NATIONAL AGRICULTURE DEVELOPMENT PROGRAMME (NADP)

DISTRICT AGRICULTURE PLAN

THIRUVALLUR

CENTRE FOR AGRICULTURAL AND RURAL DEVELOPMENT STUDIES
TAMIL NADU AGRICULTURAL UNIVERSITY
COIMBATORE -641 003

NATIONAL AGRICULTURE DEVELOPMENT PROGRAMME (NADP / RKVY)

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EXECUTIVE SUMMARY

AGRICULTURE

The district of Tiruvallur has been carved out by bifurcating erstwhile Chengalpattu district (which was renamed as Chengalpattu-MGR/Kancheepuram at the time of 1991 Census). The Tiruvallur District lies on the North Eastern part of Tamil Nadu and is bounded in the east by Bay of Bengal, in the west by Vellore district of the North East zone, in the south by Kancheepuramdistrict of the North East zone and in the North by Anthra Pradesh State. It lies between 12° 15' to 13° 15' North latitudes and 79°13' to 80° 20' East longitudes. The district has a geographical area of 3422 Sq.Km and a coastline of 80 Km.

Major Agricultural crops

Major Agricultural crops being grown in this district is Paddy, Greengram, Blackgram, Groundnut and Sugarcane.

The District Plan at a glance

The district Plan covers activities for the crops Paddy, Pulses, Oilseeds, Sugarcane and the development of STL and MSTL.

Interventions Proposed based on the scheme

1	NADP- Paddy Mission	Construction of permanent Vermicompost Unit
		Cultivation of Green Manure crops
		Production of certified seeds
		Distribution of certified Seeds
		Distribution of MN Mixture
		Distribution of bio fertilizers
		IPM (FFS School)
		Distribution of bio-agents
		Distribution of Weedicides
		Distribution of Pipeline
		SRI Demonstration/ Machine Planting
		Distribution of Small Implement kit
		Distribution of Rotavator
		Distribution of Power Tiller

		Distribution of Power Sprayer, Hand Operated Sprayer
		Distribution of Multi weeder
		Distribution of Tarpaulin
2	NADP – Pulses Mission	Production of certified seeds
		Distribution of Certified Seeds
		Distribution of MN Mixture
		Distribution of bio fertilizers
		DAP Application
		Battery operated sprayer
		Distribution of Tarpaulin
		Distribution of sprinkler
3	NADP- Oilseed Mission	Production of Foundation and certified seeds
		Distribution of F &C Seeds
		Distribution of MN Mixture
		Distribution of bio fertilizers
		Distribution of Gypsum
		Distribution of Pipeline
		Hand operated sprayer
4	NADP - Sugarcane	Distribution of Biofertilizer
		Distribution of weedicide
		Installation of drip irrigation (TANHODA subsidy)

The total budget outlay for implementing various activities under Agricultural Department for 5 years is ₹.13122.2 lakhs and as detailed below

HORTICULTURE

The Demand for the Use of fresh vegetables in the metropolitan cities like Chennai, Trichy, Madurai etc.; increased now a days due to the increased consumption by the city dwellers. As the Tiruvallur District is located very near to the Chennai city the supply of fresh vegetables to the city markets is possible. Production will be increased three times under vegetable cultivation with mulching sheets. The most important cultural practices in the cultivation of Horticultural Crops are weed control and pest management for getting higher production and also to reduce the labor cost considerably. Farm equipments are essential to carryover these operations. Agriculture Extension involved in promoting Agri-Business

opportunities through Kisan SMS link with farmers. At present all the Horticulture Scheme activities are processed through online, to get start with the online works, infrastructure facilities are needed. The proposed cost will be ₹. 4460.92 lakhhs.

AGRICULTURAL ENGINEERING

A.REMOVAL OF PROSOPIS JULIFLORA TO CONTROL WILD BOAR PROBLEM:

In Tiruvallur district wild boar is a bigger threat to the farmers who raise crops like groundnut, millets etc. These wild boars use PROSOPIS JULIFLORA as their shelter. By removing prosopis the wild boar problem can be controlled to some extent.

B. SOLAR FENCING TO CONTROL THE FARM LANDS FROM CATTLE GRAZING:

Solar fence is a barrier that uses electric shocks to deter animals from crossing a boundary. The voltage of the shock may have an effect of discomfort. Most solar fences are used today for agricultural fencing and other forms of animal control. Solar fences are designed to create an electrical circuit when touched by a person or animal. The animal touching the fence and the earth causing an electric shock.

C. CONSTRUCTION OF VILLAGE STORAGE GODOWN.

Village Storage Go-downs have been proposed in the Project to meet the demand made by the farmers. The structures will be much useful to the farmers when they find it difficult to market their produce.

D.SOLAR PUMPS:

Solar water pumps are ideal for Agriculture and related activities and are a great alternative to conventionally powered system. With power supply at times not being consistent, solar power pumps will provide continuous pumping throughout the day for a minimum period in a year.

E .LAYING OF PVC PIPES:

In open field Irrigation, irrigation water is wasted through seepage, percolation etc. To avoid such conveyance losses laying of PVC pipes in the farmers field would be much beneficial.

F.MICRO IRRIGATION SYSTEM

Drip Irrigation systems were proposed for Horticulture crops as per the proposals furnished by the Horticulture Department in following manner:

The rates approved under GOI guidelines for MIS under centrally sponsored scheme of Micro Irrigation Scheme were adopted for Drip and Sprinkler Irrigation Systems. The proposals were placed before the Lead Bank and Tamil Nadu State Agriculture & Rural Development

Bank Ltd., for availing institutional finance to meet the beneficiaries' contribution @ 80% of the total cost of installation. The overall proposals on Drip and Sprinkler Irrigation systems are made by AED.

Besides, the micro irrigation system-Drip & Sprinkler Irrigation installation was proposed by considering the following factors with respect to sub-basin factors:

1. Area proposed to be brought under Horticulture crops in the post project situation (Annual : Banana, Mango, Coconut Seasonal : Vegetables)
2. Number of potential open wells with the capacity to provide supplemental irrigation. There is acute water scarcity during south west and post North East Monsoons in the wells. The average command ability as per field enquiries ranges from 0.2 ha to 0.6 ha. Dovetailing Drip Sprinkler Irrigation system under these conditions increased the command ability to 0.5 ha-1 ha. It is hoped that the post project situation leads to confidence building among the farmers so that the water conservation methods propagate on their own.
3. In case of seasonal crops, adequate care has been taken to take advantage of the systems at least for two crops per year (to accommodate multi crop calendar) so that the investment is justified by optimum utilization. Suitable planting geometry was decided in consultation with TNAU based on their experience.
4. In the case of sugarcane, the sugar mills in the project area were actively propagating pit method of cultivation with Drip and Fertigation. Technical support was extended by the AED.

Drip Irrigation system was proposed in existing crops *viz.,* Sugarcane & Coconut Crops and for the Horticulture crops *viz.,* Banana, Mango and Sprinkler irrigation was proposed for vegetable crops *viz.,*brinjal and bhendhi and flowers under area expansion.

G. CONSTRUCTION OF THRASHING FLOOR*:*

In most of villages the farmers use the roads as Thrashing Floor / Drying yard, which is not a safe practice.

H. FARM PONDS

The Farm Ponds are ideal water harvesting structures, proposed in tail end areas of the ayacut area. The drained water and surplus irrigation water were stored in the farm ponds during monsoon seasons. Unexpected heavy runoff received during summer seasons were also harvested in these farm ponds. During the critical stage of crops, before harvesting stage, when

irrigation water could not be extended; the water stored in farm ponds was utilized as life saving irrigation. This gave an assured yield of crops for the farmers.

Besides, aquaculture was done in these farm ponds with the technical and input assistance from fisheries department for additional income. The farmers who opted for farm ponds were motivated for adopting drip/sprinkler irrigation for raising their crops. The contribution @ 20% of the total cost will be collected from the beneficiaries of the farm pond for works and the remaining 80% will be borne from the project.

I . FARMERS TRAINING

Farmers will be provided training on maintenance of the equipment, periodical cleaning and washing and trouble shooting. Self technique to run a trouble free system will be provided to enhance the confidence level of farmers. It is programmed to reach 7500 farmers through Training.

Village meetings and campaigns have been proposed for sensitizing farmers on the need for Micro Irrigation Methods and practices. Exposure visits at cluster level were organized to facilitate farmers to be convinced that it is possible to change their Irrigation practices for sustainable usage of water resources. Demonstrations and on the site trainings at the Village level would be organized to introduce Micro Irrigation Systems followed by workshop at cluster level to impart pertinent skills.

Follow-up visits have been proposed at regular intervals to substantiate and fine-tune the skills that have been imparted on the spot trainings. Follow-up visits were focused on enhancing the confidence levels of farmers in order to motivate them for continuous application of new skills and methods in their fields.

J. FARM ROADS:

The Farm roads will be much useful to the farmers when they find it difficult to transport their produce from their field to the Main road.

H. AGRICULTURAL MECHANIZATION

The preparatory cultivation is being done by the tractor for wet ploughing. The level of mechanization in respect of transplanting; seed sowing, inter cultivation was very poor. There was no awareness among the farmers regarding usage of agricultural machinery for paddy transplanter, seed drills, weeder etc. In respect of plant protection, the farmers use knapsack and power sprayers. For harvesting, the farmers started using combine harvester due to acute labour problems Promoting labour saving implements & machineries for ergonomic farm

operations was the foremost objective of the project. They assured efficient operation and maintenance of machineries and implements besides letting them to farmers at reduced tariff rate. While choosing the implements, adequate care has been taken to meet the specific demands of the predominantly paddy growing farmers.

The distribution of paddy transplanter was proposed in this project. The distribution of power tiller was also proposed in this project to meet all type of farm operation with attached implements. The Rotovators, Discplough, Power weeder, Multicrop thresher met the demands of the growers of sugarcane,banana and horticulture crops. Supply of farm machineries and equipments saved time and labour during farm operation.

ANIMAL HUSBANDRY

The Livestock Sector is playing a vital role in the rural and sub-urban development by providing employment as well as an alternative source of income during natural calamities.

The profitability of Livestock rearing is directly proportional to the source of feed and fodder, which constitutes about 60-70% of Livestock Farming. Therefore enhancement of production in Feed and Fodder with available resources is urgent need with utmost priority. The Project proposed for total outlay of Rs. 13790 lakhs which emphasize on the following guidelines:

1 Availability of fodder throughout year for their Livestock

2 To reduce the cost of feeding which in turn reduce cost of milk production

3 To encourage the farmers by providing assistance to use his unused barren land for fodder cultivation

4 To promote alternate feed substitute-*Azolla*-one of the most economic and organic feed substitute which aids in easy digestion of protein.

5 To promote and encourage farmers to raise tree fodder for their cattle

6 To utilize available water resources efficiently by providing financial assistance at 75% subsidy to farmers for installation of Rain-guns

7 Empowering women livelihood in rural and sub-urban areas

8 To improvise the Veterinary Institutions for efficient Animal Husbandry Services

FISHERIES

National Agriculture Development Project (NADP) plays key role in fisheries development, since fisheries is one of the allied sectors of Agriculture. For ensuing year various development and awareness projects were included for the overall development of the fisheries sector. Besides increasing the production and productivity of the inland water bodies fish production, this project is coupled with conservation or restoration of water bodies by biologically controlling the water weeds. Efforts were made for sustainable fisheries in marine by installing artificial reefs. Major thrust is given in post harvest management by imparting awareness on hygienic fish handling and in creating modern fish stalls and markets. Short seasonal economically viable fish species will be introduced this time to utilize farm ponds and short seasonal water bodies. Infra structure facilities of the Government fish seed farms will fortify to give good results. Overall these projects were tailored with utmost care for the development of stakeholders of fisheries sector. The project proposed for total out lay of Rs. 4238 lakhs.

Budget Abstract for Thiruvallur District (₹.in lakhs)

Sl. No	Sectors	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Agriculture	22910.68	26773.77	28740.49	31057.62	32090.69	141573.25
2	Agricultural Research (TNAU)	160.00	660.00	625.00	800.00	100.00	2345.00
3	Horticulture	69826.52	12266.23	15822.95	12451.03	12449.29	122816.02
4	Agricultural Engineering	3216.80	3360.07	3268.52	3263.12	3441.64	16550.15
5	Agricultural Marketing	1806.80	1656.35	1198.83	557.35	566.57	5785.90
6	Seed Certification and Organic Certification	23.36	13.36	0.00	0.00	0.00	36.72
7	Animal Husbandry	1348.05	1520.95	1380.95	1220.95	1144.95	6615.85
8	Animal Sciences Research (TANUVAS)	804.30	687.70	1141.05	658.05	266.65	3557.75

Sl. No	Sectors	2017-18	2018-19	2019-20	2020-21	2021-22	Total
9	Dairy Development	485.25	2326.25	9076.25	11885.25	495.25	24268.25
10	Fisheries	57.59	142.24	3602.5	95.38	76.18	4238
11	Fisheries Research (TNFU)	2389.23	2190.63	2019.63	3376.73	2585.73	12561.95
12	Water Resource Organization (PWD)	8000.00	14495.00	19400.00	1185.00	1700.00	44780.00
13	Civil Supplies &Co operation	78.75	142.25	81.75	37.00	53.75	393.50
	Total	**111107.33**	**66234.80**	**86357.92**	**66587.48**	**54970.70**	**385522.34**

The plan outlay for five years (2017-22) for Thiruvallur district is Rs. **385522.34 lakhs**. Greater emphasis has been given to farm mechanization and soil and water conservation measures as they have become pre-requisites to the implementation of modern technologies and also owing to non-availability of agricultural labourers, especially in Thiruvallur district.

CHAPTER I

INTRODUCTION

Rashtriya Krishi Vikas Yojana (RKVY) vis-à-vis National Agricultural Development Program (NADP) was initiated in 2007 as an umbrella scheme for ensuring holistic development of agriculture and allied sectors by allowing states to choose their own agriculture and allied sector development activities. The scheme has come a long way since its inception and has been implemented across two plan periods i.e. during 11th and 12th plan periods. Based on feedback received from States, experiences garnered and inputs provided by various stakeholders, schemes eligible for funding under RKVY have undergone modifications to enhance efficiency, efficacy and inclusiveness of the program.

The overall objectives of RKVY (NADP) are as follows:

Objectives of RKVY

a. To strengthen the farmers' efforts through creation of required pre and post-harvest agri-infrastructure that increases access to quality inputs, storage, market facilities etc. and enables farmers to make informed choices.

b. To provide autonomy, flexibility to States to plan and execute schemes as per local/ farmers' needs.

c. To promote value chain addition linked production models that will help farmers increase their income as well as encourage production/productivity

d. To mitigate risk of farmers with focus on additional income generation activities - like integrated farming, mushroom cultivation, bee keeping, aromatic plant cultivation, floriculture etc.

e. To attend national priorities through several sub-schemes.

f. To empower youth through skill development, innovation and agri- entrepreneurship based agribusiness models that attract them to agriculture.

District and State Agriculture Plans

As per the recent guidelines issued by the Government of India under Remunerative Approaches for Agriculture and Allied sector Rejuvenation (RAFTAAR), the new projects proposed and are to be implemented under NADP/RKVY must be in consonant with

District Agricultural Plans (DAP), State Agriculture Plans (SAP) and State Agriculture Infrastructure Development Program (SAIDP) prepared by the individual States. Thus, such action-oriented plan documents will remain as a cornerstone of planning and implementation of the NADP/RKVY and other schemes.

The overall guidelines suggested by the Government of India to be followed for preparation of District Agriculture Plans (DAP) and State Agricultural under NADP/RKVY are as follows:

- The several states have already prepared Comprehensive District and State Agriculture plans for 12th Plan period. These plans have to be revised and updated appropriately for implementing RKVY-RAFTAAR during 14th Finance Commission keeping in view modification proposed for the plan period and emerging needs of the State.
- The District Agriculture Plan (DAP) shall not be however the usual aggregation of existing schemes but would aim at moving towards projecting the requirements for development of Agriculture and allied sectors of the district and for the State a whole.
- These plans would also present the vision for Agriculture and allied sectors within the overall development perspective of the district and further State as a whole.
- The District Agriculture Plans and the State level plan would also present their financial requirements in addition to sources of financing the agriculture development plans in a comprehensive way.
- The District Agriculture Plan will include animal husbandry and fishery development, minor irrigation projects, rural development works, agricultural marketing schemes and etc. keeping in view the natural resources and technological possibilities in each district.
- District level potential linked credit plans (PLP) already prepared by the National Bank for Agriculture and Rural Development (NABARD) and Strategic Research and Extension Plans (SREP) developed under the Agricultural Technology Management Agency (ATMA) etc. may be referred for revision of DAPs.
- It should also be ensured that the strategies for convergences with other programs as well as the role assigned to the Panchayati Raj Institutions (PRIs) are appropriately incorporated in DAPs.

Therefore, each State will also have a comprehensive State Agricultural Plan (SAP) for the remaining period of the Fourteenth Finance Commission by integrating the District Plans. SAPs will invariably have to indicate resources that can flow from the State to the districts.

The Process

Revision and updating of SAPs could be a two-way process. Firstly, State Nodal Department (or Agriculture Department) could get DAPs revised in the first instance to ensure that priorities of the State are properly covered in the district plans. States should, at this stage of scrutiny, ensure that requirements of districts and priorities of the State are appropriately captured and aligned in DAPs. Alternately, State Nodal Agency could communicate to the districts in the first instance, the State's priorities that ought to be reflected in the respective district plans and the districts may incorporate these in their updated district plans. Preparation/revision of the DAPs need to be an elaborate, exhaustive and iterative process and care has to be taken by the State Nodal department and District Agriculture Department in ensuring that these plans cover the entire gamut of agriculture and allied sectors.

Revision and Updation of DAP and SAP in Tamil Nadu

Tamil Nadu State continued to receive Central Assistance under NADP/RKVY. The Government of Tamil Nadu also prepared District and State Agriculture Plans covering 11th and 12th Plan periods. Tamil Nadu State has 32 districts including Chennai. The District Agriculture Plan was prepared for 31 districts excluding Chennai during 12th plan period. Thus, the current exercise is the continuation of the 12th plan period: which also covered two years of the 14th Finance Commission period (2015-16 and 2016-17) and also keeping in view of the changing scenario in the development and emerging needs of the State and to be eligible for fresh grants from Government of India. These plans were further revised and updated appropriately for implementing RKVY during the periods from 2017-18 to 2021-22.

Methodology followed

The revision of the District Agricultural Plan of Thiruvallur district, was done by gathering the secondary data about district and block with respect to rainfall, land use pattern, demography, livestock, machinery, infrastructure so far created etc. In addition, the constraints in production and marketing of agricultural and livestock produce, crop/animal production and gaps between expected and actual yield and the reasons for such gaps were

also discussed among the various stakeholders and incorporated in this plan document. Besides, in consultation with the line department officials and based on the data received from respective districts, a detailed year-wise action plan i.e. from 2017-18 to 2021-22 with physical and financial implications were presented.

CHAPTER II

PROFILE OF THE DISTRICT

2.1. District at a glance

Tiruvallur was originally known as Tiruvallur which specifies the sleeping position of the holy lord "Balaji", in the Veeraragava temple of Tiruvallur. Later people began to refer it by names such as Trivellore and Tiruvallur. Today Tiruvallur is well known, one of the reasons being the Veeraragava Temple. The new moon day is very auspicious day for the lord and so for the people of the town.

The district of Tiruvallur has been carved out by bifurcating erstwhile Chengalpattu district (which was renamed as Chengalpattu-MGR/Kancheepuram at the time of 1991 Census). According to the said bifurcation Tiruvallur revenue division which included Tiruvallur, Tiruttani taluks and Uthukkottai and Pallipattu sub-taluks separated from Chengalpattu district along with Ponneri and Gummindipoonditaluks of Saidapet revenue division and formed this new district.

At present this district is comprised of 12 taluks namely Ambattur, Gummindipoondi, Ponneri, Uthukkottai, Tiruvallur, Poonamallee, Tiruttani, Pallipattu, Madhavaram, Maduravoyal, Thiruvottiyur and Avadi and four Revenue Divisions namely Ambattur, Ponneri, Tiruvallur and Tiruttani.

In the far past, this region was under a chain of regimes commencing from the Pallavas during the 7th century ending with the Nawab of Arcot during the early part of 19th century when it came under the British rule. In 1687, the Golkonda rulers were defeated and the region came under the Moghul emperors of Delhi. The towns and villages of this region were the scene of Carnatic wars. Battles are said to have been fought in this region during the struggle for supremacy between the English and French. The town of Pulicat was the earliest Dutch possession in India founded in 1609 which was ceded to the British in 1825. With this, the region came under the British rule which ended on the 15th August, 1947 with India becoming independent.

Geographical Position

Tiruvallur district, a newly formed district bifurcated from the erstwhile Chengalpattu district (on 1st January 1997), is located in the North East part of Tamil Nadu. North Latitude between 12°15' and 13°15'. East Longitude between 79°15' and 80°20' the district is surrounded by Kancheepuram district in the South, Vellore district in the West, Bay of Bengal in the East and Andhra Pradesh State in the North. The district is spread over an area of about 3422 sq.km.

An insight into the early history of this region shows that the region was ruled by kingdoms such as the Pallavas, the Golkondas, the Mughals, the French, the Dutch and also the British.

Physical Features

The Coastal region is mostly flat while certain areas in Tiruttani and Pallipattutaluks are undulated and even hilly. The types of soil predominantly found are red non-calcareous and coastal alluvial. Also sandy soil mixed with soda or other alkalis found.

The soil found in the coastal region is of the erinaceous type (sandy), suitable for *Casuarina*plants.

2.2. Administrative Structure

The district has been divided into three revenue divisions *viz.,*Tiruvallur, Tiruttani and Ponneri. There are three taluks under Tiruvallur division, two taluks under Tiruttani divisions and three taluks under Ponneri division. There are 46 firkas and 820 revenue villages. Likewise there are 14 blocks, 5 Municipalities and 10 town Panchayats which implement rural development activities.

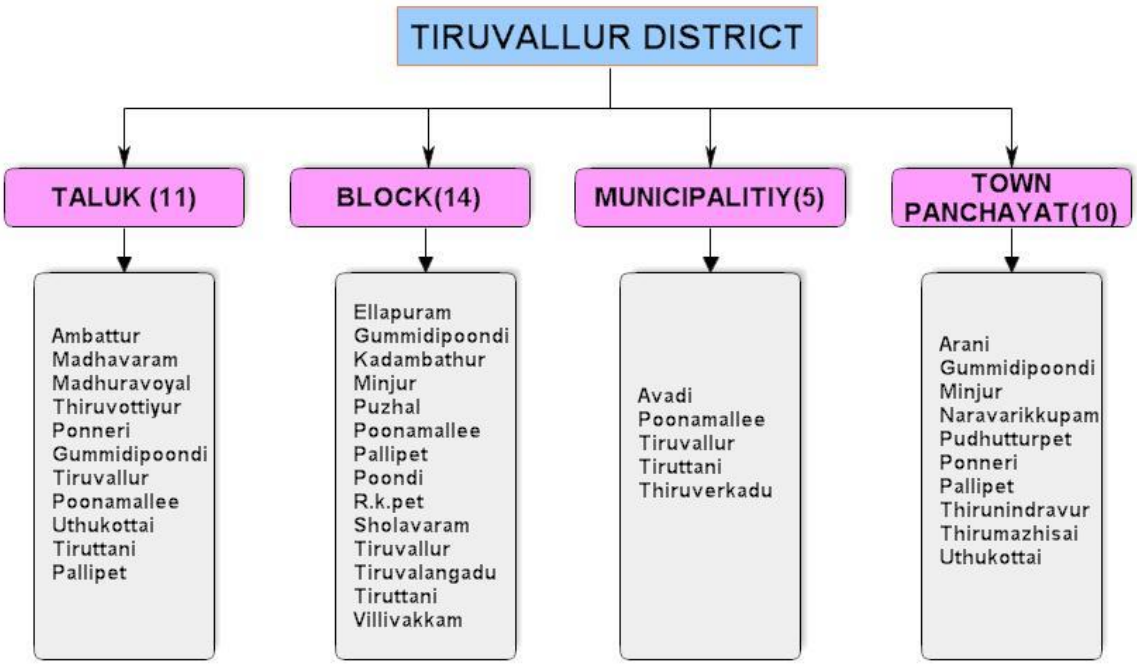

Fig. 1.District Administrative Structure

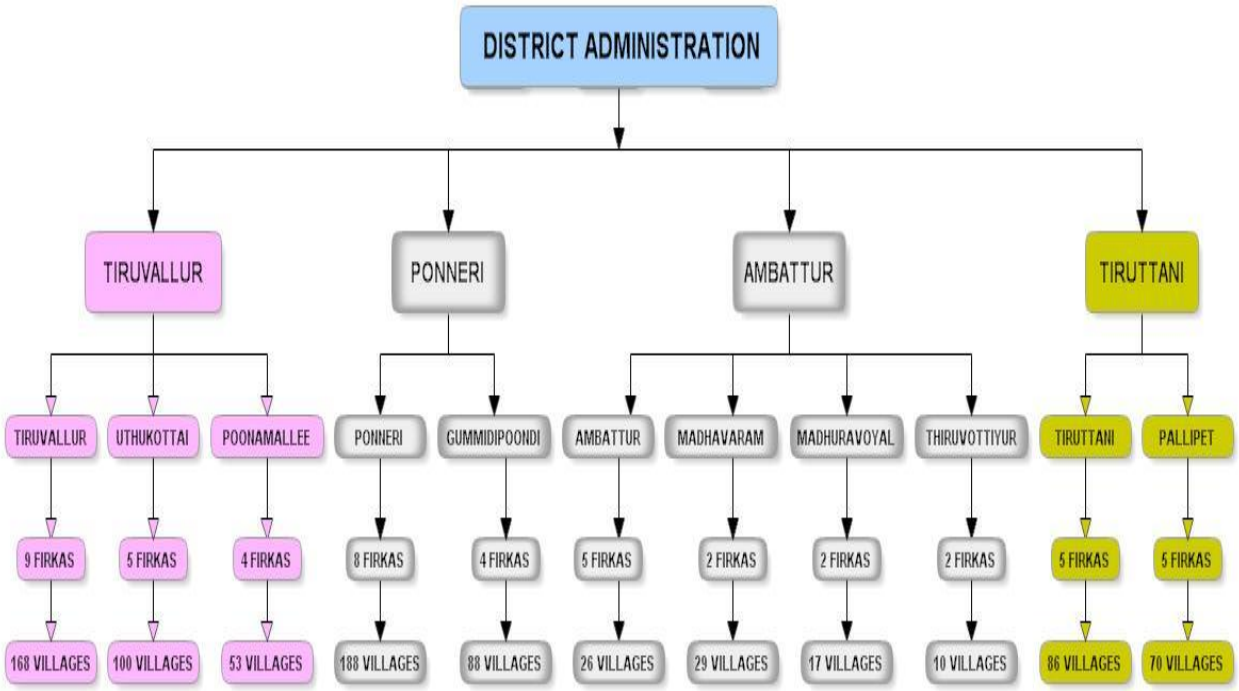

Fig. 2.District Revenue Structure

Revenue Taluks (11)

1. Ambattur
2. Madhavaram
3. Madhuravoyal
4. Tiruvottriyur
5. Ponneri
6. Gummidipoondi
7. Tiruvallur
8. Poonamallee
9. Uthukottai
10. Tiruttani
11. Pallipet
12. Avadi

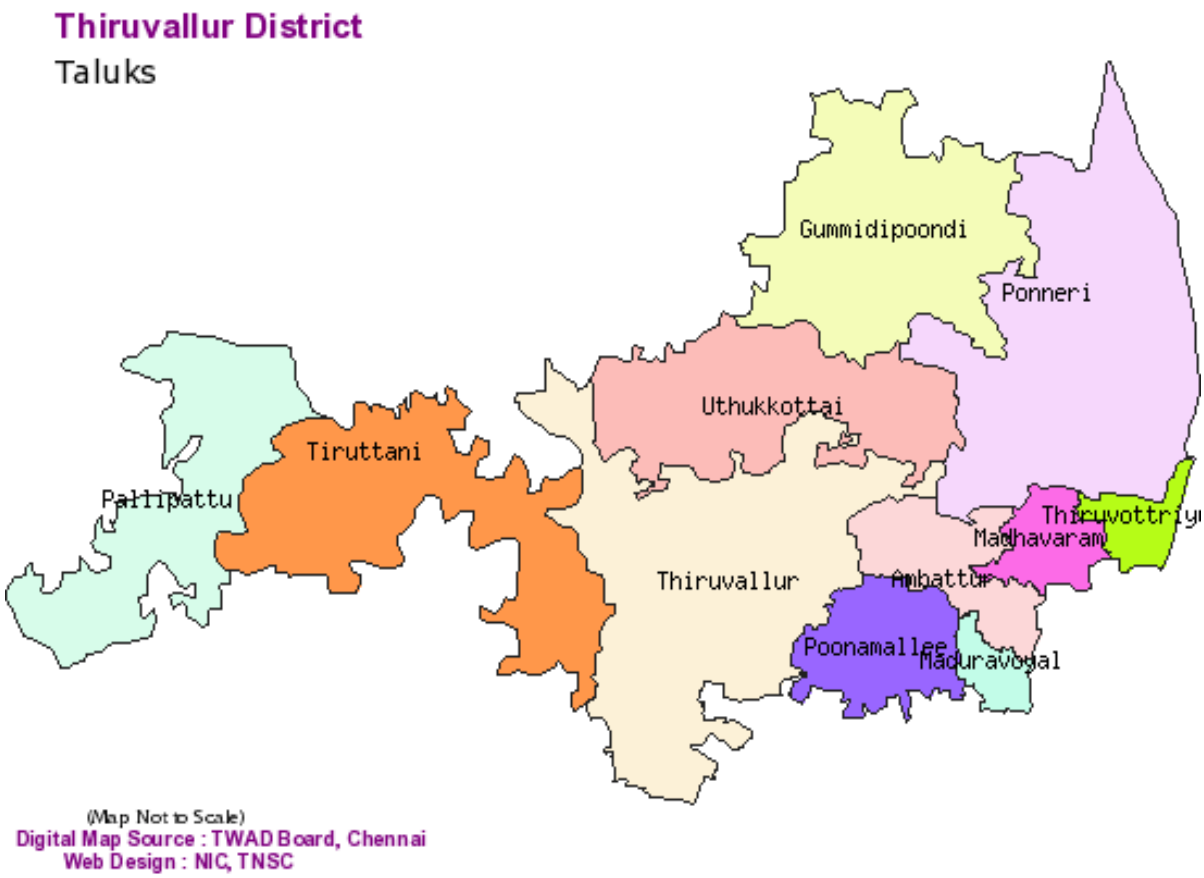

Fig.3. Map Showing the Taluks of Tiruvallur District

Blocks (14)

- Ellapuram
- Gummidipoondi
- Kadambatur
- Minjur
- Pallipet
- Poonamallee
- Poondi
- Puzhai
- R.K.Pet
- Solavaram
- Thiruvalangadu
- Tiruttani
- Tiruvallur
- Villivakkam

Fig.4. Map Showing the Blocks of Tiruvallur District

Municipalities (5)

1. Avadi
2. Poonamallee
3. Tiruvallur
4. Tiruttani
5. Tiruverkadu

Town Panchayats (10)

1. Arani
2. Gummidipoondi
3. Minjur
4. Naravarikuppam
5. Pothatturpettai
6. Ponneri
7. Pallipet
8. Thirunindravur
9. Thirmazhisai
10. Uthukottai

2.3. Demographic Profile

2.3.1. Population

The total population of the district is 3728104 with males accounting for 1876062 while females accounts for 1852042. Around 86 % of the total population is in rural areas and engaged in agricultural and allied activities. Small and marginal farmers account for 5.8 % of the population. Tiruvallur district has an urban population share of 64.97%.

2.3.2. Literacy Level

Tiruvallur district has a higher literacy rate (84%) as compared to State literacy rate of 80.1%. The total literate persons are 2791721 of which 1495711 persons are male and 1296010 persons are female.

2.3.3. Households

There are 946949 numbers of households in Tiruvallur District.

2.3.4. Working Population

Tiruvallur district is one of the fastest developing districts in Tamil Nadu in terms of Industrial Development as the district is adjacent to Chennai district. The district has 16 industrial estates; 11 developed by the Government and 5 by private firms. The total working populations are 1538054 of which 1103563 persons are male and 434491 persons are female. Total number of cultivators in this district is 73444. Total number of agricultural laborers is 270586 of which male accounts for 143674 and female 126912.

Table. 2.1. Population, Literates, Scheduled Castes and Scheduled Tribes-Sexwise By Taluk (As per Census 2011)

Sl. No.	Name of the Taluk	Population			Literates			Scheduled Castes			Scheduled Tribes		
		Persons	Male	Female	Persons	Male	Female	Persons	Male	Female	Persons	Male	Female
1	Gummidi -poondi	190541	95799	94742	121410	67899	53511	49849	24815	25034	5100	2518	2582
2	Poonneri	389862	195181	194681	275736	149141	126595	124094	61814	62280	7942	3946	3996
3	Uthukottai	152631	75475	77156	94212	52339	41873	52738	26247	26491	6609	3268	3341
4	Tiruttani	211291	105568	105723	138720	77356	61364	57297	28609	28688	6288	3160	3128
5	Pallipattu	214073	107698	106375	141661	80212	61449	48058	23955	24103	4743	2423	2320
6	Tiruvallur	407048	203911	203137	292841	158836	134005	138049	68840	69209	7057	3600	3457
7	Poonamallee	659922	333307	326615	523254	277354	245900	134523	67310	67213	4024	2058	1966
8	Ambathur	906580	457820	448760	735126	385011	350115	109785	55099	54686	3780	1904	1876
9	Madhavaram	596156	301303	294853	468761	247563	221198	107253	53837	53416	1700	815	885
	District Total	**3728104**	**1876062**	**1852042**	**2791721**	**1495711**	**1296010**	**821646**	**410526**	**411120**	**47243**	**23692**	**23551**

Source: Population Census, 2011.

Table.2.2. Salient Features of 2011 Census – Municipality-Wise

Sl. No.	Name of theMunicipality	Density per Sq. Km.	Females per 1000 males	Increase in population since 1981 in %	Urban/ Rural Population in %	Literacy rate among		S.C. Population in %	S.T. Population in %
						Male (%)	Female (%)		
1	Tiruvallur	--	985	-	--	81	69	19	0.6
2	Avadi	--	944	--	--	83	72	16	0.9
3	Ambattur	--	940	-	--	84	75	8	0.2
4	Madavaram	--	957		--	81	70	13	0.3
5	Kathivakkam	--	963	--	--	77	63	12	0.5
6	Thiruvottiyur	--	953	--	--	80	70	12	0.2

Source: Population Census, 2011.

2.4. Topography

Tiruvallur district was formed by bifurcating from the erstwhile Chengalpattu district (on 1st January, 1997), is located in the North East part of Tamil Nadu. The coastal region is mostly flat while certain areas in Tiruttani and Pallipattu taluks are undulated and even hilly. The types of soils predominantly found are red non-calcareous and coastal alluvial. Also, found are sandy soil mixed with soda and other alkali.

Table.2.3. Soil Series and Types in Tiruvallur District

Sl. No.	Soil Series	Types	Extent (ha.)
1	Kadambady	Sandy clay loam	59,143
2	Mangalathupatty	Loamy sandy	38,842
3	Vadamadurai	Sandy clay loam	37,213
4	Amapettai	Sandy clay	16,882
5	Vannapatty	Gravelly sand	13,862
6	Suramangalam	Sandy clay	12,801
7	Mattavalam	Sandy clay loam	8,981
8	R.K.Pet	Sandy clay	8,702
9	Mahabalipuram	Sandy	8,346
10	Pallikuppam	Sandy clay loam	6,067
11	Samanthipuram	Sandy	3,019
12	Miscellaneous	Mixed	1,08,649
13	Forest	Humus	19,736

Table.2.4. Soil Classification of Tiruvallur District

Sl. No.	Type of Soil	Places in District
1	Red Loam	R.K.Pet, Pallipet, Ambattur&Puzhal Block
2	Lateritic Soil	--
3	Black Soil	--
4	Sandy Coastal Alluviam	Medur Village (Minjur Block) Sunnambukulam (Gummidipoondi Block)
5	Red Sandy Soil	Tiruttani, Thiruvalangadu Block
6	Sandy Loam and Clay Loam	Ikkadu, Kadambattur, Ellapuram Block
7	Sandy Loam	PoondimPoonamallee Block
8	Clay Soil	Thiruvalangadu, Gummidipoondi, Minjur&Sholavaram Blocks

Source: Department of Economics and Statistics, Chennai.

Table.2.5. Soil Description

Soil Description	Area (ha)
Moderately deep, fine, mixed, Inceptisols	33157.13
Moderately deep, coarse loamy, mixed, Inceptisols	32583.35
Deep, fine, mixed, Inceptisols	27728.97
Moderately shallow, fine, mixed, Inceptisols	16380.47
Deep, fine, mixed, Alfisols	16337.44
Deep, contrasting particle size, mixed, Entisols	15788.36
Very deep, fine loamy, mixed, Inceptisols	15569.95
Moderately shallow, clayey skeletal, mixed, Inceptisols	15084.86
Moderately deep, clayey skeletal, mixed, Alfisols	11460.47
Deep, fine, montmorillonitic, Vertisols	11241.75
Very deep, clayey skeletal, kaolinitic, Alfisols	9349.94
Deep, sandy, mixed, Entisols	8757.90
Moderately shallow, fine, mixed, Alfisols	8557.91
Very deep, coarse loamy, mixed, Inceptisols	6247.45
Moderately deep, fine loamy, mixed, Alfisols	5685.77
Shallow, clayey, mixed, Inceptisols	5621.19
Very deep, fine loamy, mixed, Alfisols	4011.18
Moderately deep, fine loamy, mixed, Inceptisols	3321.95
Shallow, loamy skeletal, mixed, Entisols	3237.84
Deep, fine loamy, mixed, Inceptisols	3059.20
Deep, coarse loamy, mixed, Inceptisols	3041.96
Deep, fine loamy, mixed, Alfisols	2792.57
Deep, fine, mixed, Ultisols	2561.51
Very deep, fine, kaolinitic, Alfisols	2344.20
Moderately shallow, fine loamy, mixed, Alfisols	1444.30
Moderately deep, fine, montmorillonitic, Inceptisols	1017.78
Deep, fine, montmorillonitic, Inceptisols	793.54
Very deep, sandy, mixed, Entisols	429.99
Moderately deep, fine, mixed, Alfisols	220.03
Moderately shallow, coarse loamy, mixed, Entisols	155.40
Shallow, clayey, mixed, Entisols	90.44
Shallow, clayey skeletal, mixed, Inceptisols	30.02

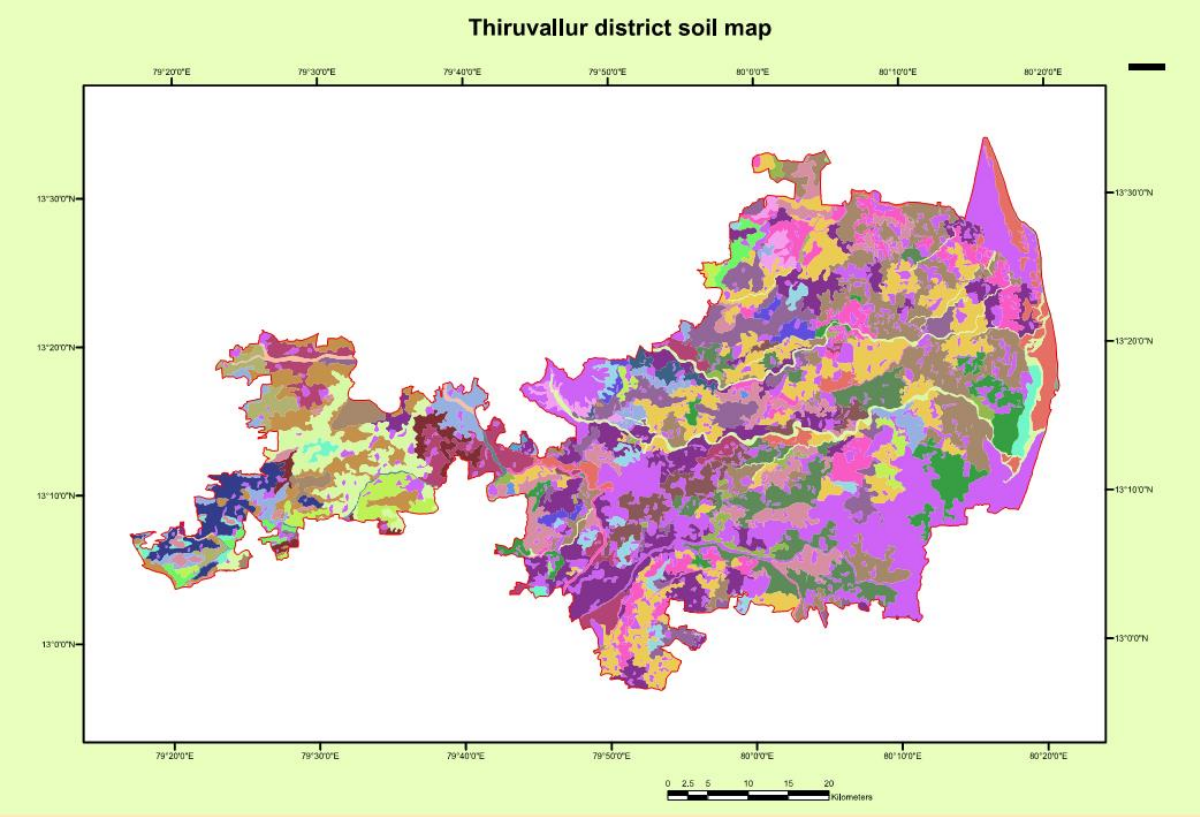

Fig.5. Soil Map of Tiruvallur District

Legend

- DEEP, COARSE LOAMY, MIXED, INCEPTISOL
- DEEP, CONTRASTING PARTICLE SIZE, MIXED, ENTISOLS
- DEEP, FINE LOAMY, MIXED, ALFISOLS
- DEEP, FINE LOAMY, MIXED, INCEPTISOL
- DEEP, FINE, MIXED, ALFISOLS
- DEEP, FINE, MIXED, INCEPTISOL
- DEEP, FINE, MIXED, ULTISOLS
- DEEP, FINE, MONTMORILLONITIC, INCEPTISOL
- DEEP, FINE, MONTMORILLONITIC, VERTISOLS
- DEEP, SANDY, MIXED, ENTISOLS
- MODERATELY DEEP, CLAYEY SKELETL, MIXED, ALFISOLS
- MODERATELY DEEP, COARSE LOAMY, MIXED, INCEPTISOL
- MODERATELY DEEP, FINE LOAMY, MIXED, ALFISOLS
- MODERATELY DEEP, FINE LOAMY, MIXED, INCEPTISOL
- MODERATELY DEEP, FINE, MIXED, ALFISOLS
- MODERATELY DEEP, FINE, MIXED, INCEPTISOL
- MODERATELY DEEP, FINE, MONTMORILLONITIC, INCEPTISOL
- MODERATELY SHALLOW, CLAYEY SKELETL, MIXED, INCEPTISOL
- MODERATELY SHALLOW, COARSE LOAMY, MIXED, ENTISOLS
- MODERATELY SHALLOW, FINE LOAMY, MIXED, ALFISOLS
- MODERATELY SHALLOW, FINE, MIXED, ALFISOLS
- MODERATELY SHALLOW, FINE, MIXED, INCEPTISOL
- SHALLOW, CLAYEY SKELETL, MIXED, INCEPTISOL
- SHALLOW, CLAYEY, MIXED, ENTISOLS
- SHALLOW, CLAYEY, MIXED, INCEPTISOL
- SHALLOW, LOAMY SKELETL, MIXED, ENTISOLS
- VERY DEEP, CLAYEY SKELETL, KAOLINITIC, ALFISOLS
- VERY DEEP, COARSE LOAMY, MIXED, INCEPTISOL
- VERY DEEP, FINE LOAMY, MIXED, ALFISOLS
- VERY DEEP, FINE LOAMY, MIXED, INCEPTISOL
- VERY DEEP, FINE, KAOLINITIC, ALFISOLS
- VERY DEEP, SANDY, MIXED, ENTISOLS
- WATERBODY / SETTLEMENT / MISCELLANEOUS LANDFORM

2.5. Climatic Condition and Rainfall

The average temperature of the district is Maximum 37.9°C Minimum 18.5°C. Like other parts of Tamil Nadu, hot climate prevails during the month of April - May and humid climate during the rest of the year except December - February when it is slightly cold.

