NATIONAL AGRICULTURE DEVELOPMENT PROGRAMME (NADP)

DISTRICT AGRICULTURE PLAN

THIRUVANNAMALAI

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

NATIONAL AGRICULTURE DEVELOPMENT PROGRAMME (NADP / RKVY)

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2017

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EXECUTIVE SUMMARY

The District Agriculture Plan aims at achieving and sustaining the desired annual growth by ensuring holistic development of agriculture and allied sectors such as horticulture, agricultural engineering, agricultural marketing, seed certification, animal husbandry, dairy development, fisheries, public works department and co-operation. It has to be ensured that the local needs/crops/priorities are better reflected in the agricultural plans.

In order to make the development of agricultural and allied activities more inclusive and also to emphasize bottom up approach in the planning process, block level stakeholders' meetings were conducted by involving all the block level officials, agricultural scientists, farmers, peoples' representatives and so on. The interventions suggested in the block level meetings were incorporated in the District Agriculture Plan. For each block, one scientist from TNAU was nominated to gather the physical and financial aspects and to prepare the block level plan.

Tiruvannamalai District is one of the industrially backward districts in Tamil Nadu that lies between 12.00' and 12.49' of North latitude and 78.38 to 79.45 East longitudes. The total geographical area of the district is 6191 sq. km comprising the Revenue divisions of Tiruvannamalai and Cheyyar. One sixth of the area of this district is covered by reserve forest and hills which is part and parcel of Eastern Ghats under Jawadhu Hills. The district has 7 taluks and 18 blocks. The urban population is 20% of the total population; the remaining 80% is rural population. The red loamy soil is predominantly found in this district; however it also has different types of soils such as ferruginous loamy, sandy loamy and black series loam in tanks and river beds of Cheyyar and Vandavasi taluks. Nearly 35 per cent of the total rainfall is received during the South West Monsoon period followed by North East Monsoon (32 per cent).

The Tiruvannamalai District Agriculture Plan for the Period (2017-2022) has been prepared and the salient features of the District Agriculture Plan are discussed below.

Budget Abstract for Tiruvannamalai District

(₹.in lakhs)

Sl. No	Sectors	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Agriculture	28927.31	28899.18	31688.14	34338.92	37098.63	160952.18
2	Agricultural Research (TNAU)	195.00	235.00	105.00	155.00	35.00	725.00
3	Horticulture	4265.08	4691.59	5160.75	5676.82	6244.50	26038.74
4	Agricultural Engineering	1850.39	1621.44	1626.79	1598.09	1620.39	8317.10
5	Agricultural Marketing	711.36	682.37	530.22	508.02	560.47	2992.44
6	Seed Certification and Organic Certification	23.36	0.00	13.36	0.00	0.00	36.72
7	Animal Husbandry	2482.05	2649.05	2535.05	2351.05	2218.05	12235.25
8	Animal Sciences Research (TANUVAS)	0.00	0.00	0.00	0.00	0.00	0.00
9	Dairy Development	2197.45	14853.45	6465.45	2612.45	2319.45	28448.25
10	Fisheries	0.00	2.00	8.00	120.00	34.00	164.00
11	Fisheries Research (TNFU)	64.76	63.16	13.16	0.26	0.26	141.60
12	Water Resource Organization (PWD)	1880.00	1000.00	60265.00	2030.00	1010.00	66185.00
13	Civil Supplies &Co operation	814.24	445.97	360.25	322.44	315.72	2258.62
	Total	**43411**	**55143.21**	**108771.17**	**49713.05**	**51456.47**	**308494.9**

The total budget requirement for the implementation of various interventions by different departments in Tiruvannamalai district is ₹ **308494.9** Lakhs.

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 were 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 Thiruvannamalai 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 BLOCKS AND DISTRICT

In this chapter, the following details are discussed elaborately at block and district levels

2.1 District at a Glance

The major objective of this study is to prepare the vision 2023 document for agriculture in Tiruvannamalai district in the state to achieve higher productivity of crops. The potential crops are first identified for Tiruvannamalai district based on various criteria like the area occupied by these crops in the district, future potential in terms of value addition and export potentials.

Fig.1 Map Showing the taluks of Tiruvannamalai district

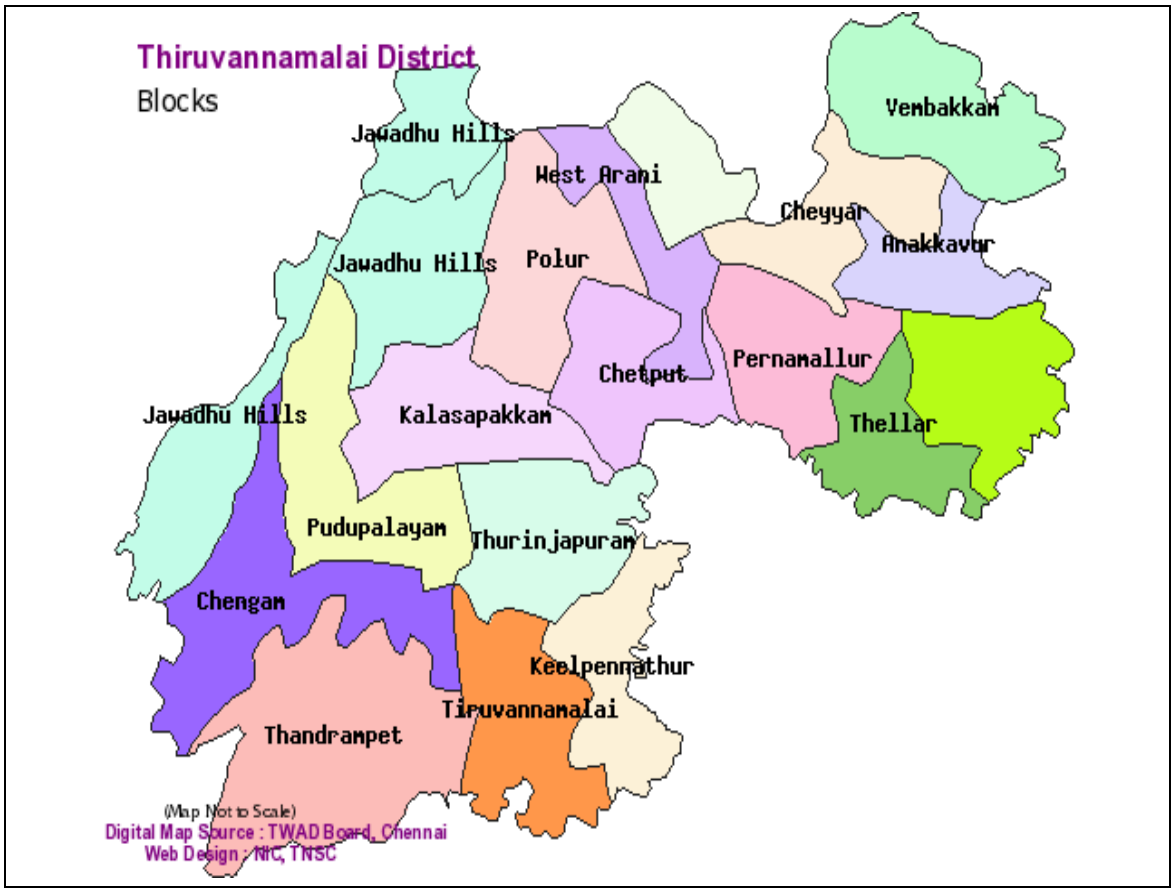

Fig. 2 Map showing blocks of Tiruvannamalai District

2.2 Area, Location and Geographical features

Tiruvannamalai District is one of the industrially backward districts in Tamil Nadu. This district is an outcome of the bifurcation of the North Arcot District and came into existence on 30th September 1989. The district lies between 12.00' and 12.49' of North latitude and 78.38 to 79.45 East longitudes. The district is bounded on North and West by Vellore District and the Southwest by Dharmapuri District, on the south by Villupuram District and on the East by Kancheepuram District. The total geographical area of the district is 6191 sq.km comprising the Revenue divisions of Tiruvannamalai and Cheyyar. The district has 8 taluks *viz.,* Tiruvannamalai, Chengam, Thandrampat, Polur, Arani, Cheyyar, Vembakkam and Vandavasi. (Fig.1) There are 18 Blocks including one tribal Block Jawadhu Hills constituting the district under Rural sector and four Municipalities viz. Tiruvannamalai, Arani, Cheyyar (Thiruvathipuram) Vandavasi representing urban sectors along with ten Town Panchayats *viz.,* Kilpenathur, Vettavalam, Chengam, Pudupalayam, Polur, Kalambur, Chetpet, Kannamangalam, Peranamallur and Desur (Fig.2). One sixth of the area of this district is covered by reserve forest and hills which is part and parcel of Eastern Ghats under Jawadhu Hills. The important hills in this district are Tiruvannamalai (2668 ft. MSL) Jawadhu hills (2500 ft. MSL) and Kailasagiri (2743 ft. MSL)

2.3 Administrative Structure of Tiruvannamalai District

Cheyyar and Tiruvannamalai is the two Revenue Divisions of Tiruvannamalai district. Tiruvannamalai district consists of 8 Taluks, 18 Community Development Blocks, 4 Municipalities, 10 Town Panchayats and 8 Census Towns. The total number of Revenue Villages in the district is 1,095. Of these, 1,041 villages are inhabited. The following table gives number of taluks with number of towns and Community Development Blocks with number of villages in Tiruvannamalai district. The details of taluks and blocks in the district are given in the Table 2.1.

Table 2.1 Administrative structure of the district

Sl. No	Name of the Taluk	Towns	S. No.	Name of the CD Block	No. of Villages	Inhabited Villages
1	Arani	7	1	Tiruvannamalai	86	86
2	Cheyyar	3	2	Kilpenathur	62	62
3	Vandavasi	3	3	Thurinjapuram	60	60
4	Polur	3	4	Polur	54	54
5	Chengam	2	5	Kalasapakkam	49	49
6	Thandrampet	0	6	Chetpet	61	61
7	Tiruvannamalai	4	7	Chengam	58	58
8	Vembakkam		8	Pudupalayam	41	41
			9	Thandrampet	62	62
			10	Jawadhu Hills	38	38
			11	Cheyyar	66	66
			12	Anakkavur	61	60
			13	Vembakkam	89	89
			14	Vandavasi	70	69
			15	Thellar	68	68
			16	Peranamallur	66	66
			17	Arani	25	25
			18	West Arani	23	23
				Not under any CD block	56	4
	Total	**22**				

Source: Census of India (2011), Director of Census Operations, Tamil Nadu

2.4 Demographic Profile

2.4.1 Population

The total population of this district was 24, 64,875 comprising of 12, 35,889 men and 12, 28,986 women as per 2011 census. The urban population is 494945 constituting 20% of the total population; the remaining 80% *ie.*1969930 is rural population. The density of the population is 399 per sq.km. The total literate among male are 1235889 and that of female are 12,28,986. Among the different blocks, Tiruvannamalai block constitutes the highest population of 3, 25,726 numbers followed by Thandrampet 1, 78,731 numbers and Polur comprising 1,77,772 numbers in the block. The details of the population in various blocks of the district are presented in the Table 2.2.

Table 2.2 Block wise demographic details of the district

Sl. No	Name of the Block	Urban Total			Rural Total			District Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
1	Tiruvannamalai	81684	81838	163522	81694	80510	162204	163378	162348	325726
2	Thurinjapuram	-	-	-	61920	61293	123213	61920	61293	123213
3	Kilpenathur	14583	14641	29224	52305	51368	103673	66888	66009	132897
4	Polur	20984	21443	42427	67609	67736	135345	88593	89179	177772
5	Kalasapakkam	-	-	-	60781	59831	120612	60781	59831	120612
6	Chetpet	9772	10055	19827	47272	47115	94387	57044	57170	114214
7	Chengam	13549	13431	26980	71994	70155	142149	85543	83586	169129
8	Pudupalayam	5608	5774	11382	45453	44038	89491	51061	49812	100873
9	Thandrampat	-	-	-	89702	89029	178731	89702	89029	178731
10	Jawadhu Hills	-	-	-	26483	25516	51999	26483	25516	51999
11	Cheyyar	25050	25241	50291	40370	40246	80616	65420	65487	130907
12	Anakkavur	-	-	-	40365	39588	79953	40365	39588	79953
13	Vembakkam	-	-	-	64013	63739	127752	64013	63739	127752
14	Vandavasi	15566	15754	31320	58637	58435	117072	74203	74189	148392
15	Thellar	2246	2351	4597	45998	45858	91856	48244	48209	96453
16	Peranamallur	2878	2923	5801	42551	42924	85475	45429	45847	91276
17	Arani	43150	44269	87419	45611	45563	91174	88761	89832	178593
18	West Arani	11093	11062	22155	46968	47260	94228	58061	58322	116383
	Total	**246163**	**248782**	**494945**	**989726**	**980204**	**1969930**	**1235889**	**1228986**	**2464875**

Source: District Statistical Handbook (2013-14)

The decennial growth rate of population in the district from 2001 to 2011 is given in the Table 2.3. From the analysis, it is revealed that the growth rate was 12.75 per cent variation from the previous census of 2001. The urban population showed the highest per cent of variation *i.e.,* 23.50 per cent from the old census whereas rural population showed 10.34 per cent.

Table 2.3 Population of the district decennial growth rate from 2001 to 2011

Period 2001 to 2011	Region	Population 2001	Population 2011	Percentage Variation Since previous Census
	Total	2186125	2464875	12.75
	Rural	1785364	1969930	10.34
	Urban	400761	494945	23.50

Source: Census of India (2011), Directorate of Census Operations, Chennai

2.4 Literacy level

Table 2.4 Literacy Level in Tiruvannamalai District

Particulars	Total literates	Male	Female
Number	1626813	909803	717010
Rate	74.21	83.11	65.32

Source: Census of India (2011), Directorate of Census Operations, Chennai

The total literate population in the district is about 1626813 and constitutes 74.21 per cent of the total population. The male literacy rate is about 83.11 per cent and the literacy rate achieved by female is about 65.32 per cent.

2.4.1 Working population

The working population in the district is presented in the Table 2.5. The male workers constitute 59.68 per cent and female workers are about 40.32 per cent. Out of the whole, 15.31 per cent are urban workers and 84.69 per cent of the people were rural worker. From the main workers, 21.42 per cent are cultivators, agricultural labourers constitutes 28.37 per cent and 2.99 per cent people are house hold industry people.

Table 2.5 Workers Details in Tiruvannamalai District

Industrial Category	Population (in No's)	Percentage of working population
Total workers	1238177	100.00
Male workers	738995	59.68
Female workers	499182	40.32
Rural workers	1048646	84.69
Urban workers	189531	15.31
1. Total Main workers	970072	78.35
a. Cultivators	265183	21.42
b. Agricultural labourers	351310	28.37
c. Household industry, manufacturing, processing, servicing and repairs	37020	2.99
d. Other workers	316559	
2.Marginal workers	268105	21.65
Non-workers	1226698	

Source: District Statistical Handbook (2014-15)

2.5 Topography

The varieties and package of cultivation practices suitable to different agro-climatic conditions and production environment need to be identified by the agricultural scientists.

2.5.1 Soil type

The red loamy soil is predominantly found in this district (Table 2.6). However Polur taluk has concentration of red series loam. The district has also different types of soils such as ferruginous loamy and sandy loamy however black series loam is found in tanks and river beds of Cheyyar and Vandavasi taluks. The taluk wise soil and soil productivity map included in the Annexure I. The general climate is tropical. Black loam is found in Tank and Riverbed areas of Vandavasi and Cheyyar Taluks accounting for about 15% of the total area.

Table 2.6 Soil Types of Tiruvannamalai District

Sl. No.	Type of Soil	Places in District
1.	Red Loam	Small patches in the Taluks of Tiruvannamalai, Chengam and Polur
2.	Black Soil	Tiruvannamalai, Chengam, Polur, Arani, Cheyyar and Vandavasi

Source: Directorate of Economics and Statistics, Chennai.

2.5.2 Soil Classification

The different series of soil classification in the district is given in the Table 2.7. The total area constitutes about 6, 31,139 ha. One third of the soil series (24 per cent) are located in the forest area whereas three fourth of the soil series are located in the remaining area (76 per cent).

Table 2.7 Soil series classification

Sl. No.	Soil Series	Symbol	Extent	
			Ha.	Per cent
1	Mathur	Mth	31760	5.03
2	Suramangalam	Sur	29370	4.65
3	Madiappankulam	Mpk	27288	4.32
4	Kurumbalur	Kbr	17305	2.74
5	Idayapatti	Idp	14631	2.32
6	Kampattu	Kmp	10684	1.69
7	Mangalathupatty	Mng	9370	1.48
8	Tenneyur	Tnr	6451	1.02
9	Olagalapadi	Ogp	5900	0.93
10	Mampattu	Mpu	5934	0.94
11	Kalakkampattu	Kpu	4377	0.69
12	Pachol	Phl	4286	0.68
13	Rajapalayam	Rpm	4258	0.67
14	Kattampoondi	Ktp	3284	0.52
15	Mangadu	Mgd	2662	0.43
16	Kuppam	Kpm	1287	0.21
17	Pallipalayam	Ppm	389	0.06
	Soil Association		251082	39.78
	Forest		153318	24.29
	Others		47503	7.53
	Grand Total		631139	**100.00**

Source: Soil Atlas (2014), Tiruvannamalai District, Soil Survey & Land Use Organization, Dept. of Agriculture, Tamil Nadu, Coimbatore-13

2.6 Climate condition and Rainfall

The average maximum and minimum temperatures at select stations in Tiruvannamalai district vary between 36.1°C to 20.9°C.

The Rainfall pattern of the district is given in Table 2.8. The average total rainfall received by the district is 871.9 mm (Actual) and 1040 mm (normal). Nearly 35 per cent of the total rainfall is received during the South West Monsoon (51.10 per cent) period followed by North East Monsoon (28.55 per cent).

Table 2.8 Month wise / season wise rainfall distribution in Tiruvannamalai District

Season / Month	2014-2015	
	Actual	**Normal**
South West Monsoon		
June	67.4	62.4
July	68.9	96
August	149.2	142.3
September	160	167.4
Total	**445.5 (51.10)**	**468.1 (45.00)**
North East Monsoon		
October	123.3	194.2
November	66.2	170.2
December	59.4	82.1
Total	**248.9 (28.55)**	**446.5 (42.93)**
Winter Season		
January	0	14.7
February	0	11.8
Total	**0 (0.00)**	**26.5 (2.55)**
Hot Weather		
March	1.8	11.4
April	114.7	19.3
May	61	68.2
Total	**177.5 (20.36)**	**98.9 (9.51)**
Annual rainfall	**871.9**	**1040**

Source: Season and Crop Report (2014-15)

Time series data (last 10 years) of rainfall by seasons explained in the Table 2.9. The ten year rainfall data indicated that the actual rainfall exceeds the normal rainfall. During the year 2006-07, 2008-09, 2009-10, 2013-14 and 2014-15 the receipt of actual amount of rainfall is lesser than the normal rainfall. The remaining years received increased rainfall from the normal.

Table 2.9 Time series data of rainfall by seasons (last 10 years)

Sl. No.	Year	South West Monsoon		North East Monsoon		Winter Season		Hot Weather Season		Total		
		Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual	3.% Deviation (+ or –Normal)
1	2005-06	465.8	446.5	439.8	800.6	32.8	3.5	108.2	92.5	1046.6	1343.1	(+)
2	2006-07	465.8	366.8	439.8	462.7	32.8	27.7	108.2	77.4	1046.6	934.6	(-)
3	2007-08	465.8	485.9	439.8	601.8	32.8	23.2	108.2	184.3	1046.6	1295.2	(+)
4	2008-09	465.8	401.0	439.8	542.0	32.8	6.4	108.2	32.1	1046.6	981.5	(-)
5	2009-10	465.8	392.0	439.8	436.4	32.8	5.1	108.2	124.2	1046.6	957.7	(-)
6	2010-11	465.8	511.3	439.8	654.6	26.5	45.2	98.9	106.0	1031.0	1317.1	(+)
7	2011-12	468.1	498.6	446.5	505.0	26.5	33.6	98.9	100.2	1074.7	1137.4	(+)
8	2012-13	468.1	492.4	446.5	504.8	26.5	4.17	98.9	69.07	1074.7	1070.4	(-)
9	2013-14	468.1	396.55	446.5	330.72	26.5	12.87	98.9	96.77	1074.7	836.1	(-)
10	2014-15	468.1	445.5	446.5	248.9	26.5	0	98.9	177.5	1074.7	871.9	(-)

Source: Department of Revenue, Tiruvannamalai.