The average normal rainfall of the District is 1139 mm. Out of which 48% has been received during North East Monsoon period and 42% has been received during South West Monsoon period.

Table.2.6. Season wise Rainfall in Tiruvallur District in 2014-15

Season / Month	2014-15	
	Actual (mm)	Normal (mm)
South West Monsoon		
June	81.3	68.6
July	77.3	110.3
August	135.6	135.4
September	130.6	137.3
Total	**424.8(42.23)**	**451.6**
North East Monsoon		
October	220	211
November	157.4	261.3
December	109.7	117
Total	**487.1(48.42)**	**589.3**
Winter Season		
January	0.8	18
February	0	13.5
Total	**0.8(0.079)**	**31.5**
Hot Weather		
March	1.3	1.5

April	53.2	13.7
May	38.8	48.4
Total	**93.3(9.28)**	**63.6**
Annual rainfall	**1006(100)**	**1139.6**

(Source: Season and Crop Report (2014-15),Figures in parenthesis denote percentage to total annual rainfall

Figure 6: Rainfall Details of Thiruvallur District in mm (2014-15)

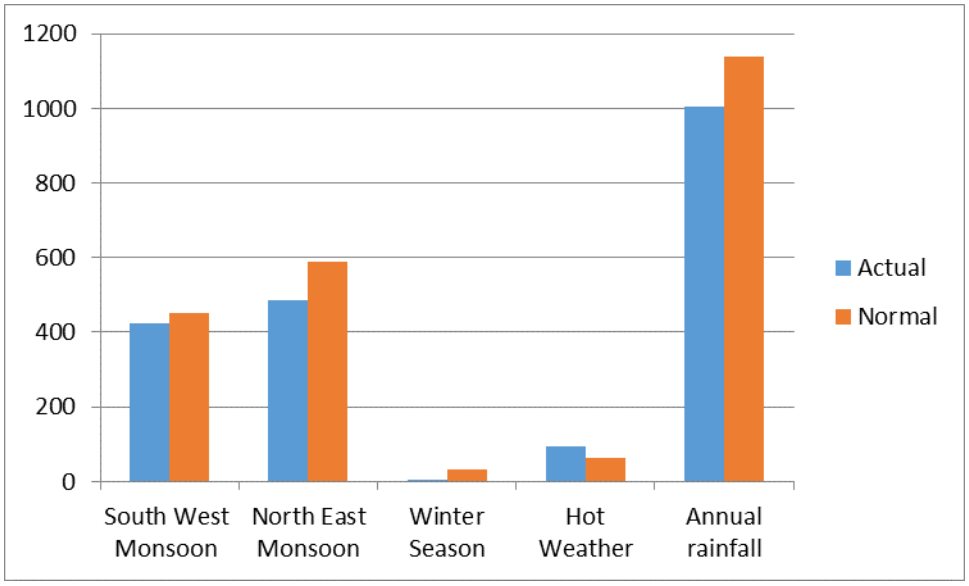

Table.2.7. Mean and Annual Seasonal Rainfall (Taluk level)

(mm)

Taluk	Mean annual Rainfall	Winter	Summer	South West Monsoon	North East Monsoon
Ambathur	3485	-	72	827.40	2585.60
Gummidipoondi	1091.40	-	40	61	990.40
Pallipat	2527	4	344	795	1384
Ponneri	4655.70	-	188	918.50	3549.2
Poonamalle	4743	-	207	932	3604
Tiruthani	3775.60	-	200	1086	2489.60
Tiruvallur	4134.33	14.60	197.80	1062.80	2859.13
Uthukottai	3971.20	8	708.20	650	2605

Table.2.8. Season wise Rainfall Pattern in Tiruvallur District

(mm)

Sl. No	Year	Winter		Summer		South West Monsoon		North East Monsoon		Total	
		Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual
1	1999-00	32.5	185.9	75.2	21.4	424.1	323.1	546.8	483.4	1078.6	1013.8
2	2000-01	32.4	7.0	76.8	120.1	426.9	301.5	546.8	291.0	1082.9	719.6
3	2001-02	32.4	39.2	63.2	26.5	426.9	380.4	546.8	704.4	1069.3	1150.5
4	2002-03	30.5	0	65.7	49.9	447.5	276.6	599.6	495.9	1143.3	822.4
5	2003-04	33.5	16.6	65.7	243.7	449.5	413.7	604.1	376.8	1152.8	1050.8
6	2004-05	33.5	0.2	65.7	123.4	449.5	351.6	604.1	450.0	1152.8	925.2
7	2005-06	33.5	0.2	65.7	64.9	449.5	463.9	604.1	1417.9	1152.8	1946.9
8	2006-07	33.5	2.5	65.7	44.5	449.5	429.2	604.1	667.9	1152.8	1144.1
9	2007-08	33.5	68.6	65.7	168.8	449.5	677.3	604.1	607.4	1152.8	1522.1
10	2008-09	33.5	11.4	65.7	15.0	449.5	420.2	604.1	740.1	1152.8	1186.7
11	2009-10	33.5	2.3	65.7	138.1	449.5	331.7	604.1	589.9	1152.8	1062.0
12	2010-11	37.9	99.7	50.6	31.1	448.4	648.1	812.7	756.8	1349.6	1535.7
13	2011-12	31.5	8.3	67.2	24.4	451.6	613.9	589.3	668.7	1139.6	1315.5
14	2012-13	32.2	20.0	61.1	86.3	520.2	504.0	828.5	604.9	1442.0	1215.2
15	2013-14	31.5	1.5	67.2	24.6	451.6	612.5	589.3	342.0	1139.6	908.6
16	2014-15	33.5	1.17	65.7	26.53	449.5	479.7	604.1	383.2	1152.8	890.63
17	2015-16	33.5	1.92	65.7	98.18	449.5	422.2	604.1	1433	1152.8	1955.3

2.6. Land

2.6.1. Land Use Pattern

The total geographical area of the district is 3, 42,243 hectares of which not sown area constitute 32.1% whereas forest covers 5.8% of the total area. Area had sown more than once accounted for 46,473 hectares. Total cropped area was 1, 49,241 hectares. Forests accounted for 19,736 hectares which forms 5.77 % of the total geographical area of the district. This proportion is far below the mark of 33% of total forest area to be maintained; hence more importance is to be given to forestry. Land put to non-agricultural use. The nine-fold classification of the land is pattern is given below.

Table.2.9. Land Use Pattern in Tiruvallur District (2014-15)

Sl.No	Classification	Area (ha)	% Share to Total Geographical area
1	Geographical Area	342243	100.00
2	Forest	19736	5.77
3	Barren &Uncultivable Area	13569	3.96
4	Land Put to Non-agricultural Uses	109848	32.10
5	Permanent Pastures & Other grazing lands	8143	2.38
6	Misc.tree crops & groves not incl. in the net area sown	7027	2.05
7	Current Fallow	29691	8.68
8	Other Fallow	44478	13.00
9	Net area sown	102768	30.03
10	Area sown more than once	46473	
11	Gross area sown	149241	

Source: season and crop report (2014-15)

Table.2.10. Number and size of Operational land holdings

Size/ Class	SC	ST	Others	Institutional	Total
Marginal 0.00 – 0.99 Ha	24207	10490	149273	1089	185059
Small 1.00 – 1.99 Ha	1815	1564	18974	219	22572
Semi– medium 2.00 – 3.99 Ha	394	783	7696	184	9057
Medium 4.00 – 9.99 Ha	107	279	2121	120	2627
Large 10.00 – 20.00 Ha	5	30	210	49	294
Total	**26528**	**13146**	**178274**	**1661**	**219609**

Source: State Hand Book (2010-11), Tiruvallur district

Table.2.11. Size of Operational Land Holdings

(ha)

Size/ Class	SC	ST	Others	Institutional	Total
Marginal 0.00 – 0.99 Ha	6480.242	3622.745	45793.890	398.648	56295.520
Small 1.00 – 1.99 Ha	2442.959	2148.327	25835.910	315.368	30742.560
Semi–medium2.00–3.99 Ha	1036.806	2149.088	20501.600	516.610	24204.100
Medium 4.00 – 9.99 Ha	587.415	1590.845	11611.700	710.258	14500.220
Large 10.00 – 20.00 Ha	105.820	372.060	3095.545	1030.400	4603.825
Total	**10653.24**	**9883.065**	**106838.6**	**2971.284**	**130346.225**

Source: State Hand Book (2010-11), Tiruvallur district

2.7. Sources of Irrigation

2.7.1. Natural Resources: Rivers and tanks

There are 4 major rivers flowing from west to east direction

- KosasthalaiyarRiver flows through Pallipet, Tiruttani, Tiruvallur, Uthukottai and Ponneritaluks. This river will be in spate when water is discharged from the Poondi reservoir in Tiruvallur taluk.
- Araniar River flows through Uthukottai and Gummidipoonditaluks. This river will be in spate when water is discharged from the Pichaturdam in AndhraPradesh.
- Nandhi River flows through Tiruttanitaluks.
- Koovam River flows through Tiruvallur and Poonamalleetaluks.
- Chembarambakkam tank is the major irrigation source in the district. It is located in Poonamalleetaluk. There are 3 giant water tanks solely for supply of drinking water to Chennai city.
    - Poondi reservoir, Tiruvallur taluk
    - Sholavaram tank, Ponneri taluk
    - Redhils tank, Ambattur taluk

Apart from seasonal rivers like Kesathaliar, Aravar, Nandi, Kallar, Coovam and Buckhingham Canal there is no perennial river in the district. Since these seasonal rivers are not sufficient, irrigation through tanks, tube wells and open wells are very common.

Table. 2.12. Tanks of Tiruvallur District

Taluk	Tanks(Nos.)
Tiruvallur	289
Uthukottai	478
Tiruthani	177
Pallipet	340
Poonamallee	143
Ponneri	258
Gummidipoondi	162
Ambathur	48
Total	**1895**

Table. 2.13. Taluk wise Irrigation by Different Sources in Tiruvallur District

Sl. No.	Name of the Taluk	Canals	Length (Km.)	Wells used for irrigation purpose only	Tube Wells	Wells used for Domestic Purpose Only	Reser voirs	Tanks (Nos.)
		Numbers						
1	Tiruvallur	4	39	4807	3556	5107	1	435
2	Uthukottai	-	-	4381	4033	750	-	332
3	Thiruthani	2	51	5195	1760	1644	-	178
4	Pallipet	5	61	5787	2325	929	-	340
5	Poonamallee	-	-	696	189	3283	-	143
6	Ponneri	2	37	4807	4561	7039	-	258
7	Gummidipoondi	4	18	2555	1372	3411	-	162
8	Ambattur	-	-	783	645	21409	-	39
9	Madhavaram	-	-	163	97	19315	-	9
	Total	**17**	**189**	**29174**	**18538**	**62887**	**1**	**1896**

Source: Department of Economics and Statistics, Chennai-6.

Table. 2.14. Area Irrigated by Different Sources of Irrigation

Sl.No.	Particularls		2012-13	2013-14	2014-15	Average
1	Canals	Gross	1286	639	137	687.33
		Net	588	362	135	361.67
2	Tanks	Gross	25829	32616	23624	27356.33
		Net	20318	26655	17706	21559.67
3	Tube wells / Bore wells	Gross	74622	91948	99640	88736.67
		Net	56997	61352	67018	61789.00
4	Open wells	Gross	14118	10040	9530	11229.33
		Net	12530	7796	7666	9330.67
5	Supplementary wells	Gross	0	0	0	0.00
		Net	0	0	0	0.00
6	Other Sources	Gross	0	0	0	0.00
		Net	0	0	0	0.00

Source: Season and crop report, 2014-15.

2.8. Mineral Resources

The district does not contain any precious mineral. However it has a few varieties of major and minor minerals.

Table. 2.15. Mineral Resources in Tiruvallur District Minor Minerals

Lime Shell	Pulikat Lake, Sunnambukulam, Annamalaicherry
Silica Sand	Elavoor, Eravanoor, Ennore, Gummidipoondi & PonneriTaluks
Stoneware Clay	Adhigathur, Odhapai, GudapakkamKandigai
Major Minerals	
River Sand	Kosasthaliyar, Araniar, Kallar, Nandi, Coovam
Blue Metal	Pallipattu and TiruttaniTaluks
Gravel	Ponneri and GummidipoondiTaluks
Brick Clay	Tiruvallur and PonneriTaluks

2.9. Agriculture

The main occupation of the district is agriculture and allied activities nearly 47% of the total work force are engaged in the agricultural sector. The major crops grown in the district are rice, cumbu - ragi, green gram, black gram, sugar cane and groundnut. Apart from this, certain horticultural crops like mango, guava and vegetables have also been cultivated successfully.

The total cropped area of the district is 149241hectares. The area under irrigated agriculture is 133721.33 Hectares, while 13231 hectares are under rainfed Agriculture. The major food grain crops cultivated are Paddy, Milles and Pulses and major nonfood crops are Groundnut, Gingelly and Sugarcane.

Cropping Pattern

Irrigated condition

Rice - Rice - Rice

Rice - Rice - Groundnut

Blackgram - Rice - Groundnut

Fallow - Vegetables - Rice

Sugarcane

Rainfed condition

Groundnut - Minor millets (Cumbu/Ragi) - Pulses (Black gram / Green gram)

Table. 2.16. Area, Productivity and Production of Major Crops in 2014-15

Sl.No	Crops	Area (in ha)	Production (in tons)	Productivity (in kg/ha)	Percentage Share (%)
1	Paddy	90170.67	392726.67	4323.67	67.43
2	Maize	208.67	1556.67	5611.33	0.16
3	Cholam	72.00	108.33	1509.00	0.05
4	Cumbu	716.00	1694.33	2269.00	0.54
5	Ragi	787.67	3059.33	3412.00	0.59
6	Bengal Gram	8.67	6.33	692.00	0.01
7	Red Gram	635.33	617.00	893.67	0.48
8	Black Gram	1458.33	1161.67	752.67	1.09
9	Green Gram	8996.67	9342.00	1009.33	6.73
10	Horse Gram	29.67	17.33	594.67	0.02
11	Groundnut	8715.00	42015.33	3304.33	6.52
12	Sunflower	10.67	12.33	973.00	0.01
13	Gingelly	977.33	730.33	551.67	0.73
14	Castor	2.00	0.67	183.33	0.00
15	Cotton	0.67	2.33	193.33	0.00
16	Coconut	993.00	67.00	4866.00	0.74
17	Sugarcane	7412.00	718645.33	64.67	5.54
18	Onion	2.33	21.67	6095.33	0.00
19	Brinjal	362.00	3177.33	8802.00	0.27
20	Bhendi	287.33	2122.33	7361.33	0.21
21	Cabbage	4.00	206.00	34949.67	0.00
22	Tomato	5.00	70.67	13678.67	0.00
23	Banana	817.67	32106.00	39706.00	0.61
24	Mango	10271.00	74439.67	9779.33	7.68
25	Jack Fruit	22.33	300.67	12870.67	0.02
26	Pine Apple	0.67	20.67	20658.33	0.00
27	Guava	202.67	1255.67	4267.67	0.15

28	Orange	2.33	1.00	1873.67	0.00
29	Chillies	456.67	218.00	452.00	0.34
30	Cloves & Cinnamon	0.67	0.67	656.00	0.00
31	Coriander	0.67	0.33	323.67	0.00
32	Turmeric	6.67	24.00	2486.67	0.00
33	Tamarind	12.33	46.67	3774.33	0.01
34	Tapioca	63.67	2069.00	32180.00	0.05
35	Sweet Potato	9.00	175.33	19541.00	0.01
	Total	**133721.33**	**1288018.67**	**250660.00**	**100.00**

(Source: Season and crop report, 2014-15)

Table. 2.17. Consumption of Chemical Fertilizers

Consumption of Fertilizers	Quantity (tones)
Nitrogenous (N)	21100
Phosphatic (P_2O_5)	8620
Potassic (K_2O)	6110

Table. 2.18. Consumption of Pesticides

Consumption of Pesticides	Quantity
Dust (Kgs)	107 Mt
Liquid (Litres)	977300 Lit

2.10. Horticulture

Table. 2.19. Block wise Area and Production of Horticulture Crops (2014-15)

Sl. No	Name of the Block	Fruits		Vegetables		Spices		Plantation Crops		Flowers		Medicinal Crops		Total	
		Area In Ha	Production (Tons)	Area In Ha	Production (Tons)	Area In Ha	Production (Tons)	Area In Ha	Production (Tons)	Area In Ha	Production (Tons)	Area In Ha	Production (Tons)	Area In Ha	Production (Tons)
1	R.K Pet	563	6784	247	5437	128	2686	5	5	41	415	1	20	985	15347
2	Pallipet	1040	10396	85	1873	79	1657	0	0	30	340	9	180	1243	14446
3	Tiruttani	783	7922	146	3648	70	1470	12	12	130	1518	0	0	1141	14570
4	Tiruvalangadu	1162	13435	211	4533	44	903	13	13	332	3716	0	0	1762	22600
5	Ekkadu	215	5919	218	4906	33	672	4	4	68	729	9	100	547	12330
6	Ellapuram	471	7355	263	7218	111	2286	0	0	233	2460.50	20	168	1098	19487.50
7	Poondi	1621	15731	110	2861	8	168	0	0	261	3109	1	10	2001	21879
8	Kadambathur	1893	20755	162	3770	108	2268	11	8	65	631	0	0	2239	27432
9	Sholavaram	435	16375	1105	24726	91	1788	0	0	49	436	2	8	1682	43333
10	Gummidipoondi	2235	24550	696	18381	42	1010	29	24	427	4313	0	0	3429	48278
11	Puzhal	113	3240	86	1544	3	63	1	1	0	0	0	0	203	4848
12	Ambathur	77	801	74	1419	4	42	0	0	54	594	1	10	210	2866
13	Poonthamalli	95	1824	168	4136	11	231	0	0	10	113	8	58	292	6362
14	Minjur	25	582	361	8326	12	189	22	22	15	165	0	0	435	9284
	Total	**10728**	**135669**	**3932**	**92778**	**744**	**15433**	**97**	**89**	**1715**	**18539.50**	**51**	**554**	**17267**	**263062.50**

2.11. Agricultural Engineering

The following implements are being supplied to the farmers under subsidy

Table. 2.20. Schemes Implemented by Agricultural Engineering Department

Under NADP scheme
Power weeder walk behind type including weed cutter, paddy weeder less than 8 HP
Mini Tractor
Power operated sprayer including, Orchard sprayer and Mist blower
Paddy transplanter covering less than 2.0 ha per 8 hr capacity
Paddy Transplanter covering more than 2.0 ha per day
Rice tray nursery preparation machine (automatic)
Gender friendly equipments (Paddy drum seeder, coconut tree climber, dryland weeder, manually operated sprayers, etc.,)
Rice tray
Power Tiller more than 8 hp and above with attachments.
Rotavator
Combined Harvester
Special equipments like Shredder, Power operated chaff cutter, Tree pruner , Post Hole digger etc.,
Seed drill
Macro Management
Tractor UPTO 40 HP
Power Tiller more than 8 hp and above with attachments.
Rotavator
(SMAM)
Tractor (40-70 PTO HP)
SMAM (Post-harvest Technology)
Tractor Drawn equipment - seed Drill
Power Weeder
Brush cutter (Operated by engine/electric motor below 5 HP)
SMAM
Tractor(20-40 PTO-HP & 40-70 PTO - HP)
Tractor Drawn equipment - seed Drill
Power Weeder
Paddy Transplanter(above 4 rows)
Coconut frond Chipper
Chuff cutter (Operated by electic motor below 3 HP)

2.12. Agricultural Marketing and Storage

Storage is an important marketing function, which involves holding and preserving goods from the time they are produced until they are needed for consumption.

- The storage of goods, therefore, from the time of production to the time of consumption, ensures a continuous flow of goods in the market.
- Storage protects the quality of perishable and semi-perishable products from deterioration;
- Some of the goods have a seasonal demand. To cope with this demand, production on a continuous basis and storage become necessary;
- It helps in the stabilization of prices by adjusting demand and supply;
- Storage is necessary for some period for performance of other marketing functions.
- Storage provides employment and income through price advantages.

a) Utilization of godowns& Drying yards

Sl. No	Location	Capacity in. MT
1	Tamaraipakkam ABC	300

Under utilization

Storage godowns	
Sl. No	**Location**
1	Kilambakkam
2	Puliyur
3	Palavedu
4	Chinnambedu
5	Thervazhi
6	Puduvoyal
7	Attrambakkam
8	Poondi

Drying yards

Sl. No	Location	Sl. No	Location
1	Tamaraipakkam	12	Athivakkam
2	Chinnambedu	13	kakkavakkam
3	Thervazhi	14	Palvakkam
4	Kilambakkam	15	kathchur
5	Puduvoyal	16	Ayanallur
6	Puliyur	17	Vannankuppam
7	Palavedu	18	Thombarambedu
8	Kanchivoyal	19	Thumbakkam
9	Attrambakkam	20	Alinjivakkam
10	Rettambedu	21	Pagasalai
11	Kuruviagaram	22	Orathur

Uzhavar Santhai

There are six uzhavar santhai in Tiruvallur District.

Sl. No	Uzhavar Santhai	Block
1	Tiruvallur	Tiruvallur
2	TIruttani	TIruttani
3	Ambattur	Ambattur
4	Perambakkam	Kadambathur
5	Naravarikuppam	Puzhal
6	Paruthipattu	Ambattur

2.13. Animal Husbandry and Fisheries

Animal husbandry is a subsidiary occupation of the district due to the presence of a number of small and marginal farmers. Presently, there are four Government Schemes in operation *viz.,* Backyard poultry farm, Buffalo Rearing Scheme, Special Animal Husbandry Programme and special campaign to protect animals. There are 5 Veterinary Hospitals, 24 Veterinary Dispensaries, 77 sub-centers and 14 mobile veterinary units catering to the needs of the farming community.

Livestock Population

Table. 2.21. Livestock Population of Tiruvallur District

Sl.No.	Particulars	Population
1	Cattle	210828
2	Buffaloes	56397
3	Sheep	74780
4	Goats	187984
5	Horses and ponies	454
6	Donkeys	586
7	Camels	0
8	Pigs	2418
	Total Livestock	**533447**
9	Elephants	0
10	Dogs	61723
11	Rabbits	2889
	Poultry	
12	Back yard Poultry	420438
13	Farm Poultry	459274
	Total Poultry	**879712**

Source: 19th livestock census, 2012

Table. 2.22. Veterinary Institutions and Animals Treated

Sl. No	Name of the Block	Veterinary Institutions				Sub centres	Other Units	
		Poly-clinic	Hos-pitals	Dispensaires	Clini-cian Centres		Upgraded Sub-centres	Mobile units
1.	Tiruvallur District	-	5	83	-	23	0	1

Table. 2.23. Number of Veterinary Hospitals

Sl. No.	Name of the Block	Number of	
		Government Hospitals	Private Hospitals
1	Tiruvallur	1	Nil
2	Kadambathur	-	
3	Poondi	-	
4	Ellapuram	-	
5	Poonamallee	1	
6	Thiruthani	-	
7	Thiruvalangadu	-	

8	Pallipet	-	
9	R.K.Pet	-	
10	Gummidi Poondi	-	
11	Minjur	2	
12	Sholavaram	-	
13	Puzhal	-	
14	Villivakkam (Ambattur Township)	1	

Table. 2.24. Dairy Development in the Tiruvallur District

Sl. No.	Name of the Block	No. of milk societies	Quantity of milk produced (In Litres) Per day	Value of milk produced (In Rs.)	Quantity of milk sold locally (Inliters.)	Quantity of milk sold to union (Inliters.)
1	Tiruvallur	4	Minimum 11500 Maximum 12000litres per Day	In between FAT/SNF Rs.16.00 upto Rs.39.61	10 to 20 litres per day by Each Societies	Above 11,500 Per day
2	Kadambathur	7				
3	Poondi	8				
4	Ellapuram	3				
5	Poonamallee	1				
6	Thiruthani	16				
7	Thiruvalangadu	23				
8	Pallipet	19				
9	R.K.Pet	11				
10	Gummidipoondi	11				
11	Minjur	8				
12	Sholavaram					
13	Puzhal					
14	Villivakkam					

Source: District Registrar, Milk Cooperative Societies, Tiruvallur.

Table. 2.25. Poultry Development

Sl. No	Name of the Block	Broiler (No's)	Layer (No's)
1	Tiruvallur	-	-
2	Kadambathur	-	-
3	Poondi	-	-
4	Ellapuram	8075	3058
5	Poonamallee	2935	2049
6	Thiruthani	16093	10148
7	Thiruvalangadu	-	-

8	Pallipet	25200	15625
9	R.K.Pet	118299	5095
10	GummidiPoondi	36928	12145
11	Minjur	22555	-
12	Sholavaram	26088	148043
13	Puzhal	15211	11945
14	Villivakkam	-	26060

1.14. Fisheries

Tiruvallur district is the top most districts and plays a major role in agrarian and industrial economy of Tamil Nadu. This district is bestowed with both Marine and Inland water resources and thus plays a vital role in fisheries sector. It has total coastal length of 27.90 km comprising 77 fisher folk villages. Among the fisher folk population of 57,999 numbers; 19,683 were active fishermen. 2570 Number wooden catamarans and 3501 FRP (Fiber Reinforced Plastic) boats were present in the district.

The total inland resources are 47,982 ha. Long seasonal irrigation tanks constitute 14,206 ha. short seasonal irrigation tanks constitute 14,604 ha. and brackish water constitute 14,660 ha. Estimated Inland fish production of our district is 13,440.58 tons (6.98% of state Inland fish production 1, 92,505.92 tons). Poondi reservoir (3263 ha.) is one of the major Inland fishery resources of our district and 8 Inland fishermen societies thrive on it. Prawn/shrimp culture is famous at the coast line of Gummidipoondi and Minjur. The total fish production is to the tune of 11372 tonnes.

Table 2.26. Fisheries Development in the district

A	Total Coastal Line of the District	27.9 km.
B	Total Inland Fresh Water spread Area	75006 ha
C	Estuaries and Brackish Water Area	63.25 km²
D	Marine Fishing Villages	77
E	Fishing Vessels(Country Craft)	4768
F	Active Marine Fishermen	19612
	Inland	
1	Freezing Plants	Nil
2	Ice plants, Cold storages and walk in coolers	-
	Sea Food Manufacturing Units	
1	Sea food manufacturing	Nil
2	Units in private sector	-

	Fisheries Training centre	
1	Marine	-
2	Inland	Nil
	Export – Fish and Fish Products	
1	Quantity (Tonne)	3 tonne per day
2	Value (Rs.in lakhs)	9 lakhs per day

Source: Assistant Director of Fisheries, Ponneri

Table. 2.27. Estimated Marine / Inland Fish Production

Sl. No.	Block / Municipalities	Quantity (Tonnes)	Value (Rs. In lakhs)
1	Marine Fish Production	9729	6223.00
2	Inland fish production	13.44	8.06

Source: Assistant Director of Fisheries, Ponneri

Table. 2.28. Number of Families Engaged In Fishing

Sl. No.	Name of the Block/District	No. of Families engaged
1.	Tiruvallur Dist.	15181

Source: Assistant Director of Fisheries, Ponneri

Table. 2.29. Agricultural Implements and Machinery in District of Tiruvallur

Sl. No	Item	Numbers
1	**Ploughs**	
	a)Wooden	11656
	b)Iron(Soil Plough & Soil String)	5612
	c) Total	17268
2	**Water Pumps for Irrigation Purpose**	
	a) Worked by Oil Engine	2375
	b)Worked by Electric Power	8963
	c) Total	11338
3	**Tractors**	
	a)Government	-
	b)Private	-
	c)Total	2389
4	**Sugarcane Crushers**	
	a) Worked by Power	-
	b)Worked by Bullocks	-
	c) Total	414
5	**Oil Ghanis**	-
	a)5kg&above	N.A
	b)Lessthan5kg.	
	c) Total	

Source: Based on Quinquennial Livestock Census (2010-11).

Table. 2.30. Commercial Banks in the District

Number of Commercial Banks: 332

(Rs. in Crores)

Items	Deposits	Advances	Credit Deposit Ratio	Sector wise Credit details	
Public Sector & PrivateSector Banks	14.84	13.41	90.37%	Total Priority	3846.92
				Of which Agri	1153.33
				Micro & Small Enterprises	894.42
				Retail trade	252.68
				Micro credit	184.62
				Education	451.54
				Housing	909.63
				Weaker Sections Advances	1408.75
Co. op. Bank	357.06	926.07	259%	Total Priority	312.57
				Of which Agri	82.14
				Micro & Small Enterprises	209.88
				Retail trade	13.06
				Micro credit	7.04
				Education	0
				Housing	0.46
				Weaker Sections Advances	60.97

Source: Lead Bank (Indian Bank), Tiruvallur.

Table. 2.31. Co-operative Banks and Societies in Tiruvallur District

Primary Land Development Bank	10	Weavers Co-Operative Societies	73
District Central Co-Operative Bank	19	Industrial Co-Operative Societies	13
Urban Banks	1	Khadi and Village Industries Societies	34
Primary Agricultural Credit Societies	134	Primary Co-operative Societies	19
Housing Co-operative Societies	25	Co-operative Sugar Mills	2

Table 2.32 Cooperative societies in the district of Tiruvallur

Sl. No.	Types of societies	No. of societies	No. of Members (in 000)	Paid up Share Capital (Rs. in Lakhs)	Working Capital (Rs. in Lakhs)	Loans Advanced (Rs .in Lakhs)	No. of employees
1	District wholesale Store	1	168	6.57	68.99	3461.87	81
2	Co-operative Marketing Societies	3	16728	4.60	480.20	4067.22	88
3	District Co-op Union	1	651	-	-	-	1
4	Co-operative Printing Press	1	186	1.47	-	97.85	9
5	Primary Agricultural Cooperative Bank	123	247213	3046.68	19894.29	31920.00	234
6	Primary Cooperative Agricultural and Rural Development Bank	10	68028	328.11	7880.17	13121.61	21
7	Co-operative Urban Bank	1	11910	70.52	1813.25	1378.64	5
8	Employees Cooperative Credit Society	58	35969	7164.65	47161.20	41810.38	60
	Total	**483**	**688163**	**20331.83**	**377343.01**	**2923992.74**	**2804**

Source: Joint Registrar of Cooperative Societies, Tiruvallur.

Table. 2.33. Regulated markets in the district of Tiruvallur

Total No. of Regulated Markets	Products Arrived	Quantity arrivals (In MT)	Receipts (Rs. in Lakhs)
Tiruvallur	Paddy	48405.570	103.44
Uthukottai, Ponneri, Gummidipoondi	Ground Nut	170..687	1.32
Tiruttani, Pallipet, Red hills & Nazarathpettai	Cumbu	527.626	0.42

Source: Marketing Committee, Kancheepuram.

Table. 2.34. Sericulture development in the district of Tiruvallur

Name of the block	Area under Mulberry (in acre)	Production of Cocoons (in Tonne)	Value of the Cocoon (Rs. in lakhs)
Tiruvallur	16.00	2780.00	611600
Kadambathur	0.00	0.00	0
R.K.Pet	0.00	0.00	0
Pallipet	3.50	1330.00	279300
Tiruttani	24.25	15332.00	3296380
TOTAL	**43.75**	**19442.00**	**4187280**

Source: Assistant Director of Sericulture, Vaniyambadi.

Table. 2.35. Insurance Scheme in the District of Tiruvallur

Name of the Insurance	No. of Branches	Policies issued	Sum assures (Rs. in lakhs)	No. of beneficiaries	Compensation paid (Rs. in lakhs)
L.I.C (Tiruvallur Branch)	1	12362	239.13	5912	404.54

Source: Concerned Insurance Institutions

CHAPTER III

DEVELOPMENT OF AGRICULTURE AND ALLIED SECTOR

The action plan for enhancing the agricultural production includes the following components:

i) Trends in area, production and productivity of major crops

ii) Yield gap analysis

iii) Projection on yield and production by 2022-23

iv)Technological intervention

3.1 Trends in area, production and productivity of major crops

The past trends in area, production and productivity of major crops need to be analyzed to plan for future agricultural development. Compound Growth Rate (CGR) tool is used to measure the annual rate of growth in area, production and productivity of major crops cultivated in the district and it is expressed in percentage. The compound growth rate has been estimated using 10 year time series data from 2005-06 to 2014-15 due to availability data for Tiruvallur district only from 1996-97 onwards. This was owing to the fact that the district was bifurcated from the erstwhile Chengalpattu district on 1st January 1997. The equation used to estimate the annual compound growth rate is:

$$\mathbf{Y_t = ab^t e}$$

Logarithmic form of the above equation is: **ln Y =ln a + t ln b**

The compound growth rate (CGR) in percentage is derived using the formula:

$$\mathbf{CGR(r) = [Antilog\ b\text{-}1] \times 100}$$

Where, Y_t = Area or Production or Yield

a = Intercept

b = Regression coefficient of t

t = Time variable

r = Compound Growth Rate

3.1.1 Area

The CGR of area, production and yield of major crops grown in Tiruvallur district are given in Tables 3.1 through Table 3.3.

Table 3.1 Compound Growth Rate of Area under Major Crops Grown in 2014-15 Tiruvallur District

Sl.No	Crops	Area (in ha)	CGR (%)	Percentage Share (%)
1	Paddy	90170.67	-2.6	67.43
2	Maize	208.67	0	0.16
3	Cholam	72.00	-0.4	0.05
4	Cumbu	716.00	-5.0	0.54
5	Ragi	787.67	18.8	0.59
6	Bengal Gram	8.67	0	0.01
7	Red Gram	635.33	2.5	0.48
8	Black Gram	1458.33	-6.7	1.09
9	Green Gram	8996.67	-3.4	6.73
10	Horse Gram	29.67	-12.5	0.02
11	Groundnut	8715.00	-7.6	6.52
12	Sunflower	10.67	-1.0	0.01
13	Gingelly	977.33	-8.8	0.73
14	Castor	2.00	0	0.00
15	Cotton	0.67	0	0.00
16	Coconut	993.00	3.7	0.74
17	Sugarcane	7412.00	-0.9	5.54
18	Onion	2.33	0	0.00
19	Brinjal	362.00	-1.2	0.27
20	Bhendi	287.33	-0.6	0.21
21	Cabbage	4.00	0	0.00
22	Tomato	5.00	0	0.00
23	Banana	817.67	2.5	0.61
24	Mango	10271.00	4.2	7.68
25	Jack Fruit	22.33	4.0	0.02
26	Pine Apple	0.67	0	0.00

Sl.No	Crops	Area (in ha)	CGR (%)	Percentage Share (%)
27	Guava	202.67	9.2	0.15
28	Orange	2.33	0	0.00
29	Chillies	456.67	-5.7	0.34
30	Cloves & Cinnamon	0.67	0	0.00
31	Coriander	0.67	0	0.00
32	Turmeric	6.67	6.7	0.00
33	Tamarind	12.33	-9.4	0.01
34	Tapioca	63.67	-5.8	0.05
35	Sweet Potato	9.00	-19.2	0.01
	Total	**133721.33**		**100.00**

The net sown area accounted for only a less than one-third (31.3 per cent of the total geographical area of the district). This would indicate that intensive developmental efforts are needed at least to sustain the existing cropped area. Paddy was the predominant crop grown in two – thirds (67.4 per cent) of the gross cropped area in Tiruvallur district followed by mango (7.6.68 per cent), green gram (6.73 per cent) groundnut (6.52 per cent), sugarcane (5.54 per cent), and so on. As these five crops accounted for 87.8 per cent of the gross cropped area, they need to be given focused attention for further development in the years to come. However, the estimated compound growth rate of various crops grown in Tiruvallur district would reveal that crops like red gram, turmeric, banana, jack fruit, guava, citrus and coconut had a positive CGR of greater than one per cent per annum. Therefore, a larger area under the commercial / horticultural crops like fruits and vegetables are also to be covered.

3.1.2 Productivity

The growth rates of productivities of major crops of Tiruvallur district are given in Table 3.2.

Table 3.2 Compound Growth Rate of Productivity of Major Crops Grown in Tiruvallur District

Sl.No	Crops	Productivity (in kg/ha)	CGR (%)
1	Paddy	4323.67	-0.7
2	Maize	5611.33	0
3	Cholam	1509.00	-7.1
4	Cumbu	2269.00	0.9
5	Ragi	3412.00	2.5
6	Bengal Gram	692.00	0
7	Red Gram	893.67	-0.7
8	Black Gram	752.67	-2.3
9	Green Gram	1009.33	-1.0
10	Horse Gram	594.67	1.1
11	Groundnut	3304.33	2.6
12	Sunflower	973.00	4.4
13	Gingelly	551.67	4.3
14	Castor	183.33	0
15	Cotton	193.33	0
16	Coconut	4866.00	0
17	Sugarcane	64.67	0.7
18	Onion	6095.33	0
19	Brinjal	8802.00	-2.0
20	Bhendi	7361.33	-0.4
21	Cabbage	34949.67	0
22	Tomato	13678.67	0
23	Banana	39706.00	0.9

Sl.No	Crops	Productivity (in kg/ha)	CGR (%)
24	Mango	9779.33	-1.3
25	Jack Fruit	12870.67	-5.4
26	Pine Apple	20658.33	0
27	Guava	4267.67	-2.7
28	Orange	1873.67	0
29	Chillies	452.00	0
30	Cloves & Cinnamon	656.00	0
31	Coriander	323.67	0
32	Turmeric	2486.67	-1.1
33	Tamarind	3774.33	0.3
34	Tapioca	32180.00	-0.2
35	Sweet Potato	19541.00	2.6
	Total	**250660.00**	

As far as the productivity of major crops grown in Tiruvallur district were concerned, cumbu, ragi, horse gram, tamarind, sugarcane, sweet potato, banana, groundnut, gingelly and sunflower had a positive CGR, while the major crops like paddy, green gram, cholam and mango had negative growth rate in their productivities. The productivities of pulses like black gram and green gram were very low in the district and therefore, the declining trend in the productivities of these crops is cause for a concern. The average productivities of major food crops need to be increased; otherwise, it would be very difficult to ensure the food security.

3.1.3 Production

The change in production could be mainly influenced by the changes either in the area or yield or both. The compound growth rates of production of major crops grown in Tiruvallur district are given Table 3.3.

Table 3.3 Compound Growth Rate of Production of Major Crops Grown in Tiruvallur District (2005-06 to 2014-15)

Sl.No.	Crops	Production (in tons) (TE 2014-15)	CGR (%)
1	Paddy	392726.67	-3.3
2	Maize	1556.67	0
3	Cholam	108.33	-7.5
4	Cumbu	1694.33	-4.2
5	Ragi	3059.33	-16.8
6	Bengal Gram	6.33	0
7	Red Gram	617.00	1.8
8	Black Gram	1161.67	-8.8
9	Green Gram	9342.00	-4.4
10	Horse Gram	17.33	-11.5
11	Groundnut	42015.33	-5.2
12	Sunflower	12.33	3.3
13	Gingelly	730.33	-4.9
14	Castor	0.67	
15	Cotton	2.33	0
16	Coconut	67.00	0
17	Sugarcane	718645.33	-0.2
18	Onion	21.67	0
19	Brinjal	3177.33	-3.2
20	Bhendi	2122.33	-1.0
21	Cabbage	206.00	0
22	Tomato	70.67	-14.6
23	Banana	32106.00	3.4
24	Mango	74439.67	2.9
25	Jack Fruit	300.67	-1.6
26	Pine Apple	20.67	0

Sl.No.	Crops	Production (in tons) (TE 2014-15)	CGR (%)
27	Guava	1255.67	14.2
28	Orange	1.00	0
29	Chillies	218.00	-12.4
30	Cloves & Cinnamon	0.67	0
31	Coriander	0.33	0
32	Turmeric	24.00	5.7
33	Tamarind	46.67	-9.1
34	Tapioca	2069.00	-6.0
35	Sweet Potato	175.33	-17.2
	Total	**1288018.67**	

Red gram, turmeric, banana, mango, guava, citrus and sunflower were the major crops which had positive CGR in their production. The major crops like paddy, green gram and sugarcane had negative growth rates in their production and therefore, planned efforts are required to reverse this trend. The production of cereals, pulses and major oilseeds like ground nut and gingelly had negative growth rates.

3.2 Projected Area, Production and Yield of Selected Crops

The major crops grown in the district are rice, green gram, sugar cane and groundnut. Apart from this, certain horticultural crops like mango, guava and vegetables are also being cultivated successfully. Paddy was the major crop grown in Tiruvallur district accounting for 62.43 per cent of the gross cropped area of the district and it was followed by groundnut (9.17 per cent), mango (7.80 per cent), sugarcane (4.69 per cent) and green gram (3.72) and they together accounted for 87.8 per cent of the gross cropped area of the district. Therefore, these five crops were focused as potential crops of the district and the scope for further expansion of their potentiality in terms of production has been explored in the present study.

To begin with, for the identified potential crops in Tiruvallur district, area, production and yield were projected using CGR for the years 2012-13, 2017-18 and 2022-23 and the results are presented in Table 3.4.

Table 3.4 Projected Area, Production and Yield Based for the Major Potential Crops Identified

Crop	Paddy			Green gram			Sugarcane		
	Area	Produ-ction	Yield	Area	Produ-ction	Yield	Area	Production	Yield
CGR	-2.6	-3.3	- 0.7	-3.4	-4.4	-1.0	-0.9	-0.2	0.7
Triennium Average ending 2010-11	82,134	2,74,123	3,338	4,899	21,76	468	6,171	6,64,717	1,07,775
2012-13	71,760	2,24,103	3,123	3,978	2,297	577	5,700	5,77,910	1,01,387
2017-18	62,981	1,89,562	3,010	3,338	1,838	550	5,461	5,73,571	1,05,033
2022-23	55,276	1,60,344	2,900	2,801	1,470	524	5,232	5,69,266	1,08,810

Crop	Mango			Groundnut		
	Area	Production	Yield	Area	Production	Yield
CGR	4.2	2.9	-1.3	-7.6	-5.2	2.6
Triennium Average ending 2010-11	10,264	25,302	2,458	12,069	46,996	3,883
2012-13	11,757	36,415	3,097	9,824	40,161	4,088
2017-18	14,444	41,987	2,907	6,625	30,825	4,653
2022-23	17,745	48,412	2,728	4,468	23,660	5,296

Note: Area in Ha; Production in Tonnes; and Yield in Kg per ha.

As could be seen from Table 3.4, the area and production of the selected crops like paddy, green gram, and sugarcane and ground nut have been projected to decline in 2022-23 owing to their negative annual compound growth rates. The production of mango alone has been projected to increase due to its positive growth rate. Further, the CGR of productivities of paddy, green gram and mango also have shown a marginal decline during the period. Nevertheless, the crops like paddy and green gram are important staple food crops; sugarcane provides raw material to sugar mill and it is important - high revenue yielding commercial crop to the farmers; mango is an important fruit crop besides having high export value; and ground nut is an important edible oilseed crop. In view of all these reasons,

planned efforts are essential to sustain their current area. Also, their productions need to be increased by way of enhancing their productivities.

3.3 Yield Gap Analysis

In order to raise the productivities of the selected crops, information regarding ruling varieties, their average yield, potential yield, progressive farmer's yield etc were collected from the office of the Joint Director of Agriculture, Tiruvallur and Krishi Vigyan Kendra, Tirur. From this information, yield gaps were analyzed and it is given in Table 3.5. Yield Gap is the difference between the progressive farmer's yield and average farm yield, which explains the gap due to soil and climatic factors, technologies adopted, availability of farm inputs like suitable varieties, fertilizers, plant protection chemicals, irrigation water, labour and so on, cultivation practices followed, etc.

Table 3.5 Yield Gap of the Identified Potential Crops in Tiruvallur District (kg/ha)

Crop	Variety	ART / Potential yield	Crop cutting yield / progressive farmer's yield (A)	Average farm yield (B)	Yield gap (A-B)
Paddy	ADT 43	5,900	6,464	4,906	1,558
	ADT 37	6,200	4,770	4,316	454
	BPT 5204	5,360	4,572	4,422	150
	ADT 45	5,400	5,128	4,968	160
	TKM 9	5,800	6,570	5,735	835
	White Ponni	4,500	5,333	4,459	874
Green gram	KM 2	767	592	571	21
	C0GG 912	800	460	445	15
Sugarcane	COC 86071	1,28,500	1,11,200	1,10,400	800
	86V96	1,05,200	1,02,800	96,800	6,000
	COC 85061	1,20,000	1,12,000	1,09,000	3,000
	CoV 94101	1,20,400	1,14,000	1,08,700	5,300
Mango	Bangalora	8,500	7,610	6,830	780
	Alphonso	8,200	7,400	6,800	600
	Panganapally	8,900	7,510	6,570	940
	Rumani	7,540	6,540	5,920	620
	Neelam	9,100	7,720	6,850	870

Crop	Variety	ART / Potential yield	Crop cutting yield / progressive farmer's yield (A)	Average farm yield (B)	Yield gap (A-B)
Groundnut	JL 24	2,000	2,812	2,239	573
	VRI 2	2,200	2,193	2,181	12
	TMV 7	1,400	2,605	2,428	177
	Pollachi 2	2,700	4,505	4,306	199
	K6	3,800	4,963	3,795	1,168

Source: O/o the Joint Director of Agriculture, Thiruvallur.

3.4 Projected Yield and Production of the Selected Crops

Using the secondary data on area, yield and production of the selected crops, *viz.,* paddy, green gram, sugarcane, mango and ground nut, the projected yield and production for these crops for the year 2022-23 were estimated and the results are discussed in the following section. The annual growth rates of areas for the period between 1996-97 and 2010-11 were negative for the selected major crops like paddy (-2.6 per cent), green gram (-3.4 per cent), sugarcane (-0.9 per cent) and groundnut (-7.6 per cent) and it was positive only in case of mango (4.2 per cent). Therefore, planned efforts are utmost necessary to sustain the areas under these crops so as to enhance the agricultural production by means of raising the productivities of these crops. Further, as could be seen in Table 3.5, the yield gaps for these selected crops were much wider ranging from 12 kg in ground nut to 6,000 kg in sugarcane. Therefore, the best option for raising the production is to take efforts in bridging the existing yield gaps in a situation where the scope for increasing the area under the crops is very limited. Moreover, as the Tiruvallur district is nearer to Chennai city, the existing cropped area is gradually being converted into real estates. Hence, it would be a great task even to sustain the existing net sown area of the district. However, efforts are required to sustain the present net sown area of the district, as this district has a very good locational advantage by way of production and supply of food grains, vegetables, fruits, flowers, and other value-added agricultural commodities required to meet the growing demands of the population of the city.

In view of the above reasons, projection for the productions of the select crops for the period from 2011-12 to 2022-23 was done by resorting to raising the productivities of the

selected crops alone and results of the estimated yield and the consequent increase in the production are discussed below.

3.4.1 Paddy

Sornavari is the major season for paddy in the district, which has 45 per cent of the total area under paddy and it was followed by *Samba* (40 per cent) and *Navarai* (15 per cent) (Table 3.6). The maximum yields recorded in the crop cutting experiment was considered to assess the potential yield for paddy varieties like ADT45 and ADT 37 grown in *Sornavari* and *Navarai* seasons. However, as Co (R) 49 is considered to be a substitute for BPT 5204 grown during *Samba* season, its average yield as given in Crop Production Guide, 2012, TNAU, Coimbatore has been considered to be its potential yield. These yield gaps in the three seasons could be gradually bridged over the next 12 year period, i.e., from 2011-12 to 2022-23 as indicated in Table 3.7.

Policy intervention against the conversion of cultivable lands into real estate is required to arrest the negative trend in the gross cropped area. Extension machinery needs to be strengthened to bridge the yield gap such that the yield is raised annually at the rate of 5.15 per cent. The bridging up of the yield gap would result in the gradual increase in paddy production from 2.74 lakh tonnes in 2010-11 to 5.04 lakh tonnes in 2022-23 accounting for an increase of 84 per cent.

Table 3.6 Existing and Projected Yield and Production of Paddy in Tiruvallur District

Year	Season			Total
	Sornavari **(Apr-July)**	***Samba*** **(Aug-Nov)**	***Navarai*** **(Dec-Mar)**	
Area (Ha)				
2008-09	39,812	31,119	11,309	82,240
2009-10	37,197	31,644	12,101	80,942
2010-11	33,201	35,714	14,304	83,219
Triennium average ending 2010-11**	36,737	32,826	12,571	82,134
Projected area for 2022-23	36,737	32,826	12,571	82,134
Per cent to total	44.73	39.97	15.31	100.00

Year	Season			Total
	***Sornavari* (Apr-July)**	***Samba* (Aug-Nov)**	***Navarai* (Dec-Mar)**	
Varieties	ADT43 and ADT45	BPT 5204 ADT 49 and Co (R) 49	ADT 37	-
Maximum yield as per Crop Cutting Experiment (Kg/Ha)	6,464	6,286*	4,770	6,134
Average yield for Triennium average ending 2010-11 (Kg/Ha)**	3,374	3,216	3487	3,338
Yield Gap (Kg/Ha)	3,090	3,070	1283	2,796
Projected Production for 2022-23 (tonnes)*	2,37,466	2,06,342	59965	5,03,773
Production for Triennium average ending 2010-11 (tonnes)**	1,25,185	1,05,127	43811	2,74,123
Percentage of increase in production over 2010-11	89.69	96.28	36.87	83.78

**Based on Crop Production Guide.*

*** Source: Season and Crop Reports of 2008-09, 2009-10 and 2010-11.*

Table 3.7 Projected Increases in Yield and Production of Paddy

Year	Yield (Kg per ha)				Production (Tonnes)			
	Sornavari	***Samba***	***Navarai***	**Total**	***Sornavari***	***Samba***	***Navarai***	**Total**
Triennium average ending 2010-11	3374	3216	3487	3338	125185	105127	43811	274123
2011-12	3631	3472	3594	3571	134541	113561	45157	293260
2012-13	3889	3728	3701	3804	143898	121996	46504	312398
2013-14	4146	3984	3808	4037	153255	130431	47850	331535
2014-15	4404	4240	3915	4270	162612	138865	49196	350673
2015-16	4661	4495	4022	4503	171968	147300	50542	369810
2016-17	4919	4751	4129	4736	181325	155734	51888	388948
2017-18	5176	5007	4235	4969	190682	164169	53234	408085
2018-19	5434	5263	4342	5202	200039	172604	54581	427223

Year	Yield (Kg per ha)				Production (Tonnes)			
	Sornavari	***Samba***	***Navarai***	**Total**	***Sornavari***	***Samba***	***Navarai***	**Total**
2019-20	5691	5519	4449	5435	209396	181038	55927	446361
2020-21	5949	5774	4556	5668	218752	189473	57273	465498
2021-22	6206	6030	4663	5901	228109	197908	58619	484636
2022-23	6464	6286	4770	6134	237466	206342	59965	503773
Required Growth Rate (%)	**5.51**	**5.68**	**2.64**	**5.15**	**5.42**	**5.71**	**2.64**	**5.15**

3.4.2 Green gram

Green gram is a major pulse crop grown in *Rabi* season accounting for 93 per cent of the total area under green gram. Major varieties grown are Co 7, Co 6, KM 2 and Vamban 2.

Table 3.8 Existing and Projected Yield and Production of Green gram in Tiruvallur District

Year	Season		
	Kharif	***Rabi***	**Total**
Area (Ha)			
2008-09	268	2984	3252
2009-10	339	2672	3011
2010-11	512	7921	8433
Triennium average ending 2010-11**	373	4526	4899
Projected area for 2022-23	373	4526	4899
per cent to total	7.61	92.39	100.00
Varieties	Vamban 2	Vamban 2	
Maximum Potential yield (Kg/Ha)*	750	750	750
Average yield for Triennium average ending 2010-11 (Kg/Ha)**	-	-	468
Yield Gap (Kg/Ha)	-	-	282
Projected Production for 2022-23 (tonnes)	-	-	3674
Production for Triennium average ending 2010-11 (tonnes)**	-	-	2176
Percentage of increase in production over 2010-11	-	-	68.84

** Based on Crop Production Guide, TNAU, Coimbatore.*

*** Source: Season and Crop Reports of 2008-09, 2009-10 and 2010-11.*

As indicated by the farmers at Rice Research Station at Tirur, Vamban 2 has more yield potential and the same is suggested for bridging the yield gap in the next 12 years period. Table 3.9 indicates that the required annual growth rate in the productivity of green gram during 2011-12 to 2022-23 is four per cent. In such an effort of bridging the yield gap, the production could be raised from 2,176 tonnes (2010-11) to 3,674 tonnes (2022-23) accounting for an increase of 69 per cent.

Table 3.9 Projected Increase in Yield and Production of Green gram

Year	Yield (Both Irrigated and Dry) (Kg per ha)	Production (Both Irrigated and Dry) (Tonnes)
Triennium average ending 2010-11	468	2176
2011-12	492	2301
2012-13	515	2426
2013-14	539	2551
2014-15	562	2675
2015-16	586	2800
2016-17	609	2925
2017-18	633	3050
2018-19	656	3175
2019-20	680	3300
2020-21	703	3424
2021-22	727	3549
2022-23	750	3674
Required Growth Rate (per cent)	**3.99**	**4.43**

3.4.3 Sugarcane

In Tiruvallur district, sugarcane is grown in an area of 6171ha and the canes are supplied to the Thiruttani Co-operative Sugar Mill Limited, Tiruvalangadu. Ratoon crop accounts for a larger area of 63 per cent. Major varieties grown in the district are CoSi 86071 and Co 86032. The yield gap estimated was only 20.5 tonnes ha and this gap could be bridged as indicated in Table 3.10. The annual growth rate required to raise the yield from 108 tonnes per ha in 2010-11 to 128.5 tonnes per ha in 2022-23 is estimated at 1.46 per cent. The increase in production by way of bridging the yield gap, from 6.6 lakh tonnes (2010-

11) to 7.9 lakh tonnes (2022-23) accounts for 19 per cent. The projected increase in yield and production of sugarcane from 2011-12 to 2022-23 is presented in Table 3.11.

Table 3.10 Existing and Projected Yield and Production of Sugarcane in Tiruvallur District

Year	Season		
	Planted	Ratoon	Total
Area (Ha)			
2008-09	2060	3555	5615
2009-10	2338	3862	6200
2010-11	2445	4253	6698
Triennium average ending 2010-11*	2281	3890	6171
Projected area for 2022-23	2281	3890	6171
per cent to total	36.96	63.04	100.00
Varieties	COSi 86071 and Co 86032	COSi 86071 and Co 86062	
Maximum potential yield (tonnes/Ha)	128.5	128.5	128.5
Average yield for Triennium average ending 2010-11 (tonnes/Ha)*	108.0	108.0	108.0
Yield Gap (tonnes/Ha)	20.5	20.5	20.5
Projected Production for 2022-23 (tonnes)	-	-	792974
Production for Triennium average ending 2010-11 (tonnes)*	-	-	664717
Percentage of increase in production over 2010-11	-	-	19.29

** Source: Season and Crop Reports of 2008-09, 2009-10 and 2010-11.*

Table 3.11 Projected Increases in Yield and Production of Sugarcane

Year	Yield (tonnes per ha)	Production (Tonnes)
Triennium average ending 2010-11	108	664717
2011-12	110	675405
2012-13	111	686093
2013-14	113	696781
2014-15	115	707469
2015-16	117	718157
2016-17	118	728846
2017-18	120	739534

Year	Yield (tonnes per ha)	Production (Tonnes)
2018-19	122	750222
2019-20	123	760910
2020-21	125	771598
2021-22	127	782286
2022-23	129	792974
Required Growth Rate (per cent)	1.46	1.48

3.4.4. Mango

Mango is the major fruit crop grown in Tiruvallur district with an area of 10,264 ha. Absentee landlordism - with many land owners staying at Chennai - is widely prevalent as far as mango orchards were concerned. There exists a wide yield gap in mango due to improper maintenance of mango orchards, old plantations, non - adoption of recommended package of practices and so on. Although many varieties of mango like Bangalora, Alphonsa, Banganapally, Rumani and Neelam are grown in Tiruvallurdistrict, Banganapalli variety is more preferred, high-priced and has a very high yield potential of 7510 kg per ha as against the average yield of only 2458 kg per ha (Table 3.12). Implementation of Area Expansion Schemes with High Density Planting method, rejuvenation and gap-filling with preferred (choice) variety and chemical spraying and other precautionary methods to prevent flower dropping and button shedding would improve the yield potential of mango garden. Drip irrigation with the recommended dosage manures and fertilizer would also improve the yield.

The required annual growth rate for enhancing the yield from 2458 kg per ha (2010-11) to 7510 kg per ha (2022-23) is estimated at 9.45 per cent (Table 3.13). After bridging the yield gap, the increase in mango production from 25,302 tonnes (2010-11) to 77,080 tonnes (2022-23) would account for 204 per cent.

Table 3.12 Existing and Projected Yield and Production of Mango in Tiruvallur District

Year	Season		
	Irrigated	Unirrigated	Total
Area (Ha)			
2008-09	5025	5044	10069
2009-10	3941	6258	10199
2010-11	2843	7680	10523

Year	Season		
	Irrigated	Unirrigated	Total
Triennium average ending 2010-11*	3936	6327	10264
Projected area for 2022-23	3936	6327	10264
per cent to total	38.35	61.65	100.00
Varieties	Banganapalli	Banganapalli	
Maximum yield as per Crop Cutting Experiment (Kg/Ha)	7510	7510	7510
Average yield for Triennium average ending 2010-11 (Kg/Ha)*	-	-	2458
Yield Gap (Kg/Ha)	-	-	5052
Projected Production for 2022-23 (tonnes)	-	-	77080
Production for Triennium average ending 2010-11 (tonnes)*	-	-	25302
Percentage of increase in production over 2010-11	-	-	204.64

** Source: Season and Crop Reports of 2008-09, 2009-10 and 2010-11.*

Table 3.13 Projected Increases in Yield and Production of Mango

Year	Yield (Both Irrigated and Dry) (Kg per ha)	Production (Both Irrigated and Dry) (Tonnes)
Triennium average ending 2010-11	2458	25302
2011-12	2879	29617
2012-13	3300	33932
2013-14	3721	38247
2014-15	4142	42561
2015-16	4563	46876
2016-17	4984	51191
2017-18	5405	55506
2018-19	5826	59821
2019-20	6247	64136
2020-21	6668	68450
2021-22	7089	72765
2022-23	7510	77080
Required Growth Rate (per cent)	9.45	9.42

3.4.5 Ground nut

Groundnut is the major oilseed crop grown in Tiruvallur district and it is grown under irrigated as well as unirrigated conditions. It is cultivated mostly in *Rabi* season accounting for 87 per cent of the total area under groundnut. Major varieties grown in the district are TMV 7, VRI 2, K6 and Pollachi 2. of these varieties, K6 – a variety released from Andhra Pradesh - has a very high yield potential of 4963 kg per ha. However, Pollachi 2 released by TNAU, has also yielded more (as per the Crop Cutting Experiment conducted in the district), next only to K6, and it is suggested for bridging the yield gap (Table 3.14). Selection of the suitable variety and timely application of inputs would improve the productivity. Extent of improvement of the average yield during the next 12 – year period, i.e., from 2011-12 to 2022-23 and the resultant increase in the production are given in Table 3.15. After bridging the yield gap, the production could be increased from 46,996 tonnes (2010-11) to 54,372 tonnes (2022-23) accounting for an increase of 16 per cent.

Table 3.14 Existing and Projected Yield and Production of Groundnut in Tiruvallur District

Year	Season		
	Kharif	***Rabi***	**Total**
Area (Ha)			
2008-09	2197	12006	14203
2009-10	1302	10355	11657
2010-11	1363	8985	10348
Triennium average ending 2010-11*	1620	10449	12069
Projected area for 2022-23	1620	10449	12069
per cent to total	13.43	86.57	100.00
Varieties	K6 and Pol.2	K6 and Pol.2	-
Maximum yield as per Crop Cutting Experiment (Kg/Ha)	4505	4505	4505
Average yield for Triennium average ending 2010-11 (Kg/Ha)*	2552	4091	3883
Yield Gap (Kg/Ha)	1953	414	622
Projected Production for 2022-23 (tonnes)	7301	47071	54372
Production for Triennium average ending 2010-11 (tonnes)*	4365	42801	46996
Percentage of increase in production over 2010-11	67.25	9.98	15.69

** Source: Season and Crop Reports of 2008-09, 2009-10 and 2010-11.*

Table 3.15 Projected Increases in Yield and Production of Groundnut

Year	Yield (Kg per ha)			Production (Tonnes)		
	Kharif	***Rabi***	**Total**	***Kharif***	***Rabi***	**Total**
Triennium average ending 2010-11	2552	4091	3883	4365	42801	46996
2011-12	2715	4126	3935	4610	43157	47611
2012-13	2878	4160	3987	4854	43513	48225
2013-14	3040	4195	4039	5099	43869	48840
2014-15	3203	4229	4090	5344	44224	49455
2015-16	3366	4264	4142	5588	44580	50069

Year	Yield (Kg per ha)			Production (Tonnes)		
	Kharif	***Rabi***	**Total**	***Kharif***	***Rabi***	**Total**
2016-17	3529	4298	4194	5833	44936	50684
2017-18	3691	4333	4246	6078	45292	51299
2018-19	3854	4367	4298	6322	45648	51913
2019-20	4017	4402	4350	6567	46004	52528
2020-21	4180	4436	4401	6812	46359	53143
2021-22	4342	4471	4453	7056	46715	53757
2022-23	4505	4505	4505	7301	47071	54372
Required Growth Rate (per cent)	4.81	0.81	1.25	4.35	0.80	1.22

The projected increase in the yield and production of the selected crops during the period from 2011-12 to 2022-23 are given in Table 3.16. The increases in paddy, green gram and food grain production are estimated at 83.8 per cent, 68.8 per cent and 83.7 per cent respectively. Along with the increase in the production of these two food grains, if efforts are taken to raise the productivities of other cereals and pulses, *viz.,* jowar, bajra, ragi, red gram and black gram, the overall food grain production could be doubled from the existing levels. Similarly, there exists a scope to enhance the production of sugarcane, mango and groundnut by 19 per cent, 204 per cent and 16 per cent respectively during the year 2022-23.

Table 3.16 Projection of Agricultural Production for 2022-23 in Tiruvallur District

Sl. No.	Crop	Area (Ha)		Yield (Kg / Ha)			Production (Tonnes)		
		2010 -11*	2022 - 23**	2010-11*	2022-23**	Difference between 2010-11 and 2022-23	2010-11*	2022-23**	Difference between 2010-11 and 2022-23
1.	Paddy	82134	82134	3338	6134	2796 (83.75)	274123	503773	229650 (83.78)
2.	Green gram	4899	4899	468	750	282 (60.14)	2176	3674	1498 (68.84)
3.	Food grains	87033	87033	1903	3442	1539 (80.87)	276299	507447	231148 (83.66)
3.	Sugar-cane	6171	6171	108000	128500	20500 (18.98)	664717	792974	128257 (19.29)
4.	Mango	7097	7097	2458	2458	7510 (205.57)	5052	25302	77080 (204.64)
5.	Groundnut	12069	12069	3883	4505	622 (16.02)	46996	54372	7376 (15.69)

**Triennium 2010-11; **Projected for 2022-23;*
Figures in parentheses indicate the percentage of difference over 2010-11

3.5 Yield Gap Analysis

Table 3.17. Yield Gap Analysis in Agricultural Crops

Sl. No	Crop	Potential Yield (Kg/ Ha)	Actual yield (Kg/Ha)	Yield Gap (Kg/ Ha)
1	Paddy	4757	4144	613
2	Millets	3122	3122	0
3	Greengram	1200	1094	106
4	Blackgram	1100	875	225
5	Oilseeds	3180	3180	0
6	Sugarcane	108000	100000	8000

3.6 Technological Interventions and Strategies to Reduce Yield Gap

Table 3.18.Technological Interventions and Strategies to Reduce Yield Gap

Major crops and enterprises being practiced in the District	Implementing blocks	Prioritized problems in these crops/ Enterprise	Title of intervention	Technology options	Proposed intervention
Paddy	All blocks of this district	Less use of organic manurers	Construction of permanant vermicompost units	Rs. 50000/- subsidy / No	30 Nos
		Lack of cultivation of Green Manure crops	Back ended subsidy	50 % subsidy limited to Rs. 2000/ Ha	1500 Ha
		Inadequate availability of seeds of less than 10 years	Seed subsidy	Rs. 15000/ Mt	500 Mt
		Micro Nutrient deficiency	MN mixture distribution	Rs. 250/ Ha	3000 Ha
		Less usage of biofertilizers	Biofertilizer distribution	50 % limited to Rs. 150 /Ha	5000 Ha
		Less usage of biopesticides	Biopesticide distribution	50 % limited to Rs. 500 /Ha	1500 Ha
		Loss of irrigation water	Distribution of pipeline	Rs. 15000/ No	200 units
		Less adoption of machine planting / SRI	50 % subsidy	SRI / Machine planting demonstration	16000 Ha
		Labour problem	50 % subsidy	Multi weeder	15000 / No
		Post-harvest losses	Rs. 4000 /No	Distribution of tarpaulin	500 No

Major crops and enterprises being practiced in the District	Implementing blocks	Prioritized problems in these crops/ Enterprise	Title of intervention	Technology options	Proposed intervention
Pulses	All Blocks	Lack seed treatment	DistributionofTrichoderma	100 % subsidy	100 % subsidy
		Micro Nutrient deficiency	MN mixture distribution	Rs. 250/ Ha	500 Ha
		Less usage of biofertilizers	Biofertilizer distribution	50 % limited to Rs. 150 /Ha	500 Ha
		Lack of awareness about DAP application	Distribution of DAP	50 % limited to Rs. 650 / Ha	1000 Ha
		Water availability	Distribution of sprinkler	50 % subsidy	50 Ha
			Distribution of pipeline	Rs. 15000/ Unit	50 Ha
Sugarcane	Tiruthani, Tiruvalangadu, Pallipet and R.K.Pet	Weed problem	Distribution of Atrazin	50 % subsidy	100 Ha
		Less usage of biofertilizers	Biofertilizer distribution	50 % limited to Rs. 150 /Ha	100 Ha
		Water deficiency	Installation of Drip	100 % subsidy	50 Ha

3.7 Interventions based on the Schemes

Table. 3.19. Interventions based on the Schemes

Sl. No	Name of the scheme	Proposed interventions
1	**NADP- Paddy Mission**	Construction of permanent Vermicompost Unit
		Cultivation of Green Manure crops
		Production of certified seeds
		Distribution of certified Seeds
		Distribution of MN Mixture
		Distribution of bio fertilisers
		IPM (FFS School)
		Distribution of bio-agents
		Distribution of Weedicides
		Distribution of Pipeline
		SRI Demonstration/ Machine Planting
		Distribution of Small Implement kit
		Distribution of Rotavator
		Distribution of Power Tiller
		Distribution of Power Sprayer
		Distribution of Hand Sprayer
		Distribution of Multi weeder
		Distribution of Tarpaulin
2	**NADP – Pulses Mission**	Production of certified seeds
		Distribution of Certified Seeds
		Distribution of MN Mixture
		Distribution of bio fertilizers
		DAP Application
		Battery operated sprayer
		Distribution of Tarpaulin
		Distribution of sprinkler

Sl. No	Name of the scheme	Proposed interventions
3	**NADP- Oilseed Mission**	Production of Foundation and certified seeds
		Distribution of F &C Seeds
		Distribution of MN Mixture
		Distribution of bio fertilizers
		Distribution of Gypsum
		Distribution of Pipeline
		Hand operated sprayer
4	**Sustainable Sugarcane Initiative**	Distribution of bio fertilizers
		Distribution of weedicide
		Installation of drip irrigation

3.8 HORTICULTURE

Tiruvallur District attracts more traders in all sectors as it is located very near to Chennai city. The area of production of Horticulture Crops in the District is also increasing accordingly to the demand of the Chennai Markets every year. During 2014-15 the area production of the Horticulture Crops in Tiruvallur District are as follows:

Table.3.20. Area and Production of Horticulture Crops in Tiruvallur District

Sl.No	Name of the Crop	Area (in Ha)	Production (in MT)
1	Fruits	12051	128078
2	Vegetables	1544	35751
3	Spices	389	215
4	Plantation Crops	1124	463
5	Medicinal Plants	56	1383
6	Flowers	1253	14341
	Total	**16417**	**180231**

1. Trends in area, production & productivity of major Horticulture crops

Major Horticulture Crops Produced in Tiruvallur District are Banana & Mango under fruit crops, Greens, Bhendi, Brinjal, Watermelon under Vegetables, Chillies under Spices, Cashew under Plantation Crops. Jasmine, Tuberose under flower crops, Thulasi under medicinal plants

Table. 3.21. Annual Production Major Horticultural Crops in Tiruvallur District

Sl. No	Name of the Crop		Area (in Ha)	Production (in MT)
1	**FRUITS**			
	1	Mango	1091	88913
	2	Banana	731	31848
2	**VEGETABLES**			
	1	Greens	118	2236
	2	Bhendi	231	1638
	3	Brinjal	364	3423
	4	Watermelon	520	19868
3	**SPICES**			
	1	Chillies	302	86
4	**PLANTATION CROPS**			
	1	Cashew	107	32
5	**FLOWERS**			
	1	Jasmine sp	974	10587
	2.	Tube rose	110	1949
6	**MEDICINAL PLANTS**			
	1	Tulasi		

The area of these crops are to be increased permanently and seasonally when the demands go up in an around Chennai city market, The farmers are advised to take up cultivation of seasonal crops based on the market intelligence forecast given by TamilNadu Agricultural University.

2. Projected area production and yield of the selected crops

The production and yield of the selected crops, can be increased thro' various programmes such as establishment of poly green house, growing of vegetables with mulching sheets promoting portray mulching kits to urban house holdings supply of Tools and Machineries for Pest and Weed control measures 25% of production will be increase d thro' the above innovative programmes.

3. Yield Gap Analysis

The area under Horticulture Crops is 16,417 ha with the production of 1, 80,231 Mt. can be increased to 20,511 ha with expected production of 2, 25,288 Mt.

4. Technological intervention and strategies to reduce the yield gaps

To achieve the additional area & production, availability of all proposed scheme materials should be ensured. The major problem for non-availability of these materials mismatches monsoonal rain of Tamil Nadu.

Table.3.22. Technological Intervention and Strategies to Reduce the Yield Gaps in Horticultural Crops

Major crops & enterprises being practiced in District	Implementing Blocks	Prioritized problem in these corps/ Enterprise	Title of intervention	Technology option	Proposed Intervention
All Horticulture Major crops	In all 14 blocks of Tiruvallur District	Availability of inputs not coincides with monsoonal rainfall.	Protected cultivation	Establishment of poly green house	Protected cultivation Through poly green houses
		Lack of export oriented technology	Exposure visit.	Create awareness on floriculture industries.	Exposure visit
		Incidents of Pest & Disease With less productivity	Distribution of Portray seedling kits & Tools/Machineries	To reduce Incidents of Pest & Disease With less productivity	Distribution of Portray seedling kits & Tools/Machineries

5. Intervention based on the scheme

i. Increasing Productivity through poly green houses, Distribution of Portray seedling kits, mulching sheets and Tools/Machineries.

Ii. Create awareness on floriculture industries, through Exposure visit by imparting technological Knowledge

Mulching Sheets

Vegetables like Cucumber, Muskmelon, Bringal, Tomato, Chillies, Shows significant increase in the earliness of yield and fruit quality when grows under mulching condition.

It is proposed to supply Mulching sheets @ Rs 18,000/-per acre on 40% subsidy cost to farmers for 20hec @ Rs. 900,000/- in Tiruvallur district.

Project cost and Financing

Sixty percent of the cost will be collected from the farmer in advance and paid to the supplying agency along with the 40 percent cost availed from the fund of NADP.

Project Components

Adoption of Mulching sheets by the farmer and the supply of inputs through tender on contract basis.

Project goal

1. To conserve soil moisture
2. To control the weeds
3. To reduce water Evaporation and get early yield with good quality
4. To increase the root development
5. To reduce the labour cost

1. Tools & Machineries

It is proposed to supply the following tools and machineries to the farmers of Tiruvallur district for the total cost of Rs. 9, 17,500/-

- Battery operated Sprayers - 50nos @ Rs.2,75.000/-
- Power operated sprayers - 50nos @ Rs.3,25.000/-
- Hand operated sprayers - 50nos @ Rs.2,50,000/-
- Tree pruner - 50nos @ Rs.30,000/-
- Hand hoe - 150nos @ Rs.37,500

Project cost and Financing

Sixty percent of the cost will be collected from the farmer in advance and paid to the supplying agency along with the 40 percent cost availed from the fund of NADP.

Project Components

Adoption of Tools and Machineries by the farmer and the supply of inputs through tender on contract basis.

Project goal

1. To reduce the labour cost
2. Timely application of Pesticides to control the pest
3. Time save

2. a. Protray seedlings

To avoid causalities of the seedlings, it is proposed to supply preferred verities of hybrid watermelon seedlings in protrays to farmers of Tiruvallur district for 50hec @ Rs. 4/no. (8890 seedlings x 50hec @ Rs4 = 1778000)

Project cost and Financing

Sixty percent of the cost will be collected from the farmer in advance and paid to the supplying agency along with the 40 percent cost availed from the fund of NADP.

Project Components

Planting of Protray Seedlings by the farmer and the supply of inputs through State Horticulture Farm.

Project goal

1. To avoid causalities of the seedlings
2. To get healthy, disease free seedlings
3. To get higher yield
4. To reduce the labour cost
5. To get more profit
6. Time save

b. Supply of water soluble fertilizers and PP chemicals

The required 19:19:19 water soluble fertilizer and Malathion 500ml per hector can be included for the supply of proposed 50hec of area.

The cost of the supply of water soluble fertilizer and PP chemicals can be availed from the fund of NADP.

3. Exposure visit

It is proposed to give two days training on floriculture for 50 farmers of Tiruvallur district that includes indoor and an exposure visit to a progressive floriculture unit in neighboring district.

Expenditure: @ Rs 2000/farmer /day

For 2 days: 50x4000=200,000/-

Project cost and Financing

The expenditure can be availed from the fund of NADP.

Project goal

1. Frequent trainings to be conducted in Village wise and Frequent arrangement for exposure visit to other Districts
2. Developing creativity awareness among the progressive farmers in all Blocks

4. Infrastructure facilities

It is found essential to have separate buildings for Horticulture office purpose in all the blocks of Tiruvallur district to keep computers, Accessories, Documents and other office materials and also to carryover all the official online reports.

Project cost and Financing

It requires a minimum area of 400sqft per block office @ Rs 12 lakhs and the cost of Rs 168 lakhs for the 14 block offices can be availed from the fund of NADP.

Project goal

1. To carry over and to execute all the scheme and official works
2. To have a contact with farmers
3. Increasing the production through Technology transfer

5. Protected Cultivation

Growing of vegetable/ flowers/ spice/ Medicinal crops under protected cultivation is highly productive and useful for the farmers for getting higher prices in the market in view of the above aspect.

Project cost and Financing

It is proposed to provide 5nos of Poly Greenhouses approximately 1000-2000 sqmt. area (Naturally ventilated / Tubular system) @ Rs.89,00,000/-

Project Components

Adoption of Poly Green Houses by the farmer and the supply of inputs through back ended subsidy.

Project goal

1. To avoid causalities of the seedlings
2. To get healthy, disease free seedlings
3. To get higher yield
4. To reduce the labour cost
5. To get more profit
6. Time save

3.9. Agricultural Engineering

Table. 3.23. Schemes Implemented by Agricultural Engineering Department

Sl.No.	Name of Scheme	Unit	Target up to December 2015		Achievement up to December 2015	
			Phy	Fin	Phy	Fin
1	**Land Development Scheme** (Hiring Scheme)					
	a. Bulldozer	Hours	3240	-	3449	-
	b. Tractor	Hours	5090	-	3127	-
	c. Combined Harvester	Hours	1700	-	128	-
2	**Minor Irrigation Scheme** (Hiring Scheme)					
	a. Tube well	Nos.	82	-	143	-
	b. Percussion Drills	Days	770	-	862	-
	c.Hand Boring Set	Metres	1610	-	1645	-
3	**IAMWARM** a)Drip Irrigation Scheme: **Other Farmer**	Hec.	3.00	2.00	2.99	1.96
4	**Solar Pump Scheme**					
	a) Fixed Type	Nos.	51	51	51	123.70
	b) Tracking Type	Nos.	38	25	25	33.81
5	**Sub MissisionAgricuturalMechanisation**					
	SC Farmer Tractor (20 to 40 PTO- HP and 40 to 70 PTO-HP)	Nos.	2	2	2.5	2.50
6	**Post-Harvest Technology (SMAM)**					
	a) SC Farmer					
	Tractor Drawn equipment - seed Drill	Nos.	1	0.44	1	0.44
	Power Weeder	Nos.	1	0.19	1	0.19
	b)General Farmer					
	Tractor Drawn equipment - seed Drill	Nos.	5	2.20	5	2.20

Sl. No.	Name of Scheme	Unit	Target up to December 2015		Achievement up to December 2015	
			Phy	Fin	Phy	Fin
	Power Weeder	Nos.	5	0.95	5	0.95
	Brush cutter (Operated by engine/electeric motor below 5 HP)	Nos.	2	2.50	2	2.50
7	**Agricultural Mechanization under SMAM**					
	a) SC Farmer					
	Tractor (40-70 PTO HP)	Nos.	2	2.50	2	2.50
	Tractor Drawn equipment - seed Drill	Nos.	5	2.20	5	2.20
	Rice Transplanter (Above 4 row)	Nos.	1	2.00	-	-
	Power Weeder	Nos.	6	1.14	3	0.57
	Coconut frond Chipper	Nos.	1	0.63	-	-
	Chuff cutter (Operated by electric motor below 3 HP)	Nos.	2	0.40	-	-
	Chuff cutter (Operated by electric motor above 3-5 HP)	Nos.	2	0.50	-	-
	b)General Farmer					
	Tractor Drawn equipment - seed Drill	Nos.	2	0.88	1	0.44
	Rice Transplanter (Above 4 row)	Nos.	2	4.00	-	-
	Power Weeder	Nos.	4	0.76	2	0.36
	Coconut frond Chipper	Nos.	2	1.26	-	-
	Chuff cutter (Operated by electric motor above 3-5 HP)	Nos.	1	0.25	-	-
8	**NADP**					
	Distribution of Machinery	Nos.	25	11.43	18	6.51
9	**Custom Hiring Centre**	Nos.	5	50.00	2	20.00
10	**Solar Drier**	Nos.	3	5.52	1	-
11	**Publicity & Demonstration for Post-Harvest Technology**					-
	1.General Category	Nos.	7	0.21	7	0.21
	2.SC/ST category	Nos.	2	0.06	2	0.06

3.10. FISHERIES

3.10.1 Trends in Area, Production and Productivity of Major Crops

Fisheries can be broadly classified into two categories namely, Marine Fisheries and Inland Fisheries. Further, fisheries can be divided into capture fisheries and culture fisheries. In our district, total fisheries of marine are constituted by capture fisheries whereas in Inland; both capture and culture fisheries contributes to the total inland fish production.

Total marine fish production shows plateau trend for almost a decade. Further increase in fishing effort will alter the situation in negative trend only, so there is no scope to increase the marine fish production by continuing the current trend of inshore fishing. Another scope to explore the grey areas in marine fisheries is Deep sea fishing. Because of non-availability of mechanized boats in our district, exploring new avenues in deep sea fishing does not arise.

Inland fish production shows as steady increase in its production as years precedes that too in culture fisheries. Inland fisheries are having wide opportunity to increase its production area and its productivity.

3.10.2 Projected Area, Production and Yield of the Selected Crops

Fish production can be increased in village community ponds for adapting proper fishery management strategies and in newly excavated farm ponds by introducing suitable fish varieties.

Present fish production of village community ponds varies from 1000 to 1250 Kg / ha. this can be increased to 2000 to 3000 Kg/ha. by adapting proper fishery management practices. Hitherto unutilized farm ponds can be utilized for fish culture activity and thus fish production can be increased.

3.10.3 Yield Gap Analyses

Present total fish production of Tiruvallur district is 23,252 tons including both marine fish production of 9,812 tons and inland fish production of 13,440. With an inland fisheries resource of 47,982 ha,inland fish production can be further increased by 6,965 tons and thereby total fish production of 23,252 tons can be achieved.

3.10.4 Technological Interventions and strategies to reduce the yield gaps

To achieve additional fish production of nearly 7,000 tons; availability of fish seeds should be ensured. The major problem for non-availability of fish seed is mismatch of seed availability and monsoonal rain of Tamil Nadu. But this can be addressed to a limit by creating additional seed rearing area and by expanding the fish culture activities in all irrigation tanks and farm ponds. The main hindrance is creating additional seed rearing area is failure of monsoon.

3.10.5 Interventions based on the Schemes

a. Increasing the fish culture area

b. Introducing short seasonal fish varieties.

Table.3.24. Technological Interventions and Strategies to Reduce the Yield Gaps in Fisheries Department

Major crops & enterprises being practiced in the District	Implementing blocks	Prioritized problems in these crops/ Enterprise	Title of intervention	Technology options	Proposed Intervention
Fish varieties -Catla, Rohu, Mrigal, Grass carp, Common carp.	In all 15 blocks of Tiruvallur Dt.	1) Mismatch of seed availability and monsoon rainfall. 2) Non-availability of short seasonal fish varieties	1) Establishment of fish seed farms. 2) Introducing fast growing fish varieties.	Introducing short seasonal varietiesie. GIFT (Genetically Improved Farmed Tilapia)	1) Seed rearing in farm ponds at 100% subsidized cost. 2) Introduction of short seasonal fish varieties in aquaculture farms.
Shrimp varieties – *Litopenaeus vannamei*	Ponneri,Minjur, Sholavaram, Elavur, Gummidipoondi.	1) Social discourage-ment to take up shrimp farm. 2) Intrusion of Shrimp farm discharges in nearby agri lands.	1)Creating awareness on shrimp culture. 2) Creating Shrimp farm hubs in fallow lands	Dissemination of awareness programs.	1) Imparting awareness program on shrimp culture for agriculture farmers. 2) Establish-ment of new shrimp farms at 75% subsidy in shrimp farm hub.

CHAPTER IV

DISTRICT PLAN

4.1 AGRICULTURE

4.1.1 Enhancing Rice Production in the Thiruvallur District

Paddy is the major crop cultivated in Tiruvallur district in three seasons ie. Sornavari, Samba and Navarai with an area of 96359 Ha. At present, the productivity of rice is 4.14 M.Ts. SRI technology is a proven technology which gives substantial increase in yield when compare to convention methods of paddy cultivation. Soil is the most important component deciding the crop growth and the yield of each crop. Any deficiencies of nutrients or soil problems affect the crop growth and result in reduction of yield even if other inputs are applied in optimum levels. Integrated Nutrient Management is the important approach for promoting efficient and balanced use of plant nutrients. Usage of appropriate inorganic fertilizers including MN Mixture, Organic Manure and Bio-fertiliser should be considered for better plant growth and improving soil fertility. There is a scope for better management practices in paddy cultivation in the District.

Project Components

- Promotion of SRI - supply of seed, seed treatment & MN mixture, bio fertilizer , cono weeder, LCC, nursery tray , machine planting) in all blocks
- Distribution of Certified and Foundation seeds in all blocks
- Seed production of Foundation and Certified class seeds in all blocks
- Incentives for paddy machine planting in all blocks
- Distribution of Protray, MN mixture, biofertilizer, Zinc sulphate in all blocks
- Distribution of biocontrol agents/biopesticides in all blocks
- Gypsum application in all blocks
- Distribution of herbicides in all blocks
- Hybrid Rice seed distribution in all blocks except ponnamallee
- Polyvinyl coated Tarpaulin (6m x 5m) in all blocks
- Direct sown paddy with seed drill sowing in all blocks

Budget

To enhance the production of paddy in this district, the projects are proposed with a budget outlay of ₹. **12470.56** lakh.