2.7 Land

2.7.1 Land use pattern

The land use pattern in different blocks of the district is presented in the Table 2.10 & 2.11.

Forest represent all actually forested area on the lands classed or administered as forest under any legal enactment dealing with forest, whether state owned or private. The forest area of the district is 1010.18 ha accounting for 0.16 per cent of the total geographical area of the state. Anakkavur block with an extent of 497.75 ha under forest is the highest among other blocks in their contribution to the forest area of the district. This works out to 49.28 per cent of the district total forest area. This is followed by Jawadhu hills which constitute 331.67 ha (32.77 per cent) and Thandrampet block with 97.17 ha (9.60 per cent).

Land which cannot be brought under cultivation unless at a high cost such as land in isolated blocks or within cultivated holdings, such as mountains, deserts, hills etc., are classified as barren and uncultivable land. An extent of 20629.59 ha of land comes under this category which represents 3.28% of the total geographical area of the district. Arani block alone accounted for 6552.30 ha which is 31.76 per cent of the district barren or uncultivable land and about 1.0 per cent of its geographical area under this category.

The land put to use for purposes other than agriculture such as buildings, pathways, roads, social forests, bus stands, railway tracks, canals, rivers, local reservoirs, swamps, marshy and water logged areas, lands under still water etc., are brought under this category. Area under this classification is 96442.59 ha accounting for 15.34% of the total district geographical area. Vembakkam block has the highest land on non-agricultural use area of 8307.67 ha which accounts for 8.60 per cent of the total area under this category.

All lands available for cultivation whether not taken up for cultivation or taken up for cultivation once, but not cultivated during the current year and continuously for the last five years or more in succession for one reason or the other are classified as cultivable waste. Such lands may be either fallow or covered with shrubs and jungles which are not put to any use. The total area under cultivable waste is 8662 ha or 1.38% of the total geographical area of the district. Polur, Thandrampet, Jawadhu hills and Vandavasi together accounted for 49.16 per cent of area under this category.

Table 2.10 Block wise Land use pattern

Block	Forest	Uncultivable Waste	Land put to Non Agri Uses	Cultivable Waste Land	Permanent Pasture & Grass Land	Misc. Tree Crops & Groves
Anakkavur	497.75	81.56	7960.30	81.58	305.83	224.56
Arani	0.00	6552.30	3893.16	261.25	36.28	2.82
Chengam	0.00	1826.79	4075.82	625.45	2.64	42.66
Chetpet	2.36	557.66	5768.07	283.74	479.50	77.31
Cheyyar	0.00	223.04	6066.03	266.13	251.68	446.59
Jawadhu hills	331.67	1096.03	812.90	849.89	15.12	0.36
Kalasapakkam	0.00	678.48	4691.30	211.66	83.20	167.15
Kilpenathur	0.00	1153.68	4572.05	68.44	2.93	46.14
Peranamallur	0.00	363.23	6541.72	369.84	294.36	184.29
Polur	44.33	1236.79	5546.49	1951.00	16.50	37.07
Pudupalayam	0.00	67.94	4290.88	264.03	0.00	32.30
Thandrampet	97.17	3628.10	5789.18	854.71	11.05	15.58
Thellar	24.96	634.07	5946.96	449.20	310.46	91.95
Thurinjapuram	11.95	270.40	5024.64	249.38	69.59	14.70
Tiruvannamalai	0.00	1219.89	5670.69	514.47	158.98	52.66
Vandavasi	0.00	422.28	7258.68	603.58	141.13	182.36
Vembakkam	0.00	334.73	8307.67	503.32	340.15	203.28
West Arani	0.00	282.67	4226.09	254.72	78.47	33.85
Total	**1010.18**	**20629.59**	**96442.59**	**8662.35**	**2597.87**	**1855.60**
Per cent	**0.16**	**3.28**	**15.34**	**1.38**	**0.47**	**0.30**

Source: Block 'G' Return report, 2011-12

Net area sown represents the area sown under first crop during the fasli year. Out of 6,30,681 ha of the total geographical area, 197136 ha of land constituting 35.51 % was cultivated once (*i.e.* Net area sown) with various crops. Of the total net area sown in the district, the share of Thandrampet block was the highest with 17,733.66 ha (2.82 per cent) followed by Thurinjapuram block with 15,455.9 ha (2.45 per cent).

Table 2.11 Land use pattern in different blocks of Tiruvannamalai

Block	Current Fallow	Other Fallow	Net Cultivated Area	Reserve Forest	Total Geographical Area
Anakkavur	6731.57	1223.30	8844.49	628.00	26578.92
Arani	4073.72	748.28	6684.84	1939.00	24191.62
Chengam	8640.26	1565.81	14800.29	28269.00	59848.71
Chetpet	5051.88	979.91	11450.82	3677.04	28328.26
Cheyyar	7528.58	1947.34	8785.70	0.00	25515.06
Jawadhu hills	2009.12	1499.36	7181.73	46097.58	59893.73
Kalasapakkam	3478.22	925.56	11919.21	8623.00	30777.76
Kilpenathur	8324.14	100.45	13313.00	51.79	27632.61
Peranamallur	10406.00	1560.27	6169.93	1585.82	27475.44
Polur	5056.59	475.68	13466.19	20074.00	47904.62
Pudupalayam	4568.03	965.28	9993.53	13215.00	33396.97
Thandrampet	5117.26	6074.70	17733.66	13833.18	53154.59
Thellar	10457.93	3521.81	8297.19	763.00	30497.52
Thurinjapuram	6674.80	682.63	15455.90	1052.12	29506.08
Tiruvannamalai	9931.90	887.14	13686.75	8576.41	40698.88
Vandavasi	7935.91	1371.62	11204.93	692.00	29812.48
Vembakkam	10669.11	1678.30	10686.83	1736.76	34460.13
West Arani	6545.80	1139.24	7460.52	986.00	21007.35
Total	**123200.82**	**27346.7**	**197136**	**151800**	**630681**
Per cent	31.1595703	5.423054	35.51386	4.693595	100

Source: Block 'G' Return report, 2011-12

The total geographical area of the district is 6.30 lakh hectares (Table 2.12). Of this 1,86,570 hectares have been brought under cultivation as net area sown. This accounts for 11.82 per cent of the total area of the district. Forests account for 9.68 per cent of the total area. About 6.11 per cent of the total area (96,481 ha) is put to non-agricultural use. However, 8.59 per cent is accounted for by current fallow lands. Tree crops, groves, Orchards etc., together account for about 0.13 per cent of the total area in the district.

Table 2.12 Land Use Pattern in Tiruvannamalai district (2014-15)

Sl. No	Classification	Area (ha)	Per cent
1	Geographical Area	631205	100.00
2	Forest	152810	24.21
3	Barren & Uncultivable Area	20586	3.26
4	Land Put to Non-agricultural Uses	96481	15.29
5	Permanent Pastures & Other grazing lands	2931	0.46
6	Misc. tree crops & groves not incl. in the net area sown	2033	0.32
7	Current Fallow	135497	21.47
8	Other Fallow	25983	4.12
9	Net area sown	186570	29.56
10	Area sown more than once	68747	10.89
11	Gross area sown	255317	40.44

Source: *Season and Crop Report (2014-15)*

Table 2.13 Land Use Pattern of Tiruvannamalai District (2014-15) Compound Growth Rates (2005-06 to 2014-15) per annum

Sl. No.	Classification	Area (ha)	CGR (%)
1	Forest	152810	-0.03
2	Barren and Uncultivable uses	20630	-0.33
3	Land put to Non-Agricultural uses	96444	0.03
4	Cultivable Waste	8689	-4.39
5	Permanent pastures and other Grazing Land	2931	-3.28
6	Land Under Miscellaneous Tree Crops and Gross not included in Net Area Sown	1856	-16.42
7	Current Fallow	123338	3.53
8	Other Fallow Land	27375	6.35
9	Net Area Sown	197132	-0.12
10	Total Geographical Area	631205	0.00
11	Area Sown More Than Once	49826	-2.07
12	Total Cropped Area	246958	-0.56
13	Irrigated Area	148528	

The growth rates of land use pattern from 2005-06 to 2014-15 is presented in the Table 2.13. The data revealed that current fallow and other fallow lands are increasing at the rate of 3.53 per cent and 6.35 per cent respectively. The land under miscellaneous tree crops is decreased at the highest rate of 16.42 per cent. Cultivable waste land and

permanent pastures and other grazing land are also decreasing at 4.39 per cent and 3.28 per cent respectively. Forest area is decreasing at 0.03 per cent.

2.7.2 Land Holding Pattern

There are five categories of land holdings. They are marginal (below 1 ha), small (1-2 ha), semi-medium (2-4 ha), medium (4-10 ha), large (10ha and above). Majority of the farmers (95 per cent) in Tiruvannamalai district have less than one hectare occupying 13 percent of the land area. These details are presented in Table 2.14.

Table 2.14 Number and area of operational land holdings

Size Class of holdings (Hectares)	Group Size	Number				Area			
		S.C.	S.T.	Others	Total	S.C.	S.T.	Others	Total
<1.0	Marginal	50276	8145	297315	355736	18550	3492	114789	136831
1.0 – 2.0	Small	7337	2284	58435	68056	9973	3131	803330	816434
2.0 – 3.0	Semi-Medium	1517	865	17668	20050	3915	2321	46527	52763
3.0 – 4.0									
4.0 – 5.0	Medium	152	208	3052	3412	806	1129	16287	18222
5.0 – 7.5		0	0	0	0	0	0	0	0
7.5 – 10		0	0	0	0	0		0	0
10 and above	Large	8	7	132	147	109	124	1791	2024
Total	**59290**	**11509**	**376602**	**447401**	**33353**	**10197**	**982724**		**1026274**
Per cent	**13.25**	**2.57**	**84.18**	**100.00**	**3.25**	**0.99**	**95.76**		**100.00**

Source: Report on 9th Agricultural Census 2010-11

2.8 Sources of irrigation

Canal, well, bore well and tank are the sources of irrigation in Tiruvannamalai district. Well irrigation forms the major source of irrigation in all the blocks in the district. Canal irrigation forms the second important major source of irrigation followed by bore wells. The details of the sources of irrigation, number and area coverage are presented in table 8 and the block-wise irrigation details mentioned in Table 2.15.

Table 2.15 Area irrigated by different sources of water supply and growth rates

S. No.	Area irrigated	Net area	Gross area
1	Canals	19.504	18.553
2	Tanks	8.074	8.233
3	Tube wells	20.491	15.556
4	Ordinary wells	2.251	1.782
	Total	**2.465**	**2.055**

Sathanur dam is one of the major dams constructed across Pennaiyar River among Chenna Kesava hills. Among the other blocks, Thandrampet block has the catchment area, more water spread area and with a capacity of 8100 lakh litres of water. About 12446 wells are in use and 92 tanks are situated. The block wise details on number of wells in use and number of tanks are furnished in the Table 2.16.

Table 2.16 Details of Dams in Tiruvannamalai District

Sl. No.	Name of the Block	Dams					Tanks				No. of Wells in use	No. of Tanks
		Catchments area	Water spread area	Height	Capacity	Length of canals	Water spread area	Capacity	Height	Length of canals		
1	Tiruvannamalai	-	-	-	-	-	-	-	-	-	10958	123
2	Thurinjapuram	-	-	-	-	-	-	-	-	-	12192	104
3	Kilpennathur	-	-	-	-	-	-	-	-	-	10771	125
4	Polur	-	-	-	-	-	-	-	-	-	11342	70
5	Chetpet	-	-	-	-	-	-	-	-	-	9093	116
6.	Kalasapakkam	-	-	-	-	-	-	-	-	-	9890	83
7.	Jawadhu hills	-	-	-	-	-	-	-	-	-	1757	0
8.	Chengam	-	-	-	-	-	-	-	-	-	12906	86
9.	Pudupalayam	-	-	-	-	-	-	-	-	-	9720	63
10.	Thandrampet	4480	4500	119	8100	35	-	-	-	-	12019	92
11.	Arani	-	-	-	-	-	-	-	-	-	4991	105
12.	West Arani	-	-	-	-	-	-	-	-	-	6841	109
13.	Cheyyar	-	-	-	-	-	-	-	-	-	8200	117
14.	Anakkavur	-	-	-	-	-	-	-	-	-	7677	116
15.	Vembakkam	-	-	-	-	-	-	-	-	-	8816	147
16.	Vandavasi	-	-	-	-	-	-	-	-	-	12138	232
17.	Thellar	-	-	-	-	-	-	-	-	-	14059	149
18.	Peranamallur	-	-	-	-	-	-	-	-	-	10872	129
	Total	**4480**	**4500**	**119**	**8100**	**35**	**-**	**-**	**-**		**174242**	**1966**

Source: Statistical handbook of the district.

The statistics on number of canals and its length, wells used for irrigation, reservoirs and tanks are presented in the Table 2.17. Thellar block have the maximum of wells used for irrigation followed by the Chengam block which has 12,906 wells. Vembakkam block constituted the maximum number of bore wells and Vandavasi have 232 tanks.

Table 2.17 Sources of water supply in the district (2014-15)

Sl. No.	Name of the block	Number of canals	Length (km)	Wells used for irrigation purpose only	Bore well	Wells used for domestic purpose only	Reser-voirs	Tanks (Nos.)
1	Tiruvannamalai	35	30	10945	13	1151	0	123
2	Thurinjapuram	2	3	11754	438	462	0	104
3	Kilpenathur	0	0	10675	96	991	0	125
4	Polur	0	0	11007	335	631	0	70
5	Chetpet	0	0	8916	177	805	0	116
6	Kalasapakkam	1	1	9887	3	780	0	83
7	Jawadhu hills	0	0	1757	0	199	0	0
8	Chengam	0	0	12906	0	709	0	86
9	Pudupalayam	1	5	9720	0	1853	0	63
10	Thandarampet	63	43	11863	156	667	1	92
11	Arani	0	0	4991	0	2202	0	105
12	West Arani	0	0	6681	160	659	0	109
13	Cheyyar	7	10	8200	0	3425	0	117
14	Anakkavur	7	9	7677	0	664	0	116
15	Vembakkam	28	18	7675	1141	590	0	147
16	Vandavasi	0	0	12138	0	2824	0	232
17	Thellar	0	0	14059	0	1658	0	149
18	Peranamallur	0	0	10872	0	684	0	129
	Total	**144**	**119**	**171723**	**2519**	**20954**	**1**	**1966**

Source: Statistical Hand Book (2014-15), Tiruvannamalai district

The district possesses the net irrigated area of 132654 ha. Of which, 2620 ha area are irrigated through tube wells and next to this is the tank irrigation which covers an area of about 10216 ha. Canal irrigation accounts an area of 108.19 ha. The detailed data on number of irrigation sources and gross irrigated area is furnished in the Table 2.18 & 2.19.

Table 2.18 Irrigation by different sources in Tiruvannamalai district

(Triennium ending Average 2014-15)

S.No.	Sources	Gross area irrigated (ha)	Net Area Irrigated (ha)	Percentage to Net area irrigated
1	Dug wells/Open wells	167280.33	119360.33	89.35
2	Tube wells/Bore wells	2048.67	1623.33	1.22
3	Tanks	14382.67	12421.67	9.30
4	Canals	218.67	173.67	0.13
5	Other sources	0.00	0.00	0.00
	Total	183930.34	133579.00	100.00

Table 2.19 Gross area irrigated by Sources (2014-15)

Sl. No	Source	No.	Area Irrigated (ha)
1	Government canals	144	108.19
2	Tanks	1966	10216.29
3	Tube wells/Bore wells	2519	2620.00
4	Other wells	171723	165359
	Total	**176352**	**178303.48**
a)Total Net area irrigated(in Ha)			132654.00
b) Gross area irrigated (in Ha)			178303.00
c) Name of the river			Cheyyar, Thenpennai, Kamandala, Naganathi and Miruganda nathi
d).Name of the Lake			Vazhkudai, Mamandur

Source: Asst. Director of Statistics, Tiruvannamalai.

2.9 Cropping pattern

2.9.1 Major crops grown

Agriculture is the main occupation of the district. Paddy, sugarcane and groundnut are the major crops grown in the district. Paddy is the principal crop extensively cultivated in all the districts of the state having a unique three-season pattern *viz*. Kar/ Kuruvai/Sornavari

(April to July), Samba/ Thaladi/ Pishanam (August to November) and Navarai / Kodai (December to March). Black gram is one of the important pulses grown in both Kharif and Rabi seasons. Red gram is sown mainly under rain-fed condition.

2.9.2 Area and productivity of major crops

The normal cultivable area under all crops in this district is 221944.1 ha in which the major area of 82,000.70 ha is under paddy and 58,503 ha under Groundnut. The other major crops cultivated in this district are Black gram, Ragi Minor Millets, Pulses, Sugarcane, Gingelly and Cotton.

Table 2.20a Area, production and productivity of major crops in different blocks (2013-14)

Sl. No	Block	Paddy			Cholam			Cumbu			Ragi		
		Area (ha)	Pdty. (Kg/ha)	Pdn. (MT)	Area (ha)	Pdty. (Kg/ha)	Pdn. (MT)	Area (ha)	Pdty. (Kg/ha)	Pdn. (MT)	Area (ha)	Pdty. (Kg/ha)	Pdn. (MT)
1	Tiruvannamalai	4985.18	4407.55	21972.43	61.12	1756.50	107.36	720.00	3539.61	2548.52	460.92	3527.00	1625.66
2	Thurinjapuram	3926.80	4407.55	17307.57	66.00	1756.50	115.93	5.00	3539.61	17.70	282.53	3527.00	996.48
3	Kilpenathur	4763.30	4407.55	20994.48	0.00	1756.50	0.00	319.00	3539.61	1129.14	37.17	3527.00	131.10
4	Chengam	3911.00	4407.55	17237.93	505.00	1756.50	887.03	627.00	3539.61	2219.34	538.00	3527.00	1897.53
5	Pudupalayam	7402.50	4407.55	32626.89	0.00	1756.50	0.00	378.50	3539.61	1339.74	437.93	3527.00	1544.58
6	Thandrampattu	5808.25	4407.55	25600.15	4.00	1756.50	7.03	1350.00	3539.61	4778.47	441.45	3527.00	1556.99
7	Kalasapakkam	4347.14	4407.55	19160.24	17.50	1756.50	30.74	208.00	3539.61	736.24	528.60	3527.00	1864.37
8	Polur	7220.00	4407.55	31822.51	23.00	1756.50	40.40	515.00	3539.61	1822.90	860.60	3527.00	3035.34
9	Chetpet	5805.05	4407.55	25586.05	0.00	1756.50	0.00	2.00	3539.61	7.08	510.80	3527.00	1801.59
10	Arani	3155.00	4407.55	13905.82	13.00	1756.50	22.83	27.00	3539.61	95.57	102.00	3527.00	359.75
11	West Arani	3424.00	4407.55	15091.45	81.00	1756.50	142.28	72.00	3539.61	254.85	208.00	3527.00	733.62
12	Vandavasi	4104.20	4407.55	18089.47	0.00	1756.50	0.00	0.00	3539.61	0.00	48.00	3527.00	169.30
13	Thellar	5335.90	4407.55	23518.25	0.00	1756.50	0.00	1.50	3539.61	5.31	75.20	3527.00	265.23
14	Peranamallur	3087.90	4407.55	13610.07	0.00	1756.50	0.00	0.00	3539.61	0.00	106.00	3527.00	373.86
15	Cheyyar	6106.70	4407.55	26915.59	0.00	1756.50	0.00	0.00	3539.61	0.00	77.00	3527.00	271.58
16	Anakkavur	3083.20	4407.55	13589.36	0.00	1756.50	0.00	2.00	3539.61	7.08	42.02	3527.00	148.20
17	Vembakkam	5534.60	4407.55	24394.03	0.00	1756.50	0.00	0.00	3539.61	0.00	71.00	3527.00	250.42
Total		**82000.7**	**4407.55**	**361422.2**	**770.62**	**1756.50**	**1353.5**	**4227.00**	**3539.61**	**14961.9**	**4827.2**	**3527.00**	**17025.6**