Area coverage

The SRI method of paddy cultivation will be promoted in Ambattur, Ellapuram, Kadambathur, Pallipet, Poondi and Tiruvallur blocks of this district with average area coverage of 21906 ha. The other components like seed distribution, production, protray distribution, gypsum, biofertilizers and biocontrol agents will be distributed to all the blocks to the paddy farmers. Hybrid rice seeds will be distributed to all the blocks except Ponnamalle for covering 794 ha. MN mixture will be distributed only in Gummidipoondi block.

Expected Outcome

It will increase the production of paddy by 15 to 20 per cent than present level of production.

Implementing Agency

The projects will be implemented by the Department of Agriculture, Department of Agricultural Marketing, Seed Certification and Agricultural Engineering department.

Table 4.1 Budget for increasing productivity of Paddy

(₹. in lakhs)

Sl. No	Interventions	Unit	Unit Cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Promotion of SRI	Ha	15000	B1, B2, B4, B6, B8, B14	3700	555.00	3970	595.50	4362	654.30	4728	709.23	5146	771.90	21906	3285.93
2	Distribution of High Yielding Varieties	MT	35000	All Blocks	637	222.95	733	256.38	783	274.06	838	293.25	909	318.27	3900	1364.91
3	Distribution of Foundation	MT	40000	All Blocks	42	16.80	47	18.70	52	20.70	58	23.21	61	24.24	259	103.65
4	seed production - Foundation	MT	32000	All Blocks	174	55.68	189	60.56	206	65.92	226	72.45	247	78.92	1042	333.52
5	seed production - Certified class	MT	26000	All Blocks	365	94.77	412	107.19	421	109.48	433	112.55	436	113.30	2066	537.28
6	Incentives for paddy machine planting	Ha	10000	All Blocks	7838	783.80	9134	913.40	9949	994.95	10712	1071.22	11375	1137.55	49009	4900.92
7	Distribution of Protray	No	80	All Blocks	54130	43.30	59435	47.55	64765	51.81	70123	56.10	75460	60.37	323913	259.13
8	Distribution of MN mixture/ Copper Sulphate	Ha	1000	B3	150	1.50	150	1.50	150	1.50	150	1.50	150	1.50	750	7.50
9	Distribution of biofertilizer / PPFM / bioinputs / plant nutrient mobilizing bacteria	Ha	300	All Blocks	4455	13.37	4795	14.39	5176	15.53	5548	16.64	5939	17.82	25914	77.74
10	Distribution of Zinc sulphate (Soil application & foliar)	Ha.	1000	All Blocks	3425	34.25	3815	38.15	4130	41.30	4437	44.37	4768	47.68	20575	205.75

Sl. No	Interventions	Unit	Unit Cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
11	Distribution of biocontrol agents/biopesticides	Ha..	1000	All Blocks	2055	20.55	2135	21.35	2353	23.53	2584	25.84	2830	28.30	11956	119.56
12	Gypsum application	Ha.	1500	All Blocks	3750	56.25	4025	60.38	4420	66.30	4787	71.81	5178	77.67	22160	332.40
13	Distribution of herbicides	Ha.	1000	All Blocks	3800	38.00	4110	41.10	4402	44.02	4659	46.59	4935	49.35	21906	219.06
14	Hybrid Rice seed distribution	Ha	4000	All Blocks except B7	161	6.45	147	5.90	155	6.18	162	6.47	169	6.75	794	31.75
15	Polyvinyl coated Tarpaulin (6m x 5m)	No.	2000	All Blocks	738	14.76	772	15.43	841	16.82	861	17.22	882	17.64	4093	81.86
16	Direct sown paddy with seed drill sowing	No.	7000	All Blocks	1275	89.25	1393	97.48	1450	101.48	1522	106.56	1640	114.83	7280	509.59
17	Demonstration of drip irrigation	Ha	100000	All Blocks	20	20.00	20	20.00	20	20.00	20	20.00	20	20.00	100	100.00
	Grand total					**2066.68**		**2314.93**		**2507.87**		**2695.00**		**2886.09**		**12470.56**

Ambathur - B1, Ellapuram - B2, Gummidipoondi - B3, Kadambathur - B4, Minjur - B5, Pallipet - B6, Ponnamallee - B7, Poondi - B8, Puzhal - B9, R.K.Pet - B10, Sholavaram - B11, Thiruvalangadu - B12, Tiruttani - B13, Tiruvallur - B14

4.1.2 Increasing the productivity of millets

Project Rationale

The millets are considered to have been cultivated in India from pre-historic times. The grains eaten by breaking, it and cooking, it in the same way as rice or by grinding in into flour and preparing unleavened bread from it. The stern and leaves are used as cattle fodder. The Normal Area under Millets is 1578 Ha. Among Millets, Cumbu is major millet crop generally sown under Rainfed condition in a Normal area of 1220 Ha. The Normal Productivity under millet is 2049 Kgs / Hectare. The promotion of millet cultivation in the district gains importance. Hence, the proposed intervention like demonstration, seed production and distribution, nutrient management and value addition will increase the millet production.

Project Components

- Demonstration (supply of seed, seed treatment & MN mixture) in maize, cumbu and Ragi in gummidipoondi,ellapuram, kadambathur, Minjur, Pallipet, R.K.pet, Thiruvalangadu, Thiruttani and Thiruvallur
- Distribution of herbicides in all blocks except sholavaram
- Distribution of Maize maxim (15 kg/ha) in all blocks except sholavaram
- Seed Distribution in maize, cumbu and ragi) in all blocks except sholavaram
- Drip irrigation for maize in all blocks except sholavaram
- Distribution of MN mixture in all blocks except sholavaram
- Distribution on biofertilizer - Liquid / Carrier in all blocks except sholavaram

Budget:

To increase millet production in the district, the interventions are proposed with a budget outlay of ₹. **3761.63** lakh is proposed.

Area coverage

The demonstration on maize, cumbu and ragi will be conducted in Ellapuram, Gummidipoondi, Minjur, R.K Pet, Tiruttani and Tiruvallur blocks for an area coverage of 368 ha maize, 196 ha cumbu and 406 ha ragi. Small millet groups will be formed in Minjur, Thurvalankadu and Tirutani. Millet processing units will be established at Minjur, Poondi and

Thiruvanlankadu. The other interventions will be distributed in almost all the blocks except Sholavaram.

Expected Outcome:

The implementation of the proposed interventions will increase the area covering under millets, improves the economy of the farmer and ensure nutritional security to the country men.

Implementing Agency:

The projects will be implemented by the Department of Agriculture. The progress of the projects will be monitored by the Director of Agriculture and Joint Director of Agriculture.

Table 4.2 Budget for increasing the productivity of Millets

(Rs.in lakhs)

Sl. No	Components	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Millets															
1	Distribution of LPG operated Bird Scanner	Nos.	0.1	B5, B12 & B13	20	2.00	25.5	2.55	31	3.10	36.5	3.65	42	4.20	155	15.50
2	Distribution on biofertilizer - Liquid / Carrier	Ha	0.003	B2, B3, B5, B8, B12, B13 & B14	420	1.26	445	1.34	464	1.39	499	1.50	539	1.62	2367	7.10
3	Expansion of area under Minor Millets (Demo - supply of seed, seed treatment, MN mixture & Organic package)	Ha	0.05	B2, B3, B12 & B13	50	2.50	58.5	2.93	66	3.30	74.5	3.73	83	4.15	332	16.60
4	Formation of small millet groups	Nos.	0.2	B5, B8, B12 & B13	18	3.60	19.1	3.82	20.2	4.04	21.3	4.26	22.4	4.48	101	20.20
5	Millet Processing unit-Minor millet	Nos.	2.5	B5, B8 & B12	12	30.00	13	32.50	14	35.00	15	37.50	16	40.00	70	175.00
6	Seed Production / Incentives for quality seed	MT	0.63	B5 & B8	10	6.30	10	6.46	10	6.46	11	7.09	11.25	7.09	53	33.39
	Maize															
7	Demonstration (Supply of seed, seed treatment & MN mixture, organic package)	Ha	0.05	B2, B3, B4, B5, B10, B12, B13 & B14	48	2.40	64	3.21	73	3.67	85	4.24	98	4.91	368.7	18.44
8	Distribution of biofertilizers Liquid / Carrier	Ha	0.003	All Blocks except B11	68	0.20	80	0.24	98	0.29	109	0.33	122	0.36	476.1	1.43
9	Distribution of herbicides	Ha	0.008	All Blocks except B11	39	0.31	45	0.36	58	0.47	64	0.51	70	0.56	276.2	2.21
10	Distribution of Maize maxim (15 kg/ha)	Ha	0.045	All Blocks except B11	25	1.13	31	1.37	36	1.62	42	1.87	47	2.12	180	8.10
11	Drip irrigation for maize	Ha	1	All Blocks except B11	9	9.00	10	10.10	11.2	11.20	12	12.30	17	17.40	60	60.00

Sl. No	Components	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
12	Seed Distribution	MT	0.4	All Blocks except B11	8	3.32	9	3.73	15	6.14	16	6.55	22	8.97	71.8	28.70
13	Seed Distribution Hybrid seeds for maize	MT	1.8	All Blocks except B11	2	2.84	2	3.30	2.09	3.76	3	4.68	3	5.59	11.2	20.16
	Cumbu															
14	Demonstration (Supply of seed, seed treatment & MN mixture, organic package)	Ha	0.05	All Blocks except B11	27	1.35	32.5	1.63	40	2.00	45.5	2.28	51	2.55	196	9.80
15	Distribution of biofertilizers Liquid / Carrier	Ha	0.003	All Blocks except B11	50	0.15	60.5	0.18	71	0.21	81.5	0.24	92	0.28	355	1.07
16	Distribution of cumbu hybrid seed	MT	2.6	All Blocks except B11 & B12	210	546.52	210	546.00	210	546.00	210	546.00	210	546.00	1050.2	2730.52
17	Distribution of MN mixture (12.5kg/ha)	Ha	0.007	All Blocks except B11	261	1.83	287	2.01	308	2.16	324	2.26	329	2.30	1508	10.56
18	Seed Distribution	MT	0.53	All Blocks except B11	106	56.20	120	63.62	112	59.38	113	59.65	113	59.91	563.7	298.76
	Ragi															
19	Demonstration (supply of seed, seed treatment & MN mixture)	Ha	0.05	All Blocks except B11	99	4.95	110	5.52	118	5.89	124	6.21	126	6.29	577.2	28.86
20	Distribution of biofertilizers Liquid / Carrier	Ha	0.003	All Blocks except B11	114	0.34	119	0.36	126	0.38	142	0.43	155	0.47	656.6	1.97
21	Distribution of MN mixture	Ha	0.007	All Blocks except B11	119	0.83	134	0.94	150	1.05	166	1.16	103	0.72	673.4	4.71
22	Seed Distribution	MT	0.66	All Blocks except B11	60	39.63	71	46.64	83	55.07	96	63.51	97	63.71	406.9	268.55
	Total					**716.66**		**738.78**		**752.58**		**769.94**		**783.66**		**3761.63**

Ambathur - B1, Ellapuram - B2, Gummidipoondi - B3, Kadambathur - B4, Minjur - B5, Pallipet - B6, Ponnamallee - B7, Poondi - B8, Puzhal - B9, R.K.Pet - B10, Sholavaram - B11, Thiruvalangadu - B12, Tiruttani - B13, Tiruvallur - B14

4.1.3 Enhancing the productivity of pulses

Pulses are part of a healthy, balanced diet and have been shown to have an important role in preventing illnesses. Pulses are a low fat source of protein, with a high fibre content and low glycemic index. In Tiruvallur District, Pulses crop is cultivated in an area of 12739 hectare. The major pulses crop grown in Tiruvallur district is Green gram, Black gram and Red gram. To increase the area and productivity of pulses crop through field demonstration, supply of high yielding variety seeds and adoption of improved package of practices.

Project components

- Purchase of Breeder Seeds in all blocks except Gumidipoondi and puzhal
- Production of Foundation / Certified pulses seeds in all blocks except Gumidipoondi and puzhal
- Distribution of Certified Seeds in all blocks
- Distribution of Biofertilizer (Rhizobium + Phosphobacteria) - Liquid / Carrier, micro nutrients(5 kgs/ Ha) and Gypsum in all blocks
- Promotion of DAP Spray and Pulse wonder in all blocks
- Incentives for bund Cropping and line sowing in all blocks
- Distribution of Yellow sticky trap /pheromone trap in all blocks
- Cropping system based demonstration in all blocks
- Distribution of weedicide and Plant Protection Chemicals in all blocks
- Seed treatment & Soil application with Trichoderma viride in all blocks
- Pure crop demonstration - Black gram and green gram in all blocks
- Demonstration on intercropping of pulses with other crops in all blocks
- Demonstration through NGOs in all blocks
- Promotion of Red gram Transplantation for nursery preparation in all blocks
- Seed treatment with Chemicals in all blocks except Gumidipoondi

Budget

It is proposed to incur ₹ **2542.00** lakh over a period of five years with the finance facilities under the NADP and other sources.

Area coverage

The pulse seeds will be distributed to all the blocks except Gummidipoondi and Puzhal. Demonstration is proposed in 190 ha and will be conducted in all the blocks.

Expected outcome

The project will results increased area under pulse with improved varieties along with the package of practices resulting in an increase in the pulse productivity and production.

Implementing Agency

Department of Agriculture will implement the project and report the progress to the District-level officials. The progress of the project will be monitored by the Director of Agriculture and Joint Director of Agriculture.

Table 4.3 Budget for increasing the productivity of Pulses

(Rs.in lakhs)

Sl. No.	Interventions	Unit	Unit cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Purchase of breeder seeds	MT	250000	All Blocks except B3 B9	10	25.70	10	25.69	10	25.76	10	25.83	10	25.92	52	128.89
2	Production of Foundation/ Certified pulses seeds	MT	86000	All Blocks except B3 & B8	77	65.92	76	65.40	80	68.50	81	69.92	87	74.62	400	344.37
3	Distribution of Certified Seeds	MT	100000	All Blocks	68	67.75	72	71.85	83	83.03	80	80.30	82	82.16	385	385.09
4	Distribution of Gypsum	ha	400	All Blocks	1520	6.08	1702	6.81	1874	7.50	2057	8.23	2242	8.97	9395	37.58
5	Distribution of Biofertilizer/ Organic packages (Rhizobium + Phosphobacteria) - Liquid / Carrier	Ha	600	All Blocks	2090	12.54	2322	13.93	2505	15.03	2689	16.13	2651	15.90	12256	73.54
6	Distribution of Micro Nutrients(5 kgs/ Ha)	Ha	350	All Blocks	1854	6.49	2127	7.44	2295	8.03	2460	8.61	2629	9.20	11365	39.78
7	DAP Spray	Ha	700	All Blocks	1197	8.38	1244	8.71	1314	9.20	1360	9.52	1381	9.67	6495	45.47
8	Pulse wonder - 5 kg/ha	Ha	1000	All Blocks	640	6.40	681	6.81	724	7.24	769	7.69	817	8.17	3631	36.31
9	Bund Cropping	Ha	300	All Blocks	892	2.68	977	2.93	1060	3.18	1109	3.33	1194	3.58	5233	15.70
10	Line sowing	Ha	2250	All Blocks	843	18.97	885	19.91	956	21.51	1018	22.89	1160	26.10	4861	109.38
11	Distribution of Yellow sticky trap /pheromone trap	ha	1000	All Blocks	827	8.27	897	8.97	972	9.72	1048	10.48	1160	11.60	4905	49.05
12	Cropping system based demonstration	Ha	12500	All Blocks	569	71.13	626	78.26	693	86.66	761	95.14	865	108.14	3515	439.33

Sl. No.	Interventions	Unit	Unit cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
13	Distribution of weedicide	Ha	1000	All Blocks	1565	15.65	1651	16.51	1744	17.44	1773	17.73	1874	18.74	8606	86.06
14	Plant Protection Chemicals	Ha	1000	All Blocks	1905	19.05	2016	20.16	2126	21.26	2196	21.96	2330	23.30	10572	105.72
15	Seed treatment and soil application with Trichodermaviridi	Ha	700	All Blocks	843	5.90	916	6.41	961	6.73	1052	7.36	1129	7.90	4901	34.30
16	Pure crop demonstration - Black gram and green gram	Ha	6300	All Blocks	830	52.29	894	56.29	969	61.05	1045	65.84	1132	71.32	4870	306.78
17	Demonstration on intercropping of pulses with other crops	Ha	8300	All Blocks	405	33.62	433	35.90	466	38.69	496	41.19	493	40.89	2293	190.29
18	Demonstration on pulses production	Ha	8250	All Blocks	163	13.45	170	14.03	177	14.64	185	15.26	193	15.90	888	73.27
19	Promotion of Redgram Transplantation for nursery preparation	Ha	5000	All Blocks	97	4.85	109	5.46	124	6.18	138	6.91	153	7.65	621	31.06
20	Seed treatment with chemicals	Ha	250	All Blocks except B3	800	2.00	830	2.08	862	2.16	746	1.87	783	1.96	4021	10.05
	Total					**447.10**		**473.55**		**513.49**		**536.17**		**571.69**		**2542.00**

Ambathur - B1, Ellapuram - B2, Gummidipoondi - B3, Kadambathur - B4, Minjur - B5, Pallipet - B6, Ponnamallee - B7, Poondi - B8, Puzhal - B9, R.K.Pet - B10, Sholavaram - B11, Thiruvalangadu - B12, Tiruttani - B13, Tiruvallur - B14

4.1.4 Enhancing the productivity of oilseeds

Groundnut is the major oilseed cultivated in a normal area of 17,401 ha under Kharif and Rabi seasons. More area is cultivated during Rabi Season. The Normal productivity is 4,274 kg/ha. Groundnut is the major oilseed crop cultivated in an area of 6928 ha. To increase the productivity of Groundnut, with a decreasing area under cultivation, the possibility to improve the production of groundnut is only through increasing the productivity by the adoption of high yielding varieties and improved packages of practices. The other oilseed crop which gains importance is castor, gingelly and sunflower. The interventions were proposed for increasing the productivity of oilseeds.

Project components

- Seed Production of Foundation seeds in groundnut in minjur,poondi, R.Kpet,Thiruvalangadu, and thirutani
- Distribution of Certified seeds in in minjur,poondi, R.K.Pet,Thiruvalangadu
- Distribution of Seed Treatment Chemicals and Bioagents in all blocks except solavaram
- Application of Gypsum to Groundnut Crop in all blocks except Ambatur, Ponnamallee and R.K.Pet
- Distribution of Micro Nutrient Mixture, Biofertilizer, Liquid Biofertilizer and Rhizobium/ PSB Culture in groundnut, castor, gingelly and sunflower in all blocks except solavaram
- Distribution of Pheromone Traps and Light Traps in all blocks except solavaram
- Combined Nutrient Spray in minjur,poondi,Thiruvalangadu, and Thirutani
- Seed Drill Sowing / Line sowing of Groundnut with Pulses as intercrop(hiring charges only) in Ellapuram,minjur,poondi,Thiruvalangadu, and Thirutani.
- Seed drill Sowing of Groundnut with Redgram as Intercrop in Ellapuram,Minjur and Thirutani
- Distribution of Tractor operated thresher, Groundnut Stripper and Groundnut Decorticator in Minjur

Budget

It is proposed to incur ₹ **4214.56** lakhs over a period of five years with the finance facilities under the NADP and other sources.

Area coverage

The proposed interventions will be implement in all the blocks viz., Ambathur, Ellapuram, Gummidipoondi, Kadambathur, Minjur, Pallipet, Ponnamallee, Poondi, Puzhal, R.K.Pet, Thiruvalangadu, Tiruttani, Tiruvallur and except sholavaram.

Expected outcome

The expected outcome of the project will result in an increase in the production of groundnut for producing oil and major supply of quality raw material to the oilseed industry which will improve the income of the farmers and requirement of oilseeds.

Implementing Agency

Department of Agriculture will implement the project. The progress of the projects will be monitored by the Director of Agriculture and Joint Director of Agriculture

Table 4.4 Budget for interventions in Oil seeds

(Rs.in lakhs)

Sl. No	Components	Blocks covered	Unit	Unit Cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Purchase of Breeder Seed	All Blocks except B3 & B11	MT	150000	11	15.75	11	15.83	11	15.91	11	16.00	11	16.10	53	79.58
2	Polythene mulch Inclusive of erection	All Blocks except B11	Ha	50000	196	98.00	209	104.38	222	111.13	237	118.29	252	125.90	1115	557.69
3	Herbicide	All Blocks except B11	Ha	1000	774	7.74	803	8.03	816	8.16	825	8.25	839	8.39	4056	40.56
4	Light trap (NCIPM)	B2, B5, B6, B8, B12 & B13	Nos.	1000	630	6.30	647	6.47	660	6.60	673	6.73	687	6.87	3298	32.98
5	Bio pesticide/fungicide	All Blocks except B11	Ha	1000	165	1.65	231	2.31	243	2.43	255	2.55	268	2.68	1163	11.63
6	Compact Block Demonstration - Groundnut	B3, B5, B6, B8, B10, B12, B13 & B14	Ha	20000	398	79.60	364	72.70	371	74.20	376	75.10	403	80.60	1911	382.20
7	Compact Block Demonstration - Gingelly / Castor	B5, B8, B12 & B13	Ha	6000	27	1.62	29	1.76	32	1.89	34	2.03	36	2.16	158	9.45
8	Compact Block Demonstration - Sunflower	B13	Ha	8000	1	0.08	2	0.16	3	0.24	4	0.32	5	0.40	15	1.20
9	Microirrigation (Raingun / Microsprinkler)	All Blocks	Ha	0.55	50	27.50	150	82.50	175	96.25	150	82.50	125	68.75	650	357.50
10	Distribution of IPM kit	All Blocks	Nos.	0.1	500	50.00	1000	100.00	500	50.00	500	50.00	1000	100.00	3500	350.00
11	Growth regulator / DAP	All Blocks	Ha	0.005	150	0.75	150	0.75	150	0.75	150	0.75	100	0.50	700	3.50
	GROUNDNUT															

Sl. No	Components	Blocks covered	Unit	Unit Cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
9	Seed Production-Foundation seeds	B5, B8, B10, B12 & B13	Mt	76000	10	7.60	12	8.93	13	9.50	14	10.83	15	11.40	64	48.26
10	Strengthening seed chain by foundation seed production	All Blocks except B11	Mt	73000	120	87.39	126	91.62	139	101.47	145	105.49	150	109.50	679	495.46
11	Strengthening seed chain by certified seed production	All Blocks except B11	Mt	84000	146	122.39	158	132.93	177	148.89	182	152.48	191	160.53	854	717.22
12	Distribution of Seed Treatment Chemicals and Bioagents (T.Viridi)	All Blocks except B11	Kg	150	380	0.57	534	0.80	604	0.91	704	1.06	775	1.16	2997	4.50
13	Application of Gypsum to Groundnut Crop	B2, B3, B4, B5, B6, B8, B10, B12, B13 & B14	Ha	1600	1355	21.68	1483	23.72	1592	25.48	1704	27.27	1799	28.79	7934	126.94
14	Distribution of Micro Nutrient Mixture (Groundnut Rich) (5.5 Kg/Ha)	All Blocks except B7, B9 & B11	Ha	1500	1495	22.43	1578	23.66	1651	24.77	1666	25.00	1773	26.60	8163	122.45
15	Distribution of Biofertilizer	All Blocks except B11	Ha	600	955	5.73	1024	6.14	1098	6.59	1153	6.92	1209	7.26	5439	32.63
16	Distribution of Liquid Biofertilizer	All Blocks except B11	Ha	600	675	4.05	731	4.39	773	4.64	814	4.88	855	5.13	3848	23.09
17	Distribution of Rhizobium/ PSB Culture	All Blocks except B11	Ha	600	680	4.08	739	4.43	783	4.70	827	4.96	872	5.23	3900	23.40
18	Distribution of Pheromone Traps	All Blocks except B11	Nos.	2000	747	14.94	780	15.60	808	16.17	832	16.64	856	17.11	4023	80.45
19	Distribution of Light Traps	B2, B5, B6, B8, B10, B12, B13 & B14	Nos.	2000	307	6.14	324	6.47	342	6.84	365	7.30	388	7.77	1726	34.52
20	Castor as Bund crop	B3, B4, B5, B6, B8, B10, B12, B13 & B14	Ha	600	125	0.75	141	0.85	157	0.94	193	1.16	187	1.12	804	4.82

Sl. No	Components	Blocks covered	Unit	Unit Cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
21	Combined Nutrient Spray	B5, B8, B12 & B13	Ha	1500	570	8.55	583	8.74	595	8.93	608	9.11	620	9.30	2975	44.63
22	Seed Drill Sowing / Line sowing of Groundnut with Pulses as intercrop(hiring charges only)	B2, B5, B8, B12 & B13	Ha	3000	220	6.60	239	7.16	253	7.58	267	8.01	282	8.45	1260	37.80
23	Seeddrill Sowing of Groundnut with Redgram as Intercrop	B2, B5 & B13	Ha	4000	125	5.00	78	3.10	80	3.21	83	3.33	87	3.46	453	18.11
24	Distribution of Tractor operated thresher	B5		150000	1	1.50	1	1.50	1	1.50	1	1.50	1	1.50	5	7.50
	GINGELLY															
25	Production of Foundation Seeds	B5 & B12	Mt	113000	1	0.68	1	0.71	1	0.73	1	0.76	1	0.79	3	3.67
26	Production of Certified Seeds	B5, B8 & B12	Mt	109000	6	6.10	6	6.13	6	6.16	6	6.19	6	6.21	28	30.79
27	Distribution of certified seeds	B2, B5, B8, B12 & B14	Mt	125000	71	88.38	72	89.69	83	104.25	91	113.39	104	129.68	420	525.38
28	Distribution of Micro nutrients **(**Manganese sulphate/ Zinc sulphate)	B2, B5 & B12	Ha	400	35	0.14	39	0.16	43	0.17	47	0.19	52	0.21	215	0.86
	CASTOR															
29	Distribution of certified seeds	B14	Mt	58000	1	0.58	0	0.00	2	1.16	3	1.74	4	2.32	10	5.80
	Grand total					**704.26**		**831.59**		**852.12**		**870.72**		**955.87**		**4214.56**

Ambathur - B1, Ellapuram - B2, Gummidipoondi - B3, Kadambathur - B4, Minjur - B5, Pallipet - B6, Ponnamallee - B7, Poondi - B8, Puzhal - B9, R.K.Pet - B10, Sholavaram - B11, Thiruvalangadu - B12, Tiruttani - B13, Tiruvallur - B14

4.1.5 Enhancing the productivity of Oil palm

India is the largest consumer of palm oil in the world, consuming around 17 per cent of total world consumption. India is also the largest importer of palm oil amounting to 44 per cent of world imports. Palm Oil is extracted from the pulpy portion (monocarp) of the fruit of Oil Palm. The Crude Palm Oil is deep orange red in colour and is semi solid at a temperature of 20 degree centigrade. Palm Oil contains an equal proportion of saturated and unsaturated fatty acid containing about 40 per cent oleic acid, 10 per cent linoleic acid. 44 per cent palmitic acid and 5 per cent stearic acid. The unprocessed palm oil is used for cooking in various countries. Palm Oil is a very rich source of Beta Carotene, an important source of Vitamin A and it contains Tecopherols and Tocotrienols, a natural source of Vitamin E. Vitamin A and Vitamin E contents are the highest in palm oil in comparison with any other types of oil and hence consumption of the same boosts health. By virtue of the high vitamin contents the Red Palm Oil is a nature's gift for the human beings. In view of the rich content of vitamins, palm oil can be utilized for the preparation of cosmetics as well there is a need to promote oil palm by the way of area expansion and better cultivation practices, it is equally important to focus on innovative growth strategies through National Mission on Oilseeds and Oil Palm (NMOOP) has been launched in which Mini Mission-II (MM-II) is dedicated to oil palm area expansion and productivity increases. MM-II of NMOOP and MM-III of NMOOP is being implemented in 13 States viz; Tamil Nadu, Andhra Pradesh, Assam, Arunachal Pradesh, Chhattisgarh, Gujarat, Karnataka, Kerala, Mizoram, Nagaland, Orissa, Telangana, and West Bengal.

Project components

- Oilpalm Area Expansion Programme in Ellapuram, Gummidipoondi, poondi, Thiruvalangadu and Thiruthani
- Incentives for Cultivation maintenance of oilpalm in Gummidipoondi,Thiruvalangadu and Thiruthani
- Inputs for Intercropping in oil palm in Gummidipoondi, Thiruvalangadu and Thiruthani
- Supply of Diesel pumps in oil palm in Gummidipoondi, poondi,Thiruvalangadu and Thiruthani
- Construction of borewells for oil palm cultivation in Gummidipoondi,Thiruvalangadu and Thiruthani
- Motorised Chisel for oilpalm cultivation in Thiruvalangadu and Thiruthani

- Aluminum portable ladder, Wire mesh and Oilpalm Cutter for cultivation and processing in Thiruvalangadu and Thiruthani
- Neem/ Pungam Area Expansion Programme for promotion of tree borne oilseeds in Thiruvalangadu
- Cultivation maintenance of tree borne oilseeds in Thiruvalangadu
- Inputs for Intercropping in tree borne oilseeds in Thiruvalangadu

Budget

It is proposed to incur **₹ 75.42** lakh over a period of five years with the finance facilities under the NADP and other sources.

Area coverage

The oilpalm is cultivated in Ellapuram, Gummidipoondi, Thiruvalankadu and Tiruttani blocks of Tiruvallur district.

Expected outcome

The expected outcome of the project will result in an increase in the production of oil palm for producing oil and major supply of quality raw material to the oilseed industry which will improve the income of the farmers and requirement of oilseeds.

Implementing Agency

Department of Agriculture will implement the project and report the progress to the District-level officials. The progress of the projects will be monitored by Director of Agriculture and Joint Director of Agriculture.

Table 4.5 Budget for increasing the productivity of Oilpalm

(Rs.in lakhs)

Sl. No	Components	Blocks covered	Unit	Unit Cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	NMOOP -Mini Mission -II (Oilpalm)															
1	Oilpalm Area Expansion Programme	B2, B3, B8, B12 & B13	Ha	14000	19	2.66	20.2	2.83	24	3.36	27.5	3.85	31	4.34	121.7	17.04
2	Cultivation maintenance	B3, B12 & B13	Ha	10000	19	1.90	24.4	2.44	27	2.70	31	3.10	35	3.5	136.4	13.64
3	Inputs for Intercropping	B3, B8, B12 & B13	Ha	10000	15	1.50	19.2	1.92	20	2.00	22.5	2.25	25	2.5	101.7	10.17
4	Supply of Diesel pumps	B3, B12 & B13	No	30000	3	0.90	5.4	1.62	6	1.80	8.5	2.55	9	2.7	31.9	9.57
5	Construction of Borewells	B3, B12 & B13	No	100000	3	3.00	3.4	3.40	3	3.00	4.5	4.50	4	4	17.9	17.90
6	Motorised Chisel	B12 & B13	No	20000	2	0.40	2.2	0.44	2.5	0.50	2.75	0.55	3	0.6	12.45	2.49
7	Alumium portable ladder	B12 & B13	No	6000	2	0.12	3.2	0.19	4.5	0.27	5.75	0.35	7	0.42	22.45	1.35
8	Wire mesh	B12 & B13	No	10000	2	0.20	3.2	0.32	4.5	0.45	5.75	0.58	7	0.7	22.45	2.25
9	Oilpalm Cutter	B12 & B13	No	3000	2	0.06	3.2	0.10	4.5	0.14	5.75	0.17	7	0.21	22.45	0.67
	NMOOP -Mini Mission -III (Tree Borne Oilseeds)															
10	Neem/ Pungam Area Expansion Programme	B12	Ha	20000	0.2	0.04	0.24	0.05	0.3	0.06	0.35	0.07	0.4	0.08	1.49	0.30
11	Cultivation maintenance	B12	Ha	2000	0.2	0.00	0.24	0.00	0.3	0.01	0.35	0.01	0.4	0.008	1.49	0.03
12	Inputs for Intercropping	B12	Ha	1000	0.2	0.00	0.24	0.00	0.3	0.00	0.35	0.00	0.4	0.004	1.49	0.01
	Grand total					**10.79**		**13.31**		**14.28**		**17.97**		**19.062**		**75.42**

Ambathur - B1, Ellapuram - B2, Gummidipoondi - B3, Kadambathur - B4, Minjur - B5, Pallipet - B6, Ponnamallee - B7, Poondi - B8, Puzhal - B9, R.K.Pet - B10, Sholavaram - B11, Thiruvalangadu - B12, Tiruttani - B13, Tiruvallur - B14

4.1.6 Enhancing the productivity of sugarcane

Sugarcane is an important commercial crop of Tamil Nadu. Sugarcane crop is cultivated in an area of 7211 ha in this district. The supply of biofertilizers and weedicides will influence the production and ultimately the productivity of the crop.

Project components

- Distribution of Gypsum, biofertilizer, weedicide and micro nutrient mixture in Ellapuram, Pallipet , Thiruvalangadu, and thiruttani
- Distribution of Chip Cutter mixture in thiruttani
- Distribution of FeSO4 Spray and ZnSO4 Spray mixture in Ellapuram, Pallipet , Thiruvalangadu, and thiruttani
- Distribution of Parasite Biocontrol agent in Ellapuram, Pallipet , Thiruvalangadu, and thiruttani
- Distribution of Protray in Pallipet
- Distribution of Sugarcane Harvester in Pallipet
- Subsidy for Micro irrigation in Ellapuram, Pallipet,R.K.Pet , Thiruvalangadu, and thiruttani
- Promotion of Sustainable Sugarcane Initiative Thiruvalangadu, and thiruttani
- Establishment of Shade net and Single Bud Seedling in Ellapuram, Pallipet , Thiruvalangadu, and thiruttani
- Trash Mulching mixture in Ellapuram, Thiruvalangadu, and thiruttani
- Demonstration on intercropping in Sugarcane mixture in Ellapuram, Pallipet , Thiruvalangadu, and thiruttani
- Breeder seed production in sugarcane in Pallipet

Budget

It is proposed to incur **₹ 107018.41 lakh** over a period of five years with the finance facilities under the NADP and other sources.

Area coverage

The interventions for promotion of sugarcane are given in the Table. The area expansion programme will be implemented in Ellapuram, Pallipet, Poondi, Thiruvalankadu and Tiruttani blocks of Tiruvallur district.

Expected outcome

The implementation of the project will increase the productivity of crop by 10-15 percent than current productivity.

Implementing Agency

Department of Agriculture will implement the project and report the progress to the District-level officials. The progress is monitored by the Director of Agriculture and Joint Director of Agriculture.

Table 4.6 Budget for interventions in Sugarcane

(Rs.in lakhs)

Sl. No	Sugarcane	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Distribution of Gypsum (500 Kg/Ha)	Ha	0.02	B2, B6, B8, B12 & B13	520	10.40	600	12.00	657	13.13	715	14.29	750	14.99	3241	65
2	Distri. of biofertilizer (Ha)	Ha	0.006	B2, B6, B8, B12 & B13	425	2.55	493	2.96	535	3.21	578	3.47	597	3.58	2628	16
3	Distri. of weedicide (Ha)	Ha	0.01	B2, B6, B8, B12 & B13	225	2.25	268	2.68	310	3.10	338	3.38	357	3.57	1498	15
4	Distribution of Chip Cutter	Nos	0.05	B13	2	0.10	3	0.15	4	0.20	5	0.25	6	0.30	20	1
5	Distribution of FeSO4 Spray	Ha	0.005	B6, B12 & B13	320	1.60	380	1.90	415	2.08	450	2.25	460	2.30	2025	10
6	Distribution of ZnSO4 Spray	Ha	0.005	B12 & B13	70	0.35	80	0.40	90	0.45	100	0.50	110	0.55	450	2
7	Distribution of Micro Nutrient Mixture	Ha	0.02	B2, B6, B8, B10, B12 & B13	645	12.90	763	15.25	880	17.61	973	19.47	1042	20.83	4303	86
8	Distribution of Parasite Trichogramma	Ha	0.00125	B2, B6, B12 & B13	260	0.33	325	0.41	390	0.49	431	0.54	447	0.56	1853	2
9	Distribution of Protray (2500 nos/ha)	Nos	0.0008	B6	100	0.08	125	0.10	130	0.10	140	0.11	140	0.11	635	1
10	Distribution of Sugarcane Booster (10 Kg/Ha)	Ha	0.035	B2, B8, B12 & B13	50	1.75	58	2.03	61	2.14	65	2.27	69	2.40	303	11
11	Distribution of Sugarcane Harvester	Nos	75	B6	200	15000	250	18750	275	20625	300	22500	300	22500	1325	99375
12	Distribution of Water Soluble Fertiliers	ha	0.25	B12 & B13	12	3.00	15	3.75	18	4.50	21	5.25	24	6.00	90	23

Sl. No	Sugarcane	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
13	Micro irrigation - Drip (1.2x0.6)	ha	1.24	B2, B6, B10, B12 & B13	45	55.80	54	66.34	57	70.87	60	74.36	63	78.07	279	345
	Sustainable Sugarcane Initiative (SSI)															
14	A. Establishment of Shadenet	Nos	1.5	B12 & B13	3	4.50	4	6.15	5	7.80	5	7.95	5	8.10	23	35
15	B. Distribution of Single Bud Seedling	Ha	0.225	B2, B6, B12 & B13	5060	1138.50	5561	1251.11	6061	1363.74	6562	1476.37	7062	1589.02	30306	6819
16	Trash Mulching	Ha	0.04	B2, B12 & B13	85	3.40	99	3.94	112	4.49	126	5.05	141	5.62	563	23
17	Demonstration on intercropping in Sugarcane	Ha	0.08	B2, B6, B12 & B13	210	16.80	262	20.93	13	1.06	15	1.20	17	1.34	517	41
18	Breeder seed production in sugarcane	Ha	0.4	B6	50	20.00	75	30.00	80	32.00	85	34.00	85	34.00	375	150
	Grand Total					**16274.31**		**20170.09**		**22151.96**		**24150.70**		**24271.35**		**107018.41**

Ambathur - B1, Ellapuram - B2, Gummidipoondi - B3, Kadambathur - B4, Minjur - B5, Pallipet - B6, Ponnamallee - B7, Poondi - B8, Puzhal - B9, R.K.Pet - B10, Sholavaram - B11, Thiruvalangadu - B12, Tiruttani - B13, Tiruvallur - B14

4.1.7 Increasing the productivity of coconut

Coconut is a long term crop. The life span of a tall coconut is about 100 years. Coconut is not like other crops. All the parts of the coconut trees are beneficial. Coconut cultivation is strictly a tropical tree ideal for irrigated garden lands with good drainage facilities". Dry humid weather is ideal for coconut cultivation. Medium fertile to high fertile soils are ideal. Drainage and better aeration in the soil is best for coconut cultivation." Minjur and Tiruttani are the blocks which covers maximum coconut area in the district. Coconut is the primary and main crop of the farmers here. For increasing the coconut cultivation, the adoption of following interventions will ensure the production.

Project components

- Distribution of T x D hybrid seedlings, Tall Seedlings and D xT hybrid Seedlings in all blocks except puzhall and sholavaram
- Distribution of Boom sprayer in poondi and thiruttani
- Distribution of MN mixture in minjur thiruvalangadu and thiruttani
- Distribution of Pheromone traps for Red palm weevil/ Rhinoceros beetle in thiruvalangadu and thiruttani
- Promotion of Drip irrigation in Gumidipoondi ,minjur and tiruttani
- Intercropping with green manures in Gumidipoondi , R.K.Pet, thiruttani and thiruvalangadu
- Management of Black headed caterpillar in pallipet thiruvalangadu and tiruttani
- Thanjavur wilt management (root feeding /soil application) in tiruttani
- Demonstration on Integrated fertilizer management in tiruttani
- Distribution of coconut seedlings to school children Gumidipoondi, minjur , Thiruvalangadu and tiruttani
- Control of Eriophid mite in Thiruvalangadu and tiruttani
- Corpus fund release for Farmer Producer Groups Gumidipoondi, kadambathur Thiruvalangadu and tiruvallur

Budget

It is proposed to incur ₹ **391.90** lakh over a period of five years with the finance facilities under the NADP and other sources.

Area coverage

The coconut seedlings of 33,000 numbers are distributed in all the blocks except Puzhal and Sholavaram. Machineries are distributed in blocks like Minjur, Pallipet, Ponnamallee, Poondi, Puzhal, Thiruvalangadu, Tiruttani, Tiruvallur and except Sholavaram.

Expected outcome

The implementation of the project will increase the productivity of crop by 10-15 percent than current productivity.

Implementing Agency

Department of Agriculture will implement the project and report the progress to the District-level officials. The progress of the project will be monitored by Director of Agriculture and Joint Director of Agriculture.

Table 4.7 Budget for increasing productivity of Coconut

(Rs.in lakhs)

Sl. No	Coconut	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Distribution of T x D hybrid seedlings	No	0.0006	All Blocks except B9 & B11	5416	3.25	6440	3.86	6706	4.02	7038	4.22	7386	4.43	32986	19.79
2	Distribution of Tall Seedlings	No	0.0004	All Blocks except B9 & B11	6200	2.48	7265	2.91	7570	3.03	7892	3.16	8301	3.32	37228	14.89
3	Boom sprayer	No	0.2	B8 & B13	6	1.20	7	1.40	7	1.40	7	1.40	7	1.40	34	6.80
4	Distribution of D xT hybrid Seedlings	No	0.0015	B12 & B13	110	0.17	130	0.20	150	0.23	170	0.26	200	0.30	760	1.14
5	Distribution of MN mixture	Ha	0.1	B5, B12 & B13	21	2.10	31.1	3.11	41.2	4.12	51.3	5.13	61.5	6.15	206.1	20.61
6	Distribution of Pheromone traps for Red palm weevil/ Rhinocerous beetle	Ha	0.016	B12 & B13	11	0.18	21.1	0.34	26.2	0.42	31.3	0.50	36.5	0.58	126.1	2.02
7	Distribution of power operated rocker sprayer	No	0.1	B3, B5, B6, B10, B12, B13 & B14	17	1.70	28.1	2.81	30.2	3.02	33.3	3.33	32.5	3.25	141.1	14.11
8	Distribution of Solar copra drier	No	0.2													
9	Distribution of tree climbers	No	0.15	B3, B5 & B13	2	0.30	3	0.45	4	0.60	3	0.45	4	0.60	16	2.40
10	Drip irrigation	Ha	0.35	B3, B5 & B13	3	1.05	4	1.40	3	1.05	4	1.40	3	1.05	17	5.95
11	Establishment of nursery- Area	ha	2													

Sl. No	Coconut	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
12	Intercropping with green manures	Ha	0.03	B3, B10, B13 & B14	22	0.66	23	0.69	27	0.81	31	0.93	30	0.90	133	3.99
13	Management of Black headed caterpillar	Ha	0.05	B6, B12 & B13	13	0.65	15.1	0.76	22.2	1.11	24.3	1.22	26.5	1.33	101.1	5.06
14	Thanjavur wilt management (root feeding /soil application)	Ha	0.03	B13	1	0.03	2	0.06	2	0.06	2	0.06	2	0.06	9	0.27
15	Demonstration on Integrated fertiliser management	Ha	0.75	B13	1	0.75	1	0.75	1	0.75	1	0.75	1	0.75	5	3.75
16	Distribution of coconut seedlings to school children	No	0.0004	B3, B5, B12 & B13	1350	0.54	1675	0.67	1800	0.72	1925	0.77	2075	0.83	8825	3.53
17	Control of Eriophid mite	No. of tree	0.0002	B12 & B13	50	0.01	100	0.02	100	0.02	100	0.02	100	0.02	450	0.09
18	corpus fund release for FPG (2000 nos.)	No	5	B3, B4, B12 & B14	16	80.00	9.5	47.50	10	50.00	10.5	52.50	11.5	57.50	57.5	287.50
	Grand Total					**95.06**		**66.92**		**71.36**		**76.09**		**82.47**		**391.90**

Ambathur - B1, Ellapuram - B2, Gummidipoondi - B3, Kadambathur - B4, Minjur - B5, Pallipet - B6, Ponnamallee - B7, Poondi - B8, Puzhal - B9, R.K.Pet - B10, Sholavaram - B11, Thiruvalangadu - B12, Tiruttani - B13, Tiruvallur - B14

4.1.8 Enhancing the livelihood of farmers through training, demonstrations, field visits and field days

Agricultural extension is being provided at the Block level and below, under the Extension Reforms scheme being implemented. Contact them or any other functionary of the State Government in Agriculture and allied departments to get answers for the queries, information about any Programme / Scheme and appropriate technologies for the area or individual farmer. The new information that farmers gain through these training sessions makes their daily farming activities much easier. It also leads to an increase in productivity and bigger profits in the long run.

Project components

- Inter State Training of Farmers in Gummidipoondi , minjur, poondi, thiruvalangadu and tiruttani
- Within the State training of Farmers in Gummidipoondi,Minjur, poondi, Thiruvalangadu and Tiruttani
- Within the district training of Farmers in all blocks except Ambathur,Ellapuram Ponnamlle,Puzhul and Sholavaram
- Training of Farmers under Mission Soil Health Card in Gummidipoondi, minjur ,Thiruvalangadu and thiruvallur
- Training of 536 Groups of Seed Village Farmers in quality Seed Production technology in all blocks except Ambathur , Ellapuram, Kadambathur, Ponnamalle, R.K.Pet and Sholavaram
- Training of paddy in all blocks except Ambathur , Ellapuram, Kadambathur, Ponnamalle, R.K.Pet and Sholavaram
- Value addition training in Gummudipoondi, minjur and poondi
- Awareness campaigns
- Organization of Kissan gothics on Soil test based nutrient application in minjur, poondi, thiruvalangadu, tiruttani and tiruvallur
- Rodent pest management demonstration in Gummidipoondi, minjur, poondi , thiruvalangadu, thiruttani and tiruvalur

Budget

It is proposed to incur **₹. 656.41 lakh** over a period of five years with the finance facilities under the NADP and other sources.

Area coverage

The trainings will be imparted to the farmers of all the blocks except Ambathur, Ellapuram, Ponnamallee, Puzhal and Sholavaram.

Expected outcome

The projects will results better income to farmers. They may learn many things to improve their knowledge of cultivation if they liste this programme which will improve the income of the farmers.

Implementing Agency

Department of Agriculture will implement the project and report the progress to the District-level officials. The progress of the project will be monitored by Director of Agriculture and Joint Director of Agriculture.

Table 4.8 Budget for interventions in Trainings

(Rs.in lakhs)

Sl. No	Cafeteria of Activities	Unit	Unit Cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	District Level															
	Training of Farmers															
1	Inter State Training of Farmers	Nos.	1.25	B3, B5, B8, B12 & B13	7	8.75	10	12.50	10	12.50	7	8.75	7	8.75	41	51.25
2	Inter State Training of Farmers	Nos.	1.75	B3, B5, B8, B12 & B13	8	14.00	9	15.75	9	15.75	7	12.25	7	12.25	40	70.00
3	Training of 536 Groups of Seed Village Farmers in quality Seed Production technology.	Nos.	0.1	All Blocks except B1, B2, B4, B7, B9 & B11	29	2.90	40	4.00	44	4.40	36	3.60	32	3.20	181	18.10
4	Training of Farmers under Mission Soil Health Card	Nos.	0.15	B3, B5, B13 & B14	8	1.20	15	2.25	17	2.55	11	1.65	11	1.65	62	9.30
5	With in the district training of Farmers	Nos.	0.1	All Blocks except B1, B2, B7, B9 & B11	200	20.00	203	20.30	205	20.50	191	19.10	191	19.10	990	99.00
6	With in the State training of Farmers	Nos.	1.2	B3, B5, B8, B12, B13 & B14	15	18.00	17	20.40	17	20.40	13	15.60	13	15.60	75	90.00
	Training of Farmers With in the district															
7	Awareness campaigns	Nos.	0.1	B3, B5 & B8	11	1.10	12	1.20	12	1.20	12	1.20	12	1.20	59	5.90
8	Cotton	Nos.	0.1	B5	1	0.10	1	0.10	1	0.10	1	0.10	1	0.10	5	0.50

Sl. No	Cafeteria of Activities	Unit	Unit Cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
9	Groundnut	Nos.	0.1	B3, B5 & B8	6	0.60	12	1.20	12	1.20	12	1.20	12	1.20	54	5.40
10	IFS	Nos.	0.1	B5 & B8	11	1.10	11	1.10	11	1.10	11	1.10	11	1.10	55	5.50
11	Major & Minor Millets	Nos.	0.1	B3, B5, B8 & B13	11	1.10	13	1.30	14	1.40	9	0.90	9	0.90	56	5.60
12	Moisture conservation practices	Nos.	0.1	B5 & B8	6	0.60	6	0.60	6	0.60	6	0.60	6	0.60	30	3.00
13	oil Palm	Nos.	0.1	B3, B5 & B8	2	0.20	3	0.30	3	0.30	3	0.30	3	0.30	14	1.40
14	Organic cultivation practices	Nos.	0.1	B3, B5 & B8	6	0.60	7	0.70	7	0.70	7	0.70	7	0.70	34	3.40
15	Paddy	Nos.	0.1	All Blocks except B1, B2, B4, B7, B9 & B11	19	1.90	23	2.30	26	2.60	20	2.00	20	2.00	108	10.80
16	Pulses	Nos.	0.1	B3, B5, B8, B13 & B14	12	1.20	14	1.40	15	1.50	12	1.20	12	1.20	65	6.50
17	Sugarcane	Nos.	0.1	All Blocks except B1, B2, B4, B7 & B14	9	0.90	13	1.30	16	1.60	13	1.30	13	1.30	64	6.40
18	Value addition training	Nos.	0.1	B3, B5 & B8	17	1.70	17	1.70	18	1.80	18	1.80	18	1.80	88	8.80
	Exposure visit of Farmers															
19	Rodent Pest Management Demonstration	Nos.	0.04	B3, B5, B8, B12, B13 & B14	123	4.92	129	5.16	140	5.60	136	5.44	141	5.64	669	26.76
20	With in State Exposure visit	Nos.	0.4	All Blocks except B1, B2, B6, B7, B10 & B11	63	25.20	64	25.60	67	26.80	63	25.20	63	25.20	320	128.00

Sl. No	Cafeteria of Activities	Unit	Unit Cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
21	Organisation of Kisangosthies on Soil test based nutrient application (Campaign)	Nos.	0.15	B5, B8, B12, B13 & B14	13	1.95	15	2.25	17	2.55	11	1.65	11	1.65	67	10.05
22	With in the district exposure visit	Nos.	0.15	All Blocks except B1, B2, B7, B9 & B11	118	17.70	122	18.30	123	18.45	121	18.15	121	18.15	605	90.75
	TOTAL					**125.72**		**139.71**		**143.60**		**123.79**		**123.59**		**656.41**

Ambathur - B1, Ellapuram - B2, Gummidipoondi - B3, Kadambathur - B4, Minjur - B5, Pallipet - B6, Ponnamallee - B7, Poondi - B8, Puzhal - B9, R.K.Pet - B10, Sholavaram - B11, Thiruvalangadu - B12, Tiruttani - B13, Tiruvallur - B14

4.1.9 Infrastructure development for agriculture development

Facilities for Seed production

Seed is the most basic input in agriculture. Therefore, the sustained supply of the quality seeds will continue to be a key factor for augmenting agricultural growth. The seed processing is a vital part of the seed production activities and the State Government has accorded high priority. In view of above, efforts have to be taken with the objective of production of quality seeds of agricultural crops through scientific methods and adopting appropriate processing techniques through establishment and modernization of State seed processing plants.

After harvesting, cleaning, drying, processing, and packaging, the representative samples of seed lot are required to be taken and sent to the laboratory for quality testing. From the test results, genetic, physical, physiological, and health qualities of seeds are determined. Different countries have set their own standards to find out these qualities in the seed lot. The National Seed Board, for instance, has approved maximum amount of moisture content, minimum germination potential, and minimum physical purity in foundation, certified and truthfully labeled seeds of different crops as basic seed standards. The test results must conform the approved seed standards to send the seeds in the market for commercial transaction. The overall budget required to establish seed testing laboratory in order to maintain the quality of seeds are ₹. **90 lakhs.**

Establishment of Laboratories

Quality control is the process of checking the quality of the material against the standard set by the organizations and if the material does not match with the standards, then such material is said to be substandard. Quality control laboratories are being established by the Government with an intention to supply quality inputs viz., seed, fertilizers and pesticide and services like soil testing to the farmers. To have effective quality control of inputs, quality inspectors are to be appointed.

The Agricultural Research - NABL Accreditation lab, Organic Fertilizer Testing laboratory, Bio-Fertilizer Quality Control Laboratory, Pesticide Residual Laboratory and laboratory for leaf analysis for selective nutrient application, Soil Testing Laboratory and Fertilizer Control Laboratory, Strengthening of Mobile Soil Testing Laboratory for Ensuring Soil Health were proposed with a budget outlay of ₹. **3122.35 lakh.**

The major interventions are

1. Additional Seed Godown and Bag closure in Ellapuram, Kadambathur, Minjur and Tiruvallur
2. Construction of IAEC with vehicle shed and compound wall in Gummidipoondi, Kadambathur and Minjur
3. Dunnage in all block except poondi, R.K.Pet, Sholavaram
4. Establishment of Thrashing floor/drying yard in STL & MSTL in Tiruvallur
5. Strengthening STL and MSTL in Tiruvallur

Budget

It is proposed to incur **₹ 3922.35 lakh** over a period of five years with the finance facilities under the NADP and other sources.

Area coverage

The seed godowns will be established at all the blocks. The existing seed testing laboratories in the Tiruvallur block is strengthened with a budget outlay of 700 lakh.

Expected outcome

The projects will ensure availability of quality seed to the farmers for their cultivation.

Implementing Agency

Department of Agriculture will implement the project and report the progress to the District-level officials. The progress of the project will be monitored by Director of Agriculture and Joint Director of Agriculture.

Table 4.9 Budget for interventions in Infrastructure development **(₹. in lakhs)**

Sl. No	Components	Unit	Unit Cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Seed Processing Unit Machineries	Nos.	2650000	B5 & B13	1	26.50	1	26.50	0	0.00	0	0.00	0	0.00	2	53.00
2	Additional Seed Godown	Nos.	1250000	B2, B4, B5 & B14	3	37.50	3	38.75	2	27.63	2	29.14	2	30.80	13	163.81
3	Construction of Integrated Agricultural Extension Centre with vehicle shed and compound wall	Nos.	25000000	B3, B4 & B5	2	500.00	2	500.00	1	250.00	1	250.00	1	250.00	7	1750.00
4	Construction of Sub-AEC (498 Nos.)	Nos.	3000000	All Blocks except B1, B6, B7, B9, B10 & B11	6	180.00	6	183.00	3	96.30	2	69.93	2	73.92	20	603.15
5	Strengthening of Soil Testing Laboratory	Nos.	6000000	B14	1	60.00	0	0.00	0	0.00	0	0.00	0	0.00	1	60.00
6	Strengthening of Mobile Soil Testing Laboratory	Nos.	3000000	B14	1	30.00	0	0.00	0	0.00	0	0.00	0	0.00	1	30.00
7	Establishment of Threshing floor/drying yard	Nos.	500000	B2 & B4	3	15.00	2	10.50	2	11.05	2	11.66	2	12.32	12	60.53
8	Dunnage	Nos.	7500	All Blocks except B8, B9 & B11	590	44.25	448	33.56	191	14.31	200	14.99	290	21.74	1718	128.84
9	Moisture meter	Nos.	25000	All Blocks except B1, B3, B8, B9 & B11	6	1.50	5	1.28	1	0.30	1	0.33	1	0.37	15	3.78
10	Bag closure	Nos.	10000	All Blocks except B8, B9, B10, B11	6	0.60	7	0.71	1	0.12	1	0.13	1	0.15	17	1.71
11	Electronic platform balance	Nos.	150000	B1, B6, B7, B8, B10,B11	6	9.00	4	6.15	1	1.82	1	2.00	1	2.20	14	21.16

Sl. No	Components	Unit	Unit Cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
12	Seed rack	Nos.	30000	B2, B4 & B14	78	23.40	85	25.35	93	27.83	100	29.95	110	32.94	465	139.46
13	Tarpaulin	Nos.	25000	All Blocks except B8, B9 & B11	18	4.50	16	4.10	15	3.71	15	3.83	15	3.71	79	19.86
14	Office Furnishings and other amenities	Nos.	200000	All Blocks except B8, B9 & B11	10	20.00	9	17.00	8	16.10	9	17.31	8	16.64	44	87.05
15	Establishment of Agricultural Training Institutes	Nos.	25000000	All Blocks	1	250.00	0	0.00	0	0.00	0	0.00	0	0.00	1	250.00
16	Strengthening of training institute / nursery / FTC / KVK	Nos.	50000000	All Blocks	0	0.00	0	0.00	0	0.00	0	0.00	1	500.00	1	500.00
17	Infrastructure for empowerment of coconut nurseries	Nos.	5000000	All Blocks	0	0.00	0	0.00	0	0.00	1	50.00	0	0.00	1	50.00
	Grand total					**1202.25**		**846.90**		**449.15**		**479.26**		**944.79**		**3922.35**

Ambathur - B1, Ellapuram - B2, Gummidipoondi - B3, Kadambathur - B4, Minjur - B5, Pallipet - B6, Ponnamallee - B7, Poondi - B8, Puzhal - B9, R.K.Pet - B10, Sholavaram - B11, Thiruvalangadu - B12, Tiruttani - B13, Tiruvallur - B14

4.1.10 Soil health management for increasing crop productivity

It has been observed that the average productivity of major crops in Tamil Nadu is only about 60 percent of the potential yield. The reason may be due to decline in organic matter content of the soil of the State leading to low soil fertility. The availability of organic manures to farmers has become scanty and costly. The importance of FYM/Green manuring in maintaining the organic matter status of the soil has to be educated to the farmers. The total production of bio-fertilizers has to be stepped up to meet the growing demand. Similarly, crop based micronutrient mixtures need to be promoted. Soil amendments *viz.,* gypsum and lime have to be provided at a subsidized rate as a reclamation measure for the cultivable acid and alkali soils. Besides, efficient earthworm cultures should be provided for vermicompost unit by providing subsidy for establishment of vermicompost units with training in vermicompost.

Project Component:

- Reclamation of acid and alkali soils in Thiruvalangadu
- Production of enriched FYM and composting of farm waste through *Pluerotus* in Pallipet, Poondi, Sholavaram, Thirvallur and Tiruttani
- Distribution of enriched press mud and blue green algae in Gummidipoondi,Pallipet,Poondi and Thiruvallur
- Distribution of enriched pressmud in Thiruvalangadu
- Distribution of soil health card all blocks except Ambathur, Ellapuram, Pallipet, Puzhal,R.K.Pet and Sholavaram.

Budget

Enhancing soil health by distributing enriched farm yard manure, micro-nutrient mixture, gypsum, bio-fertilizers, *etc.* is essential to maximize profitability. The overall budget to undertake the various interventions in Tiruvallur district is **₹. 1423.10 lakh**.

Area coverage

The various interventions proposed will be implemented in all the blocks viz., Minjur, Pallipet, Poondi, R.K.Pet, Sholavaram, Tiruttani, Thiruvalangadu except Ambathur, Ellapuram, Gummidipoondi, Kadambathur, Ponnamallee, Puzhal and Tiruvallur.

Expected Outcome

Healthy soils are the foundation for profitable, productive and environmentally sound agricultural systems. In an agricultural context, it refers to the ability of the soil to sustain agricultural productivity and protect environmental resources. The proposed soil health management practices will improve soil health by increasing productivity and profitability immediately and into the future.

Implementing Agency:

The projects will be implemented by the Department of Agriculture. The progress of the project will be monitored by Director of Agriculture and Joint Director of Agriculture.

Table 4.10 Budget for interventions in Soil Health Management **(₹. in lakhs)**

Sl. No	Components	Unit	Unit Cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Permanent Vermi compost units	Cluster Nos.	50000	B5, B11, B12, B13	7	3.50	9	4.50	11	5.50	13	6.50	15	7.50	55	27.50
2	HDPE Vermi compost units	Kit Nos	12000	B3, B6, B10, B12 & B13	12	1.44	19	2.28	24	2.88	29	3.48	35	4.20	119	14.28
3	Reclamation of Alkali Soil	MT	50000	B12	5	2.50	10	5.00	15	7.50	20	10.00	25	12.50	75	37.50
4	Reclamation of Acid Soil	L. No.	6000	B12	5	0.30	10	0.60	15	0.90	20	1.20	25	1.50	75	4.50
5	Green Manuring	Nos	4000	All Blocks except B1, B2, B3, B4, B7, B9 & B14	798	31.92	883	35.32	953	38.12	1028	41.12	1098	43.92	4760	190.40
6	Establishment of Model organic villages	Ha	1000000	B3, B5, B8 & B12	16	160.00	17	170.00	19	190.00	19	190.00	21	210.00	92	920.00
7	Procurement and Distribution of Blue Green Algae	Nos	2500	B3, B6, B8 & B12	107	2.68	111	2.76	114	2.84	117	2.93	120	3.00	568.6	14.22
8	Production of Enriched FYM	MT	2500	B3, B6, B8 & B12	110	2.75	131	3.28	221	5.53	171	4.28	201	5.03	834	20.85
9	Composting of Farm Waste Through Pluerotus (Production and Distribution of Kits)	MT	200	B6, B8, B10, B12 & B13	150	0.30	185	0.37	220	0.44	260	0.52	300	0.60	1115	2.23
10	Distribution of Soil Health Card	Ha	300	All Blocks except B1, B2, B6, B9, B10 & B11	14000	42.00	12000	36.00	12000	36.00	12000	36.00	12000	36.00	62000.	186.00
11	Distribution of Enriched Pressmud (37.5 Mt/ha)	units	1000	B12	38	0.38	75	0.75	113	1.13	150	1.50	188	1.88	562.5	5.63
	Total					**247.77**		**260.86**		**290.83**		**297.52**		**326.12**		**1423.10**

Ambathur - B1, Ellapuram - B2, Gummidipoondi - B3, Kadambathur - B4, Minjur - B5, Pallipet - B6, Ponnamallee - B7, Poondi - B8, Puzhal - B9, R.K.Pet - B10, Sholavaram - B11, Thiruvalangadu - B12, Tiruttani - B13, Tiruvallur - B14

4.1.11 Rainfed Area Development

Rainfed areas account for nearly 57 per cent of the agricultural land in India. Rainfed areas if managed properly have the potential to contribute a larger share in the food grain production. These high potential rainfed areas provide us with opportunities for faster agricultural growth compared to irrigated areas that have reached a plateau In-fact the potential is such that there is more opportunity for faster agricultural growth here than in irrigated areas. With proper management, rainfed areas have the potential of contributing a larger share to food grain production. Increasing agricultural productivity of rainfed areas in a sustainable manner by adopting appropriate farming system based approaches through Restoration of confidence in rainfed agriculture by creating sustained employment opportunities through improved on-farm technologies and cultivation practices Enhancement of farmer's income and livelihood support for reduction of poverty in rainfed areas.

Project components

- Stress Management in crops by the Application of Pink Pigmented Facultative Methylotrophs (PPFM spray)/ Kcl Spray in Poondi and Thiruvalangadu.
- Milch Animal (1 no) + 1 ha cropping system with inter crop & border plantation like castor/sesbania etc in Poondi

Budget

It is proposed to incur **₹ 28.32 lakh** over a period of five years with the finance facilities under the NADP and other sources.

Area coverage

The above interventions will be implemented in Poondi and Thiruvalangadu.

Expected outcome

The expected outcome of the project will result in an increase in the production of the rainfed crops which will improve the income of the farmers

Implementing Agency

Department of Agriculture will implement the project and report the progress to the District-level officials. The projects will be implemented by the Department of Agriculture. The progress of the project will be monitored by Director of Agriculture and Joint Director of Agriculture.

Table 4.11 Budget for rainfed area development **(₹. in lakhs)**

Sl. No	RAD	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Stress Management in crops by the Application of Pink Pigmented Facultative Methylotrophs (PPFM spray)/ Kcl Spray	Ha	0.004	B8 & B12	38	0.15	40	0.16	41	0.16	42	0.17	43	0.17	204	0.82
2	Milch Animal (1 no) + 1 ha cropping farming system (Cropping system with inter crop & border plantation like castor/sesbania etc.) @ Rs.27500/ as subsidy per Unit	Ha	0.55	B8	10	5.50	10	5.50	10	5.50	10	5.50	10	5.50	50	27.50
	Total					**5.65**		**5.66**		**5.66**		**5.67**		**5.67**		**28.32**

Ambathur - B1, Ellapuram - B2, Gummidipoondi - B3, Kadambathur - B4, Minjur - B5, Pallipet - B6, Ponnamallee - B7, Poondi - B8, Puzhal - B9, R.K.Pet - B10, Sholavaram - B11, Thiruvalangadu - B12, Tiruttani - B13, Tiruvallur - B14

4.1.12 Integrated Pest Management

Integrated Pest Management also known as integrated pest control is a broad based approach that integrates practices for economic control of pests. IPM aims to suppress pest populations below the economic injury level. IPM used in agriculture, horticulture, forestry, human habitations, preventive conservation and general pest control, including structural pest management. The principle is on control not eradication. IPM holds that wiping out an entire pest population is often impossible, and the attempt can be expensive and unsafe. IPM programmes first work to establish acceptable pest levels, called action thresholds, and apply controls if those thresholds are crossed. The IPM process starts with monitoring, which includes inspection and identification, followed by the establishment of economic injury levels.

Integrated pets management employ a variety of actions including cultural controls, including physical barriers, biological controls, including adding and conserving natural predators and enemies to the pest and finally chemical controls or pesticides.

Farmers Field Schools (FFS) is group based learning process that has been used by a governments to promote Integrated Pest Management (IPM). The FFS is a form of adult education, which evolved from the concept that farmers learn optimally from field observation and experimentation. It was developed to help farmers tailor their IPM practices to diverse and dynamic ecological conditions.

Interventions

1. Farmers Field Schools (FFS) in all blocks except Ambathur, Ellapuram, Ponnamallee, Puzhal and Sholavaram
2. Field days in Gummidipoondi, Kadambathur, Poondi, Thiruvalangadu, Tiruttani and Tiruvallur
3. Integrated Pest Management Villages in Kadambathur, Poondi, Thiruvallur and Thiruvalangadu
4. IPM School in Kadambathur, Minjur, Pallipet, R.K.Pet, Tiruvallur.

Budget

It is proposed to incur **₹ 253.60 lakh** over a period of five years by seeking funds under different funding agencies.

Area coverage

The above interventions will be implemented in Gummidipoondi, Kadambathur, Minjur, Pallipet, Poondi, R.K.Pet, Thiruvalangadu, Tiruttani, Tiruvallur except Ambathur, Ellapuram, Ponnamallee and Puzhal Sholavaram blocks.

Expected outcome

The expected outcome of the project will result in an increase in the production of the rainfed crops which will improve the income of the farmers

Implementing Agency

Department of Agriculture will implement the project and report the progress to the District-level officials. The progress of the project will be monitored by Director of Agriculture and Joint Director of Agriculture.

Table 4.12 Budget for interventions in IPM **(₹. in lakhs)**

Sl. No	Components	Unit	Unit Cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Farmers Field Schools (FFS)	Nos.	20000	All Blocks except B1, B2, B7, B9 & B11	45	9.00	48	9.60	61	12.20	57	11.40	63	12.60	274	54.80
2	Field days	No.	20000	B3, B4, B8, B12, B13 & B14	37	7.40	33	6.60	44	8.80	40	8.00	46	9.20	200	40.00
3	Integrated Pest Management Villages	Nos.	100000	B4, B8, B12 & B14	22	22.00	24	24.00	28	28.00	26	26.00	28	28.00	128	128.00
4	IPM School	Nos.	40000	B4, B5, B6, B10 & B14	13	5.20	15	6.00	15	6.00	17	6.80	17	6.80	77	30.80
	Total					**43.60**		**46.20**		**55.00**		**52.20**		**56.60**		**253.60**

Ambathur - B1, Ellapuram - B2, Gummidipoondi - B3, Kadambathur - B4, Minjur - B5, Pallipet - B6, Ponnamallee - B7, Poondi - B8, Puzhal - B9, R.K.Pet - B10, Sholavaram - B11, Thiruvalangadu - B12, Tiruttani - B13, Tiruvallur - B14

4.1.13 Farm Mechanization

Agricultural mechanization is the need of the hour to meet out the growing shortage of labour workforce in Agriculture. It has been identified as one of the critical inputs for increasing production in time. The labour intensive crops need high man power requirement, which is fast depleting and posing a big challenge to crop productivity. Agricultural labour wages are increasing at an alarming rate in Tamil Nadu resulting in shifting from labour intensive to mechanization intensive techniques. The farm machinery for land preparations, land development, seeding, planting, transplanting, weeding and intercultural operations, harvesting and threshing which are predominantly used in other parts of the country / other countries are proposed for introduction in the farmers field of Cuddalore district.

Project Component

- Distribution of tractor and power tiller in all blocks except Ambathur, Minjur, Pallipet, Ponnamallee and puzhal
- Distribution of MB plough, rotavator, laser leveller, baler and paddy transplanter
- Distribution of tractor drawn seed cum fertilizer drill
- Distribution of pump set, mobile sprinklers, rain guns and PVC Pipes to carry irrigation water from source to field
- Solar power pump system and Solar light trap
- Distribution of sprayers (power, hand and battery operated sprayer)
- Distribution of chaff cutter, combine harvester, multi crop thrasher and Tarpaulins
- Distribution of weeder (manual, cono weeder and rotary power weeder)

Budget

Agricultural mechanization programs are proposed to implement in a big way to increase the agricultural production and to popularize the agricultural machinery among the farmers of this district with a budget of **₹. 4709.54 lakh**.

Area Coverage

The above interventions will be implemented in Gummidipoondi, Kadambathur, Minjur, Pallipet, Poondi, R.K.Pet, Thiruvalangadu, Tiruttani, Tiruvallur except Ambathur, Ellapuram, Ponnamallee, Puzhal and Sholavaram blocks.

Expected Outcome

Distribution of farm machinery / implements to farmers will increase the farm power. All the proposed agricultural machinery / implements will be put into use by the farmers. The acute agricultural labour scarcity will be reduced. The benefit of agricultural mechanization is to be extended to all categories of farmers with due consideration to small, marginal, scheduled caste, scheduled tribes and women farmers.

Implementing Agency

The projects will be implemented by the Department of Agriculture. The progress of the project will be monitored by Director of Agriculture and Joint Director of Agriculture.

Table 4.13 Budget for interventions in Farm machineries **(₹. in lakhs)**

Sl. No	Components	Blocks covered	Unit	Unit Cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Solar light trap	All Blocks except B1, B2, B4, B5, B9 & B13	No.	4000	532	21.28	555	22.20	563	22.52	568	22.72	576	23.04	2794	111.76
2	Power operated sprayer	All Blocks except B5	Nos.	8000	125	10.00	128	10.20	144	11.52	153	12.21	164	13.15	714	57.08
3	Hand operated sprayer	All Blocks except B2, B4, B7, B9 & B11	Nos.	1500	173	2.60	178	2.67	192	2.88	199	2.99	208	3.12	950	14.25
4	Battery operated sprayer	All Blocks except B1, B2, B3, B4, B5, B9	Nos.	4000	150	6.00	165	6.60	179	7.16	186	7.44	195	7.80	875	35.00
5	Distribution of Tarpaulins	All Blocks except B1, B3, B4, B5, B9 & B13	Nos	8000	575	46.00	603	48.20	619	49.54	629	50.34	642	51.33	3068	245.41
6	Distribution of Rotavator	All Blocks except B1, B2, B3, B5, B7 & B9	Nos	80000	51	40.80	48	38.40	54	43.20	59	47.20	64	51.20	276	220.80
7	Distribution of Tractor	B2, B4, B8, B10, B11, B12, B13 & B14	Nos	600000	26	156.00	23	135.00	25	150.30	27	159.93	29	175.92	130	777.15
8	Distribution of Power tiller	All Blocks except B1, B5, B6, B7 & B9	Nos	150000	33	49.50	36	53.25	43	64.58	49	72.98	57	85.98	218	326.29
9	Distribution of Laser leveller	B8 & B11	Nos	380000	7	26.60	7	26.60	7	26.60	7	26.60	7	26.60	35	133.00

Sl. No	Components	Blocks covered	Unit	Unit Cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
10	Distribution of Baler	B3	Nos	350000	0	0.00	1	3.50	1	3.50	1	3.50	1	3.50	4	14.00
11	Distribution of Mini Tractor	B2, B4, B5, B8, B11 & B14	Nos	300000	15	45.00	16	46.50	17	51.15	18	52.97	18	54.96	84	250.58
12	Distribution of Paddy transplanter	B3, B5, B8 & B14	Nos	1200000	6	72.00	7	84.00	7	84.00	7	84.00	8	96.00	35	420.00
13	Distribution of chaff cutter	B3 & B14	Nos	25000	1	0.25	2	0.50	2	0.50	2	0.50	2	0.50	9	2.25
14	Distribution of Rotary Power weeder	B14	Nos	70000	2	1.40	2	1.40	2	1.40	3	2.10	3	2.10	12	8.40
15	Distribution of combine harvester	B3 & B5	Nos	1700000	2	34.00	3	51.00	3	51.00	3	51.00	3	51.00	14	238.00
16	PVC Pipes to carry Irrigation water from source to field	All Blocks except B1, B2 & B10	Unit	40000	222	88.80	213	85.20	230	92.00	260	104.00	313	125.20	1238	495.20
17	Distribution of Mobile Sprinklers	All Blocks except B1, B4, B7 & B9	Ha	30000	270	81.00	225	67.35	237	71.12	243	72.80	248	74.50	1223	366.76
18	Distribution of Rain guns	All Blocks except B1, B4, B5, B7 & B9	Ha	40000	132	52.80	118	47.00	143	57.22	139	55.46	144	57.73	676	270.21
19	Distribution of Tractor Drawn Seed cum Fertilizer Drill	B14	Nos	70000	1	0.70	1	0.70	2	1.40	2	1.40	2	1.40	8	5.60

Sl. No	Components	Blocks covered	Unit	Unit Cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
20	Distribution of Manual Weeder	B8, B12 & B14	Nos	2000	25	0.50	30	0.60	35	0.70	40	0.80	45	0.90	175	3.50
21	Distribution of Power Weeder	B5, B8 & B14	Nos	65000	60	39.00	60	39.00	60	39.00	60	39.00	60	39.00	300	195.00
22	Solar power pump system	B5, B8, B12 & B14	Nos	550000	13	71.50	14	77.00	15	82.50	17	93.50	18	99.00	77	423.50
23	Distribution Oil Engine Pump set	B2, B3, B5 & B8	Nos	30000	25	7.50	21	6.15	21	6.32	22	6.50	22	6.70	111	33.16
24	Distribution of cono weeder	B2, B8, B12, B13 & B14	Nos	2000	612	12.24	612	12.24	622	12.45	633	12.65	653	13.06	3132	62.64
	Grand total					**865.47**		**865.26**		**932.55**		**982.59**		**1063.68**		**4709.54**

Ambathur - B1, Ellapuram - B2, Gummidipoondi - B3, Kadambathur - B4, Minjur - B5, Pallipet - B6, Ponnamallee - B7, Poondi - B8, Puzhal - B9, R.K.Pet - B10, Sholavaram - B11, Thiruvalangadu - B12, Tiruttani - B13, Tiruvallur - B14

4.1.14 Information Technology in Agriculture

Agriculture is a major sector which is vital for the survival of modern man. The produce from agriculture drives trade from one country to another, brings income for farmers, makes productive use of otherwise idle land, and brings food on the table. It is such an important part of everyone's daily life, although it may not be seen as a direct factor since the produce goes a long way before reaching the hands of everyone who benefits from it. Because of its importance to society, it's must to evolve with the times and adjust to meet the needs of modern people. By adapting and making use of IT to help improve agricultural progress, everyone benefits from the union of these sectors.

Role of IT in Agriculture

In the context of agriculture, the potential of information technology (IT) can be assessed broadly under two heads: (a) as a tool for direct contribution to agricultural productivity and (b) as an indirect tool for empowering farmers to take informed and quality decisions which will have positive impact on the way agriculture and allied activities are conducted. The indirect benefits of IT in empowering farmer are significant and remain to be exploited. The farmer urgently requires timely and reliable sources of information inputs for taking decisions. At present, the farmer depends on trickling down of decision inputs from conventional sources which are slow and unreliable. The changing environment faced by farmers makes information not merely useful, but necessary to remain competitive. Components include input devices, output devices, processors, storage devices, software, networking devices, transmission media and other accessories.

Budget

It is proposed to incur **₹ 105.37 lakhs** over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

The expected outcome of the project will result in an increase in the adoption of technologies for production of the crops which will improve the income of the farmers

Implementing Agency

Department of Agriculture will implement the project and report the progress to the District-level officials. The progress of the project will be monitored by Director of Agriculture and Joint Director of Agriculture.

Table 4.14 Budget for interventions in information technology **(₹. in lakhs)**

Sl. No	Components	Unit	Unit Cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Procurement of Hardware for replacement of old hardware	Nos	50000	All Blocks except B3, B5 & B9	15	7.50	0	0.00	0	0.00	0	0.00	0	0.00	15	7.50
2	Connectivity Charges	Nos	11000	All Blocks except B9	15	1.65	0	0.00	0	0.00	0	0.00	0	0.00	15	1.65
3	Printer cum Scanner	Nos	20000	All Blocks except B9	23	4.60	0	0.00	0	0.00	0	0.00	0	0.00	23	4.60
4	UPS and Electrical Accessories	Nos	35000	All Blocks except B9	21	7.35	0	0.00	0	0.00	0	0.00	0	0.00	21	7.35
5	Xerox machine	Nos	75000	All Blocks except B9	*15*	11.25	0	0.00	0	0.00	0	0.00	0	0.00	15	11.25
6	Laptop/Desktop	Nos	50000	All Blocks except B9	14	6.75	0	0.00	0	0.00	0	0.00	0	0.00	14	6.75
7	Anti -virus software	Nos	2500	All Blocks except B9	48	1.20	0	0.00	0	0.00	0	0.00	0	0.00	48	1.20
8	Television	Nos	100000	All Blocks except B9	14	14.00	0	0.00	0	0.00	0	0.00	0	0.00	14	14.00
9	Colour printer	Nos	15000	All Blocks except B9	2	0.27	0	0.00	0	0.00	0	0.00	0	0.00	2	0.27
10	4G Internet - Dongle	Nos	2500	All Blocks except B9	22	0.55	0	0.00	0	0.00	0	0.00	0	0.00	22	0.55
11	**Equipments for Documentation**															
a	Handycam	Nos	30000	All Blocks except B9	11	3.30	0	0.00	0	0.00	0	0.00	0	0.00	11	3.30
b	Camera	Nos	25000	All Blocks except B9	17	4.25	0	0.00	0	0.00	0	0.00	0	0.00	17	4.25
c	GPS instrument	Nos	20000	All Blocks except B9	16	3.20	0	0.00	0	0.00	0	0.00	0	0.00	16	3.20
d	Android mobile	Nos	15000	All Blocks except B9	20	3.00	0	0.00	0	0.00	0	0.00	0	0.00	20	3.00
e	External Hard disk	Nos	5000	All Blocks except B9	42	2.10	0	0.00	0	0.00	0	0.00	0	0.00	42	2.10
12	Audio - visual Aids	Nos	150000	All Blocks except B9	11	16.50	0	0.00	0	0.00	0	0.00	0	0.00	11	16.50

Sl. No	Components	Unit	Unit Cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
a	LCD projector	Nos	75000	All Blocks except B9	13	9.75	0	0.00	0	0.00	0	0.00	0	0.00	13	9.75
b	pico Projector	Nos	35000	B2, B4, B6, B8 & B14	5	1.75	0	0.00	0	0.00	0	0.00	0	0.00	0	1.75
13	Air conditioner for computer room	Nos	40000	All Blocks except B3, B5, B9, B10 & B11	16	6.40	0	0.00	0	0.00	0	0.00	0	0.00	16	6.40
	Total					**105.37**		**0.00**		**0.00**		**0.00**		**0.00**		**105.37**

Ambathur - B1, Ellapuram - B2, Gummidipoondi - B3, Kadambathur - B4, Minjur - B5, Pallipet - B6, Ponnamallee - B7, Poondi - B8, Puzhal - B9, R.K.Pet - B10, Sholavaram - B11, Thiruvalangadu - B12, Tiruttani - B13, Tiruvallur - B14

4.1.15 Agricultural Research

Cultivation of field crops and vegetables are the most preferred crops by the farmers of Cuddalore district having areas with medium drainage, above medium soil depth and moderate quality of irrigation water. Vegetable Research Station, Palur should be strengthened for infrastructure facilities with model mechanized farm mainly will focus on crop improvement in fruits and vegetables with enhanced yield potential for the sustainable livelihood of farming community in the North Eastern Zone of Tamil Nadu. On a verge of development in the agriculture system, the government should open linkage and infrastructure that can help in better functioning of the procedure and help in rural development. Therefore in context to this and provide linkage between research and farm activities, the government is all set to construct permanent infrastructure for Agriculture Technology Park .It aims to cover rural women, farmers, unemployed youths, field-level agriculture personnel and rural volunteers on scientific farming to boost socio-economic condition of rural areas.

The most damaging ecological disturbance of injudicious use of pesticides in the existence of high concentration of pesticide residues in food chain including vegetables and other crops. To produce pesticide free agricultural produce, it is highly necessary to introduce bio control as one of the major tool for pest management in vegetable crops. Training and demonstrations on precision water and nutrient usage, INM, IPM, use of natural plant enemies, cultivation under protected structures etc. imparts confidence with in the farmers in agriculture and make them to adopt to harvest bumper crop and to get triple the income. In this regard, setting up of training institute will be off immense use in changing the economic and social status of the farmers, skilled workers, rural women and self-entrepreneurship development among the stake holders.

Establishing organic jaggery processing unit at Melalathur will help the sugarcane jaggery farmer by way of disseminating improved post-harvest technique in view to avoid the quality loss of jaggery during processing and storage. Jaggery is best when consumed as organic. Organic Jaggery retains not only all the sucrose but all the other natural nutrients like calcium, phosphorous, magnesium and potassium. Therefore the establishment of Chewing Cane Production and Organic Jaggerry Processing Unit at Cuddalore is essential. These problems all necessitate the need for making them aware of good farming practices from research infrastructure which may provide better infrastructure

facilities and higher agricultural production by adopting the following research infrastructure facilities so they can be getting a better knowledge on crops for getting higher agricultural production at Cuddalore district.

Project components

- Establishment of Food Processing unit (Bakery) in Chennai
- Establishment of Post Harvest Technology Centre in Chennai
- Establishment of nursery with sale outlet in Chennai
- Construction of Farmers Training Centre in Chennai
- Establishment of Communication& Video Conferencing laboratory in Chennai
- Establishment of Information Training Centre in Chennai
- Establishment of Green Globe Centre in Chennai

Budget

The budget requirement for the above research and development activities is estimated at **₹. 2345 lakhs** over a period of five years.

Implementing agency

Tamil Nadu Agricultural University will be implementing the project.

Expected outcome

The implementation of the above project will result in better research activities and trainings on latest technologies for higher agricultural production.

Table 4.15. Budget Requirement for Agricultural Research Infrastructure in Thiruvallur District

(₹. in lakhs)

Sl. No.	Interventions	Blocks Covered	Unit Cost	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
				Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
I	**Research Infrastructure**														
1	Establishment of Food Processing unit (Bakery)	Chennai	50	0	0.00	1	50.00	0	0	0	0	0	0	**1**	**50.00**
2	Establishment of Post Harvest Technology Centre	Chennai	50	1	50.00	0	0	0	0	0	0	0	0	**1**	**50.00**
3	Establishment of nursery with sale outlet	Chennai	25	0	0.00	0	0	1	25.00	0	0	0	0	**1**	**25.00**
4	Construction of Farmers Training Centre	Chennai	200	0	0.00	0	0	0	0	1	200.00	0	0	**1**	**200.00**
5	Establishment of Communication& Video Conferencing laboratory	Chennai	10	1	10.00	1	10.00	0	0	0	0	0	0	**2**	**20.00**
6	Establishment of Information Training Centre	Chennai	500	1	100.00	0	100.00	0	100.00	0	100.00	0	100	**1**	**500.00**
7	Establishment of Green Globe Centre	Chennai	1500	0	0.00	1	500.00	0	500.00	0	500.00	0	0	**1**	**1500.00**
	Total				**160.00**		**660.00**		**625.00**		**800.00**		**100.00**		**2345.00**

Table 4.16 Budget Abstract for Agriculture Development

(in Rs Lakhs)

Sl. No	Components	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Paddy	2066.68	2314.93	2507.87	2695.00	2886.09	12470.57
2	Millet	716.66	738.78	752.58	769.94	783.66	3761.62
3	Pulses	447.10	473.55	513.49	536.17	571.69	2542.00
4	Oilseeds	704.26	831.59	852.12	870.72	955.87	4214.56
5	Oilpalm	10.79	13.31	14.28	17.97	19.06	75.41
6	Cotton	0.00	0.00	0.00	0.00	0.00	0.00
7	Sugarcane	16274.30	20170.10	22152.00	24150.70	24271.40	107018.50
8	Coconut	95.06	66.92	71.36	76.09	82.47	391.90
9	Training	125.72	139.71	143.60	123.79	123.59	656.41
10	Infrastructure	1202.25	846.90	449.15	479.26	944.79	3922.35
11	Soil Health Management	247.77	260.86	290.83	297.52	326.12	1423.10
12	Rainfed Area Development	5.65	5.66	5.66	5.67	5.67	28.31
13	Integrated Pest Management	43.60	46.20	55.00	52.20	56.60	253.60
14	Farm Mechanization	865.47	865.26	932.55	982.59	1063.68	4709.55
15	Strengthening of State Seed Farm	0.00	0.00	0.00	0.00	0.00	0.00
16	Agriculture Information Technology	105.37	0.00	0.00	0.00	0.00	105.37
	Grand total	**22910.68**	**26773.77**	**28740.49**	**31057.62**	**32090.69**	**141573.25**

4.2 HORTICULTURE

4.2.1 Enhancing the productivity of horticultural crops

Area expansion of Horticultural crops

Fruit Crops covered in all blocks

Today's changing food pattern enhances the area expansion under fruits. The preferable choices of fruits are Mango, Apple, Banana, Grapes, Orange, Guava, Pomegranate, Sapota etc. Fruits are rich in fiber which is very essential for the smooth movement of the digestive system. There are some fruits that give body energy as they contain carbohydrates which are the main source of energy. Carbohydrates in fruits are mainly sugar which actually breaks down easily and make a quick source of energy. They also contain minerals, vitamins and nutrients that are useful for a healthy life. Considering the importance of fruits, the productivity can be increased by promotion of cultivation of fruit crops in the potential areas.