Source: Joint Director of Agriculture, Tiruvannamalai

Table 2.20b Area, production and productivity of major crops in different blocks (2013-14)

Sl. No	Block	Maize			Samai			Varagu			Other millets		
		Area (ha)	Pdty. (Kg/ha)	Pdn. (MT)	Area (ha)	Pdty. (Kg/ha)	Pdn. (MT)	Area (Ha)	Pdty. (Kg/ha)	Pdn. (MT)	Area (ha)	Pdty. (Kg/ha)	Pdn. (MT)
1	Tiruvannamalai	440.86	7090.00	3125.70	0.00	1452.00	0.00	0.00	2047.00	0.00	0.00	529.00	0.00
2	Thurinjapuram	114.60	7090.00	812.51	0.00	1452.00	0.00	0.00	2047.00	0.00	0.00	529.00	0.00
3	Kilpenathur	197.80	7090.00	1402.40	0.00	1452.00	0.00	0.00	2047.00	0.00	0.00	529.00	0.00
4	Chengam	63.75	7090.00	451.99	530.00	1452.00	769.56	0.00	2047.00	0.00	0.00	529.00	0.00
5	Pudupalayam	147.00	7090.00	1042.23	1800.00	1452.00	2613.60	0.00	2047.00	0.00	13.00	529.00	6.88
6	Thandrampattu	930.00	7090.00	6593.70	0.00	1452.00	0.00	0.00	2047.00	0.00	24.00	529.00	12.70
7	Kalasapakkam	121.50	7090.00	861.44	920.00	1452.00	1335.84	1.00	2047.00	2.05	25.00	529.00	13.23
8	Polur	236.50	7090.00	1676.79	2413.00	1452.00	3503.68	0.00	2047.00	0.00	49.00	529.00	25.92
9	Chetpet	1.40	7090.00	9.93	0.00	1452.00	0.00	0.00	2047.00	0.00	20.00	529.00	10.58
10	Arani	4.00	7090.00	28.36	0.00	1452.00	0.00	0.00	2047.00	0.00	0.00	529.00	0.00
11	West Arani	35.60	7090.00	252.40	0.00	1452.00	0.00	0.00	2047.00	0.00	0.00	529.00	0.00
12	Vandavasi	0.00	7090.00	0.00	0.00	1452.00	0.00	0.00	2047.00	0.00	0.00	529.00	0.00
13	Thellar	1.00	7090.00	7.09	**0.00**	1452.00	0.00	0.00	2047.00	0.00	0.00	529.00	0.00
14	Peranamallur	0.00	7090.00	0.00	0.00	1452.00	0.00	0.00	2047.00	0.00	0.00	529.00	0.00
15	Cheyyar	0.00	7090.00	0.00	0.00	1452.00	0.00	0.00	2047.00	0.00	0.00	529.00	0.00
16	Anakkavur	1.00	7090.00	7.09	0.00	1452.00	0.00	0.00	2047.00	0.00	0.00	529.00	0.00
17	Vembakkam	12.00	7090.00	85.08	0.00	1452.00	0.00	0.00	2047.00	0.00	0.00	529.00	0.00
	Total	**2307.0**	**7090.00**	**16356.70**	**5663.00**	**1452.00**	**8222.68**	**1.00**	**2047.00**	**2.05**	**131.0**	**529.00**	**69.30**

Source: Joint Director of Agriculture, Tiruvannamalai

Table 2.20c Area, production and productivity of major crops in different blocks (2013-14)

Sl. No.	Block	Red gram			Black gram			Green gram			Horse gram		
		Area (ha)	Pdty. (Kg/ha)	Pdn. (MT)	Area (ha)	Pdty. (Kg/ha)	Pdn. (MT)	Area (ha)	Pdty. (Kg/ha)	Pdn. (MT)	Area (ha)	Pdty. (Kg/ha)	Pdn. (MT)
1	Tiruvannamalai	248.00	1056.00	261.89	2110.59	485.00	1023.64	21.00	630.00	13.23	0.20	790.00	0.16
2	Thurinjapuram	169.00	1056.00	178.46	1816.20	485.00	880.86	123.00	630.00	77.49	0.25	790.00	0.20
3	Kilpenathur	243.00	1056.00	256.61	877.36	485.00	425.52	67.00	630.00	42.21	3.00	790.00	2.37
4	Chengam	270.00	1056.00	285.12	2491.50	485.00	1208.38	276.40	630.00	174.13	569.00	790.00	449.51
5	Pudupalayam	189.00	1056.00	199.58	1127.50	485.00	546.84	158.60	630.00	99.92	2237.00	790.00	1767.23
6	Thandrampattu	160.00	1056.00	168.96	2131.40	485.00	1033.73	67.00	630.00	42.21	455.00	790.00	359.45
7	Kalasapakkam	226.00	1056.00	238.66	707.59	485.00	343.18	86.00	630.00	54.18	26.00	790.00	20.54
8	Polur	266.00	1056.00	280.90	408.90	485.00	198.32	38.80	630.00	24.44	2007.00	790.00	1585.53
9	Chetpet	140.00	1056.00	147.84	923.20	485.00	447.75	207.20	630.00	130.54	1.50	790.00	1.19
10	Arani	263.00	1056.00	277.73	349.00	485.00	169.27	47.00	630.00	29.61	0.00	790.00	0.00
11	West Arani	198.00	1056.00	209.09	517.00	485.00	250.75	107.00	630.00	67.41	0.00	790.00	0.00
12	Vandavasi	103.00	1056.00	108.77	502.74	485.00	243.83	26.00	630.00	16.38	0.00	790.00	0.00
13	Thellar	128.00	1056.00	135.17	395.15	485.00	191.65	90.12	630.00	56.78	9.00	790.00	7.11
14	Peranamallur	145.00	1056.00	153.12	374.40	485.00	181.58	34.40	630.00	21.67	7.00	790.00	5.53
15	Cheyyar	136.00	1056.00	143.62	394.00	485.00	191.09	0.00	630.00	0.00	0.00	790.00	0.00
16	Anakkavur	114.00	1056.00	120.38	398.00	485.00	193.03	33.00	630.00	20.79	0.00	790.00	0.00
17	Vembakkam	132.00	1056.00	139.39	1548.00	485.00	750.78	12.80	630.00	8.06	0.00	790.00	0.00
	Total	**3130.0**	**1056.00**	**3305.2**	**17072.53**	**485.00**	**8280.18**	**1395.32**	**630.00**	**879.05**	**5314.95**	**790.00**	**4198.81**

Source: Joint Director of Agriculture, Tiruvannamalai

Table 2.20d Area, production and productivity of major crops in different blocks (2013-14)

Sl. No.	Block	Cowpea			Lab Lab			Mochi			Groundnut		
		Area (ha)	Pdty. (Kg/ha)	Pdn. (MT)	Area (ha)	Pdty. (Kg/ha)	Pdn. (MT)	Area (ha)	Pdty. (Kg/ha)	Pdn. (MT)	Area (ha)	Pdty. (Kg/ha)	Pdn. (MT)
1	Tiruvannamalai	3.17	232.00	0.74	15.00	232.00	3.48	5.00	232.00	1.16	4245.11	2345.00	9954.78
2	Thurinjapuram	85.00	232.00	19.72	14.00	232.00	3.25	4.00	232.00	0.93	4904.20	2345.00	11500.35
3	Kilpenathur	19.20	232.00	4.45	32.00	232.00	7.42	3.00	232.00	0.70	4762.50	2345.00	11168.06
4	Chengam	463.00	232.00	107.42	13.00	232.00	3.02	3.00	232.00	0.70	4812.00	2345.00	11284.14
5	Pudupalayam	0.00	232.00	0.00	12.00	232.00	2.78	5.00	232.00	1.16	1444.00	2345.00	3386.18
6	Thandrampattu	63.00	232.00	14.62	17.00	232.00	3.94	4.00	232.00	0.93	6289.30	2345.00	14748.41
7	Kalasapakkam	123.00	232.00	28.54	9.00	232.00	2.09	4.00	232.00	0.93	2549.00	2345.00	5977.41
8	Polur	20.20	232.00	4.69	17.00	232.00	3.94	6.00	232.00	1.39	2429.59	2345.00	5697.39
9	Chetpet	280.00	232.00	64.96	3.00	232.00	0.70	5.00	232.00	1.16	5553.00	2345.00	13021.79
10	Arani	46.00	232.00	10.67	10.00	232.00	2.32	3.00	232.00	0.70	2500.00	2345.00	5862.50
11	West Arani	49.00	232.00	11.37	8.00	232.00	1.86	3.00	232.00	0.70	2315.00	2345.00	5428.68
12	Vandavasi	66.40	232.00	15.40	7.00	232.00	1.62	2.00	232.00	0.46	3852.00	2345.00	9032.94
13	Thellar	35.00	232.00	8.12	7.00	232.00	1.62	2.00	232.00	0.46	3997.00	2345.00	9372.97
14	Peranamallur	33.00	232.00	7.66	6.00	232.00	1.39	2.00	232.00	0.46	2100.00	2345.00	4924.50
15	Cheyyar	141.00	232.00	32.71	4.00	232.00	0.93	2.00	232.00	0.46	2649.50	2345.00	6213.08
16	Anakkavur	129.00	232.00	29.93	8.00	232.00	1.86	4.00	232.00	0.93	2021.80	2345.00	4741.12
17	Vembakkam	44.00	232.00	10.21	8.00	232.00	1.86	2.00	232.00	0.46	2079.00	2345.00	4875.26
	Total	**1599.97**	**232.00**	**371.19**	**190.00**	**232.00**	**44.08**	**59.00**	**232.00**	**13.69**	**58503.00**	**2345.00**	**137189.54**

Source: Joint Director of Agriculture, Tiruvannamalai

Table 2.20e Area, production and productivity of major crops in different blocks (2013-14)

Sl. No.	Block	Gingelly			Sunflower			Cotton			Sugarcane		
		Area (ha)	Pdty. (Kg/ha)	Pdn. (MT)	Area (ha)	Pdty. (Kg/ha)	Pdn. (MT)	Area (ha)	Pdty. (Kg/ha)	Pdn. (MT)	Area (ha)	Pdty. (Kg/ha)	Pdn. (MT)
1	Tiruvannamalai	562.01	895.00	503.00	22.70	1480.00	33.60	24.00	1985.00	47.64	5424.13	62500.00	339008.1
2	Thurinjapuram	60.00	895.00	53.70	6.00	1480.00	8.88	3.50	1985.00	6.95	3433.21	62500.00	214575.6
3	Kilpenathur	183.60	895.00	164.32	8.50	1480.00	12.58	2.00	1985.00	3.97	1875.11	62500.00	117194.3
4	Chengam	25.00	895.00	22.38	30.00	1480.00	44.40	69.50	1985.00	137.96	2476.35	62500.00	154771.8
5	Pudupalayam	127.00	895.00	113.67	6.00	1480.00	8.88	20.00	1985.00	39.70	1451.00	62500.00	90687.50
6	Thandrampattu	348.50	895.00	311.91	292.30	1480.00	432.60	45.00	1985.00	89.33	5068.00	62500.00	316750.0
7	Kalasapakkam	60.00	895.00	53.70	6.00	1480.00	8.88	20.00	1985.00	39.70	2259.40	62500.00	141212.5
8	Polur	80.00	895.00	71.60	6.20	1480.00	9.18	80.00	1985.00	158.80	2392.20	62500.00	149512.5
9	Chetpet	20.00	895.00	17.90	0.00	1480.00	0.00	12.00	1985.00	23.82	3496.90	62500.00	218556.2
10	Arani	60.00	895.00	53.70	5.30	1480.00	7.84	0.00	1985.00	0.00	393.80	62500.00	24612.50
11	West Arani	10.00	895.00	8.95	0.00	1480.00	0.00	0.00	1985.00	0.00	908.00	62500.00	56750.00
12	Vandavasi	30.00	895.00	26.85	0.00	1480.00	0.00	0.00	1985.00	0.00	630.72	62500.00	39420.00
13	Thellar	60.00	895.00	53.70	0.00	1480.00	0.00	0.00	1985.00	0.00	572.80	62500.00	35800.00
14	Peranamallur	40.50	895.00	36.25	0.00	1480.00	0.00	0.00	1985.00	0.00	122.80	62500.00	7675.00
15	Cheyyar	100.00	895.00	89.50	0.00	1480.00	0.00	0.00	1985.00	0.00	494.40	62500.00	30900.00
16	Anakkavur	101.10	895.00	90.48	0.00	1480.00	0.00	0.00	1985.00	0.00	810.37	62500.00	50648.13
17	Vembakkam	102.30	895.00	91.56	0.00	1480.00	0.00	0.00	1985.00	0.00	314.42	62500.00	19651.25
	Total	**1970.01**	**895.00**	**1763.16**	**383.00**	**1480.00**	**566.84**	**276.00**	**1985.00**	**547.86**	**32123.61**	**62500.00**	**2007725.3**

Source: Joint Director of Agriculture, Tiruvannamalai

Table 2.21 Area, production and productivity of major crops in ha (Triennium average ending 2014-15)

Sl. No	Particulars	Area (in ha)	Production (in tonnes)	Productivity (in kg/ha)
1	Paddy	89176.33	374713.00	4204.33
2	Maize	1319.67	8586.00	5802.67
3	Cholam	736.67	1080.00	1428.00
4	Cumbu	4362.67	11534.67	2451.33
5	Ragi	3346.00	10724.67	2840.33
6	Bengal Gram	5.67	1.67	152.67
7	Red Gram	2032.67	1788.33	810.67
8	Black Gram	12210.00	7247.33	580.33
9	Green Gram	1134.00	693.00	556.33
10	Horse Gram	3117.33	2462.67	749.00
11	Groundnut	61690.00	144452.33	1627.33
12	Sunflower	296.33	486.00	1124.67
13	Gingelly	2291.67	1654.67	460.33
14	Castor	3.33	1.33	250.00
15	Cotton	397.00	888.33	276.67
16	Coconut	584.67	58.33	6140.00
17	Sugarcane	35417.33	3177673.00	55.00
18	Tobacco	45.33	65.67	926.67
19	Onion	85.67	742.67	8777.67
20	Brinjal	423.33	3596.00	8481.33
21	Bhendi	359.67	2804.33	7737.67
22	Cabbage	4.33	246.67	34949.67
23	Tomato	166.00	2235.33	13678.67
24	Banana	2769.67	129553.33	46860.33
25	Mango	671.33	4691.33	6823.00
26	Jack Fruit	16.67	238.00	12870.67
27	Guava	34.33	212.00	6151.67
28	Grapes	0.67	647.67	5423.33
29	Chillies	459.00	385.00	746.00
30	Coriander	17.00	8.00	439.67
31	Turmeric	658.33	4130.67	5655.67
32	Tamarind	30.00	166.33	5550.67
33	Potato	4.33	72.00	12518.00
34	Tapioca	2609.67	133357.33	51503.67
35	Sweet Potato	30.00	564.33	19021.00
	Total	**226506.67**	**4027762.00**	**277625.00**

The area under major crops during the three consecutive years is presented in the Table. 2.21. The triennium ending average depicted that paddy covers an area of 89,176.33 ha which is almost half in the total area (2,26,50,667 ha). This is followed by ground nut which covers 61,690 ha and next to which is the sugarcane of about 35,417.33

ha. The millets and pulses cover very minimum area such as cumbu (4,362.67 ha), black gram (12,210 ha) of the total area acreage. The major horticultural crops are banana (2769.67 ha), mango (671.33 ha), turmeric (658.33 ha) and tapioca (2,609.67 ha) are cultivated in this district.

2.10 Consumption of chemical fertilizers and pesticides

The preservation of soil fertility and nutrition management are much imperative for a profitable agriculture in a long run. The use of chemical fertilizers and their intensification in many areas are being reviewed and the Government will encourage application of appropriate fertilizers relevant to the soil and crops based on soil test recommendations. The application of slow release fertilizers combined with organic fertilizers will be promoted to improve the fertilizer use efficiency and also the nutritional status of the soil by working in a complementary manner with the natural ecosystem of the soil. Consumption of fertilizers and pesticide in the district is presented in the Table. 2.22.

Table 2.22 Consumption of chemical fertilizers and pesticides during 2013-14

Fertilizers (in '000 Tone)				Pesticides (in '000 Tone)			
Nitrogenous (N)	**Phosphates ($P_2 0_5$)**	**Potassic (k_2O)**	**Total (NPK)**	**Dust (Kgs)**	**Liquid (Lit.)**	**Total**	**Urea ('000 Tone)**
30021	14694	16110	60825	52	98	150	20317

Source: Statistical Hand Book (2013-14), Tiruvannamalai district

2.11 Agricultural Engineering- Machineries and Implements

The agricultural machinery industry or agricultural engineering industry is the part of the industry that produces and maintains tractors, agricultural machinery and agricultural implements. The number of agricultural machineries and equipment are furnished in the Table 2.23.

Table 2.23 Farm Mechanization in Tiruvannamalai district

Sl. No.	Item	Numbers
1	**Ploughs**	
	a) Wooden	54908
	b) Iron	34247
	Total	**89155**
2	**Water pumps for irrigation purpose**	
	a) Worked by oil engine	15636
	b) Worked by Electric power	64677
	Total	**80313**
3	**Tractors**	
	a) Government	9
	b) Private	1566
	Total	**1575**
4	**Sugarcane Crushers**	
	a) Worked by power	772
	b) Worked by bullocks	350
	Total	**1122**
5	**Oil Ghanis**	
	a) 5 kg & above	-
	b) Less than 5 kg	-
	Total	**0**

*Source: Statistical Hand Book (*2014-15*), Tiruvannamalai district*

2.12 Agricultural Marketing and Regulated Markets

Regulated market is wholesale market where buying and selling is regulated and controlled by the state government through the market committee. The primary object of regulating the market is to safeguard the interest of the producer sellers raise the standards of the local Markets where the first exchange of the goods takes place. It has 18 regulated markets through which the farmers sell their agri products directly to the government. The number of regulated markets and quantity and value of commodities transacted in those markets are given in Table 2.24

Table 2.24 Quantity and Value of Commodities Transacted in 6 Regulated Markets of Tiruvannamalai District during 2013-14

No. of Regulated Markets	No. of Sub Regulated Markets	Quantity arrivals ('in M.T.') (Product wise)		Receipts (₹ in Lakhs) (Product wise)
16	2	1. Paddy	23722.683	347.900
		2. Groundnut	13415.175	47.369
		3. Gingili	1165.721	3.620
		4. Chillies	226.132	1.281
		5. Cumbu	240.689	0.332
		6. Horse gram	147.173	0.015
		7. Ragi	316.050	0.361

Source: District Agriculture Marketing Office, Tiruvannamalai

The average annual rice production in the district was 3.74 lakh tonnes. However, the transaction of paddy through regulated markets in the district was only 2.3 lakh tonnes. Therefore, the reasons for the poor market arrivals to the regulated markets should be identified and the more facilities need to be created in the regulated markets to attract larger arrivals.

2.13 Storage Facilities

In Tiruvannamalai district there are 30 storage godowns and 119 drying yards are functioning. Seven Cold storages, 1 Agri Business centre, 8 storage godowns and 5 drying yards are under progress. The details about the storage infrastructure and capacity are given in Table 2.25.

Table 2.25 Storage Infrastructure in Tiruvannamalai District

Sl. No.	Particulars	No.	Capacity (MT)
Completed			
1	Storage Godown	30	16000
2	Drying yard (Area in Sq.m)	119	47600
Under Progress			
1	Storage Godown	8	16300
2	Cold Storage	7	175
3	Agri Business Centre	1	100
4	Drying yard	5	2000

Source: District Agriculture Marketing Office, Tiruvannamalai

2.14 Sericulture

The scope for improving sericulture further was bright in Tiruvannamalai as the demand for silk yarn has been growing every day. Self-help groups were best promoters of sericulture, which would generate rural employment on a large-scale. The sericulture development in the district is furnished in the Table 2.26.

654.40 acres of land is under mulberry cultivation in this District. Training in Mulberry farming, Rearing Silk Worms is done through a large network of Govt. Departmental Institutions of Sericulture such as Silk quality development farms, Govt. Sericulture training center, Govt. Sericulture Farm, Base seedlings (grain age) development farms, Govt. Bi-voltine grain age centers, govt. cocoon markets, silk reeling unit, silk twisting unit, technical support and service center for rearing silk worm, with the above maintained facilities sericulture industry has good scope in this district.