Vegetable crops coverd in all blocks

Vegetables are the store houses of most of the vitamins and minerals and also proteins. In order to ensure continuous supply of fresh vegetables to the burgeoning urban markets, it is absolutely necessary to create forward linkages from rural to urban areas. This will also ensure assured income to farmers in the rural areas adjoining the cities. Cultivation of vegetables, formation of farmer clusters, formation of farmers society, collection centers, reefer vans, retail outlets, mobile stores are the components to be promoted for increasing the productivity and marketing of vegetables.

Flower crops coverd in al blocks

The major flowers grown are Gundumalli, Mullai, Rose, Crossandra, Chrysanthemum, Marigold, Tuberose, Arali, Jathimalli etc. Floriculture activity has evolved as a viable and profitable alternative, with a potential to generate remunerative self-employment among small & marginal farmers. The flower crops require lots of manpower for picking flowers and perform other operations, hence providing opportunity to marginal and small farmers for generating more income, employment and promote greater involvement of women work force. Keeping this in mind, the promotion area of cultivation of traditional and cut flowers are planned for different flower crops.

Spice crops

Spice crops play a unique role in India's economy by improving the income of the rural people. Cultivation of spices is labor intensive so it can generate lot of employment opportunities for the rural population. The demand of Indian spice is very much in other countries. Hence production of spices has very much scope to meet that demand by huge production.

Rejuvenation of Old Orchards (Mango and Guava) covered in all blocks

In general, 40-45 years old mango trees exhibit decline in fruit yield because of dense and overcrowded canopy. The trees do not get proper sunlight resulting in decreased production of shoots. New emerging shoots are weak and are unsuitable for flowering and fruiting. The population of insects and pests builds up and the incidence of diseases increases in such orchards. These unproductive trees can be converted into productive ones by pruning with the techniques developed. Similarly, a procedure to rejuvenate and restore the production potential of old unproductive and wilt affected guava orchards has been developed, which employs pruning of branches at different periodicity and at different severities. Crowding and encroachment of guava trees with subsequent inefficient light utilization is an obvious problem with older orchards, if trees are not well managed. The internal bearing capacity of guava trees also decreases with time, due to overshadowing of internal bearing wood.

Pollination support by bee keeping covered in all blocks

Production of apiary honey in the country reached 10,000 tons, valued at about Rs.300 million. Bee-Keeping Industry is one of the important activities. The Government provides financial support to this Industry by way of providing grant for supply of bee-hives to the Tribal on hill areas, Scheduled Castes /Scheduled Tribes under Western Ghats Development Programmes, Hill Area Development Programme and Integrated Tribal Development Programme. The income earned by the farmers through bee-keeping activities is an additional income to their agriculture income. Honey industry in the country can well become a major foreign exchange earner if international standards are met. Beekeeping is an age-old tradition in India but it is considered a no-investment profit giving venture in most areas. Of late, it has been recognized that it has the potential to develop as a prime agri-horticultural and forest-based industry. Honey production is a lucrative business and it generates employment.

Apiary honey is produced in bee hives and is harvested by extraction in honey extractors. Other types of beekeeping equipment like queen excluder, smoker, hive tool, pollen trap and honey processing plant are also used. Indian honey has a good export market. With the use of modern collection, storage, beekeeping equipment, honey processing plants and bottling technologies, the potential export market can be tapped.

Rainfed Area Development Programme (RADP) covered in all blocks

Rainfed areas assume special significance in terms of ecology, agricultural productivity and livelihood for millions of rural households in India. To ensure agriculture growth in the rainfed areas, the Government of India launched a new scheme “Rainfed Area Development Programme (RADP)” in the year 2011-12 as a sub-scheme under Rashtriya Krishi Vikas Yojana (RKVY). It aims at improving quality of life of farmers especially, small and marginal farmers by offering a complete package of activities to maximize farm returns. RADP focuses on Integrated Farming System (IFS) for enhancing productivity and minimizing risks associated with climatic variabilities.

Special Interventions

Production Enhancement through Precision Farming

Farmers have experienced fruitful results of technology especially during the past five years. Hence further increase in the production of horticultural crops would be possible both by increasing area and productivity by adopting advanced technologies like precision farming, high density planting, protected cultivation, shade net nursery, integrated pest management and integrated nutrient management. Besides increasing infrastructure and mechanization facilities, productivity enhancement is considered by area expansion and resorting to high tech cultivation practices. Annual crops like vegetables, flowers, spices, medicinal plants and one year long season crops like banana, tapioca, turmeric and annual moringa could be considered for expansion by precision farming technology and providing assistance for inputs like water soluble fertilizers, hybrid/ high yielding vegetable seeds, plant protection chemicals etc., with subsidy.

Pandal / Trellis cultivation, Propping / Support / Staking

Pandal vegetables being short duration crops fit very well in the cropping system by offering viable option to the growers to get increased income per unit area. However, the cultivation of vegetables is too constrained due to high initial investment cost. With the

objective of enhancing area under pandal vegetables and encouraging farmers to realize increased income, this project is proposed by popularizing high yielding/hybrid seed materials and dissemination of improved method of cultivation to farmers. It is proposed to cover at least 500 hectares in crops like bitter gourd, ribbed gourd, snake gourd, pandal beans etc.

Banana Bunch Sleeve

'Bunch care techniques' are to be followed in banana cultivation to achieve the best quality. Transparent polyethylene sleeves are recommended to cover the bunch immediately after opening of the last hand. Using of opaque polythene covers / sleeves gauge (during winter) and paper bags (to avoid chilling injury at frost conditions and sun scrotch). The bunch will be free from insect bites, fungi, bacteria attacks and physical injuries. The cover will also improve bunch appeal and maturity of bunch will be advanced by 7 to 10 days. Its coverd all blocks except Ambathur, Kadambathur, Ponnamallee, Sholavaram,Thiruttani & Tiruvallur.

Agro Ecosystem Analysis (AESA) based IPM

The IPM has been evolving over the decades to address the deleterious impacts of synthetic chemical pesticides on environment ultimately affecting the interests of the farmers. The economic threshold level (ETL) was the basis for several decades but in modern IPM (FAO 2002) emphasis is given to AESA where farmers take decisions based on larger range of field observations. Decision making in pest management requires a thorough analysis of the agro-ecosystem. Farmer has to learn how to observe the crop, how to analyze the field situation and how to make proper decisions for their crop management. This process is called the AESA. In AESA based IPM emphasis is given to natural enemies, plant compensation ability, abiotic factors and P: D ratio.

Control of coconut Red Palm weevil

Coconut is a perennial crop and longevity of the tree is about 50 to 70 years. The red palm weevil is a fatal enemy and less than 20 years coconut palm succumbs to severe damage when infected. Hence it is highly necessary to control the attack of red palm weevil pest on war footing. It is programmed to distribute 50, 000 traps of ferrolure of five traps per ha for 1.00 lakh hectare with subsides assistance of 50 per cent. The total cost for one

hectare of Rs. 325/ferrolure comes to Rs.3, 250. Hence, an assistance of Rs. 1600/ha is proposed for five ferrolure per ha.

Crop insurance and mitigation scheme

Crop insurance is an example of risk management tool that protects against losses but also offers the opportunity for more consistent gains. It ensures the reliable level of cash flow and allows more flexibility in the marketing plan. With some level of production insured, the crop could be forward – priced with greater certainty, creating a more predictable level of revenue. Some of the risk management strategies recommended crop insurance.

INFRA STRUCTURES AND ASSETS

To increase the income of the horticultural farmers, support for the establishment of pandals, trellies, staking and propping polygreen houses, (tubular structure) have to be provided. Vegetables like bitter gourd, snake gourd, ribbed gourd, pandal avarai, pole beans, tomato, gherkin, cucumber, squash and in fruits grapes, musk melons and in spices pepper etc could be cultivated under pandal cultivation. Similarly, crops like peas, musk melon, pole beans, tomatoes, ivy gourd could be raised in trellis. High value vegetables like capsicum, beans and flowers like carnation, roses etc could be raised in poly houses.

Vermicompost unit

There is growing realization that vermicomposting provides the nutrients and growth enhancing hormones necessary for plant growth. The fruits, flowers and vegetables and other plant products grown using vermicompost are reported to have better keeping quality. A growing number of individuals and institutions are taking interest in production of compost utilizing earthworm activity.

Establishing Centre of Excellence for different crops

Centre of Excellence for Horticulture crops like fruits, vegetables and flowers are aimed at designing, manufacturing and installation of State of the art facilities be it greenhouse technology, environmental control systems, tissue culture labs, crop production modules specializes in developing Centre of Excellence for fruits, vegetables and flowers in different states of India.

Establishment of Mushroom unit

Mushrooms have been valued throughout the world as both food and medicine for thousands of years. They are a rich source of nutrition and form a major chunk of health

foods. Earlier mushroom eating was restricted to specific regions and areas of the world but due to globalization, interaction between different cultures, growing consumerism has ensured the accessibility of mushrooms in all areas. Mushrooms are increasingly gaining acceptance in different cushions and in everyday consumption. They have created a space in a common man's kitchen. Also, current trend of consumption conveys the opportunity that lies in the area of mushroom exports.

Supporting structures for vegetable production

Vegetables are excellent source of vitamins and minerals such as calcium, iron besides proteins and carbohydrates. Vegetables combat under nourishment and are known to be a cheapest source of natural protective tools.

a. Staking, trellis and propping

Though most vegetables grow on their own, plants with vining and sprawling growth or with brittle stems and heavy fruits need support. Peas, cucumbers, pole beans, tomatoes, squash, eggplants and peppers benefit from trellising, caging or staking. The trick to heavy harvests knows which vegetable support system works best for each plant. Trellising, which involves tying plant stems to vertical structures with garden twine or plant ties, allows you to fit more plants in the garden. It is the preferred support method for peas, indeterminate vine-type tomatoes, pole and runner beans, cucumbers and smaller squash varieties.

b. Pandal structure

Pandal vegetables, being short duration crops, fit very well in the intensive cropping system. It offers viable option for the growers to get increased income per unit area. It includes number of vegetables viz. bitter gourd, snake gourd, ribbed gourd, pandal avarai etc. These vegetables are grown on commercial scale and are capable of giving high yields and high economic returns to the growers. It has tremendous market potential. The cultivation of vegetables is constrained due to high initial investment cost. With the objective of enhancing area under pandal vegetables and encouraging farmers to obtain increased income, it is proposed to implement the project on "Encouraging Cultivation of Pandal Vegetables. In this situation, financial support for the establishment of pandal structures for the vegetables will increase in the area and production of pandal vegetables. Along with which the support on supply of high yielding / hybrid seed materials for cultivation will be additional assistance among the farmers to get enhanced yield per unit area.

District Horticulture information and training centre

The information center also houses a training center where all the training programmes are being imparted. This includes training under various schemes like Mission for Integrated Development of Horticulture, Micro Irrigation, Medicinal plants, Perimetro vegetable cluster development Scheme, ATMA (SSEPER) etc. The Centre would not only provide employment, but also training to agriculturists in batches on raising vegetable and horticultural crops and conduct orientation programme for Department officials.

Additionally, to augment the promotion of cut flowers and other horticulture crops cold storage facilities can also be made in the horticulture complex. The other facilities like glass house, green house for production and multiplication of ornamental plants will also be established in the training centre for demonstration purpose.

Community Seed Bank

Community Seed Banks (CSBs) are places of storage where indigenous seed varieties are conserved and managed by community members. These ex-situ conservation sites provide farmers with free and easy access to traditional seeds under the condition that a farmer returns twice the amount of seeds he or she borrowed. They not only reduce farmers' dependence on seed companies but also help conserve the agro-biodiversity of their villages. These seed banks form the cornerstone of GREEN's efforts for biodiversity conservation through community empowerment.

Establishment of Processing Units

Tamil Nadu produces nearly 110 lakh tones of vegetables and fruits but it has only 136 cold storage locations with a capacity of 2.3 lakh tonnes which is shared amongst marine, milk and agro produce. The combined capacity is small as compared to required capacity. Further it has been reported that nearly 30 per cent of the horticultural crops produced are wasted due to rotting and in the post-harvest supply chain of storage and handling. Reducing this wastage calls for conversion of value added horticultural crops, fruits and flowers. Hence, it has been programmed to establish horticultural processing unit and essential oil extraction unit.

CAPACITY BUILDING

Conducting Field Days / Shows and Farmer's mela

Regular training programmes on relevant topics for Upgradation of knowledge and skill of extension functionaries of development department and farmers are essential. Apart from this, exhibition, horticulture show, Farmers' Mela, Field Days in farmer's field and Frontline Demonstrations to demonstrate technologies are to be regularly conducted.

Capacity building of Horticultural Officers and Farmers

In service training of horticultural officers regularly would help them to update the modern technologies in production, marketing and value addition of horticultural crops including organic farming. Similarly, exposure visits to farmers to nearby districts / States and even foreign countries would help them aware and adopt new innovative technologies.

Budget

The budget requirement for fulfilling the various interventions is ₹ **122816.00 Lakhs**. The details of budget requirement for each intervention across the blocks are shown in Table 4.17.

Implementing agency

The projects will be implemented by the Department of Horticulture. The progress of the project will be monitored by the Director of Horticulture and Plantation crops and Joint Director & Deputy Director of Horticulture.

Table 4.17 Budget for horticulture development

(Rs.in lakhs)

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
A	**Production Growth**															
I	**Area expansion of fruit crops**															
1	Banana / Hill Banana sucker & Pine apple sucker	Ha	0.875	All Blocks except B1,B7,B13,B14	94	82.25	94	82.25	99	86.63	112	98	112	98	511	447.13
2	HDP in Mango, Guava, Litchi, Pomegranate	Ha	1	All Blocks	212	212	212	212	217	217	242	242	247	247	1130	1130
3	Area expansion fruits with traditional varieties	Ha	0.6	B6	1	0.6	1	0.6	1	0.6	1	0.6	1	0.6	5	3
4	Normal Planting in lime / lemons	Ha	0.6	B3,B5,B12,B13	12	7.2	12	7.2	12	7.2	17	10.2	17	10.2	70	42
5	Normal Planting in Mango	Ha	0.6	All Blocks	158	94.8	155	93	155	93	180	108	180	108	828	496.8
6	Normal planting in Guava	Ha	0.6	B1,B5,B8,B12,B13	30	18	30	18	30	18	40	24	40	24	170	102
7	Normal planting in Sapota	Ha	0.6	B3,B9,B12,B13	11	6.6	11	6.6	11	6.6	15	9	15	9	63	37.8
8	Normal planting in Amla	Ha	0.6	B5,B9	7	4.2	7	4.2	7	4.2	10	6	10	6	41	24.6
9	Normal planting in Papaya	Ha	0.6	B5,B13,B14	6	3.6	6	3.6	6	3.6	9	5.4	9	5.4	36	21.6

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
10	Normal planting in Pomegranate	Ha	0.6	B7, B13	2	1.2	2	1.2	2	1.2	2	1.2	2	1.2	10	6
11	Banana for leaf production	Ha	0.6	B2,B3,B4,B5, B6,B8,B9,B10,B11,B12	60	36	60	36	65	39	85	51	85	51	355	213
12	Commercial production of choice fruits (Kiwi, Mangoosteen, Rambutan, Fig, Date palm, Durian, Carambola, Dragon fruit,Passion Fruit, Kiwi, Grapes, Strawberry, etc.,)	Ha	1.25	B5	1	1.25	1	1.25	1	1.25	2	2.5	2	2.5	7	8.75
II	**Area expansion of vegetable crops**															
13	Brinjal	Ha	0.5	All Blocks	102	50.75	89	44.5	89	44.5	112	56	112	56	503.5	251.75
14	Bhendi	Ha	0.5	All Blocks	87	43.5	75	37.5	75	37.5	96	48	96	48	429	214.5
15	Green Chillies	Ha	0.5	All Blocks	37	18.25	37	18.25	37	18.5	41	20.5	42	20.75	192.5	96.25
16	Gourds including pumpkin and tinda	Ha	0.5	All Blocks except B4,B7,B11,B14	31	15.5	32	16	32	16	35	17.5	35	17.5	165	82.5
17	Greens	Ha	0.5	All Blocks except B2,B3,B13,B14	56	28	56	28	56	28	69	34.5	69	34.5	306	153
18	Bellary Onion	Ha	0.5	B11	1	0.25	1	0.25	1	0.25	1	0.25	1	0.25	2.5	1.25
19	Annual Moringa	Ha	0.5	B4,B5,B6	2	0.85	2	0.85	2	0.85	2	1	2	1	9.1	4.55
20	Lab Lab	Ha	0.5	B8	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	5	2.5

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
21	Radish	Ha	0.5	B12	5	2.5	5	2.5	5	2.5	5	2.5	5	2.5	25	12.5
22	Melons	Ha	0.5	B3,B4,B5,B6,B8, B9,B10,B12	122	61	122	61	122	61	133	66.5	133	66.5	632	316
23	Cluster bean	Ha	0.5	B3,B12	8	4	8	4	8	4	8	4	8	4	40	20
24	Tapioca	Ha	0.5	B4,B9	35	17.5	35	17.5	35	17.5	45	22.5	45	22.5	195	97.5
25	Yams and colacassia	Ha	0.5	B11	2	1	2	1	2	1	2	1	2	1	10	5
26	Sweet potato	Ha	0.5	B4	5	2.5	5	2.5	5	2.5	6	3	6	3	27	13.5
27	Commercial production of choice vegetables (Bread fruit, Brussels sprout, Brocolli, Spring Onion, KnolKhol, Turnip, Winged Bean, Butter Bean, Chinese Cabbage, Lettuce, Leek, Porum, etc.,	Ha	0.5	B5	2	1	2	1	2	1	2	1	2	1	10	5
III	**Area expansion of Medicinal and Aromatic plants**															
28	Ocimum	Ha	0.3586	B1,B2,B3,B4,B5, B8,B9,B12	14	4.84	14	4.84	14	4.84	15	5.38	15	5.38	70.5	25.28
29	Solanumnigrum	Ha	0.2989	B8	1	0.3	1	0.3	1	0.3	1	0.3	1	0.3	5	1.49
30	Vettiver	Ha	0.3	B6	1	0.3	1	0.3	1	0.3	1	0.3	1	0.3	5	1.5
IV	**Area expansion of Spices crops**															

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
31	Seed and Rhizomatic spices (Coriander, Turmeric, Ginger, Dry Chilly, Cumin, Fennel, Fenugreek, Dil, Cardamom etc.,)	Ha	0.3	All Blocks	108	32.25	69	20.7	69	20.7	74	22.2	74	22.2	393.5	118.05
32	Perennial spices (Pepper, Curry leaf, All spice, Cinnamon, Clove, Tamarind, Nut meg etc.,)	Ha	0.5	B3	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	5	2.5
V	**Area expansion of Flower crops**															
33	Loose flowers - Jasminumsp, Crossandra, Marigold, Rose, Chrysanthemum, Nerium, Torenia	Ha	0.4	All Blocks	121	48.4	121	48.4	121	48.4	159	63.6	159	63.6	681	272.4
34	Bulbous flowers - Tube rose, Gladioli, Dahlia, Bird of paradise, Heliconia, Tulip	Ha	1.5	B3,B7,B8,B9, B11,B12,B13, B14	45	67.5	43	64.5	46	69	49	73.5	49	73.5	232	348
VI	**Area expansion /Gap filling of Plantation crops**															
35	Cashew	Ha	0.5	B4,B5,B6,B1 1,B14	11	5.5	11	5.5	11	5.5	13	6.5	13	6.5	59	29.5
VII	**Rejuvenation/INM-IPM/Mulching/Anti**															

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
	bird net															
36	Mango/Cashew – Rejuvenation	Ha	0.4	All Blocks	209	83.6	209	83.6	209	83.6	244	97.6	244	97.6	1115	446
37	INM/IPM for Horticultural crops	Ha	0.04	All Blocks	235	9.4	235	9.4	235	9.4	235	9.4	235	9.4	1175	47
38	Mulching	Ha	0.32	B7,B13	10	3.2	22	7.04	22	7.04	22	7.04	22	7.04	98	31.36
VIII	**Pollination Support through Bee Keeping**															
IX	**Organic Farming**															
39	Organic farming and PGS certification in 50 acre cluster	1 cluster	14.95	B7,B12	11	164.45	0	0	0	0	0	0	0	0	11	164.45
40	HDPE Vermibed	No	0.16	All Blocks	68	10.88	68	10.88	68	10.88	68	10.88	68	10.88	340	54.4
X	**Rainfed Area development**															
41	Green manuring	Ha	0.04	All Blocks	160	6.4	160	6.4	160	6.4	160	6.4	160	6.4	800	32
42	Moisture stress management - Minimum irrigation gurantee by PUSA hydrogel	Ha	0.1	All Blocks	110	11	110	11	110	11	110	11	110	11	550	55
B	**Infra structures and Assets creation**															

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
1	Poly Green House	1000 Sq.m	9.35	B6,B9,B13	7	60.78	6	56.1	5	42.08	4	37.4	3	28.05	24	224.4
2	Shade net	1000 Sq.m	7.1	B6,B9,B11,B13	9500	67450	1500	10650	2000	14200	1500	10650	1500	10650	16000	113600
II	**Mushroom production**															
1	Cottage mushroom unit	1 No.	1	B4	0	0	1	1	1	1	1	1	0	0	3	3
III	**Vermicompost unit**															
1	Permanent Vermicompost Unit	600 cu.ft	1	All Blocks	66	66	66	66	66	66	66	66	66	66	330	330
IV	**Supporting structures for Horticulture crop production**															
1	Staking/ Trellies/ Propping	Ha	1	B2,B3,B5,B6,B8, B10,B12	34	34	34	34	34	34	39	39	39	39	180	180
2	Permanent Pandhal structure	Ha	4	All Blocks except B1,B6,B10	22	88	22	88	22	88	22	88	22	88	110	440
V	**District Horticulture information and training centre**															
VI	**Community seed bank**															

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
C	**Special interventions**															
1	Promotion of Roof top Garden/ Potager garden Kit	No	0.005	All Blocks	700	3.5	700	3.5	700	3.5	1400	7	1400	7	4900	24.5
2	Promotion of Roof top Garden/ Potager garden Kit with shadenet	No	0.0735	All Blocks	140	10.29	140	10.29	140	10.29	210	15.44	210	15.44	840	61.74
3	Banana Bunch Sleeve	Ha	0.25	All Blocks except B1,B4,B7,B11,B13,B14	8	2	8	2	8	2	8	2	8	2	40	10
4	AESA based IPM in fruits and vegetables Pheramone trap	Ha	0.04	All Blocks	0	0	210	8.4	280	11.2	350	14	420	16.8	1260	50.4
5	AESA Based IPM in fruits and vegetables Yellow sticky trap	Ha	0.04	All Blocks	0	0	210	8.4	280	11.2	350	14	420	16.8	1260	50.4
6	AESA Based IPM in fruits and vegetables Light trap	Ha	0.08	All Blocks	70	5.6	70	5.6	70	5.6	70	5.6	70	5.6	350	28
D	**Post Harvest Management**															
1	Pre cooling unit 6 mt	1 No	25	B1	1	25	0	0	0	0	0	0	0	0	1	25
2	Cold storage unit 3000 mt	1 No	400	B6	1	400	0	0	0	0	0	0	0	0	1	400
3	Collection centre	1 No	15	All Blocks except B11,B13,B14	11	165	0	0	0	0	0	0	0	0	11	165

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
E	**Development of Farms, Nurseries and Parks**															
1	Developmental activities in new/ exsisting state Horticultural farm, Keelapalur	No	25	B4	0	0	1	25	1	25	0	0	0	0	2	50
F	**Mechanization - Machineries, Equipments & Tools**															
1	Land development, tillage and seed bed preparation equipments	Nos	0.3	All Blocks	14	4.2	14	4.2	14	4.2	28	8.4	28	8.4	98	29.4
2	Manual Sprayer-Knapsack/Foot operated Sprayer	Nos	0.12	B13	3	0.36	3	0.36	3	0.36	3	0.36	3	0.36	15	1.8
3	Tractor Mounted / Operated Sprayer (Below 20HP)	Nos	0.2	B4,B11	3	0.6	3	0.6	3	0.6	3	0.6	3	0.6	15	3
	Fruit Plucker, Tree pruners, Fruit Harvester, Fruit Graders, Track Trolley, Nursery Media Filling Machine, Power operated horticulture tools for	No	2.5	All Blocks	14	35	14	35	14	35	14	35	14	35	70	175

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
	pruning, budding, grating, shearing etc.															
4	Power operated sprayer	Nos	0.05	All Blocks	140	7	140	7	140	7	210	10.5	210	10.5	840	42
5	Plastic crates for vegetable & fruits handling	No of sets containing 10 crates	0.075	All Blocks	140	10.5	140	10.5	140	10.5	210	15.75	210	15.75	840	63
G	**Water / Irrigation Management**															
1	Micro Irrigation - Drip	Ha	1.12	All Blocks	178	199.36	168	188.16	169	189.28	183	204.96	181	202.72	879	984.48
2	Sprinkler	No	0.195	B6	10	1.95	10	1.95	10	1.95	10	1.95	10	1.95	50	9.75
H	**Capacity Building**															
1	Training to farmers within the State. 2 days Rs.1000/farmer/day	No	0.02	All Blocks	700	14	700	14	700	14	700	14	700	14	3500	70
2	Training to farmers outside the state. 30 farmers/Batch	No	0.105	All Blocks	15	1.58	15	1.58	14	1.47	14	1.47	14	1.47	72	7.56
3	Exposure visit to farmers for 5 days. Rs.1000/farmer/day	No	0.05	All Blocks	140	7	140	7	140	7	140	7	140	7	700	35
4	Exposure visit of farmers outside India	No	4	All Blocks	15	60	15	60	14	56	14	56	14	56	72	288
5	Training to staff outside the state / Batch of 5 members	No	0.04	All Blocks	14	0.56	14	0.56	14	0.56	14	0.56	14	0.56	70	2.8

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
6	Computerization & governance	No	1	B1	0	0	0	0	1	1	1	1	1	1	3	3
7	Publicity and Documentation	No	0.5	All Blocks	17	8.5	0	0	0	0	0	0	0	0	17	8.5
I	**Crop Insurance and Risk Mitigating schemes**															
1	Crop Insurance	Ha	0.025	All Blocks except B6,B7,B13,B14	97	2.43	97	2.43	97	2.43	112	2.8	112	2.8	515	12.88
	Grand Total					**69826.52**		**12266.23**		**15822.95**		**12451.03**		**12449.29**		**122816**

4.3 AGRICULTRUAL ENGINEERING

Agricultural mechanization is the process whereby equipments, machineries and implements are utilized to boost agricultural and food production. It is the application of machineries, equipments and implements in the day to day farm activities to increase marginal output in food production and poverty eradication. It increases productivity of land and labour by meeting timeliness of farm operations and increase work out-put per unit time. Besides its paramount contribution to the multiple cropping and diversification of agriculture, mechanization also enables efficient utilisation of inputs such as seeds, fertilisers and irrigation water. The agricultural mechanization is the only way out to face the challenge of farm worker's shortage. Thus the ultimate objective of Agricultural Mechanization Strategies in developing countries is to help increase the welfare of farm households and create positive dynamics and opportunities for economic growth in rural areas.

Strategies

- Promotion and strengthening of Agricultural Mechanization through training, Testing and Demonstration in order to ensure performance testing of agricultural machinery and equipment, capacity building of farmers and end users and promoting farm mechanization through demonstrations.
- Demonstration, Training and Distribution of post-harvest Technology and Management (PHTM) to popularize the technology for primary processing, value addition, low cost scientific storage/transport and the crop by-product management through demonstrations, capacity building of farmers and end users. Provides financial assistance for establishing PHT units.
- Promotion of ownership to small and marginal farmers for various agricultural machinery and equipments such as Tractors, Power tillers, Rice transplanter, Self-propelled machinery, Tractor/Power tiller drawn equipments (MB Plough, Disc plough, Cultivator, Harrow, Leveller Blade, Ridger, Laser Land Leveller, Reversible Mechanical Plough, Rotavator, Rotopuddler, Reversible Hydraulic Plough, Post hole digger, Reaper, Seed driller, Balers, Coconut thrash cutter, coconut frond chopper, Multi crop thresher, Paddy thresher, Brush cutter, Chaff cutter, Drum Seeder) and Plant protection equipments .
- Provision of suitable financial assistance to establish farm machinery banks for custom hiring for appropriate locations and crops

- Establishment of hi-tech machinery hubs for high value crops like sugarcane, cotton etc.
- Promotion of appropriate technologies and to set up farm machinery banks in identified villages
- Provision of financial assistance on per hectare basis to the beneficiaries hiring machinery/equipments from custom hiring centres
- Increases the tractor hire services in the farms of small and marginal farmers
- Strengthening of Minor irrigation for the rainfed and hard rock areas. It would establish through construction of open well, tube wells and Bore wells. Revitalisation of wells by side boring and blasting in hard rock areas.
- Introduction of renewable energy in the villages which would replace other fuels. Also attractive for water pumping applications in remote areas. Hence solar operated photovoltaic water pumping system provides better sustainable alternative option to fulfill irrigation requirement of agriculture.
- Provision of components such as High tech Earth excavator, Poly Green House with Fogging facility, Vermi Compost unit with packing accessories, Farm pond / Fish pond, Farmers kit (Crow bar, Hand hoe, rose can, pruning siccature, coconut dehusker, trolley etc.,), Land levelling, Pipe laying, Stening wall, Well deepening, Replacement of old Pumpsets, Infrastructure like packing unit, godown, cattle shed and Threshing floor, Publicity and propaganda for farm mechanization in AED, Special Training for Coconut Growers, Special Training for Coconut Tree Climbing, J C B, Mini Drill, Compartmental Bund Formation, Farm Ponds, Community Bore wells, Deepening of Open Wells, Renovation of MI Tanks, Check Dam, Percolation Pond, Recharge Shaft, Summer Ploughing, PVP pipe laying, Replacement of Submersible Motors pump sets, Telescopic Pruner, Motorized Rubber Roller, Trays for Paddy Nursery Raising, Combine Harvester, Diesel Pump, Rotary Tiller, Smoke House, Mist Blower, Tea Harvester, Construction of LD & MI Repair Shed and Construction of Training Centre for farmers with furniture and accessories at the department of Agricultural engineering
- Strengthening of communication and information facilities in order to disseminate the information in rural areas
- Awareness to be created towards the usage of Sugarcane infielder, Bird scarer, Mechanized row crop cultivation and Modernization of tractor workshop which indirectly increase the production.

- Promotion of agro-processing and management machinery at community level through supply of post-harvest machinery such as self-propelled/other driven horticultural machinery (Chain saw/ wheel barrow/ Mango grader/ planter and other suitable self-propelled machineries and equipments), Manual horticultural equipments (Aluminium ladder/ Ladder, Aluminium pole, Plucker), Post-harvest equipments for grains, oil seeds and Horticultural crops (Mini Rice mill, Mini Dhall mill, Millet Mill, Oil mill with filters, Extractor, pomegranate air extractor, Custard apple pulper, Dehydration unit, Pricking Machine, Humidifier, Packing machine, power driven dehusker, thresher, Harvester, De-spiking, Deconing, Peeler, Splitter, Stripper, Boiler, Steamer, Dryer solar, Washing Machine, Grinder, Pulveriser, Polisher, Cleaner cum grader, gradient separator, Specific gravity separator) this would make sure that more value is added to farm outputs locally
- Promotion of Bio-mass gasifier unit which hold huge potential technology for decentralized electricity generation in rural villages. Biomass is a CO2 neutral fuel and, therefore, unlike fossil fuels such as diesel does not contribute to net CO2 emissions, which makes biomass based power generation systems an attractive option in mitigating the adverse effects of climate change.
- Establishment of Agricultural Engineering Extension centres in order to collect information related to Government subsidy on agricultural / machineries / equipment / irrigation systems etc., compilation of latest technologies related to Agricultural Engineering and Development of video cassettes library related to Processing of agricultural products, Working of important agricultural machines and equipment and Repair, maintenance and proper setting of the different agricultural Machines / and equipment
- Promotion of training to AED engineers on post-harvest techniques and bio energy
- Rehabilitation of irrigation network to bring water directly to the root zone of the crop, improve application and conveyance efficiency, thereby reduce the wastage of water due to flood irrigation.
- Prevention of sea water intrusion through construction of subsurface dyke, Village Pond / Community Pond, Farm Pond, Recharge shaft and Weir/Bed Dam.
- Reclamation of problem soils which needs special management for satisfactory crop production. Physical limitations can be managed by irrigation, drainage, mulching, manuring, tillage, and soil conservation measures such as terracing, contouring, and cover crops whichever is appropriate.

Expected outcome

Implementation of the above strategies such as supply of farm implements to carry out mechanised cultivation operations and demonstration to farmers the advantage of using Agricultural implements and machinery would increase the production and productivity. Post- Harvest Technologies to farmers would prevent loss of food grains during harvest and storage and Preserve the quality of produce in respect of perishable commodities. Disseminated technologies on renewable energies, in particular, solar energy for agricultural activities in respect of pumping with solar powered pumps, drying farm produce for enhancement of quality to fetch reasonable market price.

Budget

Agriculture continues to be the most predominant sector of this district economy, as 70 percent of the population is engaged in Agriculture and allied activities for their livelihood. Agricultural Mechanization could provide the stability in agricultural production in a sustainable manner to meet the food requirement of growing population and also to meet the raw material needs of agro based industries, thereby providing employment opportunities to the rural population**.** The projects will be implemented with a budget outlay of **Rs. 16550.15 Lakhs**

Implementing agency

The projects will be implemented by the Department of Agricultural Engineering. The progress of the project will be monitored by the Chief Engineer and the Executive Engineer.

Table 4.18 Budget requirement for Agricultural Engineering

(₹ in lakhs)

Sl. No	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Capacity Building															
1	Demonstration of Agricultural Machinery	All Blocks	No's/Ha	0.04	18	0.72	18	0.72	18	0.72	18	0.72	18	0.72	90	3.60
2	Training of farmers	All Blocks	No's/Ha	0.04	15	0.60	15	0.60	15	0.60	15	0.60	15	0.60	75	3.00
3	Training of Rural Youth in workshops	All Blocks	No's/Ha	0.04	12	0.48	12	0.48	12	0.48	12	0.48	12	0.48	60	2.40
4	Demonstration of Post-Harvest Technologies	All Blocks	No's/Ha	0.04	10	0.40	10	0.40	10	0.40	10	0.40	10	0.40	50	2.00
	Tractors															
5	Tractor (15-20 PTO HP)	All Blocks	No's/Ha	4	20	80.00	20	**80.00**	20	80.00	20	80.00	20	80.00	100	400.00
6	Tractor (Above 20-40 PTO HP)	All Blocks	No's/Ha	6	60	360.00	60	360.00	60	360.00	60	360.00	60	360.00	300	1800.00
7	Tractor (40-70 PTO HP)	All Blocks	No's/Ha	8.5	100	850.00	100	850.00	100	850.00	100	850.00	100	850.00	500	4250.00
	Power Tillers															
8	Power Tiller (below 8 BHP)	All Blocks	No's/Ha	1	5	5.00	5	5.00	5	5.00	5	5.00	5	5.00	25	25.00
9	Power Tiller (8 BHP & above)	All Blocks	No's/Ha	1.75	30	52.50	30	52.50	30	52.50	30	52.50	30	52.50	150	262.50

Sl. No	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Rice Transplanter															
10	Self Propelled Rice Transplanter (4 rows)	All Blocks	No's/Ha	2.5	12	30.00	12	30.00	12	30.00	12	30.00	12	30.00	60	150.00
11	Self Propelled Rice Transplanter (Above 4-8 rows)	All Blocks	No's/Ha	16	15	240.00	15	240.00	15	240.00	15	240.00	15	240.00	75	1200.00
	Self Propelled Machinery															
12	Reaper cum Binder	All Blocks	No's/Ha	3	10	30.00	10	30.00	10	30.00	10	30.00	10	30.00	50	150.00
	Specialized Self Propelled Machinery															
13	Reaper	All Blocks	No's/Ha	1.1	10	11.00	10	11.00	10	11.00	10	11.00	10	11.00	50	55.00
14	Post Hole Digger / Augur	All Blocks	No's/Ha	0.63	15	9.45	15	9.45	15	9.45	15	9.45	15	9.45	75	47.25
	Tractor/Power Tiller (below 20 BHP) driven equipments															
	a. Land Development, tillage and seed bed preparation equipments															
15	Laser Land Leveller	All Blocks	No's/Ha	3.4	3	10.20	3	10.20	3	10.20	3	10.20	3	10.20	15	51.00
16	Rotavator	All Blocks	No's/Ha	0.35	50	17.50	50	17.50	50	17.50	50	17.50	50	17.50	250	87.50

Sl. No	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	b. Sowing Planting, Reaping and Digging Equipments:															
17	Zero till seed cum fertilizer drill	All Blocks	No's/Ha	0.5	3	1.50	3	1.50	3	1.50	3	1.50	3	1.50	15	7.50
	c. IntercultivationEquipments															
18	Power Weeder (engine operated below 2 BHP)	All Blocks	No's/Ha	0.25	5	1.25	5	1.25	5	1.25	5	1.25	5	1.25	25	6.25
19	Brush Cutter	All Blocks	No's/Ha	0.25	20	5.00	20	5.00	20	5.00	20	5.00	20	5.00	100	25.00
20	f. Chaff Cutter (Operated by engine / electric motor below 3 hp and by power tiller and tractor of below 20 BHP tractor)	All Blocks	No's/Ha	0.25	10	2.50	10	2.50	10	2.50	10	2.50	10	2.50	50	12.50
	Tractor (above 20-35 BHP) driven equipments															
21	Cultivator	All Blocks	No's/Ha	0.25	15	3.75	15	3.75	15	3.75	15	3.75	15	3.75	75	18.75
22	Rotavator	All Blocks	No's/Ha	0.8	30	24.00	30	24.00	30	24.00	30	24.00	30	24.00	150	120.00
	b. Sowing, Planting, Reaping and Digging Equipments															

Sl. No	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
23	Post Hole digger	All Blocks	No's/Ha	0.9	5	4.50	5	4.50	5	4.50	5	4.50	5	4.50	25	22.50
24	Tractor drawn reaper	All Blocks	No's/Ha	1.1	10	11.00	10	11.00	10	11.00	10	11.00	10	11.00	50	55.00
	c.Inter Cultivation Equipments															
25	Power Weeder (engine operated above 2 BHP)	All Blocks	No's/Ha	0.7	30	21.00	30	21.00	30	21.00	30	21.00	30	21.00	150	105.00
	d. Equipments for Residue management/Hay and Forage Equipments															
26	Balers	All Blocks	No's/Ha	3	10	30.00	10	30.00	10	30.00	10	30.00	10	30.00	50	150.00
	e.Harvesting& Threshing Equipments															
27	Brush Cutter	All Blocks	No's/Ha	0.3	10	3.00	10	3.00	10	3.00	10	3.00	10	3.00	50	15.00
	f.Chaff Cutter (Operated by engine / electric motor above 3-5 hp and by power tiller and tractor of below 35 BHP tractor)	All Blocks	No's/Ha	0.4	2	0.80	2	0.80	2	0.80	2	0.80	2	0.80	10	4.00
28	Cultivator	All Blocks	No's/Ha	0.3	10	3.00	10	3.00	10	3.00	10	3.00	10	3.00	50	15.00
29	Rotavator	All Blocks	No's/Ha	0.95	200	190.00	200	190.00	200	190.00	200	190.00	200	190.00	1000	950.00

Sl. No	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	b. Sowing Planting, Reaping and Digging Equipments:															
30	Tractor drawn reaper	All Blocks	No's/Ha	1.25	10	12.50	10	12.50	10	12.50	10	12.50	10	12.50	50	62.50
31	Post Hole digger	All Blocks	No's/Ha	1.05	3	3.15	3	3.15	3	3.15	3	3.15	3	3.15	15	15.75
32	Automatic Rice Nursery Sowing Machine	All Blocks	No's/Ha	2.5	15	37.50	15	37.50	15	37.50	15	37.50	15	37.50	75	187.50
	d.Harvesting& Threshing Equipments															
33	Balers (Round)	All Blocks	No's/Ha	3.5	2	7.00	2	7.00	2	7.00	2	7.00	2	7.00	10	35.00
	All Manual/animal drawn equipment/implements / Tools															
34	Drum Seeder (Below 4 Row)	All Blocks	No's/Ha	0.1	10	1.00	10	1.00	10	1.00	10	1.00	10	1.00	50	5.00
35	Drum Seeder (Above 4 Row)	All Blocks	No's/Ha	0.15	10	1.50	10	1.50	10	1.50	10	1.50	10	1.50	50	7.50
	Plant protection equipments															
36	Manual sprayer: Knapsack/foot operated sprayer	All Blocks	No's/Ha	0.015	20	0.30	20	0.30	20	0.30	20	0.30	20	0.30	100	1.50

Sl. No	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
37	Powered Knapsack Sprayer/Power operated Taiwan sprayer (capacity 8-12 lts)	All Blocks	No's/Ha	0.06	30	1.80	30	1.80	30	1.80	30	1.80	30	1.80	150	9.00
38	Powered Knapsack Sprayer/Power operated Taiwan sprayer (capacity above 12-16 lts)	All Blocks	No's/Ha	0.08	30	2.40	30	2.40	30	2.40	30	2.40	30	2.40	150	12.00
39	Powered Knapsack Sprayer/Power operated Taiwan sprayer (capacity above 16 lts)	All Blocks	No's/Ha	0.1	30	3.00	30	3.00	30	3.00	30	3.00	30	3.00	150	15.00
40	Establishment of Hi-Tech, High Productive Equipment Hub for Custom Hiring	All blocks except B7, B1 &B9	No's/Ha	112	1	112.00	1	112.00	1	112.00	1	112.00	1	112.00	5	560.00
41	Promotion of Farm Mechanization in Selected Villages	All blocks except B10, B1 &B9	No's/Ha	11.5	3	34.50	3	34.50	3	34.50	3	34.50	3	34.50	15	172.50
	Tractor Hiring Scheme															
42	Purchase of Tractors for AED	All Blocks	No's/Ha	8	3	24.00	3	24.00	3	24.00	3	24.00	3	24.00	15	120.00
43	Purchase of Tractor drawn implemnets for AED	All Blocks	No's/Ha	0.5	3	1.50	3	1.50	3	1.50	3	1.50	3	1.50	15	7.50