In the 654.40 acres of mulberry cultivation, 76,640 kg of cocoons is produced with a value of 3, 01, 76,000 rupees. Among the blocks, Thurinjipuram block hold the potential to rear silk worm in a larger area of about 91.00 acres followed by 77.00 acres in Jawadhu hills.

Table 2.26 Sericulture development in the district

Name of the block	Area under Mulberry (in Acres)	Production of Cocoons (in Kg.)	Value in Rupees
Tiruvannamalai	57.50	1518	127200
Thurinjapuram	91.00	17179	6871600
Kilpenathur	32.55	3846	1538400
Chetpet	68.75	17681	7072400
Jawadhu hills	77.00	4909	1963600
Chengam	57.75	3870	1548000
Anakkavur	0.0	0.0	0.0
Vembakkam	42.00	3824	1529600
Vandavasi	8.0	513	205200
Thellar	2.0	140	56000
Peranamallur	0.0	0.0	4283796
Arani	61.00	7240	2896000
Polur	52.50	8593	3437200
Kalasapakkam	24.00	1778	711200
Pudupalayam	36.00	1923	769200

Name of the block	Area under Mulberry (in Acres)	Production of Cocoons (in Kg.)	Value in Rupees
Thandarampet	4.25	0.0	0.0
Cheyyar	0.0	0.0	0.0
West Arani	40.00	3626	1450400
Total	**654.40**	**76640**	**30176000**

Source: Statistical Handbook (2013-14), Tiruvannamalai district

2.15 Animal husbandry and Dairy development

A large number of farmers in this district depend on animal husbandry for their livelihood. In addition to supplying milk, meat, eggs, wool and hides, animals, mainly bullocks, are the major source of power for both farmers and drayer. Thus, animal husbandry plays an important role in the rural economy. Moreover, livestock sector provides supplementary employment and sustainable source of income to many small and marginal farmers.

2.15.1 Livestock population in the district

According to 12th Livestock Census, the approximate population of the livestock in the district includes 11, 87,325 number. Of which 6, 76,629 No's were cattle's, 2, 58,111 No's were sheep's, ponies and domestic dogs are few in number. The data on livestock population in the district is presented in the Table 2.27.

Table 2.27 Livestock population in the district

S. No.	Particulars	Population (in numbers)
1	Cattle	676629
2	Buffaloes	15523
3	Sheep	258111
4	Goats	226240
5	Horses and ponies	113
6	Donkeys	98
7	Camels	0
8	Pigs	10611
	Total Livestock	**1187325**
9	Elephants	1
10	Dogs	18876
11	Rabbits	1450
	Poultry	
12	Back yard Poultry	247711
13	Farm Poultry	208022
	Total Poultry	**455733**

Source: 12th Livestock Census, 2012

The data on livestock population in the blocks of Tiruvannamalai district is presented in the Table 2.29. Among the different blocks, Vandavasi block possess the maximum number of livestock population (1, 55,115 No's) followed by Vembakkam (1, 34,341 No's). Cattle population was highest in the Chengam block (50,435 No's) while poultry population was highest in the Vandavasi (90850 No's) block. The details are furnished in the Table 2.28.

Table 2.28 Block wise livestock population of the district

Livestock population	B1	B2	B3	B4	B5	B6
Cattle	36652	24464	50435	31763	31522	25543
Buffalo	1994	194	314	126	993	124
Sheep	20806	12670	21005	9415	15377	5980
Goat	11013	9748	20506	8990	15080	17626
Pigs	1	193	311	122	256	5418
Poultry	2449	6249	33164	7911	33777	14145
Others	0	0	0	0	0	0
Total	**72915**	**53518**	**125735**	**58327**	**97005**	**68836**

B1-Anakkavur, B2 - Arani; B3 - Chengam; B4 - Chetpet; B5 -Cheyyar; B6- Jawadhu hills
Source: Tamil Nadu Veterinary and Animal Sciences University, Chennai

Table 2.28 Block wise livestock population of the district (continuation)

Livestock population	B7	B8	B9	B10	B11	B12	B13
Cattle	31714	36728	34112	44642	36801	47280	27104
Buffalo	115	27	24	297	578	8824	219
Sheep	7930	14786	12245	21188	16832	34169	7084
Goat	8815	13822	6439	13886	9697	16388	8592
Pigs	98	1189	5	121	357	47	106
Poultry	7680	37433	5404	6663	90850	27633	15946
Others	0	0	0	0	0	0	0
Total	**56352**	**103985**	**58229**	**86797**	**155115**	**134341**	**59051**

B7-Kalasapakkam; B8-Kilpennathur; B9-Pernamallur;B10- Thellar; B11- Vandavasi; B12-Vembakkam; B13- West Arani
Source: Tamil Nadu Veterinary and Animal Sciences University, Chennai

2.15.2 Veterinary institutions and hospitals

With the goal of sustaining and further improving the production of livestock products, the Animal Husbandry Department provides comprehensive veterinary assistance and health cover to all livestock and poultry across the State through a network of 103 Veterinary Institutions and 34 Veterinary Sub Centres. Animals in remote villages also get veterinary assistance through Mobile Veterinary Units (3 no's). With the implementation of cross breeding programme and various other schemes by the department, livestock farming has become economically viable and remunerative to a large number of rural households in the district. The number of animals treated through the veterinary hospitals and castrations performed are furnished in the Table 2.29.

Table 2.29 Veterinary institutions and hospitals in the district

Veterinary Institutions				Subcent-res	Upgraded sub-centres	Other units		Animals treated	Castration performed	Number of Govern - ment hospitals
Poly clinics	Hosp-itals	Dispensaries	Clinical centres			Animal disease investigation unit	Mobile units			
Nil	5	97	1	31	-	-	3	42849	12129	103 – Veterinary institution 34 – sub centre

Source: Statistical Handbook (2013-14), Tiruvannamalai district

2.15.3 Dairy development

Dairy sector is important not only as the producer of highly nutritious food products, but also for the sustenance of poor farmers and over all prosperity of the farming community. The dairy development in the district is presented in the Table 2.30. The district holds about 661 milk societies at various blocks. Among the blocks, Tiruvannamalai block possess the highest number of 84 societies followed by which, Chengam and Pudhupalayam block constitute each 78 milk societies. Jawadhu hills have the least number of one milk societies in the block. From all the milk societies, the district collected about 1, 90,323 litres of milk daily for value of 34, 25,814 rupees in a year. Tiruvannamalai block produced the largest quantity of milk (24, 712 litres daily) for worth of 4, 44,816 rupees. The least quantity of milk was produced at Jawadhu hills (200 litres per day) with a value of 3600 rupees.

Table 2.30 Dairy development in the district

Name of the block/Urban Town	No. of milk societies	Quantity of milk produced (in litres per day)	Value of milk produced (in ₹ In lakh)
Tiruvannamalai	84	24712	444816
Thurinjapuram	60	10200	183600
Kilpenathur	40	13000	234000
Chengam	78	19100	343800
Pudhupalayam	78	4200	75600
Thandarampet	16	7300	131400
Polur	55	16600	298800
Kalasapakkam	31	11300	203400
Chetpet	32	9270	166860
Jawadhu hills	1	200	3600
Arani	17	12975	233550
Arani (W)	19	16730	301140
Cheyyar	22	10604	190872
Anakkavur	20	8571	154278
Vembakkam	25	7600	136800
Vandavasi	25	3674	66132
Thellar	28	5468	98424
Peranamallur	30	8819	158742
Total	**661**	**190323**	**3425814**

Source: Statistical Handbook (2013-14), Tiruvannamalai district

Table 2.31 Block wise infrastructure facilities for dairy development in the district

Infrastructure facilities	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13
Dairy co-operative society	10	10	32	34	16	0	21	30	28	23	6	24	7
Co-operative marketing society	0	1	1	0	1	0	0	0	0	1	1	0	0
Veterinary clinics	5	5	5	7	8	2	5	7	7	6	6	7	5
Milk collection centre	52	48	58	54	55	0	53	54	55	64	60	67	45

B1-Anakkavur, B2 - Arani; B3 - Chengam; B4 - Chetpet; B5 -Cheyyar; B6- Jawadhu hills; B7-Kalasapakkam; B8-Kilpennathur; B9-Pernamallur;B10- Thellar; B11- Vandavasi; B12-Vembakkam; B13- West Arani

Source: Tamil Nadu Veterinary and Animal Sciences University, Chennai

The infrastructure facilities like dairy cooperative societies, cooperative marketing societies, veterinary clinics and milk collection centres were located in different blocks of the district. The maximum number of dairy cooperative societies was located in Chetpet block (34 No's) followed by Chengam (32 No's) and Kilpennathur (30 No's) respectively. Very few blocks in the district possess co-operative marketing society and that is restricted to one in number (Arani, Chengam, Cheyyar, Thellar and Vandavasi). In case of veterinary clinics, Chetpet, Kilpennathur, Peranamallur and Vembakkam block possess the maximum number of veterinary clinics (7 No's each). For milk collection, centres were established at most of the blocks; Vembakkam (67 No's), Thellar (64 No's), Vandavasi (60 No's) and Chengam (58 No's). The details on infrastructure developed for dairy development are furnished in the above Table 2.31.

2.15.4 Poultry development

Poultry rearing is one of the important activities of Animal Husbandry Sector in the district. The development of poultry industry is significant in the district. The district produced 12,10,344 numbers of fowls and 3,08,548 numbers of ducks during 2013-14. The poultry development in the district is furnished in the Table 2.32.

Table 2.32 Poultry development in the district

Sl. No.	Poultry	Population (in numbers)
1	Fowls	1210344
2	Ducks	308548
3	Others	2111
	Total	**1521003**

Source: Statistical Handbook (2013-14), Tiruvannamalai district

2.15.5 Egg production

There are 88.340 lakh numbers of eggs were produced from desi breed during 2012. The details are furnished in the Table 2.33.

Table 2.33 Egg production in the district

District	Desi	Improved	Total (in Lakh No's)
Tiruvannamalai	88.340	0.00	88.340

Source: Statistical Handbook of Animal Husbandry (2012), Chennai

2.16 Fisheries

Fishing is one of the allied sectors for development of society. More number of people was engaged in fishing. The total inland fresh water spread area in the district is about 32.40 ha and produced fish of about 140.85 tonnes with a value of 52.76 lakhs during the year 2012. The fish production details are presented in the Table 2.34 & 2.35.

Table 2.34 Fish production in the district

Total inland fresh water spread area	:	32.40 ha
Fish production (Quantity in Tonnes)	:	140.85
Value (₹ In lakhs)	:	52.76

Source: Statistical Handbook (2013-14), Tiruvannamalai district

The Sathanur dam alone produces 188 tonnes of inland fish. About 80 fishermen's were engaged in Sathanur dam reservoir and 80 families in Thandrampet block and 50 families in Tiruvannamalai block.

Table 2.35 Fisheries development and production in the district

Name and Address of Fishing centres	Inland Fish catch (Tonne)	Marine Fish Catch (Tonne)	Number of Fisherman engaged	Number of families engaged in fishing
Thandrampet	-	Nil	-	80
Tiruvannamalai		Nil	-	50
Tamaraikulam - TV malai		Nil	-	-
Ayyan kulam - TV malai		Nil	-	-
Agnithertham -TV malai		Nil	-	-
Esanya kulam - TV malai		Nil	-	-
Sathanur dam	188	Nil	80	-
District Total	**188**		**80**	**130**

Source: Statistical Handbook (2013-14), Tiruvannamalai district

2.17 Banking and Insurance

To create the financial needs a network of 20 commercial banks with 105 branches, one District central co-op bank with 23 branches, PCARDB 8, Urban banks 4, one TIIC 1, 159 primary Agri Co-operative banks are operated. The details of banking are presented in the Table 2.36.

Table 2.36 Banking development

Year/Bank credits	Credit (₹ In crores)	Deposits (₹ In crores)	CD Ratio (%)
2011 – 12	10151	11732	87
2012 – 13	12825	13031	98

Source: Quarterly statistics on Deposits and Credits of Scheduled Commercial Banks – Reserve Bank of India, Mumbai (2012-13)

The insurance given for various crops in the district during 2012-13 was furnished in the Table 2.38. Crops like paddy, cumbu, ragi, Gingelly, cotton, groundnut, cotton, sugarcane, cholam, black gram, green gram, banana and Tapioca are given insurance during 2012.

Table 2.37 Crop insurance for the year 2013-14 in Tiruvannamalai district

Sl. No	Name of the crop	No. of Blocks notified	No. of Experiments (in all season)	Premium collected	No. of Beneficiaries	Amount Sanctioned (in ₹)
1	Paddy	17	1288	-	-	-
2	Cumbu	6	96	-	-	-
3	Ragi	4	36	-	-	-
4	Gingelly	3	84	-	-	-
5	Groundnut	17	616	-	-	-
6	Cotton	-	-	-	-	-
7	Sugar cane	17	520	-	-	-
8	Cholam	-	-	-	-	-
9	Black gram	10	206	-	-	-
10	Green gram	-	-	-	-	-
11	Banana	5	84	-	-	-
12	Tapioca	3	60	-	-	-

Source: Statistical Handbook (2013-14), Tiruvannamalai district

The insurance schemes through LIC, PLI, Oriental and New India Assurance are issued for different blocks of the district. In Cheyyar block, highest number of policies are issued (18373 numbers) in Tiruvanamalai block. Followed by cheyar block (19072 numbers). About 99651 policies were issued in 475 branches. There are about 64677 beneficiaries in the district. An amount of 246 crores are paid as compensation. Tiruvannamalai block received the highest amount of 13.94 crores as compensation. The details are furnished in the Table 2.39.

Table 2.38 Insurance schemes in the district (2013-14)

Name of the insurance	No. of branches	Policies issued	Sum Assured (in crores)	No. of beneficiaries	Amount paid as compensation (in crores)
L.I.C – Tiruvannamalai	1	19072	247.0	19072	13.94
Polur	1	11959	106.69	11959	3.2
Cheyyar	1	12460	168.774	8763	21.3368
Arani	1	12090	102.98	5438	9.82
P.L.I Rural	469	13130	40.82	39	186
Oriental Insurance	1	18373	109.93	18032	7.42
New India Assurance	1	12567	5.05	1374	5.1
	475	99651	781.24	64677	246.82

Source: Statistical Handbook (2013-14), Tiruvannamalai district

2.18 Co-operation

Cooperatives play an important role in the socio-economic development of the people of the district. The cooperative societies play a vital role not only in agricultural development and consumer service, but also in sectors such as housing, textiles, dairy and fisheries which contribute significantly to the economic development of the district. At present there are 226 cooperative societies functioning in the district. About 790101 numbers of people were members in the 226 societies. The details on working capital, loan as advance and number of employees are furnished in the Table 2.39.

Table 2.39 Co-operative Institutions Functioning in Tiruvannamalai District

Type of Societies	No. of Societies	Membership	Share Capital /Working capital	Loads Advanced		
				O/S	Overdue	No. of Employees
PACB	156	610067	2658.34	92125.82	5318.40	1472
CO-OP Urban Bank	4	8140	251.20	10496.72	256.27	28
LAMPS	2	15367	21.41	602.46	112.88	20
Co-Op Marketing Society	7	47096	46.77	1475.77	65.33	64
Farmer Service Co-op Societies	1	5016	23.55	1134.00	42.70	4
PARDBS	8	73894	364.81	5386.26	-	20
Co-Op Store	3	10634	6.74	-	-	27
District Central Co-op Bank	1	1065	13579.8	133492.2	3090.15	130
District Co-op Whole sale store	1	2009	20.09	-	-	151
Labour contract co-op societies	-	0	-	-	-	-
Employees Co-op stores	40	15426	5199.24	19493.53	534.80	41
Students Co-Op Store	-	0	-	-	-	-
Rural Electric Co-op store	-	0	-	-	-	-
Co-op sugar mill canteen	1	230	-	-	-	1
Lift Irrigation societies	-	0	-	-	-	-
Land Colonisation	-	0	-	-	-	-
Kaspa Societies	-	0	-	-	-	-
District Co-op union	1	926	-	-	-	1
District Co-op press	1	231	11.78	-	-	15
Total	**226**	**790101**				

CHAPTER III

DEVELOPMENT OF AGRICULTURAL AND ALLIED SECTORS

Before suggesting an action plan for development of agriculture and allied sectors, a brief analysis (at district level) was done in the following components:

i. Assessing the trends in area, production and productivity of major crops and projection till the 12th Plan period (2015-16)
ii. Yield gap analysis for the major crops

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 was estimated using 12 years' time series data from 2000-2001 to 2011-12. The equation used to estimate the annual compound growth rate is:

$$Y_t = ab^t e$$

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:

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

Where, Y_t = Area or Production or Yield

a = Intercept

b = Regression coefficient of t

t = Time variable

r = Compound Growth Rate

Average of area, production and productivity of major crops in the district is presented in Table 3.1. It could be seen from the Table 3.1 that paddy, Groundnut, Tapioca, Sugarcane Black gram and banana are the major crops grown in the district. On an average (triennium average ending 2014-15) the district showed a paddy output of 374713 tonnes in an area of about 89176 ha. Tapioca another major food crop is grown in 2610 ha yearly about 133357 tonnes are harvested. Banana a high value crop is grown in many pockets of the district and every year around 129553 tonnes of banana are produced.

Table 3.1 Area, Production and Yield of major crops in Thiruvannamalai District (Triennium average ending 2014-2015)

Sl.No	Crop	Area	%	Production	Yield (kg/ha)
1	Paddy	89176	42.46	374713	4204
2	Cholam	737	0.35	1080	1428
3	Cumbu	4363	2.08	11535	2451
4	Blackgram	12210	5.81	7247	580
5	Turmeric	658	0.31	4131	5659
6	Sugarcane	35417	16.86	3177673	89
7	Banana	2770	1.32	129553	46858
8	Tapioca	2610	1.24	133357	51504
9	Cotton	397	0.19	888	384
10	Groundnut	61690	29.37	144452	2334
	Total	**210028**	**100.00**		

Table 3.2 Compound Growth Rates (CGR) of
Area, Production and Productivity under major crops in Thiruvannamalai District

		CGR during 2005-2006 to 2014-2015 (%)		
Sl.No	**Crops**	**Area**	**Production**	**Yield**
1	Paddy	-3.98	0.27	4.43
2	Cholam	-4.99	2.49	7.87
3	Cumbu	-0.47	17.15	17.70
4	Blackgram	26.98	30.17	2.52
5	Turmeric	7.17	1.02	-5.74
6	Sugarcane	2.67	0.81	-1.76
7	Banana	-1.40	-6.79	-5.47
8	Tapioca	-4.34	-1.51	2.96
9	Cotton	-15.86	-17.64	-2.11
10	Groundnut	-6.17	-0.50	5.54

3.1.1 Projected Area, Production and Yield of Selected Crops

The major crops grown in the district are paddy, groundnut and sugar cane. Apart from this, certain horticultural crops like banana, tapioca, black gram also being cultivated successfully. The area under cultivation of cumbu is 4465 ha. Paddy was the major crop grown in Tiruvannamalai district accounting for 49.74 per cent of the gross cropped area of the district and it was followed by groundnut (27.86 per cent) and sugarcane (13.93 per cent). Therefore, these three 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 Tiruvannamalai district, area, production and yield were projected using CGR for the years 2017-18 and 2022-23 and the results are presented in Table.3.3.

Table 3.3 Projected Area, Production and Yield based on growth rates

Crop	Paddy			Groundnut			Sugarcane		
	Area	Produ-Ction	Yield	Area	Produ-ction	Yield	Area	Produ-Ction	Yield(tonnes)
CGR (%)	-0.007	0.001	0.04	-0.04	-0.06	0.05	0.01	-0.06	0.001
Triennium Average ending	110851	333540	3021	62296	115184	1849	31435	2940680	93.54
2012-13	123496	359330	3090	57225	121040	2035	32280	3055958	93.27
2017-18	118650	363459	3181	46281	137015	2587	34493	3364314	92.60
2022-23	113993	367636	4627	37429	155099	3287	36858	3703785	91.90

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

As could be seen from above Table, the area of the selected crops like paddy, sugarcane and groundnut have been projected to decline in 2022-23 owing to their negative annual compound growth rates. The production of the paddy has been projected to increase due to its positive growth rate. But in ground nut area shows negative trend and due to impact of technology and other factors production still maintain positive trend. Inorder to maintain the positive trend in groundnut production technological improvement is needed. In future area under horticultural crops like tapioca, turmeric and vegetable crops may slightly increase. There is also possibility of increasing area under sugarcane. Sugarcane is an important - high revenue yielding commercial crop to the farmers 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.