Sl. No	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
44	Purchase of Bull Dozers for AED	All Blocks	No's/Ha	80	2	160.00	2	160.00	2	160.00	2	160.00	2	160.00	10	800.00
45	Purchase of Paddy Transplanter for AED		No's/Ha	18												
46	Purchase of Paddy combine Harvester for AED	B14 & B2	No's/Ha	17	1	17.00	0	0.00	0	0.00	0	0.00	1	17.00	2	34.00
	Solar Energy															
47	**5 hp**	All Blocks	No's/Ha	3.75	50	187.50	50	187.50	50	187.50	50	187.50	50	187.50	250	937.50
48	**7.5 hp**	All Blocks	No's/Ha	5.3	50	265.00	50	265.00	50	265.00	50	265.00	50	265.00	250	1325.00
49	**10 hp**	All Blocks	No's/Ha	6.75	50	337.50	50	337.50	50	337.50	50	337.50	50	337.50	250	1687.50
50	**upto 400sq.ft**	All Blocks	No's/Ha	4.25	2	8.50	2	8.50	2	8.50	2	8.50	2	8.50	10	42.50
	Information Technology (IT) related items															
51	Computer & its accessories	B14 & B2	No's/Ha	0.8	0	0.00	5	4.00	0	0.00	0	0.00	4	3.20	9	7.20
52	Tablet (Tab)	B14 & B2	No's/Ha	0.25	0	0.00	2	0.50	0	0.00	0	0.00	0	0.00	2	0.50
53	Xerox machine	B14 & B2	No's/Ha	1.5	0	0.00	4	6.00	0	0.00	0	0.00	0	0.00	4	6.00
	Modernisation of Tractor workshops of AED															
54	Chain saw/ Wheel barrow/ Mango	All Blocks	No's/Ha	1	0	0.00	15	15.00	0	0.00	15	15.00	15	15.00	45	45.00

Sl. No	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	grader/ planter and other suitable self propelled machineries and equipments for horticulture Crops															
	Manual Horticultural Equipments															
55	Aluminium Ladder/ Ladder	All Blocks	No's/Ha	0.2	0	0.00	10	2.00	0	0.00	0	0.00	0	0.00	10	2.00
56	Aluminium pole	B14 & B2	No's/Ha	0.03	0	0.00	5	0.15	0	0.00	0	0.00	0	0.00	5	0.15
57	Plucker	All Blocks	No's/Ha	0.02	0	0.00	10	0.20	0	0.00	0	0.00	0	0.00	10	0.20
	Post Harvest Equipments for food grains, oil seeds and Horticultural Equipments															
58	Mini Rice Mill	B14	No's/Ha	1.5	0	0.00	0	0.00	1	1.50	0	0.00	0	0.00	1	1.50
59	Mini Dal Mill	B14	No's/Ha	1.7	0	0.00	0	0.00	1	1.70	0	0.00	0	0.00	1	1.70
60	Millet Mill	B14	No's/Ha	1.5	0	0.00	0	0.00	1	1.50	0	0.00	0	0.00	1	1.50
61	Oil mill with filter press (for all type of Horticulture / Food grain / Oil seeds crop)	B14	No's/Ha	1.2	0	0.00	0	0.00	1	1.20	0	0.00	0	0.00	1	1.20
62	Packing Machines (for all types of Horticulture / Food	B14	No's/Ha	3	0	0.00	0	0.00	3	9.00	0	0.00	0	0.00	3	9.00

Sl. No	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	grain / Oil seeds crop)															
63	All types of Power driven Dehusker/ sheller/ Threshers/ Harvesters/ De-spiking/ Deconing Machine/ Peeler/ Splitter/ Stripper (for all type of Horticulture / Food grain / Oil seeds crop)	All Blocks	No's/Ha	1.2	0	0.00	10	12.00	10	12.00	10	12.00	10	12.00	40	48.00
64	All types of Boiler/ Steamer/ Dryer solar (for all type of Horticulture / Food grain / Oil seeds crop)	All Blocks	No's/Ha	2	0	0.00	15	30.00	15	30.00	10	20.00	15	30.00	55	110.00
65	All types of Washing Machines (for all type of Horticulture / Food grain / Oil seed crop)	All Blocks	No's/Ha	1.5	0	0.00	2	3.00	2	3.00	5	7.50	5	7.50	14	21.00
66	All types of Grinder/ Pulveriser/ Polisher (for all type of Horticulture / Food grain / Oil seed crop)	All Blocks	No's/Ha	0.3	0	0.00	4	1.20	4	1.20	4	1.20	8	2.40	20	6.00
67	All types of Cleaner cum grader/ Gradient separator/ Specific gravity separator (for all types of Horticulture / Food	All Blocks	No's/Ha	0.75	0	0.00	10	7.50	10	7.50	10	7.50	6	4.50	36	27.00

Sl. No	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	grain / Oil seed crop)															
68	Bio- mass gasifier	B14 & B2	No's/Ha	1.2	0	0.00	3	3.60	0	0.00	0	0.00	0	0.00	3	3.60
69	Construction of Agricultural Engineering Extension centres (AEECs)	B14 & B2	No's/Ha	75	0	0.00	1	75.00	0	0.00	0	0.00	2	150.00	3	225.00
70	Training of AED Engineers on " Agricultural Processing" and " Bio- Energy"	All Blocks	No's/Ha	0.04	0	0.00	3	0.12	3	0.12	3	0.12	6	0.24	15	0.60
	Total					**3216.80**		**3360.07**		**3268.52**		**3263.12**		**3441.64**		**16550.15**

Ambathur - B1, Ellapuram - B2, Gummidipoondi - B3, Kadambathur - B4, Minjur - B5, Pallipet - B6, Ponnamallee - B7, Poondi - B8, Puzhal - B9, R.K.Pet - B10, Sholavaram - B11, Thiruvalangadu - B12, Tiruttani - B13, Tiruvallur - B14

4.4 AGRICULTURAL MARKETING

The Government is taking every effort to attain sustainable agricultural development by transforming agriculture into a commercial venture, by switching over to new scientific methods of cultivation so as to increase the productivity manifold. Besides, through value addition, processing and utilization of marketing opportunities, the marketing of such incremental output can be ensured. To further improve the marketing opportunities and to reduce the loss of agricultural produces, several measures have to be taken up by way of interventions like strengthening of shandies, construction of storage godown, provision of market accessories and capacity building of farmers.

The core problem however in Agribusiness development is the general failure in coordinating the decisions of the private stakeholder's *viz.,* farmers, traders and agricultural processors and service providers by the government and non-governmental sectors. In fact farmers fail to link themselves through effective producer-organizations to undertake joint decisions in production and marketing as well. Such weak linkages also due to limited access to relevant market intelligence and inadequate market infrastructure. Farmers are also poorly linked to research and extension providers to address their specific technology and knowledge needs that would enable them into high-value production systems.

Enterprisers also have weak linkages with the farmers through contracts and vertical integration arrangements and are away from consumers because of absence of organized retail chains. Linkage with service providers are characterized by lack of confidence, particularly in the case of research and extension organizations. The inadequacy in certification, quality assurance systems and inadequate infrastructure continues to limit the integration of production and international markets.

Service providers also fail to link with each other. Links between State and Central Agencies are also often limited. Service providers from the public sector are often unable to provide effective service due to lack of funding. Most NGOs are not used to work in the field of enterprises development and their presence in the agricultural sector is marginal. On the other hand, service providers from the private sectors are emerging and have to fulfill the aspirations of small and marginal enterprises or producer groups.

So, to accelerate the growth substantially, a new way of linking of Agribusiness development and promoting Agribusiness is needed. Promotion of commodity groups,

farmer producer agencies, marketing organization and market linkage, encouraging of private players in marketing, value addition, more infrastructural facilities for processing and sensitizing the farmers for market-led agriculture by rendering crop advisory and market information are needed. Agri-business also contributes to the production of higher-value products and diversification away from the staple foods. Through this diversification and the development of the value chain between producers and consumers, the rural economy benefits from innovation and the creation of non-farm employment.

Strategies

Paddy and pulses are being cultivated in larger extent in Tiruvallur district. Farmers can get more profit on value added products rather than selling them as raw products. More than 100 value added products is available in paddy itself. Farmers should get more awareness about the value added products from paddy and pulses and its importance in making high profit out of their produce. Thereby farmers can become an entrepreneur. Motivating farmers to produce value added products and thereby to get remunerative price for the farming community quality produce to the consumers with reasonable cost.

Components

- Promotion of commodity groups and market information in Ambathur
- Promotion of cold Storage for commodity groups in Gummidipoondi, Kadabathur, Palipet, Ponnamallee, Poondi, Puzhal, R.K.Pet
- Construction of drying yards in all blocks
- Upgradation of rural shandies and Uzhavar shandies in Ambathur and Palipet
- Strengthening of Regulated Markets in Ambathur, Ellapuram and Ponnamalee
- Formation of Farmer Producer Organizations (FPO) in all blocks except Ambathur, Ellapuram and Tiruvallur.
- Storage godown in all blocks
- Groundnut decorticator in all blocks except Ambathur, Ellapuram and Ponnamalee, Poondi, Thiruvalangadu and Tiruvallur.
- Trader shop in Ambathur

- Exposure visit (within state & outside state) for commodity group farmers to acquire value addition technologies in all blocks.

Budget

It is proposed to incur **₹ 5785.89 lakh** over a period of five years**.**

Expected Outcome

The interventions will promote entrepreneurs by organizing trainings and exposure visits. Farmers are facilitated to use drying yards and cold storage to market good quality graded products. It will also avoid distress sale by storing their agricultural produce. It helps them to get loans during storage period and sell it when the market price is high. This will strengthen the economic condition of the farmers as well as habituate them for grading, drying, sorting and storing.

Implementing Agency

Agricultural Marketing and Agri Business Department will implement the programs. The progress of the projects will be monitored by the Commissioner of Agricultural Marketing and Agribusiness and Deputy Director of Agricultural Marketing.

Table 4.19 Budget for strengthening of Agricultural Marketing and Agri-Business in Thiruvallur District **(₹. in lakhs)**

Sl. No	Intervention	Unit	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Promotion of Commodity Groups and Market Information															
1	e-learning Centre		70	B1	0	0.00	1	70.00	0	0.00	0	0.00	0	0.00	1	70.00
	Strengthening of UzhavarSandhai and Regulated Market															
2	Cold Storage		35	B3, B4, B6, B7, B8, B9, B10	1	35.00	6	210.00	0	0.00	1	35.00	0	0.00	8	280.00
3	Drying Yard		4	All Blocks	73	292.00	71	284.00	70	280.00	68	272.00	67	268.00	349	1396.00
4	Storage godown		10, 18, 60	All Blocks	25	340.00	24	422.00	18	330.00	14	140.00	14	140.00	95	1372.00
5	Ticker Board and External Electrification		1	B1, B2, B7, B10,B12, B14	6	6.00	0	0.00	0	0.00	0	0.00	0	0.00	6	6.00
6	Platform Balance		0.12	B1, B2, B7, B10, B12, B14	9	1.08	0	0.00	0	0.00	0	0.00	0	0.00	9	1.08
7	Drinking Water Facility			B1, B2, B7, B12, B14	0	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	100.00
8	Price Display Board		0.0025	B1, B2, B7, B10, B12, B14	246	0.62	0	0.00	0	0.00	0	0.00	0	0.00	246	0.62
9	Strengthening of RM		2.5	B1, B2, B7, B10, B12, B14	6	15.00	0	0.00	0	0.00	0	0.00	0	0.00	6	15.00
10	Structures for Rural Market		120	B7, B10	4	480.00	0	0.00	0	0.00	0	0.00	0	0.00	4	480.00
11	Traders shop		16	B1	6	96.00	7	112.00	6	96.00	1	16.00	1	16.00	21	336.00
12	Up gradation of UzhavarShadhais		60	B1, B6	0	0.00	1	60.00	0	0.00	0	0.00	0	0.00	1	60.00
	Formation of FPO / Strengthening of Existing Commodity Groups															

Sl. No	Intervention	Unit	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
13	FPO		43.01	All Blocks except B1, B2, B14	8	344.08	7	301.07	10	430.10	0	0.00	2	86.02	27	1161.27
	Provision of Market Access and Market Activities															
14	Dunnage		0.04	All Blocks	730	29.20	420	16.80	415	16.60	385	15.40	405	16.20	2355	94.20
15	Wheing balance(300Kg)		5.5	B7, B10, B13	0	0.00	16.5	90.75	0	0.00	0	0.00	0	0.00	16.5	90.75
16	Electronic Digital Weighing Scale - 5 Kg		0.05	B1, B2, B12, B14	246	12.30	0	0.00	0	0.00	0	0.00	0	0.00	246	12.30
17	Plastic crates		0.0025	All Blocks	4090	10.23	4030	10.08	3130	7.83	3080	7.70	2880	7.20	17210	43.03
	Post Harvest Infrastructure and Machinaries															
18	BhendiPlucker		0.015	B4, B5,B6, B11, B13	300	4.50	350	5.25	350	5.25	300	4.50	300	4.50	1600	24.00
19	Destoner in millets		2	B10	1	2.00	1	2.00	1	2.00	0	0.00	0	0.00	3	6.00
20	Dhal processing Unit		1.5	B3, B4, B6, B11	8	12.00	5	7.50	5	7.50	5	7.50	7	10.50	30	45.00
21	Grading and Packing Hall(30X6 Mtr)		40	B10	0	0.00	1	40.00	0	0.00	1	40.00	0	0.00	2	80.00
22	Groundnut decorticator (power)		0.5	All blocks except B1, B2, B7, B8, B12, B14	18	9.00	18	9.00	15	7.50	10	5.00	8	4.00	69	34.50
23	Tree Fruit Picker		0.015	B7, B8	100	1.50	100	1.50	100	1.50	0	0.00	0	0.00	300	4.50
24	country chekku (Power)		1.5	B4, B11	2	3.00	2	3.00	2	3.00	2	3.00	2	3.00	10	15.00
	Capacity building Programme															
25	Exposure Visits - within state		0.25	B14	20	5.00	16	4.00	15	3.75	15	3.75	15	3.75	81	20.25

Sl. No	Intervention	Unit	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
26	Exposure Visits - outside state - 3 days		0.4	All Blocks	17	6.80	15	6.00	16	6.40	15	6.00	15	6.00	78	31.20
27	Training on Market led Extension, Agmarkgrading&Food safety, post harvest technology, Supply Chain Management, Grading-sorting-packing, Market linkages & Exports, Food processing and value addition at district level		0.1	All Blocks	15	1.50	14	1.40	14	1.40	15	1.50	14	1.40	72	7.20
	Total					**1806.80**		**1656.35**		**1198.83**		**557.35**		**566.57**		**5785.89**

B1-Villivakkam, B2-Puzhal, B3-Minjur, B4-Sholavaram, B5-Gummidipoondi, B6-Tiruvalangadu, B7-Tiruttani, B8-Pallipet, B9- R.K.Pet, B10-Tiruvallur, B11-Poondi, B12-Kadambathur, B13-Ellapuram, B14- Poonamallee

4.5. SEED CERTIFICATION AND ORGANIC CERTIFICATION

Seed is a critical input for long-term sustained growth of agriculture. Timely availability of certified quality seeds with good yield potential continues to be a decisive factor in agricultural production. Farmers in Tamil Nadu state are well aware of the benefits of using quality seeds which include foundation, certified and truthfully labelled seeds. In our State, the seed replacement rate is being adopted as per the guidelines of Government of India. In order to achieve the target of doubling the income of farmers, timely availability of quality seeds is given utmost importance. Concerted efforts are essential in ensuring timely availability of seeds as well as increasing the Seed Replacement Rate (SRR). The National Mission on Seeds has been formulated with a view to upgrade the quality of farm saved seeds and also to enhance Seed Replacement Rate. The Department of Seed Certification & Organic Certification plays the supporting role in the enhancement of Seed Replacement Rate by certifying quality seeds in an increasing trend over the years.

Seed certification is a legally sanctioned system for quality control of seed multiplication and production. The immediate objective of seed certification is to supply high quality seed to farmers and other growers, which is true to identity, high in purity and germination capacity and free from certain pests and diseases. Seed quality is most important in crop production, as high quality seed is essential for good crop yields and good returns, and minimize the likelihood of crop failure. Moreover, growing consciousness of health hazards due to possible contamination of farm products from use of chemicals have immensely contributed to the revival of organic agriculture. Organic certification is a certification body for organic production which was established as a government department on 17 of May 2007. Thus the major focus of the department will be creation of new facilities for better certification by strengthening the lab facilities, and infrastructure, create more awareness on quality seed and organic agriculture through capacity building, expanding communication and networking facilities in order to enhance the activities on seed and organic certification.

Project components

Strengthening of Seed Testing laboratories in all blocks

Samples received in a seed testing laboratory should be processed through various stages in the laboratory as quickly as possible so that result may be sent to sender promptly. The space provided for seed testing, the arrangement of that space and furnishing available would contribute greatly in the efficient functioning of the laboratory. In order to

carry out seed quality tests and maintaining the purity in the seed testing laboratory the equipments such as Dehumidifier, R.O. System, Humidifier, Thermo hydrometer, Digital Moisture meter, Microscope, Working table, Working Chair, Air conditioner, Sample Racks, Geaser, Heater, Trolley for Carriages, Generator 30KV, Induction Stove, Fabricated Display Racks, Conductivity Meter, Dehuller/ Scarifier, Seed Grinder, Blower, Hot Air oven, Incubator and Miscellaneous are required.

Strengthening of communication and networking facilities in all blocks

Information on quality seed production techniques would be disseminate among the farmers and seed growers.

Expected outcome

Enhancement of infrastructure facilities, capacity building, communication and networking would promote the quality of seed and organic certification.

Budget

The budget requirement for implementation of interventions in seed certification is **Rs. 36.72 lakh**.

Area coverage

The seed testing laboratories located in all the blocks of this district will be renovated and additional facilities will be created.

Implementing agency

The projects will be implemented by the Directorate of seed and organic certification. The progress of the project will be monitored by Director of Seed Certification and Deputy Director of Seed Certification.

Table 4.20 Budget requirement for Seed Certification and Organic Certification

(₹. in lakhs)

Sl. No	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
I	**Strengthening of Seed Certification lab**															
1	Blower, Conductivity meter, Dehuller/Scarifier, Dehumidifier Air Conditioner, Digital moisture meter, Dunnage, Fabricated display Racks ,Geaser, Generator, Heater,Hot air oven,Humidifier,Incubator,Induction stove,Microscope,Moisture meter,Packing machine,R. O system,Sample racks,Seed Grinder,Sieve,Thermohydro meter,Dunnage,Trolley for carriages,Working chair,Working table, Miscellaneous,	All Blocks	No's	13.36	1.00	13.36	1.00	13.36	0.00	0.00	0.00	0.00	0.00	0.00	2.00	26.72
II	**Strengthening of communication and networking facilities**															
2	Computer accessories		No's	0.50	20.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	10.00
	Total					**23.36**		**13.36**		**0.00**		**0.00**		**0.00**		**36.72**

Blocks: Tiruvallur, Elapuram, Poondi, Kadambathur, Ponamalle, Tirrutani, Tiruvalangadu, R. K. pet, Pallipet, Ambathur, Puzhal, Sholavaram, Minjur and Gummidipoondi

4.6. ANIMAL HUSBANDRY

Increasing the availability of fodder through field level interventions

Livestock rearing is one of the major occupations in India and is making significant contribution to the country's GDP. The livestock population, over the years, has shown a steady growth on broadly two counts i.e. (i) increase in the number of stall feeding based bovine livestock viz. buffaloes and hybrid cattle, and (ii) increase in the number of free grazing based livestock like goats and sheep that can survive on the fast degrading pasturage. The animal husbandry sector has a good growth potential. However, further growth of the sector will be as much dependent upon the availability of fodder. The available data reveals that the present fodder availability in the country is well below requirement. The data also reveals that only about half of the annual fodder requirement is met from the cultivated fodder and crop residues, whereas open grazing and fodder availability from common property resources like forests, pastures, village commons, etc. fulfills the remaining half of the annual fodder requirement. The issue to be taken note of is that it is the open grazing and fodder availability from the common property resources that provides sustenance to a vast majority of households with animal husbandry as the only vocation.

The increasing number of livestock and the changing dynamics of animal husbandry practices require corresponding increase in the type of fodder needed to meet the requirements of these new situations. The budget requirement for fulfilling the below interventions is ₹ **215.62** lakhs. To overcome these issues the following field level interventions are proposed to improve the fodder availability.

1. Establishment of vermicomposting unit in all blocks
2. Distribution of Azolla trays in all blocks
3. Fodder plot development in all blocks
4. Meikkal land development in all blocks
5. Distribution of seedlings, sprinklers, grass cutter and raingun to the farmers in all blocks
6. Development of seed production plots in all blocks

Increasing the availability of fodder by strengthening farm infrastructure

The livestock sector is handicapped due to inadequate infrastructure facilities as a result of low productivity. Infrastructure development for animal husbandry is felt essential to provide the desired veterinary services in the interior pockets of the districts so as to enable the livestock owners living in the remote areas can avail the opportunities to consider AH activities as livelihood option and maximize profit through livestock sector. Adequately providing proper infrastructure and equipment to

the veterinary health care institution is necessary for the timely diagnosis and treatment of animal diseases. Further, emphasis has to be laid on optimum utilization of waste land to grow fodder.

Improved infrastructure facilities will provide improved veterinary services contributing to reduction in the incidences of animal diseases thereby increasing the overall productivity of animals. The Rural Veterinary Dispensaries are either functioning from rented premises or in dilapidated buildings. Further, functioning of Veterinary Institutions in the rental buildings do not satisfy the requirement of a typical Veterinary Institution and with a restricted scope for further expansion, these are not ideal infrastructure. This necessitates strengthening the infrastructure of the veterinary institutions to offer better delivery of services and to reshape it into knowledge resource centers where best practices can be disseminated to the farmers. The following infrastructure facilities will strengthen the fodder availability such as

1. Establishment of farm production cover
2. Construction of silo pit and overhead tanks
3. Establishment of feed mixing units
4. Installation of rain gun and sprinklers
5. Procurement of agri inputs

Livestock breeding management

Over the past few decades, imported exotic cow varieties have gain a boost in milk production in Tamil Nadu. Most of the cattle breeds are exotic. These breeds theoretically produce a lot of milk, but are not well-adapted to our conditions. About 69% of Indian cows are owned by the economically poor strata of the society. These folks cannot afford to house these exotic breeds in regulated climate conditions.

The government has significantly mismanaged cow breeding. The average milk yield per animal in India is just 3.2 kgs, compared to a global average of 6.6 kgs. The dairy policy and outlook is highly outdated and needs to be replaced with modern, evidence-based thinking

Livestock industry continues to demonstrate a beneficial impact on rural people by improving their income, employment and consumption and thereby acting as a potential tool in alleviating rural poverty. Artificial insemination (AI) has proven to be very effective for the improvement of the genetic potential of animals for higher production and there is no surprise why today AI is the back bone of all breeding programmes in India. The replacement of unproductive and ageing animals in the herd and its expansion are very important to maintain the scale of economy of the farm. Augmentation of fertility in repeat breeders and sex-sorted semen are some of the modern scientific tools which have been proposed to be employed for effective breeding management to enhance the livestock fertility

and productivity. The following interventions will help to improve livestock breeding management, such as

1. CIDR
2. Establishment and distribution of sex-sorted semen facility
3. Establishment of IVF lab
4. Establishment of LN2 and embryo transfer lab
5. Estrous synchronization

Livestock health

A large number of infectious and metabolic diseases prevalent in Indian livestock have serious implication for animal productivity, export potential and safety/ quality of livestock products and many of these diseases have zoonotic implications. The current efforts of prevention and control of livestock diseases needs to be strengthened. There is a shortage of veterinary and Para-veterinary manpower and facilities including mechanisms for diagnosis, treatment, tracking and prevention of the diseases. Adequate infrastructure for ensuring bio-security, proper quarantine systems and services to prevent the ingress of diseases across the states and national borders is not available. By providing the following facilities will prevent the above diseases such as

1. Upgradation of vaccine production facilities for bacteria and virus
2. Procurement of vaccines, medicine, diagnostic kit
3. Animal quarantine facility in govt. farm
4. Animal testing facility

Improving the livestock productivity

Although India is a major producer of livestock products the average productivity of livestock is lower compared to world average. Inadequate availability of feed and fodder, insufficient coverage through artificial insemination, low conception rates, non-availability of quality males for breeding, poor management practices, high mortality and morbidity losses due to diseases, inadequate marketing infrastructure and unorganized marketing are the other major concerns. To maximize the livestock productivity the following activities should be implement. The intervention have been propose are

1. Distribution of sheep, goat, buffalo, piggery, poultry units in all blocks

Improving the service delivery at veterinary institutions

Veterinary hospitals, dispensaries, Aid Centers, diagnostic laboratories and veterinary manpower already available are much less than what is required. These services would be improved

and expanded and will continue to be provided by the state owned facilities with an appropriate system of recovery of cost wherever feasible. Private investment to improve delivery of animal health services including facilities by private veterinary graduates would be encouraged. Mobile veterinary dispensaries with provision for vaccination and facilities to generate awareness of farmers regarding various livestock management issues would be promoted to improve outreach. For companion animals, state governments may consider to extend the veterinary services on full cost recovery basis. To improve the service delivery the below mentioned intervention have been proposed. The intervention have been propose are

1. Deep freezer facility for storage of vaccines and medicines in all blocks
2. Establishment of infrastructure facilities, disease diagnostic lab, mobile veterinary units, surgical theaters and ambulance facilities in all blocks.

Enhancing livestock management

The country has rich and diverse genetic resources of livestock in the form of a large number of species, breeds, and strains within a species. India has some of the best breeds of cattle and buffaloes with traits for dairy, draught power and dual purposes, several carpet wool breeds of sheep, highly prolific breeds of goats and adaptive breeds of poultry. Such utility genes and breeds would be identified, conserved and utilized for breeding and research. The focus would be on conservation of indigenous breeds of livestock and poultry. By developing slaughter house, livestock shandy also be helpful to enhancing livestock management. The intervention have been propose are

1. Animal identification and traceability in all blocks
2. Conservation of indigenous breeds in all blocks

Capacity building

Educating the farmers about the advanced crop production technologies as well as the techniques will enrich the knowledge of farmers through conduct of trainings and demonstrations to the farmers, youths and young entrepreneurs. On field demonstrations are conducted on fodder production technologies, seed production, poultry farming and sheep farming etc.

Capacity building programme is to strengthen the capacities of farmers, indigenous and local communities, and their organizations and other stakeholders, to manage sustainable biodiversity so as to increase their benefits, and to promote awareness and responsible action, in the form of trainings, demonstrations, exposure visits, etc. To create awareness among the farmers the following trainings and campaigns have to be conducted.

1. Establishment of farmers training Centre in Tiruttani

Budget allocation

The major themes proposed in the plan for animal husbandry sector with a total budget out lay of ₹ **6615.85 lakh.**

Project implementing agency

The projects proposed will be implemented by the Department of Animal husbandry sector. The progress of the project will be monitored by Director of Animal Husbandry.

Table 4.21 Budget requirement for Animal Husbandry

(Rs. in lakhs)

Sl. No	Interventions	Unit	Unit Cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Increasing the Availability of Fodder through Field level Interventions															
1	Establishment of Vermicomposting unit (single bed)	Nos	0.05	All Blocks	100	5.00	98	4.90	98	4.90	98	4.90	98	4.90	492	24.60
2	Fodder production to the farmers by Hydroponic methods	Nos	0.1	All Blocks	16	1.60	16	1.60	16	1.60	16	1.60	16	1.60	80	8.00
3	Distribution of Azolla trays	Nos	0.03	All Blocks	510	15.30	510	15.30	510	15.30	510	15.30	510	15.30	2550	76.50
5	Fodder plot development	acre	0.05	All blocks	400	20.00	400	20.00	400	20.00	200	10.00	200	10.00	1600	80.00
6	Meikal land development (incl infrastructure development)	acre	6	All Blocks	3	18.00	3	18.00	3	18.00	3	18.00	2	12.00	14	84.00
7	Distribution of Chaff Cutter to farmers	Nos	0.25	All Blocks	28	7.00	28	7.00	28	7.00	28	7.00	28	7.00	140	35.00
8	Distribution of Grass Cutter to farmers	Nos	0.25	All Blocks	28	7.00	28	7.00	28	7.00	28	7.00	28	7.00	140	35.00
9	Development of Seed Production plots	acre	0.25	All Blocks Except B5, B6, B11	11	2.75	11	2.75	11	2.75	11	2.75	11	2.75	55	13.75

Sl. No	Interventions	Unit	Unit Cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
10	Distribution of Raingun to Livestock farmers	Nos	0.25	All Blocks	59	14.75	59	14.75	59	14.75	59	14.75	59	14.75	295	73.75
12	Distribution of sprinkler for fodder production	Nos	0.15	All Blocks	49	7.35	49	7.35	49	7.35	49	7.35	49	7.35	245	36.75
	Improving the Livestock Productivity															
11	Distibution of Sheep/Goat units -semi intensive system	Nos	0.6	All Blocks	38	22.80	38	22.80	38	22.80	38	22.80	38	22.80	190	114.00
12	Distribution of Buffalo units(5 Buffaloes)	Nos	4.5	All Blocks	70	315.00	70	315.00	70	315.00	70	315.00	70	315.00	350	1575.00
13	Integrated farming (Goat+Cattle+Fish+Agriculture /Horticulture)	Unit	2	All Blocks	5	10.00	5	10.00	5	10.00	5	10.00	5	10.00	25	50.00
14	Development of Native chicken farms	Farm	1	All Blocks	25	25.00	25	25.00	25	25.00	25	25.00	25	25.00	125	125.00
15	Establishment of disposal pits for poultry unit	Nos	1	All Blocks	25	25.00	25	25.00	25	25.00	25	25.00	25	25.00	125	125.00
16	Distribution of Piggery units (fattening-5 Nos)	Nos	1.25	All Blocks	22	27.50	22	27.50	22	27.50	22	27.50	22	27.50	110	137.50
	Improving the Service Delivery at Veterinary Institutions															
17	Deep freezer facility for Storage of vaccines and Medicines	Nos	10	All Blocks	0	0.00	0	0.00	14	140.00	0	0.00	0	0.00	14	140.00

Sl. No	Interventions	Unit	Unit Cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
18	Establishment of Infrastructure facilities for Veterinary Institutions	Nos	30	All Blocks	14	420.00	14	420.00	14	420.00	14	420.00	14	420.00	70	2100.00
19	Establishment of Mobile Disease Diagnostic Labs	Nos	20	All Blocks	3	60.00	3	60.00	3	60.00	3	60.00	2	40.00	14	280.00
20	Establishment of Mobile Veterinary Units	Nos	10	All Blocks	3	30.00	3	30.00	3	30.00	2	20.00	3	30.00	14	140.00
21	Establishment of surgical theatres at veterinary institution	Nos	30	All Blocks	3	90.00	3	90.00	3	90.00	3	90.00	2	60.00	14	420.00
22	Providing solar lighting panels at veterinary institution	Nos	1	All Blocks	14	14.00	14	14.00	14	14.00	14	14.00	14	14.00	70	70.00
23	Package of Modern Veterinary Diagnostic Aids to Veterinary Institutions such as Computerized X rays, Ultrasound, Diathermy etc.	Nos	30	All Blocks	3	90.00	3	90.00	3	90.00	3	90.00	2	60.00	14	420.00
24	Establishment of Ambulance facility for animal	Nos	80	B13	1	80.00	1	80.00	0	0.00	0	0.00	0	0.00	2	160.00
	Livestock Management															
25	Animal Identification and Traceability	Unit of 1000 animals	0.1	All Blocks	300	30.00	30	3.00	30	3.00	30	3.00	30	3.00	420	42.00

Sl. No	Interventions	Unit	Unit Cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
26	Conservation of Indigenous breeds	Pack	10	All Blocks	1	10.00	1	10.00	1	10.00	1	10.00	1	10.00	5	50.00
	Capacity Building															
27	Establishment of Farmers training Centre	Nos	200	B13	0	0.00	1	200.00	0	0.00	0	0.00	0	0.00	1	200.00
	Grand Total					**1348.05**		**1520.95**		**1380.95**		**1220.95**		**1144.95**		**6615.85**

Blocks: Tiruvallur, Elapuram, Poondi, Kadambathur, Ponamalle, Tirrutani, Tiruvalangadu, R. K. pet, Pallipet, Ambathur, Puzhal, Sholavaram, Minjur and Gummidipoondi

1.7 ANIMAL SCIENCE RESEARCH

Infrastructure and Asset creation for animal science research

Existing animal science research priorities have been generated primarily in the Tamil Nadu. In general, animal science research can be grouped into the following broad categories: animal health, food safety, food and feed security, climate change, animal well-being, and water quantity and quality. The proposals for animal science research are proposed with a budget outlay of **Rs. 3557.75 lakh**.

Project implementing agency

The projects proposed will be implemented by the Tamil Nadu Veterinary and Animal Sciences University. The project is motored by Vice Chancellor and Director of Research.

Table 4.22 Budget for Animal Science Research

Sl. No	Interventions	Blocks Covered	Unit	Unit Cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	E-extension services	All Blocks	Nos	54.65	2	109.30	2	109.30	1	54.65	1	54.65	1	54.65	7	382.55
2	Farm animal waste management	All Blocks	No	25	1	25.00	1	25.00	1	25.00	2	50.00	2	50	7	175.00
3	Centralized Molecular laboratories	All Blocks	Nos	508	1	508.00	0	0.00	1	508.00	0	0.00	0	0	2	1016.00
4	Nutraceuticals Analytical Laboratory	All Blocks	Nos	100	0	0.00	1	100.00	1	100.00	1	100.00	0	0	3	300.00
5	Manufacturing units for production of agro - dairy products	All Blocks	Nos	291.4	0	0.00	1	291.40	1	291.40	1	291.40	0	0	3	874.20
6	Methane mitigating strategies	All Blocks	Nos	81	2	162.00	2	162.00	2	162.00	2	162.00	2	162	10	810.00
	Total					**804.30**		**687.70**		**1141.05**		**658.05**		**266.65**		**3557.75**

Blocks: Tiruvallur, Elapuram, Poondi, Kadambathur, Ponamalle, Tirrutani, Tiruvalangadu, R. K. pet, Pallipet, Ambathur, Puzhal, Sholavaram, Minjur and Gummidipoondi

1.8 DAIRY DEVELOPMENT

The importance of dairying in a country like India hardly needs emphasize. India has vast resources of livestock, which play an important role in the national economy and also in the socioeconomic development of millions of rural households. India has one of the largest stocks of cattle and buffaloes: more than 50 percent of the world's buffaloes and 20 percent of its cattle. Dairy sector acts as an important source of income for rural families, plays a vital role in providing gainful employment and income generating opportunities in the district. Dairy industry in the country is expected to witness spectacular growth in 2017, according to experts.

During the last 10 years, the annual growth rate in Indian dairy industry is 4.6 per cent as compared to the global growth rate of 2.2 per cent. During this period, per capita consumption of milk in the country was 340 g a day as against 299 g globally. “India’s milk production has touched 155.4 metric tonnes during 2015-16. Consumption is increasing at a faster rate. However in the country more than 90 per cent of the dairying is at the subsistence level so the emerging trends have to increase the county’s milk production moreover. To fulfill the shortage in dairy sector the following interventions have been suggested.

Strengthening of milk storages and processing units

Clean milk production is a concept being used everywhere, where quality of milk has become prime importance. It has to be maintained throughout the milk supply chain right from the dairy farm environment to cooling & storage to its packaging. The machinery and equipment required depends on the level of mechanization desired and the scale of operation. However, some machinery and equipment are essentially required such as storage tanks, washer, coolers, pumps and processing equipment’s. Except for this some electrical installation also required to provide proper storage facilities.

The major interventions are,

1. Milk storage tanks of various capacities in all blocks
2. Milk tankers in all blocks
3. Milk pumps in all blocks
4. Processing equipment’s in all blocks
5. Pasteurizers in all blocks

Enhancing milk production and milk processing units

The quality of animals is critical in determining its milk productivity and hence overall production. Currently, low productivity per animal hinders development of the dairy sector. Despite being the world's largest milk producer, India's productivity per animal is very low, at 987 kg per lactation, compared with the global average of 2038 kg per lactation.

The low productivity is a result of ineffective cattle and buffalo breeding programmes, limited extension and management on dairy enterprise development, traditional feeding practices that are not based on scientific feeding methods, and limited availability and affordability of quality feed and fodder. Animal health and breeding services provision, veterinary infrastructure development and vaccinations are the responsibility of the state government. These services have traditionally been provided for free or at a very subsidized rate but in the past few years it has been payable. state livestock development agencies are being set up as autonomous bodies to offer services in animal breeding in the form of procurement, production and distribution of breeding inputs (such as semen and liquid nitrogen), training and promotional activities. Despite these initiatives, the availability of services remains limited and extension activities in dairy management are woefully lacking. Let to get a better improvement in milk production than before the following inputs have been suggested.

1. Provision of veterinary medicine in all blocks
2. Fodder development equipment and seed material in all blocks
3. Milk testing equipment's in all blocks
4. Equipment's for artificial insemination in all blocks
5. Milk society buildings and cow shed in all blocks
6. Cryogenic containers in all blocks
7. Weighing machines in all blocks
8. Computer accessories in all blocks

Capacity building

India is the largest milk producer in the world with an annual production of over 155.4 metric tonnes of milk, yet the sector faces numerous issues. One of the major challenges facing the dairy sector is the growing gap between milk supply and demand. Another major

challenge arises from the fact that more than 92 percent of the animals are owned by smallholders who had little ownership of land to manage them. The small farmers do not have sufficient resources and lack training in dairy sector that leads to poor animal health and low milk yield. Furthermore, the small farmers lack knowledge of modern breeding practices. To make the farmers as scholars in particular thing some trainings and camps has to be conducted. To make sure this the following intervention has been proposed.

1. Training of personnel of MPCS, Union and federation in all blocks
2. Infertility camps in all blocks

Marketing structures

Marketing is generally defined as the process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods, and services to create exchanges that satisfy individual and organizational objectives. The word Dairy marketing means where the milk is kept and marketing. Dairy marketing truly came into the public consciousness with the introduction of the “Got milk” campaign in 1993. Marketing plays a vital role not only in stimulating production and consumption, but also in accelerating the pace of economic development. An efficient marketing system minimizes costs, increases returns to farmers by reducing the number of middlemen or by restricting the commission of marketing system. To increase the income in dairy sector the suitable marketing structure is vital. For that the following structures have been suggested

1. Parlour structure in all blocks
2. Milk product storage cabinets in all blocks
3. Product billing system in all blocks

Quality control

Quality is a vital ingredient of a good brand. Remember the “core benefits” – the things consumers expect. These must be delivered well. To ensure the quality of the following interventions have been suggested

1. Adulteration detection equipment’s in all blocks
2. Milk testing equipment and laboratory in all blocks

Processing and value addition

While adding value to farm and livestock products before they reach the local and international market is one of the key aims of Vision 2030. Product diversification has become an important aspect of business strategy with reasons for this increased focus being increased profitability, reduction in risk, increasing competition, higher growth and more efficient resource allocation. Value addition in the dairy value chain is still a challenge in our country. Value addition has been hailed as one of the solutions to the perishability challenge of milk by converting it to a more durable form and hence reducing farm losses. But only few of them undertake the value addition In India. To maximize the value addition in rural areas the following interventions have been suggested

1. Dairy processing plants in all blocks
2. Effluent treatment in a Refrigeration plants in all blocks
3. Steam raisning plant in all blocks
4. Fat handling and other dairy equipment's in all blocks

Development for dairy sector

Though the milk production has reached an all-time high in the district, the producers are not able to market the milk produced. This is mainly due to inadequate infrastructure available for procurement, processing of milk and marketing network. Providing proper infrastructure to the veterinary health care institutions is necessary for the timely diagnosis and treatment of animal diseases. An efficient management of cattle will be incomplete without a well-planned and adequate housing of cattle. Good quality milk is essential for production of good quality dairy products, taste and flavor, free from pathogens and long keeping quality. Immediately after milking, the milk must be cooled preferably to 4° C. This requires mechanical refrigeration or milk cooling tanks. These are expensive and can usually be afforded by large scale commercial farms. For small scale dairy farmers, setting up a milk cooling centre centrally may be the ideal solution. The following buildings have been proposed for better storage and improvement

1. Construction of dairy farm and skim milk powder plant in all blocks
2. BMC building in all blocks
3. Cattle feed plants in all blocks
4. Ware house for dairy products in all blocks

5. Ice cream manufacturing buildings in all blocks.

Budget allocation

An outlay of **Rs. 24268.25 lakhs** is proposed to fulfill the aforementioned interventions for five years. The details of budget requirement for each intervention across the blocks are shown in Table 4.22.

Area coverage

The proposed interventions are implemented in all the blocks of the district.

Implementing agency

The projects will be implemented by the Department of Dairy Development. The progress of the project will be monitored by Director of Dairy Development.