3.1.2 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, Tiruvannamalai. 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.

The important varieties cultivated under paddy are ADT 43, ADT 45, White Ponni and ADT 37. In the case of groundnut varieties such as TMV-7 and VRI 2 are mainly cultivated in this district. Yield Gap analysis was done to identify potential crops and varieties of paddy, groundnut and sugarcane. COS86032 is the common variety cultivated in the district. The results of the yield gap analysis are presented in table below.

Table 3.4 Projected area, production and yield based for the major potential crops identified

Description	Paddy			Cholam			Cumbu		
	Area	Produ-ction	Yield	Area	Production	Yield	Area	Production	Yield
Compound Growth Rates (%)	3.710	4.901	1.148	-14.265	-11.919	2.744	-13.528	-9.609	4.538
Triennium Average ending 2011 - 12	111530	346291	3122	602	601	1001	2933	3063	1055
2012-13	125686	407907	3245	424	420	991	2206	2280	1034
2013-14	130350	427897	3283	363	370	1018	1907	2060	1081
2014-15	135186	448867	3320	312	326	1046	1649	1862	1130
2015-16	140201	470864	3358	267	287	1075	1426	1684	1181

Description	Paddy			Cholam			Cumbu		
	Area	Produ-ction	Yield	Area	Production	Yield	Area	Production	Yield
Compound Growth Rates (%)	-6.570	-1.871	5.027	1.338	0.205	4.286	-9.464	-0.597	2.381
Triennium Average ending 2011 - 12	8106	4465	536	62478	131486	2135	912	2332	447
2012-13	3577	2187	611	81119	141636	2143	729	2742	467
2013-14	3342	2146	642	82204	141927	2235	660	2725	478
2014-15	3123	2106	674	83304	142218	2331	598	2709	489
2015-16	2918	2067	708	84418	142510	2431	541	2693	501

Description	Tapioca			Sugar cane		
	Area	Production	Yield	Area	Production	Yield
Compound Growth Rates (%)	23.321	24.387	0.865	7.210	9.869	2.527
Triennium Average ending 2011 - 12	2619	107730	41596	31232	3217704	102
2012-13	6267	258102	41188	34999	3888523	111
2013-14	7728	321046	41544	37522	4272268	114
2014-15	9530	399341	41903	40227	4693885	117
2015-16	11753	496729	42265	43128	5157109	120

Description	Banana			Turmeric		
	Area	Production	Yield	Area	Production	Yield
Compound Growth Rates (%)	12.493	18.874	5.673	11.281	13.712	2.185
Triennium Average ending 2011 - 12	3049	133487	43797	772	4163	5316
2012-13	4486	298646	66576	771	4900	6353
2013-14	5046	355013	70353	858	5572	6491
2014-15	5677	422020	74344	955	6336	6633
2015-16	6386	501673	78562	1063	7205	6778

Table 3.5 Yield gap analysis (kg/ha)

Crop	ART / Potential yield	Crop cutting yield / progressive farmer's yield (A)	Average farm yield (B)	Yield gap (A-B)
Paddy	5205	8404	3713	4691
Groundnut	3328	5300	2691	2609
Sugarcane	135000	160000	113000	47000

Source: Office Records, Joint Director of Agriculture, Tiruvannamalai District

3.2 Projected yield and production of selected crops

Using the secondary data on area, yield and production of the selected crops, viz., paddy, groundnut and sugarcane 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 1991-92 and 2010-11 were negative for the selected major crops like paddy and ground nut and it was positive only in case of sugarcane. 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. However, efforts are required to sustain the present the net sown area of the district, as this district has a very good locational advantage of production and supply of food grains, vegetables, fruits 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 raising the productivities of the selected crops alone was resorted to assess the estimated yield and production for the period from 2011-12 to 2022-23 and the results are discussed below.

3.2.1 Paddy

Samba is the major season for paddy in the district, which has 48 per cent of the total area under paddy followed by *Navarai* (30 per cent) and *Sornavari* (21 per cent) (Table 3.6). Policy intervention against the conversion of cultivable lands into real estate is required to arrest the negative trend in the gross cropped area. 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. Percentage of increase in production over 2010-11 is 72.29

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

Year	Season			Total
	Sornavari **(Apr-July)**	***Samba*** **(Aug-Nov)**	***Navarai*** **(Dec-Mar)**	
Area (ha)				
2008-09	18540.10	40212	43133.09	101885.19
2009-10	21957.62	57727.57	25491.62	105176.80
2010-11	30337.82	64594.25	30558.41	125490.49
Triennium average ending 2010-11**	23611.85	54177.94	33060.95	110851
Projected area for 2022-23	--	--	--	110851
per cent to total	--	--	--	100.00
Varieties	ADT 45, ADT 43, ADT 37	White Ponni	ADT 45, ADT 43, ADT 37	--
Potential yield of paddy (Kgs/ha)	--	--	--	5205
Average yield for Triennium average ending 2010-11 (Kgs/ha)**	--	--	--	3021
Yield Gap (Kgs/ha)	--	--	--	2184
Projected Production for 2022-23 (tonnes)	--	--	--	576979
Production for Triennium average ending 2010-11 (tonnes)**	--	--	--	334880
Percentage of increase in production over 2010-11	--	--	--	72.29

**Based on Crop Production Guide.*

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

Table 3.7 Projected Increase in Yield and Production of Paddy from 2011-12 to 2022-23

Year	Yield (Kgs per ha)	Production (Tonnes)
Triennium average ending 2010-11	3021	334880
2011-12	3203	354944
2012-13	3385	375230
2013-14	3567	395405
2014-15	3749	415580
2015-16	3931	435755
2016-17	4113	455930
2017-18	4295	476105
2018-19	4477	496279
2019-20	4659	516454
2020-21	4841	536629
2021-22	5023	556804
2022-23	5205	576979
Required Growth Rate (%)	**4.60**	**4.60**

The table 3.7 has shown the projected increase in yield and production of paddy from the year 2011-12 to 2022-23. The required growth rate is 4.60 per cent

3.2.2 Groundnut

Groundnut is the major oilseed crop grown in Tiruvannamalai district and it is grown under irrigated as well as unirrigated conditions. It is cultivated mostly in *Kharif* season accounting for 70 per cent of the total area under groundnut. Major varieties of groundnut grown in the district are TMV 7 and VRI 2. 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 3.8. After bridging the yield gap, the production could be increased from 128980 tonnes (2010-11) to 253706 tonnes (2022-23) accounting for an increase of 96.70 per cent. The required growth rate of groundnut is 5.57 per cent

Table 3.8. Existing and Projected Yield and Production of Groundnut in Tiruvannamalai district

Year	Season		
	Kharif	***Rabi***	**Total**
Area (ha)			
2008-09	53737.12	43814.58	97551.70
2009-10	43960.67	24896.91	68857.59
2010-11	44478.98	17816.43	62295.42
Triennium average ending 2010-11*	47362.30	28842.60	76234.90
Projected area for 2022-23			76234.90
per cent to total			100.00
Varieties	VRI 2	TMV 7	
Potential Yield (Kgs/ha)			3328
Average yield for Triennium average ending 2010-11 (Kgs/ha)*			1723
Yield Gap (Kgs/ha)			1605
Projected Production for 2022-23 (tonnes)			253706
Production for Triennium average ending 2010-11 (tonnes)*			128980
Percentage of increase in production over 2010-11			96.70

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

Table 3.9 Projected Increases in Yield and Production of Groundnut from 2011-12 to 2022-23

Year	Yield (Kgs per ha)	Production (Tonnes)
Triennium average ending 2010-11	1723	128980
2011-12	1857	141566
2012-13	1991	151781
2013-14	2124	161921
2014-15	2258	172136
2015-16	2392	182351
2016-17	2526	192567
2017-18	2659	202706
2018-19	2793	212921
2019-20	2927	223136
2020-21	3061	233352
2021-22	3194	243491
2022-23	3328	253706
Required Growth Rate (%)	**5.57**	**5.63**

3.2.3 Sugarcane

In Tiruvannamalai district, sugarcane is grown in an area of 26700 ha. Major variety grown in the district is Co 86032. The annual growth rate required to raise the yield from 95.3 tonnes per ha in 2010-11 to 140 tonnes per ha in 2022-23 is estimated at 2.93 per cent. The increase in production by way of bridging the yield gap, from 2542 tonnes (2010-11) to 3604 tonnes (2022-23). The projected increase in yield and production of sugarcane from 2011-12 to 2022-23 is presented in Table.3.10. The required growth rate of sugarcane is 2.93 per cent. The increase in production over 2010-11 was 62.79 per cent.

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

Year	Season		
	Planted	Ratoon	Total
Area (ha)			
2008-09	12261.32	11936.67	24197.99
2009-10	12988.13	11479.41	24467.54
2010-11	16208.21	15226.63	31434.84
Triennium average ending 2010-11*(ha.)	13819.22	12880.90	26700.12

Projected area for 2022-23 (ha.)			26700.12
per cent to total			100.00
Varieties			CO86032
Maximum potential yield (tonnes/Ha)			135
Average yield for Triennium average ending 2010-11 (tonnes/ha)*			95.3
Yield Gap (tonnes/ha)			39.70
Projected Production for 2022-23 (000'tonnes)			3604
Production for Triennium average ending 2010-11 (000'tonnes)*			2542
Percentage of increase in production over 2010-11			62.79

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

Table 3.11 Projected Increase in Yield and Production of Sugarcane from 2011-12 to 2022-23

Year	Yield (Tonnes per ha)	Production '000 (Tonnes)
Triennium average ending 2010-11	95.300	2542
2011-12	98.608	2632
2012-13	101.916	2721
2013-14	105.224	2809
2014-15	108.532	2897
2015-16	111.840	2986
2016-17	115.148	3074
2017-18	118.456	3162
2018-19	121.764	3251
2019-20	125.072	3339
2020-21	128.380	3427
2021-22	131.688	3516
2022-23	134.996	3604
Required Growth Rate (%)	**2.93**	**2.93**

Table 3.12 Technological Interventions and strategies to reduce the yield gaps

Sl. No.	Major crops& enterprises being practiced in the district	Prioritized problems in these crops/ enterprise	Title of intervention	Technology options	Proposed Intervention
1	Paddy	Lack/updation of knowledge on new varieties	Assessment of location specific high yielding rice varieties	**High Yielding Varieties of Paddy suitable for the district** **Season:** • **Sornavari:** ADT 36, ASD 16, ASD18, MDU 5, ADT 43, CO 47, CORH 3, ADT(R) 45, ADT(R) 47, Paiyur 1. • **Samba (August):** White Ponni,Bhavani**,** CO 43**,** CO(R) 49**,** TRY 1**,** TNAU Rice ADT 50. • **Navarai (Dec –Jan):** ADT 36, MDU 5, CORH 3.	On farm field trial, Field demonstration, seed multiplication and Supply to the farmers, training etc.,
		Seed borne diseases caused by fungus and bacteria leads severe loss	Management of seed borne diseases through bio control agents	• Seed hardening with 1% KCl (seed and KCl solution 1:1) for 16 hours to withstand early moisture stress • Seedling dip with *Pseudomonas fluorescens* (Pf-1) @ 2.5 kg/ha or seed treatment (10g/kg)	On farm trial, field demonstration, supply of bio control agents in subsidized rate, training etc.,
		Reduction in yield and incurring loss by the farmers due to erratic rainfall. Reduction in quality of rice due to nutrient imbalance.	Popularization of SRI system of rice cultivation in the drought prone tracts.	• Adoption of SRI technique with low seed rate (5-7 kg/ha), wider spacing (25 cm × 15cm) and improved package of practices. • Foliar Nutrition in flowering stage: - 2% DAP + 1% KCL + 1% Urea at 50% flowering stage or TNAU Rainfed rice MN mixture @ 12.5 kg/ha as EFYM at 1:10 ratio at tillering and panicle initiation stages.	On farm trial, field demonstration and supply of seeds to the farmers at subsidized rate Preparation and supply of TNAU micronutrient mixtures at the university research stations

Sl. No.	Major crops& enterprises being practiced in the district	Prioritized problems in these crops/ enterprise	Title of intervention	Technology options	Proposed Intervention
					and KVK's
		Pests and diseases like rice blast, sheath blight, rice root ad white tip nematodes and sucking pests are widely prevalent. All these lead to a decline in yield.	Assessment of efficacy of pesticides and bio control agents Mass multiplication of bio control agents at district headquarters/research stations/KVK's	• **Rice blast & Sheath blight** – Seed treatment with TNAU Pf 1 10 ml/kg of seeds or spray Carbendazim 50WP @ 500g/ha or Tricyclozole 75 WP @ 500g/ha or Azoxystrobin 25 SC @ 500 ml/ha or Neem oil at 3% • **Rice root and White tip nematodes -** Seed treatment with *Pseudomonas fluorescens* (10 g/kg seed) and as foliar spraying @ 1 kg/ha thrice at 45, 55 and 65 DAT. • **Sucking pests (Brown leafhopper, Green leaf hopper, Thrips & Gall midge), Stem borer and leaf folder** – Spray Fipronil 5% SC 1000-1500 ml/ha or Triazophos 40% EC 625-1250 ml/ha or Seed treatment @ 5g/Kg of seed and foliar application of *Beauveriabassiana*@ 5g/l twice at 15 days interval	On farm trial, field demonstration Mass multiplication and supply of TNAU bio control agents at the university research stations and KVK's
		Scarcity of efficient labour for mechanical operations	• Assessment of efficacy of seed drill and rotary weeder • Supply of seed drill, rotary weeder and combine harvester at subsidized rate to the department • Enrichment of mechanical equipment's at engineering department of hiring of	• Seed drill – Sow of seeds with 20 cm inter row spacing • Single row or double row rotary weeder for weeding • Combine harvester for harvesting	Field demonstration and supply of machineries at subsidized cost through the department of Agricultural engineering

Sl. No.	Major crops& enterprises being practiced in the district	Prioritized problems in these crops/ enterprise	Title of intervention	Technology options	Proposed Intervention
			machineries at engineering department by the farmers		Make availability of machineries for hiring at low cost
2	Tapioca	Lack of knowledge on high yielding varieties of tapioca	Promotion of high yielding varieties of tapioca based on the market demand	• **Varieties -**CO 2, CO 3, CO (TP) 4, MVD 1, H 165, H 226, SreeVisakham (H.1687), SreeSahya (H 2304), SreePrakash (S. 856), Sree Vijaya, SreeJaya, SreeRekha and SreePrabha, • CTCRI CO (Tp) 5 (SreePadmanabha): Resistance to cassava mosaic disease with low cyanoglucoside content. Fair starch content (28%) and moderate tuber yield (38 t/ha).	On farm field trial on evaluation of high yielding varieties' and field demonstrations
		Reduction of yield by the occurrence of cassava mosaic virus	Popularization of tapioca sett treatment by fungicides	• Mosaic free setts were treated with Carbendazim 1 g in one l of water for 15 minutes before planting.	Technology through field demonstrations
		Yield reduction due to drought and improper nutrient management system	Adoption of micro irrigation system in Tapioca	• **Irrigation** – Irrigation through drip with dripper rate of 4 LPH • **Fertigation** – Adoption of fertigation technique (Fertilizer requirement: 90: 90:240 kg of NPK / ha) once in three days throughout the cropping period.	On farm field trail, Field demonstrations, Supply of micro irrigation system at subsidized cost, training to the farmers on fertigation system`
		Pests and diseases like mosaic and sucking pests are	Assessment of efficacy of pesticides and bio control agents	• **Mosaic -** Spray Dichlorvos 76 WSC @ 1 ml/l or Triazophos 40 EC 2 ml/l and install sticky cum light traps. • **White fly -** Remove alternate weed	On farm trial, field demonstrations, supply of sticky traps to the

Sl. No.	Major crops& enterprises being practiced in the district	Prioritized problems in these crops/ enterprise	Title of intervention	Technology options	Proposed Intervention
		widely prevalent. All these lead to a decline in yield.	Production of yellow sticky traps	hosts *viz*., *Abutilon indicum* and install yellow sticky trap at 12 No's/ha or Spray Neem oil 3 % or fish oil rosin soap 25 g/l or Methyl Dematon 25 EC 2 ml/l.	farmers at subsidized cost
3	Cotton	Lack of knowledge on high yielding varieties of cotton	Promotion of high yield varieties	**Varieties suitable for the district** **Season:** • **Winter Irrigated (Aug – Sep):** MCU 5**,** Surabhi**,** TCHB 213**,** MCU 12, MCU 13.	On farm trail, field demonstrations Supply of seeds of high yielding varieties at subsidized cost
		Lack of awareness on application of basal fertilizers and seed treatment at the time of planting	Popularization of bio fertilizers for basal application and seed treatment techniques Mass production of bio fertilizers at research stations, KVKs and constituent colleges.	• **Basal application of fertilizers:** Azophos 2kg/ha or Azospirillum + Phosphorus Solubilising Bacteria + Pink Pigmented Facultative Methylotropics @ 2.2 kg/ha each apply as basal application. • **Seed treatment:** Seed treatment with 3 packets of Azospirillum (600 g/ha) and 3 packets (600 g/ha) of Phosphobacteria or 6 packets of Azophos (1200 g/ha). In addition apply 10 packets of Azospirillum (2000 g/ha) and 10 packets (2000 g/ha) of Phosphobacteria or 20 packets of Azophos (4000 g/ha) mixed with 25 kg FYM and 25 kg of soil on the seed line. This saves 25% nitrogen besides increasing yield.	Field demonstrations, supply of bio fertilizers at subsidized cost
		Yield and quality were reduced by	Popularization and adoption of STCR-IPNS system of	• Adoption of soil test crop response based integrated plant nutrition system	On farm trial, supply of TNAU

Sl. No.	Major crops& enterprises being practiced in the district	Prioritized problems in these crops/ enterprise	Title of intervention	Technology options	Proposed Intervention
		the non-adoption of integrated nutrient management system	plant nutrition system. Popularization of TNAU MN mixture	(STCR- IPNS) • **Micro nutrient application:** TNAU MN mixture 12.5 kg/ha for variety and 15 kg/ha for hybrid apply as enriched FYM or apply 12.5 kg of micronutrient mixture formulated by the Department of Agriculture, Tamil Nadu with enough sand to make a total quantity of 50 kg for one ha.	micronutrient mixture at subsidized cost.
		Growth and yield reduction by the lack of growth regulators	Testing of crop boosters for enhance of yield and quality of cotton	• Spray 40 ppm NAA at 60 and 90 days after sowing on the crop to prevent early shedding of buds and squares and to increase the yield.	On Farm trial, field demonstration
		Reduction in yield and cotton quality due to occurrence of pests and disease	Testing of NPV virus and pesticides on boll worm control. Assessment of bacteriomycin and fungicide on cotton leaf blight	• **American bollworm:** Application of Nuclear Polyhedrosis Virus (NPV) at 3 x 1012 POB /ha in evening hours at 7th and 12th week after sowing or spraying of Fipronil 5%SC 2000 ml/ha at early stages or spraying of Carbaryl 50 WP 2.5 kg/ha at bolling and maturation stage. • **Bacterial leaf blight:** Spray Streptomycin sulphate + Tetracycline mixture 100g + Copper oxychloride 1250g/ha. Repeat spraying at 10 days interval twice or thrice if drizzling continues.	Filed demonstrations, Popularization of bacteriomycin on cotton leaf blight control.
4	Sugarcane	Lack of knowledge on selection in high	Performance evaluation of high yield varieties,	The primary seed materials are available in large quantity at the Sugarcane Research	Distribution of setts of high

Sl. No.	Major crops& enterprises being practiced in the district	Prioritized problems in these crops/ enterprise	Title of intervention	Technology options	Proposed Intervention
		yielding varieties of sugarcane	Popularization of varieties suitable for specific location	Stations at Cuddalore, Sirugamani and Melalathur. • **Suitable Varieties:** Co 86032, Co Si(Sc)6, Co G (Sc)5, Co C (Sc)22, Co 97009, CoV 94101, CoC 90063, CoSi 95071, CoC 24 TNAU SC Si7, TNAU SC Si 8.	yielding sugar cane varieties, training and field demonstrations,
		Less plant population caused delay in achievement of potential yield of varieties	Evaluation of sugarcane varieties under different planting densities, popularization of technologies	• Paired row system of planting double side planting of sugarcane setts with 150 + 30 cm spacing for Astraf 8000 series (Mechanical harvester) operated areas and 150 + 30 cm spacing for New Holland 4000 series operated areas may be adopted with single row of cane planting.	Research and development, popularization of technologies through trainings and demonstrations
		Lack of knowledge on application of growth regulators and chemicals to increase yield and sugar percentage	Popularization / dissemination of technologies through different modes	• **Growth hormones:** Foliar application of TNAU Sugarcane Booster @ 1.0, 1.5 and 2 kg/acre in 200 litres of water at 45,60 and 75 days after planting enhances cane growth and weight, internodal length, cane yield, sugar content and offers drought tolerance. • **Application of Micronutrients:** To provide all micronutrients to sugarcane, 50 kg /ha of micronutrient mixture containing 20 kg Ferrous sulphate, 10 kg Manganese sulphate, 10 kg Zinc sulphate, 5 kg of Copper sulphate, 5 kg of Borax mixed with 100 kg of well decomposed FYM, can be	Mass production and distribution of TNAU Sugarcane boosters at different centres of TNAU Supply of TNAU micronutrient mixture at subsidized rate Dissemination of technologies through on farm trial, trainings and field

Sl. No.	Major crops& enterprises being practiced in the district	Prioritized problems in these crops/ enterprise	Title of intervention	Technology options	Proposed Intervention
				recommended as soil application prior to planting or Apply TNAU MN mixture @ 50 kg/ha as EFYM for higher cane yield. • **Application of cane ripener's:** Spraying of Sodium metasilicate 4 kg/ha in 750 litres of water on the foliage of crop at 6, 8 & 10th month after planting will enhance cane yield and sugar percentage.	demonstrations Through pamphlets, books and notices etc.
		Lack of knowledge on integrated pest and disease management	Standardization of pest management strategies for sugarcane	• **Red rot:** Sett treatment with Carbendazim before planting (Carbendazim 50 WP @ 0.05% or Carbendazim 25 DS @ 0.1% along with 1.0% Urea for 5 minutes) • **Smut:** Sett treatment with fungicides *viz.*, Triadimefon @ 0.1% or Carbendazim @ 0.1% for 10 minutes or Treating the seed setts with Aerated Steam Therapy (AST) at 50 ºC for 1 hour or in hot water at 50 ºC for 30 minutes or at 52 ºC for 18 minutes • **Shoot borer:** Spraying of Fipronil 5%SC 1500-2000 ml/ha or Fipronil 0.3%GR 25-33.3 Kg/ha or intercropping of daincha in sugarcane can lower the shoot borer incidence. • **Termite:** Dip the setts in imidacloprid 70 WS 0.1% or Chlorpyriphos 20 EC 0.04 % for 5 minute or Imidacloprid	Training and demonstration's on disease and pest management, distribution pest control kits on subsidy

Sl. No.	Major crops& enterprises being practiced in the district	Prioritized problems in these crops/ enterprise	Title of intervention	Technology options	Proposed Intervention
				17.8% SL 350 ml/ha or Chlorpyriphos 20% EC 750 ml/ha.	
5	Groundnut	Lack of knowledge on high yielding varieties	Popularization and distribution of seed nuts through Department of Agriculture	**Varieties / hybrids** **Season:** • **Karthigaipattam (Nov – Dec):** TMV 7, CO 3, COGn 4, VRI 2, VRI 3, ALR 3, VRIGn5, VRIGn 6, TMVGn 13. • **Anipattam:**TMV 7, VRI 2, VRIGn 5, VRI Gn 6, TMVGn 13	Distribution of seeds at subsidy, training and demonstration on performance of high yielding varieties
		Less productivity due to non-adoption of advanced technologies	Promotion / dissemination of advance crop cultivation technologies	• **Seed Treatment** with talc formulation of *Trichodermaviride* @ 4 g/kg seed or *Pseudomonas fluorescens* @ 10 g/kg seed (or) with Thiram or Mancozeb @ 4 g/kg of seed or Carboxin or Carbendazim at 2 g/kg of seed (or) Treat the seeds with 3 packets (600 g)/ha of Rhizobial culture TNAU14 + 3 packets of Azospirillum (600 g/ha) and 3 packets (600 g/ha) of Phosphobacteria or 6 packets of Azophos (1200 g/ha) developed at TNAU using rice kanji as binder • **Micronutrients:** TNAU MN mixture @ 7.5 kg /ha as Enriched FYM (Prepare enriched FYM at 1:10 ratio of MN mixture & FYM; mix at friable moisture &incubate for one month in shade) under rainfed conditions. • **Apply Calcium Sulphate (Gypsum)** @ 400 kg/ha by the side of the plants on	Mass production and supply of bio control agents / bio fertilizer at subsidy, distribution of TNAU MN mixture during rain fed conditions, supply of gypsum, polythene mulching, TNAU ground nut rich in subsidy, dissemination of technologies etc.,

Sl. No.	Major crops& enterprises being practiced in the district	Prioritized problems in these crops/ enterprise	Title of intervention	Technology options	Proposed Intervention
				40th to 70th day depending upon soil moisture. Avoid gypsum in calciferous soils. Gypsum is effective in soils deficient in calcium and sulphur. Application of gypsum encourages pod formation and better filling up of the pods. Application of gypsum at the rate of 50 % basal both in rainfed and irrigated condition reduces Kalahasti malady and pod scab nematode under rainfed conditions. • Spray nutrient solution prepared by soaking DAP 2.5 kg, Ammonium sulphate 1 kg and borax 0.5 kg in 37 lit of water overnight. The next day morning it can be filtered and about 32 litre of mixture can be obtained and it may be diluted with 468 lit of water so as to made up to 500 litre to spray for one ha. Plano fix at the rate of 350 ml can also be mixed while spraying. This can be sprayed on 25^{th} and 35^{th} day after sowing under rainfed conditions. • **Polythene Film Mulching:** Spread black polythene sheet (90 cm width) over the soil surface. • Irrigation based on physiological growth phases. ○ **Life irrigation –** 4 to 5 days after sowing	

Sl. No.	Major crops& enterprises being practiced in the district	Prioritized problems in these crops/ enterprise	Title of intervention	Technology options	Proposed Intervention
				○ **Pegging stage -** 1 or 2 irrigations should be given ○ **Flowering stage –** 2 irrigations should be given ○ **Pod development stage -** 2 to 3 irrigations should be given • **Foliar spray of TNAU Groundnut Rich** @ 2 kg/acre in 200 litres of water at peak flowering and at pod development stages increases flower retention, pod filling and improves moisture stress tolerance and pod yield. • Spraying 0.5% Potassium chloride during flowering and pod development stages will aid to mitigate the ill effects of water stress.	
		Harvesting and separation of groundnut husk is a laborious task	Popularization of TNAU ground nut stripper	• **Farm mechanization:** Groundnut stripper developed by TNAU can be used for stripping the pods from the plants	Distribution of groundnut stripper at subsidy, training and demonstrations on groundnut stripping
6	Turmeric	Lack of knowledge on new varieties and cultivars	Promotion of cultivation of advanced and high yielding turmeric varieties	• **High yielding varieties:** CO 1, BSR 1, BSR 2, Roma, Suvarna, Sudarshana, Suguna, Sugandham, Ranga, Rasmi, Rajendra Sonia, Krishna, Suroma and Allepy Supreme, Kedaram, Prabha, Prathiba	Promotion of new varieties through supply of planting materials Training on its cultivation

Sl. No.	Major crops& enterprises being practiced in the district	Prioritized problems in these crops/ enterprise	Title of intervention	Technology options	Proposed Intervention
		Reduction in yield by insufficient supply of nutrients	Dissemination of advanced production technologies and distribution of nutrients	• **Fertigation:** Fertigation is done as per the recommended dose with 150:60:108 kg of NPK/ha • **Micronutrient application:** Apply 375 g each of Boron, Iron and Zinc, at rhizome development stage, as Borax, Ferrous sulphate, Zinc sulphate + 375 g of Urea in 250 lit of water/ha. Spray twice at 25 days interval.	Supply of micro nutrients mixture, training and demonstrations
7	Cholam	Lack of knowledge on identification location of specific varieties	Popularization and distribution of seed grains through Department of Agriculture	**Season: Varieties / hybrids** • **Thaipattam (Jan - Feb):** TNAU Sorghum hybrid CO 5 • **Chithiraipattam (April-May):** TNAU Sorghum variety CO 30 • **Adipattam (June-July):** CO(S) 28 • **Puratasipattam (Sep –Oct):** K Tall	Training, demonstrations, supply of seeds
		Observed yield reduction due to non-adoption of package of practices	Promotion of millet cultivation through trainings on package of practices and supply of inputs	• **Seed treatment** with seeds with three packets (600 g) / ha of Azospirillum and 3 packets (600g) of Phosphobacteria or 6 packets of Azophos (1200g) using rice gruel (Kanji) as binder. • Adoption of **Soil test crop response based integrated plant nutrition system** (STCR- IPNS) recommendation for prescribing fertilizer doses for specified yield targets. • Application of **micronutrient mixture** @ 12.5 kg/ha with enough sand to make a total quantity of 50 kg and apply the mixture over the furrows and on top one	Training, demonstrations, supply of seeds, distribution of inputs such as bio fertilizers, micronutrient mixture, mechanical threshers at subsidized cost, distribution of pamphlets

Sl. No.	Major crops& enterprises being practiced in the district	Prioritized problems in these crops/ enterprise	Title of intervention	Technology options	Proposed Intervention
				third of the ridges. • **Thinning** of the seedlings and gap fill with the seedlings thinned out. Maintain a spacing of 15 cm between plants after the first hand weeding. Thin the pulse crop to a spacing of 10 cm between plants for all pulse crop except cowpea, for which spacing is maintained at 20 cm between plants. • Thresh using a **mechanical thresher** or by drawing a stone roller over the ear heads or by using cattle and dry the produce and store. • Promotion of **Ratoon sorghum**	
8	Cumbu	Lack of knowledge on identification location of specific varieties	Popularization and distribution of seed grains through Department of Agriculture	**Season : Varieties / hybrid** • **Chithiraipattam (Mar-April):** CO 7 • **Masipattam (Jan-Feb):** CO (Cu) 9 • **Adipattam (Jun-July):** X7 • **Puratasipattam (Sep-Oct):** ICMV 221, TNAU cumbu hybrid Co 9	Training, demonstrations supply of seeds
		Observed yield reduction due to non-adoption of package of practices	Promotion of millet cultivation through trainings on package of practices and supply of inputs	• **Seed treatment** with three packets (600g) of the Azospirillum inoculant and 3 packets (600g) of Phosphobacteria or 6 packets (1200g) of Azophos. • Application of **phorate** 10 G 180 g or Carbofuran 3 G 600 g mixed with 2 kg of moist sand, spread on the beds and work into the top 2 cm of soil to protect the seedlings from shoot fly infestation. • **Chiseling for soils with Hard Pan:**	Awareness on seed treatments, précised application of fertilizers, root dipping treatments, trainings and demonstrations, supply of inputs at

Sl. No.	Major crops& enterprises being practiced in the district	Prioritized problems in these crops/ enterprise	Title of intervention	Technology options	Proposed Intervention
				Chisel the soils having hard pan formation at shallow depths with chisel plough at 0.5m interval, first in one direction then in the direction perpendicular to the previous one, once in three year • **Application of basal in main field** - Spread 12.5 t/ha of FYM or compost or composted coir pith uniformly on unploughed soil. Incorporate the manure by working the country plough and apply Azospirillum to the soil @ 10 packets per ha (2000 g) and 10 packets (2000g) of Phosphobacteria (or) 20 packets (4000g) of Azophos with 25kg of soil and 25 kg of FYM. • **Root dipping with bio-fertilizers:** Prepare the slurry with 5 packets (1000 g)/ha of Azospirillum inoculant and 5 packets (1000g/ha) of Phosphobacteria or 10 packets of Azophos (2000g/ha) in 40 lit. of water and dip the roots of the seedlings 15 - 30 minutes before planting. • Thresh in a **mechanical thresher** • **Integrated management strategies for major pest and diseases of pearl millet -** Seed treatment with Metalaxyl @ 6g/kg of seeds + Seed treatment with Imidacloprid @ 5g/kg of seeds +	subsidized cost

Sl. No.	Major crops& enterprises being practiced in the district	Prioritized problems in these crops/ enterprise	Title of intervention	Technology options	Proposed Intervention
				Removal of downy mildew infected plants up to 45 days of sowing + Spraying of Mancozeb @ 1000g/ha + Spraying of NSKE 5% @ 50% flowering against downy mildew, rust and shoot fly.	
9	Banana	Problem in selection of location specific varieties	Evaluation of banana germplasm for suitability of North - Eastern zones	**Variety suitable for the district –** Dwarf Cavendish	Supply of TC planting materials in subsidy, training and demonstration
		Occurrence of disease and gradual yield reduction due to non-adoption of package of practices	Precision farming techniques in banana cultivation	• **Pre-treatment of suckers:** Select sword suckers of 1.5 to 2.0 kg weight, free from diseases and nematodes. Trim the roots and decayed portion of the corm, cut the Pseudostem leaving 20 cm from the corm and grade the suckers to size. To avoid wilt disease, infected portions of the corm may be pared, dipped for 5 minutes in Carbendazim 0.1% (1 g in 1 lit of water) for Rasthali, Monthan, Neyvannan, Virupakshi and other wilt susceptible varieties. Pralinage with 40 g of Carbofuran 3 G granules per sucker (Dip the corm in slurry solution of 4 parts clay plus 5 parts water and sprinkle Carbofuran to control nematodes). Alternatively, dip the corm with 0.75% Monocrotophos, shade dry for atleast 24 hours and plant. Sow Sun hemp on 45th day; incorporate it after about a month. This operation reduces nematode build	Training and demonstrations, supply of disease free tissue culture planting materials at subsidized rate, supply of inputs such micronutrients, fertilizer's, bio fertilizers, bio control agents, post- harvest chemicals etc., distribution of bunch covers at subsidized cost

Sl. No.	Major crops& enterprises being practiced in the district	Prioritized problems in these crops/ enterprise	Title of intervention	Technology options	Proposed Intervention
				up. • Adoption of **high density planting** for higher productivity - Plant 3 suckers / pit at a spacing of 1.8 x 3.6 m (4600 plants / ha) for Cavendish varieties and 2 m x 3 m for Nendran (5000 plants /ha). • For maximizing productivity follow **Fertigation Technique** - Apply 25 litres of water / day + 200:30:300 g N: P2O5: K2O / plant using water soluble fertilizer For economizing the cost of fertilizers, fertigate using normal fertilizers (Urea and Muriate of potash) with 50% of the recommended dose along with recommended dose of phosphorus as basal at 2nd month after planting. • **Special Practices:** The dry and diseased leaves are removed and burnt to control the spread of leaf spot diseases. Male flowers may be removed a week after opening of last hand. The plants at flowering may be **propped.** Cover the peduncle with flag leaf to prevent stalk end rot. **Cover the bunches** with banana leaves to avoid sun scald. • Surface diggings may be given at bi-monthly intervals and **Desuckering** at monthly intervals • **Growth regulators:** To improve the	

Sl. No.	Major crops& enterprises being practiced in the district	Prioritized problems in these crops/ enterprise	Title of intervention	Technology options	Proposed Intervention
				grade of bunches, 2,4-D at 25 ppm (25 mg / lit.) may be sprayed in Poovan and CO 1 banana after the last hand has opened. This will also help to remove seediness in Poovan variety. Spray CCC 1000 ppm at 4th and 6th month after planting. Spray Plantozyme @ 2ml / l at 6th and 8th month after planting to get higher yield. • **Micronutrients Spray:** Spray micronutrients viz., ZnSO4 (0.5%), FeSO4 (0.2%), CuSO4 (0.2%) andH3BO3 (0.1%) at 3rd, 5th and 7th MAP to increase yield and quality of banana.	

CHAPTER IV

DISTRICT PLAN

The interventions proposed, the associated outlays, the physical targets, budgetary requirements, time frame for achievements in the Agriculture, Agricultural Research, Horticulture, Agricultural Engineering, Agricultural Marketing, Seed Certification, Animal Husbandry, Dairy Development, Fisheries, Public Welfare Department and Cooperation and Civil Supplies sectors are discussed in this chapter. This would comprehend the activities and the achievements to be made in beyond twelfth plan.

4.1. Agriculture

The development of agriculture sector has been aimed at by mainly pushing up the productivity levels of the major crops *viz.,* Rice, Millets, Pulses, Oilseed, Oil palm, Cotton, Sugarcane, Coconut and others interventions like training, infrastructure development, integrated pest management, soil health management, rainfed area development, farm mechanization and agricultural information technology and strengthening of seed farm. in the district. Activities planned for and the costs involved under each crop are detailed below.

4.1.1. Enhancing the rice productivity in Thiruvannamalai District

In the recent years, while the area under paddy had declined, the productivity has become almost stagnant. Therefore, there is a need to increase the productivity of rice to feed the growing population. The aim must be to raise the productivity level in paddy to the extent of 3 to 5 per cent, by making the farmers aware of the available improved production technologies and adopt the same for increasing productivity in paddy.

Project components

- ✓ Promotion of SRI in all blocks.
- ✓ Distribution of MN mixture, biofertilizer, zinc sulphate, zypsum for all blocks.
- ✓ Distribution of certified seeds and distribution of foundation seeds for all blocks.
- ✓ Certified seed production for all blocks except chetpet, arni, west arni, theller
- ✓ Foundation seed production for all blocks except Polur.
- ✓ Providing incentives for paddy machine planting and direct sown paddy with seed drill sowing for all blocks.
- ✓ Distribution of biocontrol agents for all blocks.
- ✓ Distribution of hybrid seed rice for all blocks.
- ✓ Providing taurpaulin for all blocks.

Budget

The budget requirement for fulfilling the various interventions is **₹. 21833.83 Lakhs**.

Expected outcome

Supply of quality seeds of certified varieties will certainly increase the production and productivity. Reduction in cost of cultivation of crops due to supply of fertilizers and plant protection chemicals at a cost lower than market price. Assured supply of fertilizers and plant protection chemicals even in the condition of shortage of supply in market.

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.1.Budget Requirement for Agriculture Sector in Paddy

Finance (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
1	Promotion of SRI	Ha	0.15	All blocks	8805	1320.75	9555	1433.25	10780	1617	11230	1684.5	12505	1875.75	52875	7931.25
2	Distribution of High Yielding Varieties	MT	0.35	All blocks	575	201.25	631	220.85	711	248.85	731	255.85	820	287	3468	1213.8
3	Distribution of Foundation	MT	0.40	All blocks	102.5	41	115.5	46.2	116.5	46.6	130.5	52.2	136.5	54.6	601.5	240.6
4	seed production - Foundation	MT	0.32	All blocks except B9,B10,B11,B13	99.5	31.84	106.5	34.08	108.5	34.72	115.5	36.96	121.5	38.88	551.5	176.48
5	seed production - Certified class	MT	0.26	All blocks except B7	530	137.8	575	149.5	641	166.66	596	154.96	675	175.5	3017	784.42
6	Incentives for paddy machine planting	Ha	0.10	All blocks	8580	858	8815	881.5	9860	986	10145	1014.5	11280	1128	48680	4868
7	Distribution of Protray	No	0.0008	All blocks except B17	12545	10.036	16205	12.964	11460	9.168	14615	11.692	12075	9.66	66900	53.52
8	Distribution of High Yielding Varieties	Ha	0.01	All blocks	12200	122	12470	124.7	13250	132.5	14850	148.5	15600	156	68370	683.7
9	Distribution of High Yielding Varieties	Ha	0.003	All blocks	15000	45	15650	46.95	16350	49.05	16600	49.8	17200	51.6	80800	242.4
10	Distribution of High Yielding Varieties	Ha	0.01	All blocks	12460	124.6	12870	128.7	13830	138.3	13690	136.9	14690	146.9	67540	675.4
11	Distribution of bio control agents/ biopesticides	Ha	0.01	All blocks	8100	81	8225	82.25	8700	87	9050	90.5	9475	94.75	43550	435.5
12	Gypsum application	Ha	0.015	All blocks	7700	115.5	7980	119.7	8135	122.025	8290	124.35	8495	127.43	40600	609
13	Distribution of herbicides	Ha	0.01	All blocks except B8	8260	82.6	8860	88.6	9010	90.1	8960	89.6	9060	90.6	44150	441.5
14	Hybrid Rice seed distribution	Ha	0.04	All blocks except B8	2595	103.8	2857	114.28	2970	118.8	3115	124.6	3377	135.08	14914	596.56

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
15	Polyvinyl coated Tarpaulin (6m x 5m)	No	0.02	All blocks	1809	36.18	1889	37.78	2134	42.68	2729	54.58	2774	55.48	11335	226.7
16	Direct sown paddy with seed drill sowing	Ha	0.07	All blocks	5730	401.1	6285	439.95	7340	513.8	7995	559.65	9150	640.5	36500	2555
	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
	Total					**3732.46**		**3981.25**		**4423.25**		**4609.14**		**5087.73**		**21833.83**

B1- Thiruvannamalai, B2- Thurinjapuram, B3- Kilpennathur, B4- Chengam, B5- Thandrampattu, B6- Pudupalayam, B7- Polu, B8- Kalasapakkam, B9- Chetpet, B10- Arni, B11- Westarni, B12- Vandavasi, B13- Thellar, B14- Peranamallur, B15- Cheyyar, B16- Anakkavoor, B17- Vembakkam

4.1.2. Enhancing the millets productivity in Thiruvannamalai District

Declining trends in area and production of major and minor millets are observed in the recent years. On the other hand, the nutritive value of these millets are well recognized by the consumers, particularly at the mid and high income brackets in the recent times. The aim must be to grow millets especially minor ones under larger area including sub marginal lands, so as to meet the growing demand. The strategies are by utilizing the sub-marginal and relatively waste lands and with the application of latest production technologies, the production of millets (major and minor) would be increased.