Table 4.23 Budget requirement for Dairy Development

(Rs. in lakh)

Sl. No	Intervention	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Engineering section															
1	Electrical installation like Transformer, UPS, Stabilizers, Control Panel MCC etc.,	All blocks	1	25	1	25.00	1	25.00	0	0.00	0	0.00	0	0.00	2	50.00
2	Milk Storage Tanks of various capacities	All blocks	1	15	0	0.00	2	30.00	2	30.00	2	30.00	2	30.00	8	120.00
3	Tub washer, Canwashers, Crate conveyor systems.	All blocks	1	10	0	0.00	0	0.00	0	0.00	1	10.00	1	10.00	2	20.00
4	SS pipes and fittings	All blocks	1	5	1	5.00	1	5.00	1	5.00	1	5.00	1	5.00	5	25.00
5	Solar system for water heating	All blocks	1	2	2	4.00	2	4.00	2	4.00	2	4.00	2	4.00	10	20.00
6	Packing Machineries for milk, Butter, Ghee, SMP and Other Milk products	All blocks	1	18	0	0.00	2	36.00	2	36.00	0	0.00	0	0.00	4	72.00
7	Plate Heat type Chillers and pasteurizers	All blocks	1	10	1	10.00	0	0.00	0	0.00	1	10.00	0	0.00	2	20.00
8	Milk Pumps of Various capacities	All blocks	1	0.5	5	2.50	5	2.50	5	2.50	5	2.50	5	2.50	25	12.50
9	Generator of various	All blocks	1	20	0	0.00	0	0.00	0	0.00	0	0.00	1	20.00	1	20.00

Sl. No	Intervention	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	capacities															
10	Cleaning In Place Equipments with accessories	All blocks	1	75	0	0.00	0	0.00	1	75.00	0	0.00	0	0.00	1	75.00
	Procurement and Input															
11	Veterinary Medicine	All blocks	1	2	2	4.00	2	4.00	2	4.00	2	4.00	2	4.00	10	20.00
12	Two wheeler for AI technician	All blocks	1	0.5	5	2.50	5	2.50	5	2.50	5	2.50	5	2.50	25	12.50
13	Computer system with accessories	All blocks	1	0.5	5	2.50	5	2.50	5	2.50	5	2.50	5	2.50	25	12.50
14	Fodder seed materials	All blocks	1	0.25	5	1.25	5	1.25	5	1.25	5	1.25	5	1.25	25	6.25
15	Fodder development equipments like chaff cutter, Mower etc.,	All blocks	1	0.2	15	3.00	15	3.00	15	3.00	15	3.00	15	3.00	75	15.00
16	Bulk Milk coolers of Various capacities	All blocks	1	15	2	30.00	2	30.00	2	30.00	2	30.00	2	30.00	10	150.00
17	Milk cans	All blocks	1	0.035	200	7.00	200	7.00	200	7.00	200	7.00	200	7.00	1000	35.00
18	Electronic weighing scales of various capacities.	All blocks	1	0.3	5	1.50	5	1.50	5	1.50	5	1.50	5	1.50	25	7.50
19	Electronic milk testing equipments	All blocks	1	1.25	5	6.25	5	6.25	5	6.25	5	6.25	5	6.25	25	31.25
20	Milking machine	All blocks	1	0.8	5	4.00	5	4.00	5	4.00	5	4.00	5	4.00	25	20.00
21	Cow shed	All blocks	1	5	5	25.00	5	25.00	5	25.00	5	25.00	5	25.00	25	125.00

Sl. No	Intervention	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
22	Society Buildings	All blocks	1	20	5	100.00	5	100.00	5	100.00	5	100.00	5	100.00	25	500.00
23	Cryogenic containers	All blocks	1	0.35	5	1.75	5	1.75	5	1.75	5	1.75	5	1.75	25	8.75
24	Equipments for Artificial Insemination	All blocks	1	0.5	5	2.50	5	2.50	5	2.50	5	2.50	5	2.50	25	12.50
	Capacity building															
25	Training of personnel of MPCS, Union and Federation.	All blocks	1	0.05	50	2.50	50	2.50	50	2.50	50	2.50	50	2.50	250	12.50
26	Infertility Camps	All blocks	1	0.2	50	10.00	50	10.00	50	10.00	50	10.00	50	10.00	250	50.00
	Marketing															
27	Parlour structures	All blocks	1	5	10	50.00	10	50.00	10	50.00	10	50.00	10	50.00	50	250.00
28	Milk product storage cabinets	All blocks	1	0.3	100	30.00	50	15.00	50	15.00	50	15.00	50	15.00	300	90.00
29	Product Billing systems		1	0.3	100	30.00	100	30.00	100	30.00	100	30.00	100	30.00	500	150.00
	Quality control															
30	Adulteration detection equipments	All blocks	5	4	5	20.00	5	20.00	5	20.00	5	20.00	5	20.00	25	100.00
31	Milk testing equipment and Laboratory.	All blocks	5	5	5	25.00	5	25.00	5	25.00	5	25.00	5	25.00	25	125.00
	Processing															
32	Dairy Processing Plants	All blocks	1	6000	0	0.00	0	0.00	1	6000.00	1	6000.00	0	0.00	2	12000.00

Sl. No	Intervention	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
33	Refrigeration Plants	All blocks	1	500	0	0.00	0	0.00	1	500.00	1	500.00	0	0.00	2	1000.00
34	Water Treatment Plants. Reverse Osmosis plant	All blocks	1	100	0	0.00	0	0.00	1	100.00	1	100.00	0	0.00	2	200.00
35	Effluent treatment plant	All blocks	1	100	0	0.00	1	100.00	1	100.00	1	100.00	0	0.00	3	300.00
36	Steam raising plant with accessories	All blocks	1	100	0	0.00	0	0.00	1	100.00	1	100.00	0	0.00	2	200.00
37	Fat handling Equipments	All blocks	1	200	0	0.00	0	0.00	1	200.00	1	200.00	0	0.00	2	400.00
38	Dairy Equipments	All blocks	1	50	1	50.00	1	50.00	1	50.00	1	50.00	1	50.00	5	250.00
	Civil work Infrastructure															
39	Construction of Dairy	All blocks	1	1500	0	0.00	1	1500.00	1	1500.00	1	1500.00	0	0.00	3	4500.00
40	BMC buildings	All blocks	1	15	2	30.00	2	30.00	2	30.00	2	30.00	2	30.00	10	150.00
41	Ice cream and dairy product buildings	All blocks	1	2500	0	0.00		0.00	0	0.00	1	2500.00	0	0.00	1	2500.00
42	Ware house for Dairy products	All blocks	1	200	0	0.00	1	200.00	0	0.00	1	200.00	0	0.00	2	400.00
43	Ware house for Dairy consumables	All blocks	1	200	0	0.00	0	0.00	0	0.00	1	200.00	0	0.00	1	200.00
	Grand Total					**485.25**		**2326.25**		**9076.25**		**11885.25**		**495.25**		**24268.25**

Blocks: Tiruvallur, Elapuram, Poondi, Kadambathur, Ponamalle, Tirrutani, Tiruvalangadu, R. K. pet, Pallipet, Ambathur, Puzhal, Sholavaram, Minjur and Gummidipoondi

4.9 FISHERIES

Fisheries sector is one of the important food production sector in the State contributing to the livelihood as well as food security of a large section of the economically under-privileged population. In recent years, it has assumed greater significance and its contribution towards the State and the National economy in terms of livelihood and nutritional security, rural employment generation and foreign exchange earnings have been enormous. Fisheries include marine, freshwater and brackish water subsectors. The Fisheries sector over the years has transformed from subsistence-based artisanal activities to modern livelihood activities with the application of science and modern technologies in the field of capture fishing and culture fisheries. It is developing as a major industry with diversifications viz., exploring deep sea resources and eco-friendly aquaculture practices for culture of finfish and shell fish, ornamental fish culture, eco-tourism, fish processing parks, mid sea fish processing units, etc.

Creation of infrastructure facilities

Fisheries sector occupies a very important place in the socio-economic development of the country. It has been recognized as a powerful income and employment generator as it stimulates growth of a number of subsidiary industries, and is a source of cheap and nutritious food besides being a foreign exchange earner. Most importantly, it is the source of livelihood for a large section of economically backward population of the country. The main challenges facing fisheries development in the country includes accurate data on assessment of fishery resources and their potential in terms of fish production, development of sustainable technologies for fin and shell fish culture, yield optimization, harvest and post-harvest operations, landing and berthing facilities for fishing vessels and welfare of fishermen.

With increasing pressure on the world's inland and coastal marine fisheries, increases in production and quality of yield are being sought through the application of a range of enhancement techniques. Which of these is applied depends on the attitude to the natural resource by societies at different levels of economic development. The range of enhancement techniques involves increasing levels of human input and control which raise productivity significantly, but which also raise costs. Introductions have raised production in many areas of the world at the price of the risk of environmental disruption. Stocking is extremely widespread but has generally been applied uncritically. A variety of models are proposed to serve as a basis for more rigorous evaluation of biological and economic effectiveness of this practice. Fertilization of water bodies is used to raise levels of production further. Elimination of unwanted species then becomes necessary to maximize benefits from the target species. Adjustments to

the habitats within the water body assist in raising general levels of productivity which culminate in the conversion of areas of the water into fish ponds or for cage culture. This process has important implications for the social, economic and policy context which necessitates shifts in ownership, finance and education among populations where these types of development occur**.**

In the inland fisheries sector, aquaculture is poised to play a pivotal role in increasing fish production, ensuring food security and enhancing growth of the State's economy. To maximize fish production from an unit area and to generate maximum income to the fish farmers, the Government has initiated innovative approaches such as stocking of fast growing fish species in the short seasonal water bodies, integrating aquaculture in the existing irrigation systems / rain water harvesting systems, brood stock development to produce quality fish fingerlings, promotion of fish culture in farm ponds and introduction of cage culture in reservoirs etc. With concerted efforts to mobilize farmers to adopt fish farming, application of appropriate technologies for sustainable fish farming and fish seed production and availability of institutional finance, it would be possible to bring in substantial hikes in the annual fish production from the aquaculture sector within a span of 5 years. Hence in this district it suggested to implement the following intervention to enhance the production and growth of fisheries with budget cost of ₹ 477.77 lakh.

The interventions are

- Increasing Fishing Efficiency of Inland Fishermen and Fish Farmers in Poondi
- Promotion of quality fish marketing by traditional fishers by providing moped with ice box in Poondi and Ponneri
- Improvement of hygienic fish handling by providing ice boxes in Sholavaram and Ponnammallee
- Increasing fish production in existing fish/shrimp farms by providing aerators and infrastructure in Gummidipoondi
- Assistance for construction of shrimp farms for DFFDA farmers in Gummidipoondi
- Exposer visit to farmers in Poondi and Poneri blocks

Capacity Building

Effective extension support is essential for the promotion of Aquaculture in freshwater and brackish water areas. It is necessary to establish the information centres/data dissemination centres in Fishermen villages, animation camps in fisheries villages, seminars, exhibitions and workshop, and awareness centres for linking the fishing villages, marketing centres and the district offices. Hence in this district it is necessary to give training to fish farmers and

establishment of chemical residue monitoring laboratory for fish in Tamil Nadu with budget of cost of ₹ 38.00 lakhs

Budget

The budget requirement for fulfilling the above interventions is ₹ **477.77 lakhs**.

Implementing agency

Department of Fisheries will be implementing the project. The project will be monitored by Commissioner of Fisheries and Assistant Director of Fisheries.

Table 4.24 Budget requirement for fisheries development

(₹. In lakhs)

Sl. No.	Interventions	Blocks Covered	Unit	Unit cost	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
I. Creation of infrastructure facilities																
1	Biological Control of Aquatic Weeds by Stocking of Grass Carps in Aquatic Weed Infested water bodies	B2, B6, B7 and B14	Ha.	0.015	110	1.65	120	1.80	140	2.10	140	2.10	140	2.10	650	9.75
2	Increasing Fishing Efficiency of Inland Fishermen and Fish Farmers	Poondi	No.	0.075	50	3.75	50	3.75	50	3.75	50	3.75	50	3.75	250	18.75
3	Enhancement of Fish production in irrigation tanks and Panchayat tanks by stocking fish seeds	B2, B4, B5, B7, B10, B11 and B12	Ha.	0.04	85	3.40	85	3.40	130	5.20	130	5.20	150	6.00	580	23.20
4	Promotion of quality fish marketing by traditional fishers by providing moped with ice box	Poondi and Ponneri	No.	0.55	10	5.50	40	22.00	40	22.00	20	11.00	20	11.00	130	71.50
5	Improvement of hygienic fish handling by providing ice boxes	Sholavaram and Ponneri	No.	0.3	20	6.00	20	6.00	20	6.00	20	6.00	20	6.00	100	30.00
6	Increasing fish production in existing fish/shrimp farms by providing aerators and infrastructure	Gummidipoondi	Ha.	2	0	0.00	0	0.00	2	4.00	2	4.00	2	4.00	6	12.00
7	Assistance for construction of shrimp farms for DFFDA farmers	Gummidipoondi , Poondi and Ponneri	Ha.	3.5	8	28.00	8	28.00	9	31.50	9	31.50	9	31.50	43	150.50
8	Propagation of Fish Culture in Multi-purpose farm ponds in Tamil Nadu	B1, B2, B3, B13 & B14	No.	0.25	11	2.75	13	3.25	13	3.25	13	3.25	13	3.25	63	15.75
9	Up gradation of Fishing Efficiency of Inland Fishermen of Tamil Nadu.	Poondi	No.	0.15	10	1.50	10	1.50	20	3.00	20	3.00	20	3.00	80	12.00
10	Introduction of short seasonal fish species in existing farm ponds	Ponneri	Ha.	0.04	1	0.04	1	0.04	2	0.08	2	0.08	2	0.08	8	0.32
11	Establishment of mini lab facilities in Government fish farms	Poondi	No.	5	0	0.00	1	5.00	0	0.00	0	0.00	0	0.00	1	5.00
12	Improvement of hygienic fish marketing by establishing modern fish kiosk TNFDC	B7, B8, B12, B13 and B15	No.	6	0	0.00	2	12.00	3	18.00	0	0.00	0	0.00	5	30.00

Sl. No.	Interventions	Blocks Covered	Unit	Unit cost	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
13	Promotion of Ornamental fish culture	Puzhal	No.	0.5	10	5.00	10	5.00	10	5.00	10	5.00	10	5.00	50	25.00
14	Establishment of GIFT farms and provision of inputs	B2, B7, B10, B13 and B14	No.	2	0	0.00	9	18.00	0	0.00	9	18.00	0	0.00	18	36.00
II.	**Capacity Building Program**															
15	Exposure visit to farmers to other states	Poondi and Ponneri	Nos	0.05	0	0.00	40	2.00	40	2.00	40	2.00	0	0.00	120	6.00
16	Providing trainers training and exposure visit to Departmental staff	Ponneri	No.	0.1	0	0.00	5	0.50	5	0.50	5	0.50	5	0.50	20	2.00
17	Establishment of chemical residue monitoring laboratory for fish in Tamil Nadu	Poondi	No.	30	0	0.00	1	30.00	0	0.00	0	0.00	0	0.00	1	30.00
18	Creation of Marine infrastructure facilities for the fisher-folk of coastal towns and villages to enhance Marine fish production, hygienic handling of catch and prevention of Post harvest losses	Chennai	Nos	300	0.00	0	0	0	0	0	0	0	2	**600**	**2**	600
19	Creation of Marine infrastructure facilities for the fisher-folk of coastal towns and villages to enhance Marine fish production, hygienic handling of catch and prevention of Post harvest losses	Tiruvallur	Nos	600	0.00	0	0	0	6	3600	0	0	0	**0**	**6**	3600
	Total					**57.59**		**142.24**		**3602.50**		**95.38**		**76.18**		**4238.00**

B1- Ellapuram, B2-Gummidipoondi, B3-Kadambathur, B4-Minjur, B5-Pallipet, B6-Ponndi, B7-Ponneri, B8-Poonamallee, B9-Puzhal, B10- R.K.Pet, B11-Sholavaram, B12-Thiruvallur, B13-Tiruttani, B14-Tiruvalangadu, B15- Villivakkam

4.10 FISHERES RESEARCH

Establishment of Aquatic Food Safety Analytical Center at FC&RI, Ponneri

Fisheries is recognized as a rapidly growing sector globally and considering its role in addressing malnutrition issues, creating food security and providing employment opportunities, special attention is paid for its development. Tamil Nadu is one of the major states of fish production in India with a coastline of more than 1000 km. Tiruvallur district, located close to Chennai, is endowed with rich natural resources and a sizable proportion of the population (30%) is living below the poverty line. Fishery is the major economic activity in the district comprising fishing, dry fish production and shrimp farming. Although much of the fishery resources are available, much smaller quantities meet the more stringent standards imposed by the major importing countries and exports to these countries are limited. The globalization of trade in fish has created many challenges for the developing world specifically with regard to food safety and quality.

Revitalisation of Freshwater Aquaculture through Cage culture systems in Thiruvallur and Kancheepuram districts of Tamil Nadu

Tamilnadu has more number of small reservoirs than any other states in India. The Fisheries Institute of Technology and Training, a constituent unit of Tamil Nadu Fisheries University has cage culture facility at Poondi reservoir, Thiruvallur district and Kulavai lake, Chengalpattu. GIFT Tilapia and Pangasius are cultured in cages. Presently the breakeven point in cage culture of GIFT Tilapia and Pangasius is not very much encouraging due to certain problems. The decrease in water level during the culture period is one among the problem. For example, the water level in Kulavai lake is 18 feet after north west monsoon rains and gradually reduced to 7 feet before next north east monsoon and with almost stagnant water. Similarly, the water level in Poondi reservoir after north east monsoon is at its full capacity of 35 feet and drastically reduced to 8 feet before north east monsoon. However the water is not stagnant and there is water flow. The change in the water level observed in Poondi reservoir and Kulavai lake need certain management practices like reducing stocking density during culture period, maintaining certain distance between cage bottom and soil bottom, change of cage nets, culling, best feed management practices and partial harvesting to get good fish production. Another persistent issue is the mortality of fish seeds in nursery rearing phase. These management related gaps are identified and certainly they need interventions to achieve good production and profitability in order to make cage culture as an attractive enterprise for the Inland fishermen and other stakeholders.

During the last year's (November,2006) flood calamity, the cage structures in the Poondi reservoir have been damaged and most of the inner and outer cage nets were carried away by flood waters. Therefore this project is aimed to restore and strengthen the cage culture facility affected due to flood and also to develop a cost effective production method by addressing the above management gaps. Once these gaps are fulfilled and profitability is assured, the cage fish culture will become remunerative and stakeholders and Inland fishermen will voluntarily involve in this activity.

Guided increase of aquaculture produce through networked disease surveillance and health certification of cultured fish and shellfish in Tamil Nadu

Indian aquaculture has been growing considerably over the last two decades. There is substantial potential to improve its productivity, diversification of the species, optimum system management and sustainable disease free aquaculture development. In Tamil Nadu, the development of fisheries and aquaculture has seen very rapid growth in the last one decade. Due to several factors including varied agro-climatic parameters and anthropogenic incursions, the freshwater and marine cultivable fish and shellfish are prone to disease problems in aquaculture systems and several disease problems are being reported from the fish and shrimp farms of the State. As the data is fragmented and unrecorded in many instances, there is an imperative need to put the entire aquaculture activities in the State under continuous surveillance, detecting emergence of epizootics and new diseases. A record of our aquaculture activities and the incidence of diseases and its management measures through treatment and prophylactics has to be documented as a prime requirement for the export of many the fish and shrimp products according to the WTA guidelines.

TNFU has developed the expertise and basic infrastructure to investigate the fish and shellfish disease diagnosis and remedial measures, over the last one and half decades, at Fisheries College and Research Institute, Thoothukudi and disease diagnostic laboratories at Madhavaram and Nagapattinam. These laboratories would serve as the backbone of the current proposal to bring the entire state under a network platform development. Fisheries College and Research Institute, Thoothukudi of Tamil Nadu Fisheries University has been a participating centre in the National Surveillance programme for Aquatic Animal Diseases. This national programme is covering only select districts of Tamil Nadu and we are now getting consistent queries from among the fish and shellfish farmers across the state for the diagnosis of infections in the aquaculture systems.

In the light of the above, Tamil Nadu Fisheries University propose to set up a State level network platform of aquaculture farms to record the disease incidence for an effective surveillance system with the establishment of three laboratories spread across South, Central and North Tamil Nadu. These laboratories would target and cater to the entire State by forming three clusters of districts according to their geographic distribution. The present proposal is therefore submitted for strengthening the existing infrastructure for achieving this aim as the University is blessed with the required personnel and expertise to meet the objective.

The interventions are

- Establishment of Advanced Hatchery Facility for Pangas, Pangasianodonhypophthalmus in Tiruvallur block
- Aquatic animal health and management in Tiruvallur block
- Fish processing technology in Tiruvallur block
- Value addition and fish product diversification in Tiruvallur block
- Branding of fish products and institutional marketing in Tiruvallur block
- Utilization of seaweeds and other marine resources for food security

Budget

The budget requirement for fulfilling the above interventions is ₹ **12561.93 lakh**.

Implementing agency

Tamil Nadu Fisheries University will be implementing the project. The project will be monitored by Vice-Chancellor & Director of Research.

Table 4.25 Budget requirement for fisheries research

(Rs. in lakhs)

Sl.No	Interventions	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	**Aquaculture**														
i	**Inland Aquaculture**														
a	Establishment of Advanced Hatchery Facility for Pangas, Pangasianodonhypophthalmus	214.6	Tiruvallur	1	214.60	0	0.00	0	0.00	0	0.00	0	0.00	1	214.60
b	Evolving new candidate species for diversified aquaculture	250	Tiruvallur	0	0.00	0	0.00	1	250.00	0	0.00	0	0.00	1	250.00
iii	**Aquatic animal health and management**														
a	Establishment of State aquatic animal health centre with regional satellite laboratories to improve the aquculture production of Tamil Nadu	300	Tiruvalllur	0	0.00	0	0.00	0	0.00	1	300.00	0	0.00	1	300.00
b	Establishment of accredited laboratory for fish/shrimp seed quality testing and certification	500	Tiruvalllur	0	0.00	0	0.00	1	500.00	0	0.00	0	0.00	1	500.00
c	Development of innovative field level diagnostics for diseases of commercial importance	300	Tiruvalllur	1	300.00	0	0.00	0	0.00	0	0.00	0	0.00	1	300.00
d	Development of advanced (molecular) diagnostoc assays/kits for diagnosis of diseases in aquaculture	100	Tiruvalllur	0	0.00	1	100.00	0	0.00	1	100.00	0	0.00	2	200.00

Sl.No	Interventions	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
e	Establishment of disease surveillance network and dissemination centres for disease management in aquaculture	191	Tiruvalllur	1	191.00	0	0.00	0	0.00	0	0.00	0	0.00	1	191.00
2	**Harvest and Post harvest**														
i	**fish processing technology**														
a	**Fish processing novel technologies and techniques**														
	Development of techniques to improvise and modernize traditional preservation of fish	50	Tiruvalllur	0	0.00	1	50.00	0	0.00	0	0.00	0	0.00	1	50.00
	Modernization of dry fish production through solar driver	100	Tiruvalllur	1	100.00	1	100.00	1	100.00	1	100.00	1	100.00	5	500.00
b	**Value addition and fish product diversification**														
	Development of snack foods from fish	100	Tiruvalllur	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	1	100.00
	Promotion of consumption of farmed Tilapia through product development and diversification	100	Tiruvalllur	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	1	100.00
	Development of ready to eat products from farmed freshwater fishes	100	Tiruvalllur	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00	1	100.00
c	**Branding of fish products and institutional marketing**														
	Creation of regional production centers for fishery products with state Brand	500	Tiruvalllur	0	0.00	0	0.00	0	0.00	1	500.00	0	0.00	1	500.00

Sl.No	Interventions	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
d	**Reduction of post harvest losses**														
	Awareness to fishers on hygienic handling of fish	0.005	Tiruvallur	133	0.67	133	0.67	133	0.67	133	0.67	133	0.67	665	3.33
	Creation of awareness among fishers on fish processing technologies	0.6	Tiruvallur	25	15.00	25	15.00	25	15.00	25	15.00	25	15.00	125	75.00
	Capacity building and skill development programmes on fish processing technologies	6.6	Tiruvallur	13	85.80	13	85.80	13	85.80	13	85.80	13	85.80	65	429.00
e	**Enhancement of per capita consumption of fish**														
	Awareness campaign on health beneficial attributes of fish	0.005	Tiruvallur	52	0.26	52	0.26	52	0.26	52	0.26	52	0.26	260	1.30
	Production of short films on nutritive value of fish and screening in theatres and television channels	50	Tiruvallur	1	50.00	0	0.00	0	0.00	0	0.00	0	0.00	1	50.00
f	**Utilization of seaweeds and other marine resources for food security**														
	Development of neutraceutical products form seaweeds	50	Tiruvallur	1	50.00	0	0.00	0	0.00	0	0.00	0	0.00	1	50.00
	Popularization of seaweed products through mass media	0.005	Tiruvallur	400	2.00	400	2.00	400	2.00	400	2.00	400	2.00	2000	10.00
	Development of seaweed snack foods	50	Tiruvallur	0	0.00	1	50.00	0	0.00	0	0.00	0	0.00	1	50.00
g	**Ensuring nutritional security through fish and fishery**														

Sl.No	Interventions	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	products														
	supply of preserved ready to eat and ready to cook fish products through public distribution sytems	12.9	Tiruvallur	0	0.00	0	0.00	1	12.90	0	0.00	0	0.00	1	12.90
	Supply of fish and fish products in mid day meal programme	12.9	Tiruvallur	1	12.90	0	0.00	0	0.00	0	0.00	0	0.00	1	12.90
	Supply chain management to promote consumption of farmed freshwater fishes	64.5	Tiruvallur	0	0.00	0	0.00	0	0.00	1	64.50	0	0.00	1	64.50
h	**Enforcement of international quality standards in fishery products meant for dosmetic market**														
	Creation of laboratory facility at regional level for testing and certification of fish and fishery products	1000	Tiruvallur	0	0.00	1	1000.00	0	0.00	0	0.00	0	0.00	1	1000.00
	Establishment of sea food forensic laboratory to ensure supply of quality products to domestic and international market	800	Tiruvallur	0	0.00	0	0.00	1	800.00	0	0.00	0	0.00	1	800.00
	Establishment of Aquatic Food Safety Analytical Center	500	Tiruvallur	0	0.00	0	0.00	0	0.00	1	500.00	0	0.00	1	500.00
	Accredited Microbial Quality Testing Laboratory for Certification of Aquatic Food Products in South Tamil Nadu	1000	Tiruvallur	1	1000.00	0	0.00	0	0.00	0	0.00	0	0.00	1	1000.00

Sl.No	Interventions	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
i	**Utilization of fish processing waste and by catch**														
	installation of waste rendering plant at selected fishing harbors and fish markets	130	Tiruvallur	1	130.00	0	0.00	0	0.00	0	0.00	0	0.00	1	130.00
	Development of fish compost for production of organic agricultural and horticultural crops	65	Tiruvallur	0	0.00	0	0.00	0	0.00	1	65.00	0	0.00	1	65.00
	Installation of unit for biogas from fish waste	161.5	Tiruvallur	0	0.00	0	0.00	0	0.00	1	161.50	0	0.00	1	161.50
	Development of technologies for effective utilization of shrimp shell waste	100	Tiruvallur	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
	Development of peptides from fish processing wastes as dietary supplement	100	Tiruvallur	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	1	100.00
ii	**fishing technology**														
	Establishment of artificial fish bait development laboratory to conserve forage fish stock along the coast of Tamil Nadu due to longlining	500	Tiruvallur	0	0.00	0	0.00	0	0.00	0	0.00	1	500.00	1	500.00
	Establishment of ecofriendly fishing gear technology unit to cater the needs of fishermen of Tamil Nadu	350	Tiruvallur	0	0.00	0	0.00	0	0.00	0	0.00	1	350.00	1	350.00
3	**Fish resource management and conservation**														
a	**Indigenous fisheries**														

Sl.No	Interventions	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	reseource conservation centres														
	Brackishwater (Pulicat lake and Kodiyakarai)	300	Tiruvallur	0	0.00	0	0.00	0	0.00	0	0.00	1	300.00	1	300.00
b	Blue carbon initiative in fisheries resource conservation	1000	Tiruvallur	0	0.00	0	0.00	0	0.00	1	1000.00	1	1000.00	2	2000.00
4	**Fisheries Engineering**														
i	**Aquacultural engineering**														
a	**Farm implements**														
	Deisgn and development of e interface gadgets for sustainable aquaculture	20	Tiruvallur	0	0.00	0	0.00	1	20.00	0	0.00	0	0.00	1	20.00
b	**Harvestors**														
	Deisgn and development of shrimp harvester	25	Tiruvallur	0	0.00	0	0.00	0	0.00	0	0.00	1	25.00	1	25.00
	Deisgn and development of synchronised harvester for freshwater aquaculture	30	Tiruvallur	0	0.00	1	30.00	0	0.00	0	0.00	0	0.00	1	30.00
d	**Automation technologies**														
	Developnment of mobile gadgets/apps for remote monitoring system for aquaculture farms	15	Tiruvallur	0	0.00	0	0.00	1	15.00	0	0.00	0	0.00	1	15.00
e	**Advanced aquaculture systems**														
	Design and development of	50	Tiruvallur	0	0.00	0	0.00	0	0.00	1	50.00	0	0.00	1	50.00

Sl.No	Interventions	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	advanced aquaponics systems														
f	**Feeding technologies**														
	Design and development of effective feeders for aquaculture	35		0	0.00	1	35.00	0	0.00	0	0.00	0	0.00	1	35.00
ii	**Navigation and Fisheries Engineering**														
	Development of cost effective gadgets for effective fishing	15	Tiruvallur	0	0.00	1	15.00	0	0.00	0	0.00	0	0.00	1	15.00
	Development of mobile apps for effective fishing	8	Tiruvallur	0	0.00	0	0.00	1	8.00	0	0.00	0	0.00	1	8.00
iii	**Post-harvest fisheries engg**														
a	**Handling, transportation and storage**														
	Design and development of handling devices/machines for fish processing	50	Tiruvallur	1	50.00	0	0.00	0	0.00	1	50.00	0	0.00	2	100.00
	Design and development of solar powered tricycle for fish vendors	2	Tiruvallur	1	2.00	0	0.00	1	2.00	1	2.00	1	2.00	4	8.00
	Deisgn and development of cost effective packaging technologies for fish processing	6	Tiruvallur	0	0.00	1	6.00	0	0.00	0	0.00	0	0.00	1	6.00
b	**Processing machines**														
	Design and development of shrimp processing machines	15	Tiruvallur	0	0.00	0	0.00	1	15.00	0	0.00	0	0.00	1	15.00

Sl.No	Interventions	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Design and development of freshwater fish processing machines	20	Tiruvallur	1	20.00	0	0.00	0	0.00	0	0.00	0	0.00	1	20.00
	Design and development of gadgets for fish processing	20	Tiruvallur	0	0.00	0	0.00	0	0.00	0	0.00	1	20.00	1	20.00
	Technologies development for preservation of fish and value added fish products	15	Tiruvallur	0	0.00	0	0.00	0	0.00	1	15.00	0	0.00	1	15.00
c	**Waste utilization technologies**														
	Design and development of waste utilization centre	85	Tiruvallur	0	0.00	0	0.00	1	85.00	0	0.00	0	0.00	1	85.00
	Design and development of energy harvesting mechanisms from sea materials	65	Tiruvallur	1	65.00	0	0.00	0	0.00	0	0.00	0	0.00	1	65.00
	Design and development of nanotechnological applications for fisheries engineering	85	Tiruvallur	0	0.00	0	0.00	0	0.00	0	0.00	1	85.00	1	85.00
5	**Fisheries technology transfer**														
c	Establishment of Communication Centre to Improve Production and Employment Opportunities in Fisheries Sector in the State through Propagation of Improved technologies	300.9	Tiruvallur	0	0.00	1	300.90	0	0.00	0	0.00	0	0.00	1	300.90
f	Establishment of Fisheries Baseline Data Repository for	200	Tiruvallur	0	0.00	0	0.00	0	0.00	1	200.00	0	0.00	1	200.00

Sl.No	Interventions	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	the state at FC & RI, Ponneri														
g	Capacity building and training of trainers, fishers, fish farmers and entrepreneurs in the adoption of advanced farming techniques	8	Tiruvallur	0	0.00	0	0.00	1	8.00	0	0.00	0	0.00	1	8.00
h	Establishment of Mobile training unit to cater the needs of fishermen of Tamil Nadu on engine maintenance, sea safety and responsible fishing	300	Tiruvallur	0	0.00	1	300.00	0	0.00	0	0.00	0	0.00	1	300.00
6	**Incubation centres**														
b	Esablishment of incubation centre for extruded products	65		0	0.00	0	0.00	0	0.00	1	65.00	0	0.00	1	65.00
	Grand total				**2389.23**		**2190.63**		**2019.63**		**3376.73**		**2585.73**		**12561.93**

4.11 Public Works Department

Increasing the ground water level

In Thiruvallur district, there are 4 major rivers flowing from west to east direction. These Rivers plays a key role in maintaining water table level in this district.1895 PWD tanks are situated in the district. Most of the tanks are silted and a bush like Prosopis and Acassia spp occupied major part of the tanks and there by storage capacity of the tank is very much reduced. Hence, to raise the water table level, construction of check dams need to be taken up to increase the storage capacity of the tanks and there by crop cultivation area in tank ayacut area may be increased.

Project components

- Construction of check dams across the rivers in Kadambathur block
- Construction of new tanks

Budget

It is proposed to incur **Rs.447.80 crores** over a period of five years

Expected outcome

The project will increase the Ground water table level and thereby increasing the crop cultivation area. This will result in the ensuring of food security for the people.

Implementing agency

Department of Public Works will be implementing the project.

Table 4.26 Budget estimate for PWD works

(₹.in lakhs)

Sl. No	Intervention	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Construction of CheckdamacrossSunnambukalodai near Kunnathur village in ThiruvallurTaluk.	Kadambathur	Ha	4.24	70.82	300.00	0	0.00	0	0.00	0	0.00	0	0.00	70.82	300.00
2	Construction of Check Dam across Kosasthalaiyar river near Puthukuppam village in Ponneritaluk.	Sholavaram	Ha	4.99	100.25	500.00	0	0.00	0	0.00	0	0.00	0	0.00	100.25	500.00
3	Construction of Check Dam across Kosasthalaiyar river in between Lakshimiyapuram village and Bagasalai village in ThiruvallurTaluk .	Thiruvilangadu	Ha	8.55	70.21	600.00	0	0.00	0	0.00	0	0.00	0	0.00	70.21	600.00
4	Construction of Check Dam across Araniyar river near Mambakkam village in UthukottaiTaluk.	Poondi	Ha	5.93	101.17	600.00	0	0.00	0	0.00	0	0.00	0	0.00	101.17	600.00
5	Construction of Check Dam across CooumrivernearSoranjeri village in	Poonamallee	Ha	55.6	80.93	4500.00	0	0.00	0	0.00	0	0.00	0	0.00	80.93	4500.00

Sl. No	Intervention	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	ponnamalletaluk .															
6	Construction of a Check Dam across Katrankalvai in PonneriTaluk .	Minjur	Ha	37.07	40.46	1500.00	0	0.00	0	0.00	0	0.00	0	0.00	40.46	1500.00
7	Formation of New Tank near Sengarai village of UthukottaiTaluk .	Ellapuram	Ha	0.44	0	0.00	215	95.00	0	0.00	0	0.00	0	0.00	215	95.00
8	Construction of Check Dam across Araniyar river near Pralayapakkam village in PonneriTaluk of Tiruvallur	Minjur	Ha	6.25	0	0.00	80	500.00	0	0.00	0	0.00	0	0.00	80	500.00
9	Construction of Check Dam across Araniyar river near Elavoor village in GummudipoondiTaluk.	Gummudi poondi		107.39	0	0.00	48.42	5200.00	0	0.00	0	0.00	0	0.00	48.42	5200.00
10	Construction of Check Dam across Araniyar near Thirupalaivanam village of PonneriTaluk .	Minjur	Ha	18.54	0	0.00	32.37	600.00	0	0.00	0	0.00	0	0.00	32.37	600.00
11	Construction of Check Dam across Kosasthaiyar near Erumaivettipalayam village of	Sholavaram	Ha	585.37	0	0.00	12.3	7200.00	0	0.00	0	0.00	0	0.00	12.3	7200.00

Sl. No	Intervention	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	PonneriTaluk .															
12	Construction of Check dam across Araniyar river near Andarmadam village in PonneriTaluk .	Minjur	Ha	6.93	0	0.00	43.3	300.00	0	0.00	0	0.00	0	0.00	43.3	300.00
13	Construction of Check Dam across CooumrivernearAra nvoyalkuppam in Thiruvallurtaluk .	Thiruvallur	Ha	9.32	0	0.00	64.35	600.00	0	0.00	0	0.00	0	0.00	64.35	600.00
14	Construction of Check Dam across SeyanOdai near Edirampuram village in Thiruvallur District.	Minjur	Ha	16.47	0	0.00	0	0.00	24.28	400.00	0	0.00	0	0.00	24.28	400.00
15	Construction of Check dam across Araniyar river near Avurivakkam village in PonneriTaluk.	Minjur	Ha	181.22	0	0.00	0	0.00	18.21	3300.00	0	0.00	0	0.00	18.21	3300.00
16	Construction of Check dam across Araniyar river near Pakkam village in PonneriTaluk of Thiruvallur District.	Minjur	Ha	7.8	0	0.00	0	0.00	38.44	300.00	0	0.00	0	0.00	38.44	300.00
17	Construction of Check dam across Araniyar river near	Minjur	Ha	69.56	0	0.00	0	0.00	54.63	3800.00	0	0.00	0	0.00	54.63	3800.00

Sl. No	Intervention	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Pollachiammankulam village in PonneriTaluk .															
18	Construction of Check dam across Araniyar river near Mangalam village in GummudipoondiTaluk.	Gummudi poondi	Ha	394.2	0	0.00	0	0.00	17.25	6800.00	0	0.00	0	0.00	17.25	6800.00
19	Construction of a Check Dam acrossCooum river near Athigathur village of KadambathurTaluk in Tiruvallur	Kadambathur	Ha	52.72	0	0.00	0	0.00	91.05	4800.00	0	0.00	0	0.00	91.05	4800.00
20	Construction of Check Dam across CooumrivernearChittukadu village in ponnamalletaluk.	Poonamallee	Ha	6.59	0	0.00	0	0.00	0	0.00	75.85	500.00	0	0.00	75.85	500.00
21	Construction of Check Dam across Kosasthalaiyar river near Supparettipalayam village in Ponneritaluk .	Minjur	Ha	38.83	0	0.00	0	0.00	0	0.00	15.45	600.00	0	0.00	15.45	600.00
22	Construction of Check Dam in Veeramangalam Tank Supply Channel near	R.K.Pet	Ha	7	0	0.00	0	0.00	0	0.00	12.14	85.00	0	0.00	12.14	85.00

Sl. No	Intervention	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Nesanur Village of PallipetTaluk .															
23	Formation of New Tank near Venugopalapuram village of ThiruthaniTaluk in Tiruvallur District.	R.K.Pet	Ha	1.41	0	0.00	0	0.00	0	0.00	0	0.00	141.64	200.00	141.64	200.00
24	Construction of Check Dam across Nagari river near Kumaramangalam Village of PallipetTaluk.	Pallipet	Ha	14.42	0	0.00	0	0.00	0	0.00	0	0.00	104	1500.00	104	1500.00
	Total					**8000.00**		**14495.00**		**19400.00**		**1185.00**		**1700.00**		**44780.00**

Blocks: Tiruvallur, Elapuram, Poondi, Kadambathur, Ponamalle, Tirrutani, Tiruvalangadu, R. K. pet, Pallipet, Ambathur, Puzhal, Sholavaram, Minjur and Gummidipoondi

4.11. Agriculture Cooperation

Cooperatives all over the world have become an effective and potential instrument of economic development. The Cooperative Movement in Tamil nadu has witnessed over the decades substantial growth in diverse areas of economy. There is not a single major sphere ofeconomic activity which has not been touched by Cooperatives. Cooperatives are also envisaged as an instrument for implementing many important policies like agricultural credit, urban credit, market intervention, and price support for agricultural commodities through Cooperative Wholesale stores, PublicDistribution system etc., from a small beginning, the Cooperative movement in Tamil Nadu has grown in strength overthe years. From Agricultural Banks to Marketing societies and Consumer Cooperatives provide service to the people in various economic activities. Cooperatives also run the Public Distribution system which provides relief to each and every family in the state.

Project components

a) Office infrastructure in all blocks
b) Capital Asset Creation in all blocks

Budget

It is proposed to incur **₹.393.50** lakhs over a period of five years

Expected outcome

The expected outcome for the project agricultural credit, urban credit, market intervention, and price support for agricultural commodities through Cooperative Wholesale stores, Public Distribution system. This will result in the ensuring of food security for the people.

Implementing agency

Department of Agriculture Cooperation will be implementing the project.

Table. 4.27 Budget for Cooperation

(₹. in lakhs)

Sl. No	Co-operation	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Infrastructure													
1	Construction of Compound wall	B5,B9,B13,B15,B16	10	37.00	8	40.00	6	18.00	2	10.00	3	12.00	29	117.00
2	Construction of Godown	B6,B12	0	0.00	0	0.00	1	10.00	1	10.00	0	0.00	2	20.00
3	Establishment of Tractor Shed	B3, B4,B5, B12	2	2..00	7	57.00	2	2.00	1	1.00	1	1.00	13	63.00
4	Renovation of Godown	B6,B10,B14, B15,B16	1	13.00	5	27.5	4	30.00	1	3.00	1	3.00	12	76.50
5	Renovation of Office Building	B5,B9,B13	36	18.00	11	11.00	24	17.25	16	10.25	27	12.25	114	68.75
6	Strengthening of Cooperation Centres (Furniture's, Solar panel, Modern counter, Xerox machine, Air Conditioner, CCTV Camera, Bore well, Generator, UPS Battery, Cash Counting Machine, Invertor, Jewel Weighing Machine, Packing Machine, Purchase of computer and peripherals, Hand Billing machine, LED Display for tender process, Purchase of	All Blocks	17	8.75	12	6.75	10	4.5	7	2.75	4	25.5	50	48.25

Sl. No	Co-operation	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Jewel Carat Meter, Smart Card Printing Machine, Burglary Alarm, Agricultural Equipments, Safety Locker, Purchase of Display racks, Defender Door, Purchase of Paddy drying machine, Automatic Printer machine, Conveyer, E-Tender process, Fork Lifter, Gunny Bag Stitching machine, Jewel tester, Pallets, Tarpaulin, Trolley and Printing Press machineries)													
	Total			**78.75**		**142.25**		**81.75**		**37**		**53.75**		**393.50**

Table 4.28 Budget Abstract for Thiruvallur District

(₹.in lakhs)

Sl. No	Sectors	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Agriculture	22910.68	26773.77	28740.49	31057.62	32090.69	141573.25
2	Agricultural Research (TNAU)	160.00	660.00	625.00	800.00	100.00	2345.00
3	Horticulture	69826.52	12266.23	15822.95	12451.03	12449.29	122816.02
4	Agricultural Engineering	3216.80	3360.07	3268.52	3263.12	3441.64	16550.15
5	Agricultural Marketing	1806.80	1656.35	1198.83	557.35	566.57	5785.90
6	Seed Certification and Organic Certification	23.36	13.36	0.00	0.00	0.00	36.72
7	Animal Husbandry	1348.05	1520.95	1380.95	1220.95	1144.95	6615.85
8	Animal Sciences Research (TANUVAS)	804.30	687.70	1141.05	658.05	266.65	3557.75
9	Dairy Development	485.25	2326.25	9076.25	11885.25	495.25	24268.25
10	Fisheries	57.59	142.24	3602.5	95.38	76.18	4238
11	Fisheries Research (TNFU)	2389.23	2190.63	2019.63	3376.73	2585.73	12561.95
12	Water Resource Organization (PWD)	8000.00	14495.00	19400.00	1185.00	1700.00	44780.00
13	Civil Supplies &Co operation	78.75	142.25	81.75	37.00	53.75	393.50
	Total	**111107.33**	**66234.80**	**86357.92**	**66587.48**	**54970.70**	**385522.34**

The total budget requirement for implementation of various interventions by different departments in Tiruvallur district is **₹. 385522.34 lakhs.**


KARNATAKA
KERALA
SRI LANKA