Project components

- ✓ Demonstration (supply of seed, seed treatment & MN mixture) in sorghum crops for kilpennathur, Chengam, Vandavasi.
- ✓ Distribution of biofertilizers Liquid / Carrier in cumbu for all blocks except Thurinjapuram, Arni, West arni, Anakkavur.
- ✓ Expansion of area under minor millets for all blocks except Thurinjapuram, Chetpet, Anakkavur.
- ✓ Millet processing unit for minor millet for all blocks except Thurinjapuram, Chetpet, Anakkavur.
- ✓ Seed production unit for all blocks except Thurinjapuram, Chetpet, and Anakkavur.
- ✓ Provide drip irrigation in maize for kilpennathur, Thandrampattu, Pudhupalayam, Chetpet, Vandavasi, Peranamallur, Cheyyar, and Vembakam.
- ✓ Seed distribution of millets for kilpennathur, Chengam, Kalasapakam, Vandavasi.

Budget

The total cost of the project for five years works to **₹. 7854.04 Lakhs**.

Expected outcome

There is a scope to increase the area under millets in Thiruvannamalai district. By distributing improved varieties / hybrids of millets will certainly improve the living standard of the farmers of this tract. Supply of quality seeds of newly released varieties will certainly increase the production and productivity.

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.2.Budget Requirement for Agriculture Sector in Millets

(Rs. in lakhs)

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															
Distribution of LPG operated Bird Scarrer	Nos.	0.1	All blocks except B2, B9, B16	651.3	65.13	727.3	72.73	813.3	81.33	841.3	84.13	846.3	84.63	3879.5	387.95
Distribution on biofertilizer - Liquid / Carrier	Ha	0.003	All blocks except B2, B9, B16	2025.3	6.08	2925.3	8.78	2900.3	8.70	3450.3	10.35	3750.3	11.25	15051.5	45.15
Expansion of area under Minor Millets (Demo - supply of seed, seed treatment, MN mixture & Organic package)	Ha	0.05	All blocks except B2, B9, B16	1110	55.50	1510	75.50	1705	85.25	1775	88.75	2175	108.75	8275.0	413.75
Formation of small millet groups	Nos.	0.2	All blocks except B2, B9, B16	87	17.40	97	19.40	115	23.00	127	25.40	140	28.00	566.0	113.20
Millet Processing unit-Minor millet	Nos.	2.5	All blocks except B2, B9, B16	35	87.50	42	105.00	55	137.50	50	125.00	76	190.00	258.0	645.00
Seed Production / Incentives for quality seed	MT	0.63	All blocks except B2, B9, B16	47.5	29.93	50	31.50	53.2	33.52	54.5	34.34	58	36.54	263.2	165.82
Soil moisture conservation practices	Ha	0.05	All Blocks	400	20.00	350	17.50	250	12.50	300	15.00	250	12.50	1550.0	77.50
Initiative for Nutritional Security through Intensive Millet Promotion (INSIMP)	ha	0.04	All Blocks	300	12.00	300	12.00	300	12.00	300	12.00	300	12.00	1500.0	60.00
Sorghum															
Demonstration (Supply of seed, seed treatment, MN mixture &	Ha	0.05	B3,B4, B12	70	3.50	75	3.75	90	4.50	115	5.75	120	6.00	470.0	23.50

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
Organic package)															
Distribution of biofertilizers Liquid / Carrier	Ha	0.003	B3,B4, B8, B12	175	0.53	180	0.54	195	0.59	215	0.65	230	0.69	995.0	2.99
Distribution of MN mixture (12.5kg/ha)	Ha	0.007	B3, B4, B12	75	0.53	80	0.56	95	0.67	115	0.81	130	0.91	495.0	3.47
Seed distribution	MT	0.7	B3,B4, B8, B12	10.5	7.35	10.75	7.53	13	9.10	15.25	10.68	16.5	11.55	66.0	46.20
Maize															
Demonstration (Supply of seed, seed treatment & MN mixture, organic package)	Ha	0.05	B3,B5,B6,B7,B9,B10,B11, B12	284.5	14.23	307.5	15.38	386.5	19.33	388.50	19.43	662.50	33.13	2029.5	101.48
Distribution of biofertilizers Liquid / Carrier	Ha	0.003	B3, B5,B6,B9,B12	220.15	0.66	245.15	0.74	254.15	0.76	266.15	0.80	280.15	0.84	1265.8	3.80
Distribution of herbicides	Ha	0.008	B3,B5,B6,B7,B9,B12	200.08	1.60	245.08	1.96	274.08	2.19	316.08	2.53	500.08	4.00	1535.4	12.28
Distribution of Maize maxim (15 kg/ha)	Ha	0.045	B3,B5,B6,B7,B10,B11,B12,B14,B15,B17	430	19.35	495	22.28	504	22.68	666.00	29.97	830.00	37.35	2925.0	131.63
Drip irrigation for maize	Ha	1	B3,B5,B6,B9,B12,B14,B15,B17	184	184.00	176	176.00	158	158.00	175.00	175.00	180.00	180.00	873.0	873.00
Seed Distribution	MT	0.4	B3,B5,B6,B7,B12,B14,B15,B17	4.6	1.84	5.2	2.08	5.45	2.18	7.00	2.80	7.25	2.90	29.5	11.80
Seed Distribution Hybrid seeds for maize	MT	1.8	B3,B7,B9,B10, B11,B12,B14,B15,B17	3.8125	6.86	4.16	7.49	4.6125	8.30	5.16	9.29	7.6625	13.79	25.4	45.74
Cumbu															
Demonstration (Supply of seed, seed treatment & MN mixture, organic package)	Ha	0.05	All blocks except B2, B10,B11, B16	977.5	48.88	932.5	46.63	867.5	43.38	1047.5	52.38	1152.5	57.63	4977.5	248.88
Distribution of biofertilizers Liquid / Carrier	Ha	0.003	All blocks except B2, B10,B11, B16	1450.3	4.35	1725.3	5.18	1256.2	3.77	1820.3	5.46	1630.3	4.89	7882.4	23.65

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
Distribution of cumbu hybrid seed	MT	2.6	B4,B9,B12,B14 ,B15,B17	250.65	651.69	250.9	652.34	251.35	653.51	351.6	914.16	351.85	914.81	1456.4	3786.51
Distribution of MN mixture (12.5kg/ha)	Ha	0.007	All blocks except B2, B10,B11, B16	920.35	6.44	975.35	6.83	896.05	6.27	1060.35	7.42	1070.35	7.49	4922.5	34.46
Seed Distribution	MT	0.53	All blocks except B2, B10,B11, B16	48.06	25.47	57.06	30.24	64.91	34.40	95.26	50.49	105.26	55.79	370.6	196.39
Ragi															
Demonstration (supply of seed, seed treatment, MN mixture & organic package)	Ha	0.05	All blocks except B5,B6,B16	502.5	25.13	557.5	27.88	723.5	36.18	752.50	37.63	757.5	37.88	3293.5	164.68
Distribution of biofertilizers Liquid / Carrier	Ha	0.003	All blocks except B5,B6,B16	675.3	2.03	745.3	2.24	910.36	2.73	935.30	2.81	940.3	2.82	4206.6	12.62
Distribution of MN mixture	Ha	0.007	All blocks except B5,B6,B16	545.35	3.82	615.35	4.31	780.49	5.46	800.35	5.60	810.35	5.67	3551.9	24.86
Seed distribution	MT	0.66	All blocks except B5,B6,B8,b16	50.86	33.57	53.86	35.55	56.19	37.09	68.86	45.45	69.86	46.11	299.6	197.76
Total					**1335.34**		**1391.88**		**1444.87**		**1774.04**		**1907.91**		**7854.04**

B1- Thiruvannamalai, B2- Thurinjapuram, B3- Kilpennathur, B4- Chengam, B5- Thandrampattu, B6- Pudupalayam, B7- Polu, B8- Kalasapakkam, B9- Chetpet, B10- Arni, B11- Westarni, B12- Vandavasi, B13- Thellar, B14- Peranamallur, B15- Cheyyar, B16- Anakkavoor, B17- Vembakkam

4.1.3. Enhancing the pulses productivity in Thiruvannamalai District

Pulses are in short supply with sky rocketing prices as compared to the growing demand. Hence, there is a need for increasing pulses in the near future. The targets are aimed to increase pulses production by increasing area and productivity through the adoption of appropriate technologies. The strategy must be through area expansion and increased productivity in the rice fallows of all river basins as well as in the non - ayacut areas as a pure crop.

Project components

- ✓ Promotion of redgram transplantation for nursery preparation in all blocks except Vembakkam.
- ✓ Production of foundation/certified pulses seeds for all blocks.
- ✓ Distribution of certified seeds, micro nutrients, weedicide and DAP Spray, pulse wounder for all blocks.
- ✓ Distribution of biofertilizer (Rhizobium + Phosphobacteria) - liquid / carrier, gypsum, plant protection chemicals, traps for all blocks.
- ✓ Cropping system based demonstration for all blocks.
- ✓ Seed treatment with chemicals, *Trichoderma* for all blocks.

Budget

The total budget for the proposed intervention is **₹. 8594.58 Lakhs**.

Expected outcome

The timely supply of seed material of ruling varieties and distribution of machineries through Department of Agriculture at block level will facilitate the farmers to adopt high yielding varieties in turn to get higher income.

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.3.Budget Requirement for Agriculture Sector in 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 B1,B8,B10,B11,B13,B16,B17	12	29.88	12	29.88	12	30.38	8	19.63	8	19.63	52	129.38
2	Production of Foundation/ Certified pulses seeds	MT	86000	All blocks	231	198.66	265	227.90	270	232.20	289	248.54	295	253.70	1350	1161.00
3	Distribution of Certified Seeds	MT	100000	All blocks	480	480.00	509	509.00	520	520.00	445	445.00	455	455.00	2409	2409.00
4	Distribution of Gypsum	ha	400	All blocks	5275	21.10	5575	22.30	5975	23.90	5935	23.74	6235	24.94	28995	115.98
5	Distribution of Biofertilizer/ Organic packages (Rhizobium + Phosphobacteria) - Liquid / Carrier	Ha	600	All blocks	6150	36.90	6650	39.90	6750	40.50	7050	42.30	7050	42.30	33650	201.90
6	Distribution of Micro Nutrients(5 kgs/ Ha)	Ha	350	All blocks	4195	14.68	4695	16.43	4795	16.78	5375	18.81	5375	18.81	24435	85.52
7	DAP Spray	Ha	700	All blocks	7650	53.55	8450	59.15	8650	60.55	9000	63.00	9200	64.40	42950	300.65
8	Pulse wonder - 5 kg/ha	Ha	1000	All blocks	3300	33.00	3690	36.90	3710	37.10	3980	39.80	3900	39.00	18580	185.80
9	Bund Cropping	Ha	300	All blocks	2400	7.20	2650	7.95	2270	6.81	3500	10.50	3600	10.80	14420	43.26
10	Line sowing	Ha	2250	All blocks	3175	71.44	3115	70.09	3385	76.16	3500	78.75	3750	84.38	16925	380.81
11	Distribution of Yellow sticky trap /pheromone trap	Ha	1000	All blocks	2160	21.60	2510	25.10	2520	25.20	2800	28.00	2900	29.00	12890	128.90
12	Cropping system based demonstration	Ha	12500	All blocks	2220	277.50	2195	274.38	2405	300.63	2325	290.63	2425	303.13	11570	1446.25
13	Distribution of weedicide	Ha	1000	All blocks	3125	31.25	3625	36.25	3735	37.35	3810	38.10	3810	38.10	18105	181.05

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
14	Plant Protection Chemicals	Ha	1000	All blocks except B3	3025	30.25	3675	36.75	4075	40.75	4150	41.50	4150	41.50	19075	190.75
15	Seed treatment and soil application with Trichodermaviridi	Ha	700	All blocks	2725	19.08	2975	20.83	3075	21.53	3310	23.17	3310	23.17	15395	107.77
16	Pure crop demonstration - Black gram and green gram	Ha	6300	All blocks	1120	70.56	1235	77.81	1285	80.96	1420	89.46	1470	92.61	6530	411.39
17	Demonstration on intercropping of pulses with other crops	Ha	8300	All blocks except B1,B17	1175	97.53	1280	106.24	1130	93.79	1475	122.43	1335	110.81	6395	530.79
18	Demonstration on pulses production	Ha	8250	All blocks except B17	585	48.26	585	48.26	565	46.61	615	50.74	635	52.39	2985	246.26
19	Promotion of Redgram Transplantation for nursery preparation	Ha	5000	All blocks except B19	620	31.00	730	36.50	1150	57.50	1700	85.00	1730	86.50	5930	296.50
20	Seed treatment with chemicals	Ha	250	All blocks except B7,B17	2850	7.13	3150	7.88	3400	8.50	3450	8.63	3800	9.50	16650	41.63
	Total					**1580.55**		**1689.48**		**1757.19**		**1767.71**		**1799.65**		**8594.58**

B1- Thiruvannamalai, B2- Thurinjapuram, B3- Kilpennathur, B4- Chengam, B5- Thandrampattu, B6- Pudupalayam, B7- Polu, B8- Kalasapakkam, B9- Chetpet, B10- Arni, B11- Westarni, B12- Vandavasi, B13- Thellar, B14- Peranamallur, B15- Cheyyar, B16- Anakkavoor, B17- Vembakkam

4.1.4. Enhancing the oilseeds productivity in Thiruvannamalai District

In the past, the down-trend in the area under groundnut and sesame was observed. The area expansion under sunflower in the recent time is quite encouraging. It should be aimed to increase the production of oilseeds through an area expansion and productivity will be increase. And the strategy should be in increasing the area coverage and productivity through improved crop production technologies.

Project components

- ✓ Certified seed production and foundation seed production for groundnut in all blocks.
- ✓ Distribution of light traps for all blocks.
- ✓ Foundation and certified seed production in sunflower, gingelly and castor for Chengam, Vandavasi, Peranamallur, Vembakkam, Anakkavoor,
- ✓ Purchase of breeder seed for all blocks except Pudhupalayam, Polur, Chetpet, Arni, West arni, Thellar, Vembakkam, Anakkavoor.
- ✓ Provision of herbicide for all blocks except Thurinjapuram, Polur, Kalasapakam, Chetpet.
- ✓ CBD for groundnut covered in all blocks except Kilpennathur.
- ✓ CBD for gingelly covered for all blocks except Thurinjapuram, Kilpennathur, Thandrampet, Pudhupalayam, Polur, Kalasapakam, Chetpet, Vembakkam,
- ✓ CBD for sunflower covered for Chengam, Vandavasi, Peranamallur and Cheyyar.

Budget

The total cost of the project for five years works to **₹. 21333.00 Lakhs**.

Expected outcome

The supply of good quality seeds, planting materials, and distribution of micronutrients, gypsum and bio-fertilizers will enhance the production and productivity of oilseeds.

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.4.Budget Requirement for Agriculture Sector in Oilseeds

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
1	Purchase of Breeder seed	MT	1.5	All blocks except B6,B7,B9,B10, B11,B13,B16, B17	79.80	119.70	90	135.00	91.40	137.10	94.30	141.45	88.90	133.35	444.40	666.60
2	Polythene mulch Inclusive of erection	Ha	0.5	All blocks except B2,B7,B9,B10, B11,B13,B17	1655	827.50	1930	965.00	1930	965.00	2180	1090.00	1935	967.50	9630	4815.00
3	Herbicide	Ha	0.01	All blocks except B2,B7,B8,B9	3960	39.60	4235	42.35	4510	45.10	4635	46.35	4585	45.85	21925	219.25
4	Light trap (NCIPM)	Nos.	0.01	All blocks	2330	23.30	2505	25.05	2530	25.30	3255	32.55	2935	29.35	13555	135.55
5	Bio pesticide/ fungicide	Ha	0.01	All blocks except B7,B9	2675	26.75	2850	28.50	2950	29.50	3150	31.50	3400	34.00	15025	150.25
6	Compact Block Demonstration - Groundnut	Ha	0.2	All blocks except B3	1480	296.00	1700	340.00	1680	336.00	1855	371.00	1810	362.00	8525	1705.00
7	Compact Block Demonstration - Gingelly / Castor	Ha	0.06	All blocks except B2,B3,B5,B6,B7, B8,B9,B17	137	8.22	153	9.18	175	10.50	183	10.98	191	11.46	839	50.34
8	Compact Block Demonstration - Sunflower	Ha	0.08	B4,B12,B14,B 15	30	2.40	30	2.40	33	2.64	38.00	3.04	14	1.12	145	11.60
9	Microirrigation (Raingun / Microsprinkler)	ha	0.55	All Blocks	130	71.50	150	82.50	160	88.00	200	110.00	125	68.75	765	420.75
10	Distribution of IPM kit	Nos.	0.10	All Blocks	1000	100.00	500	50.00	1500	150.00	1000	100.00	1500	150.00	5500	550.00
11	Growth regulator / DAP	ha	0.01	All Blocks	150	0.75	100	0.50	150	0.75	100.00	0.50	150	0.75	650	3.25
	GROUNDNUT															
12	Strengthening seed chain by	Mt	0.76	All blocks	131	99.56	156	118.56	161	122.36	176	133.76	151	114.76	775	589.00

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
	foundation seed production															
13	Strengthening seed chain by certified seed production	Mt	0.73	All blocks	565	412.45	575	419.75	620	452.60	635	463.55	585	427.05	2980	2175.40
14	Distribution of Certified seeds	Mt	0.84	All blocks	605	508.20	620	520.80	655	550.20	665	558.60	605	508.20	3150	2646.00
15	Distribution of Seed Treatment Chemicals and Bioagents (T.Viridi)	Kg	0.0015	All blocks	2465	3.70	2520	3.78	2570	3.86	2720	4.08	2620	3.93	12895	19.34
16	Application of Gypsum to Groundnut Crop	Ha	0.016	All blocks	6150	98.40	5950	95.20	6300	100.80	6650	106.40	6650	106.40	31700	507.20
17	Distribution of Micro Nutrient Mixture	Ha	0.015	All blocks except B8	5350	80.25	5350	80.25	5700	85.50	6050	90.75	6050	90.75	28500	427.50
18	Distribution of Biofertilizer	Ha	0.006	All blocks except B7,B9	9800	58.80	5400	32.40	5650	33.90	6050	36.30	6050	36.30	32950	197.70
19	Distribution of Liquid Biofertilizer	Ha	0.006	All blocks	3350	20.10	3550	21.30	3800	22.80	4200	25.20	4150	24.90	19050	114.30
20	Distribution of Rhizobium/ PSB Culture	Ha	0.006	All blocks	4550	27.30	4950	29.70	5250	31.50	5650	33.90	5550	33.30	25950	155.70
21	Distribution of Pheromone Traps	Nos.	0.02	All blocks except B7,B8,B9	1625	32.50	1700	34.00	1850	37.00	2000	40.00	2050	41.00	9225	184.50
22	Distribution of Light Traps	Nos.	0.02	All blocks except B7,B9	1950	39.00	2100	42.00	2200	44.00	2400	48.00	2525	50.50	11175	223.50
23	Castor as Bund crop	Ha	0.006	All blocks	777	4.66	751	4.51	761	4.57	787	4.72	770	4.62	3846	23.08
24	Combined Nutrient Spray	Ha	0.015	All blocks except B8	1900	28.50	1510	22.65	1560	23.40	1660	24.90	1660	24.90	8290	124.35
25	Seed Drill Sowing / Line sowing of Groundnut with Pulses as intercrop(hiring charges only)	Ha	0.03	All blocks	3500	105.00	3580	107.40	3635	109.05	3960	118.80	3860	115.80	18535	556.05

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
26	Seeddrill Sowing of Groundnut with Redgram as Intercrop	Ha	0.04	All blocks except B3,B5,B7,B9,B17	1710	68.40	1770	70.80	1920	76.80	2270	90.80	1845	73.80	9515	380.60
27	Distribution of Tractor operated thresher	Nos.	1.5	All blocks except B3,B5,B7,B8,B9,B16	188	282.00	193	289.50	198	297.00	205	307.50	195	292.50	979	1468.50
28	Distribution of Power Operated Groundnut Stripper	Nos.	1.3	All blocks except B3,B5,B7,B9,B16	159	206.70	161	209.30	217	282.10	223	289.90	220	286.00	980	1274.00
29	Distribution of Power operated Groundnut Decorticator	Nos.	1	All blocks except B3,B5,B7,B9,B16	259	259.00	265	265.00	293	293.00	298	298.00	320	320.00	1435	1435.00
	SUNFLOWER															
30	Production of Foundation Seeds	Mt	0.52	B4,B12,B14,B17	0.90	0.47	0.90	0.47	1.10	0.57	1.10	0.57	1.10	0.57	5.10	2.65
31	Production of Certified Seeds	Mt	0.5	B4,B12,B14,B17	2	1.00	2.00	1.00	2.00	1.00	2.20	1.10	2.20	1.10	10.40	5.20
32	Distribution of certified seeds	Mt	0.57	B4,B12,B14,B17	2	1.14	2.00	1.14	2.00	1.14	2.20	1.25	2.20	1.25	10.40	5.93
33	GINGELLY															
34	Production of Foundation Seeds	Mt	1.13	B4,B12,B14,B16	0.90	1.02	0.90	1.02	0.90	1.02	0.90	1.02	0.90	1.02	4.50	5.09
35	Production of Certified Seeds	Mt	1.09	All blocks except B2, B3, B5,B6,B8,B10, B11,B13,B15, B17	3.30	3.60	3.80	4.14	4.00	4.36	4.00	4.36	4.20	4.58	19.30	21.04
36	Distribution of certified seeds	Mt	1.25	All blocks except B2, B3, B5,B6,B8,B16, B17	6	7.50	6.55	8.19	6.80	8.50	6.85	8.56	7.05	8.81	33.25	41.56
37	Distribution of Micro nutrients (Manganese sulphate/ Zinc sulphate)	Ha	0.004	All blocks except B2, B3, B5,B6,B8,B17	350	1.40	462	1.85	465	1.86	520	2.08	575	2.30	2372	9.49

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
	CASTOR															
38	Production of Foundation Seeds	Mt	0.52	B4	0.10	0.05	0.10	0.05	0.10	0.05	0.10	0.05	0.10	0.05	0.50	0.26
39	Production of Certified Seeds	Mt	0.5	B4,B12,B14	0.70	0.35	0.70	0.35	0.70	0.35	0.70	0.35	0.70	0.35	3.50	1.75
40	Distribution of certified seeds	Mt	0.58	B4,B12,B14	3.70	2.15	3.70	2.15	3.70	2.15	3.70	2.15	3.70	2.15	18.50	10.73
	Total					**3868.91**		**4067.73**		**4381.32**		**4634.03**		**4381.02**		**21333.00**

B1- Thiruvannamalai, B2- Thurinjapuram, B3- Kilpennathur, B4- Chengam, B5- Thandrampattu, B6- Pudupalayam, B7- Polu, B8- Kalasapakkam, B9- Chetpet, B10- Arni, B11- Westarni, B12- Vandavasi, B13- Thellar, B14- Peranamallur, B15- Cheyyar, B16- Anakkavoor, B17- Vembakkam

4.1.5. Enhancing the oil palm productivity in Thiruvannamalai District

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 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 as 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, Odisha, Telangana, and West Bengal.

Project components

- ✓ Oil palm area expansion programme for all blocks except Thandrampet, Thellar, Cheyyar and Anakkavoor.
- ✓ Inputs for intercropping covered for all blocks except Thandrampet, Thellar, Cheyyar and Anakkavoor.
- ✓ Supply of diesel pumps for all blocks except Thandrampet Thellar, Cheyyar and Anakkavoor.
- ✓ Supply of aluminium ladder, wire mesh and oil palm cuter for all blocks except Thandrampet Thellar, Cheyyar and Anakkavoor.
- ✓ Construction of borewells for all blocks except Thandrampet, Thellar, Cheyyar and Anakkavoor.
- ✓ Enhancing neem/pungam area expansion programme for all blocks except Thandrampet, Thellar, Cheyyar and Anakkavoor.

Budget

It is proposed to incur **₹. 946.67 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 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.

Table.4.5 Budget Requirement for Agriculture Sector in Oil palm Rs. in lakhs

Sl. No	Components	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	NMOOP -Mini Mission -II (Oilpalm)															
2	Oilpalm Area Expansion Programme	Ha	0.14	All blocks except B5,B13,B15,B16	140.00	19.60	165.00	23.10	190.00	26.60	210.00	29.40	240.00	33.60	945.00	132.30
3	Cultivation maintenance	Ha	0.1	All blocks except B5,B13,B15,B16	287.00	28.70	413.00	41.30	580.00	58.00	720.00	72.00	815.00	81.50	2815.00	281.50
4	Inputs for Intercropping	Ha	0.1	All blocks except B5,B13,B15,B16	287.00	28.70	416.00	41.60	590.00	59.00	740.00	74.00	840.00	84.00	2873.00	287.30
5	Supply of Diesel pumps	No	0.3	All blocks except B5,B13,B15,B16	10.00	3.00	32.00	9.60	44.00	13.20	59.00	17.70	59.00	17.70	204.00	61.20
6	Construction of Borewells	No	1	All blocks except B5,B13,B15,B16	5.00	5.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	65.00	65.00
7	Motorised Chisel	No	0.2	All blocks except B5,B13,B15,B16	2.00	0.40	6.00	1.20	6.00	1.20	6.00	1.20	5.00	1.00	25.00	5.00
8	Alumium portable ladder	No	0.06	All blocks except B5,B13,B15,B16	2.00	0.12	10.00	0.60	10.00	0.60	10.00	0.60	9.00	0.54	41.00	2.46
9	Wire mesh	No	0.1	All blocks except B5,B13,B15,B16	16.00	1.60	37.00	3.70	37.00	3.70	37.00	3.70	38.00	3.80	165.00	16.50
10	Oilpalm Cutter	No	0.03	All blocks except B5,B13,B15,B16	2.00	0.06	15.00	0.45	15.00	0.45	15.00	0.45	15.00	0.45	62.00	1.86
11	NMOOP -Mini Mission -III (Tree Borne Oilseeds)															
12	Neem/ Pungam Area Expansion Programme	Ha	0.2	All blocks except B5,B13,B16	48.00	9.60	57.00	11.40	61.00	12.20	65.00	13.00	67.00	13.40	298.00	59.60
13	Cultivation maintenance	Ha	0.05	All blocks except B5,B13,B16	48.00	2.40	61.00	3.05	72.00	3.60	76.00	3.80	78.00	3.90	335.00	16.75
14	Inputs for Intercropping	Ha	0.05	All blocks except B5,B13,B16	49.00	2.45	63.00	3.15	74.00	3.70	78.00	3.90	80.00	4.00	344.00	17.20
						101.63		**154.15**		**197.25**		**234.75**		**258.89**		**946.67**

B1- Thiruvannamalai, B2- Thurinjapuram, B3- Kilpennathur, B4- Chengam, B5- Thandrampattu, B6- Pudupalayam, B7- Polu, B8- Kalasapakkam, B9- Chetpet, B10- Arni, B11- Westarni, B12- Vandavasi, B13- Thellar, B14- Peranamallur, B15- Cheyyar, B16- Anakkavoor, B17- Vembakkam

4.1.6. Enhancing the sugarcane productivity in Thiruvannamalai District

Sugarcane is one of the important cash crop and a perfect gift to mankind. The demand for sugarcane in the country is mainly for the purpose for which they are utilized in the various form for consumption. There exist wide variations in the productivity of sugarcane in Thiruvannamalai district. In areas between Thiruvannamalai and Neyveli, the yield levels are comparable with very good yield per hectare, while in other areas, the yield levels are considerably lower. The low yield per hectare in most of the areas in the district needs the application of science – based production technologies. So, the strategy must be to increase the yield per hectare, by the application of latest technologies and through infrastructure developments.

Project components

- ✓ Sustainable Sugarcane Initiative (Shade net establishment and distribution of single bud seedling, trash mulching in all blocks except Vembakkam.
- ✓ Distribution of micro nutrient mixture, biofertilizers and weedicide for all blocks except Kalasapakam, Vembakkam, Vembakkam, Anakkavoor.
- ✓ Micro-irrigation – drip for all blocks except Kalasapakam, Vembakkam, and Anakkavoor.
- ✓ Demonstration on intercropping in Sugarcane in all blocks except Vembakkam.
- ✓ Strengthening of sugarcane tissue culture labs for all blocks except Kalasapakam.
- ✓ State level training for all blocks except Kalasapakam.

Budget

The total cost of the project for five years works to **₹. 25895.88** lakhs.

Expected outcome

Fertility status of the soil will be improved by application of micronutrient mixture and biofertilizers. Hence assurance of nutritional sustainability will be kept. The timely supply of inputs will increase the production and productivity of sugarcane. Minimum of 5 to 10 tonnes increase in cane production per hectare could be achieved.

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.6 .Budget Requirement for Agriculture Sector 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	All blocks except B8	2325	46.50	2670	53.40	2725	54.50	2730	54.60	2785	55.70	13235	264.70
2	Distribution. of biofertilizer (Ha)	Ha	0.006	All blocks except B8, B17	2475	14.85	2520	15.12	2725	16.35	2830	16.98	2835	17.01	13385	80.31
3	Distribution. of weedicide (Ha)	Ha	0.01	All blocks except B7, B8, B17	2020	20.20	2225	22.25	2330	23.30	2535	25.35	2640	26.40	11750	117.50
4	Distribution of Chip Cutter	Nos	0.05	All blocks except B5,B6,B8	605	30.25	695	34.75	775	38.75	805	40.25	910	45.50	3790	189.50
5	Distribution of FeSO4 Spray	Ha	0.005	All blocks except B2,B3,B8	1645	8.23	1770	8.85	1900	9.50	1955	9.78	1985	9.93	9255	46.28
6	Distribution of ZnSO4 Spray	Ha	0.005	All blocks except B2,B3,B8	1645	8.23	1870	9.35	1950	9.75	2005	10.03	2035	10.18	9505	47.53
7	Distribution of Micro Nutrient Mixture	Ha	0.02	All blocks except B8,B14,B16,B17	1220	24.40	1375	27.50	1530	30.60	1635	32.70	1690	33.80	7450	149.00
8	Distribution of Parasite Trichogramma	Ha	0.00125	All blocks except B7,B8,B17	770	0.96	920	1.15	975	1.22	1080	1.35	1185	1.48	4930	6.16
9	Distribution of Protray (2500 nos/ha)	Nos	0.0008	All blocks B8,B12,B17	104450	83.56	114250	91.40	120450	96.36	140650	112.52	161050	128.84	640850	512.68
10	Distribution of Sugarcane Booster (10 Kg/Ha)	Ha	0.035	All blocks except B2,B3,B5,B6, B8,B16,B17	470	16.45	555	19.43	570	19.95	585	20.48	600	21.00	2780	97.30
11	Distribution of Sugarcane Harvester	Nos	75	All blocks except B2,B3,B5,B6,B7,B8,B16,B17	9	675.00	11	825.00	12	900.00	15	1125.00	16	1200.00	63	4725.00
12	Distribution of	ha	0.25	All blocks except	1365	341.25	1470	367.50	1585	396.25	1500	375.00	1605	401.25	7525	1881.25

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
	Water Soluble Fertiliers			B2,B3,B7,B8,B16, B17												
13	Micro irrigation - Drip (1.2x0.6)	ha	1.24	All blocks except B8,B16,B17	1675	2077.00	1870	2318.80	1945	2411.80	1950	2418.00	2005	2486.20	9445	11711.80
	Sustainable Sugarcane Initiative (SSI)															
14	A. Establishment of Shade net	Nos	1.5	All blocks except B17	404	606.00	301	451.50	315	472.50	327	490.50	343	514.50	1690	2535.00
15	B.Distribution of Single Bud Seedling	Ha	0.225	All blocks except B17	1402	315.45	1470	330.75	1572	353.70	1684	378.90	1835	412.88	7963	1791.68
16	Trash Mulching	Ha	0.04	All blocks except B17	2035	81.40	2200	88.00	2325	93.00	2500	100.00	2775	111.00	11835	473.40
17	Demonstration on intercropping in Sugarcane	Ha	0.08	All blocks except B17	1690	135.20	1935	154.80	2340	187.20	2495	199.60	2750	220.00	11210	896.80
18	Strengthening of sugarcane tissue culture laboratory	No	150	All blocks except B8	0	0.00	0	0.00	0	0.00	2	300.00	0	0.00	2	300.00
19	State Level training in Sugarcane cultivation	No	0.4	All blocks except B8	31	12.40	33	13.20	34	13.60	37	14.80	40	16.00	175	70.00
	Grand Total					**4497.32**		**4832.75**		**5128.33**		**5725.83**		**5711.66**		**25895.88**

B1- Thiruvannamalai, B2- Thurinjapuram, B3- Kilpennathur, B4- Chengam, B5- Thandrampattu, B6- Pudupalayam, B7- Polu, B8- Kalasapakkam, B9- Chetpet, B10- Arni, B11- Westarni, B12- Vandavasi, B13- Thellar, B14- Peranamallur, B15- Cheyyar, B16- Anakkavoor, B17- Vembakkam

4.1.7. Enhancing the coconut productivity in Thiruvannamalai District

In Thiruvannamalai, coconut occupies an area of 1881 ha. Yield decline due to old varieties causes economic loss to the farmers. Distribution of high yielding coconut seedlings from the State Horticulture Farm and Research Stations, Training and demonstrations on package of practices on coconut cultivation are essential to increase the coconut production in this district.

Project components

- ✓ Distribution of T X D hybrid seedlings and tall seedlings for all blocks.
- ✓ Distribution of D X T hybris seedling for Tiruvanamalai, Polur, Kalasapakam, Vandavasi, Peranamallur, Cheyyar and Anakkavoor.
- ✓ Collective farming - corpus fund release for FPG for all blocks.
- ✓ Distribution of solar copra drier for Tiruvanamalai, Kalasapakam, Vandavasi and Cheyyar.
- ✓ Establishment of nursery area for Tiruvanamalai, Kalasapakam, Vandavasi, Cheyyar, Polur and Peranamallur.
- ✓ Coverage of drip irrigation for Tiruvanamalai, Kalasapakam, Vandavasi, Cheyyar, Polur and Peranamallur.
- ✓ Replanting and rejuvenation of coconut gardens in Polur, Vandavasi, Peranamallur, Cheyyar and Anakkavoor.
- ✓ Establishment of neera processing unit and training production for Cheyyar.

Budget

The total cost of the project for five years works to **₹. 4391.98 Lakhs**.

Expected outcome

The implementation of the project will result in a minimum increase of coconut planting. This will help the coconut growing farmers to increase the area and productivity. This will help the employment opportunity and income of the farming community.

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.7 Budget requirement for Agriculture Sector in 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	12050	7.23	12800	7.68	12450	7.47	13550	8.13	14000	8.4	64850	38.91
2	Distribution of Tall Seedlings	No	0.0004	All blocks	9300	3.72	10700	4.28	10900	4.36	12050	4.82	11950	4.78	54900	21.96
3	Boom sprayer	No	0.2000	B7,B9,B12, B14,B15	29	5.8	36	7.2	38	7.6	47	9.4	52	10.4	202	40.4
4	Distribution of D xT hybrid Seedlings	No	0.0015	B1,B7,B8,B 12,B14,B1 5,B16	1300	1.95	1550	2.33	1650	2.48	1850	2.76	2000	3	8350	12.525
5	Distribution of power operated coconut leaf shredder	No	0.6000	B1,B12,B1 4,B15	21	12.6	29	17.4	30	18	34	20.4	36	21.6	150	90
6	Distribution of MN mixture	Ha	0.1000	B1,B12,B7, B12,B14,B 15,B16	105	10.5	115	11.5	124	12.4	129	12.9	144	14.4	617	61.7
7	Distribution of Pheromone traps for Red palm weevil/ Rhinocerous beetle	Ha	0.0160	B1,B12,B1 4,B15,B16	70	1.12	77	1.24	82	1.32	89	1.424	104	1.65	422	6.752
8	Distribution of power operated rocker sprayer	No	0.1000	B1,B7,B9,B 12,B14,B1 5,B16	19	1.9	22	2.2	23	2.3	26	2.6	27	2.7	117	11.7
9	Distribution of Solar copra drier	No	0.2000	B1,B8,B12, B15	7	1.4	8	1.6	9	1.8	10	2	11	2.2	45	9
10	Distribution of tree climbers	No	0.1500	B1,B2,B7,B 8,B12,B14, B15,B16	26	3.9	32	4.8	33	4.95	36	5.4	37	5.55	164	24.6
11	Drip irrigation	Ha	0.3500	B1,B8,B12, B14,B15,B 17	16	5.6	21	7.35	25	8.75	28	9.8	33	11.55	123	43.05
12	Establishment of nursery- Area	ha	2.0000	B1,B8,B12, B14,B15,B 17	3	6	3.5	7	5	10	5.5	11	6.5	13	23.5	47
13	Intercropping with green	Ha	0.0300	B1,B7,B8,B 12,B14,B1	75	2.25	87	2.61	92	2.76	99	2.97	114	3.42	467	14.01

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
	manures			5,B16												
14	Management of Black headed caterpillar	Ha	0.0500	B12,B14,B15,B16	30	1.5	35	1.75	42	2.1	47	2.35	62	3.1	216	10.8
15	Replanting and Rejunation of coconut gardens	Ha	0.4500	B7,B12,B14,B15,B16	72	32.4	74	33.3	79	35.55	83	37.35	86	38.7	394	177.3
16	Thanjavur wilt management (root feeding /soil application)	Ha	0.0300	B12,B14,B16	304	9.12	304	9.12	304	9.12	306	9.18	306	9.18	1524	45.72
17	Demonstration on Integrated fertiliser management	Ha	0.7500	B12,B14,B15,B16	203	152.25	28	21	35	26.25	40	30	55	41.25	361	270.75
18	Distribution of coconut seedlings to school children	No	0.0004	B12,B14,B15,B16	720	0.288	725	0.29	780	0.312	785	0.314	850	0.34	3860	1.544
19	Control of Eriophyid mite	No. of tree	0.0002	B12,B14,B15	30	0.006	40	0.008	50	0.01	60	0.012	70	0.014	250	0.05
20	Establishment of Neera processing unit	No	600.000	B15	1	600	1	600	1	600	1	600	1	600	5	3000
21	Control of slug caterpillar	No. of tree	0.0003	B15	10	0.003	15	0.0045	20	0.006	25	0.0075	30	0.009	100	0.03
22	Training on neera production	Batches	0.2500	B15	2	0.5	2	0.5	2	0.5	2	0.5	2	0.5	10	2.5
23	Distribution of wheel barrow	No	0.0400	B15	1	0.04	1	0.04	1	0.04	1	0.04	1	0.04	5	0.2
25	corpus fund release for FPG (2000 nos.)	No	5.0000	All blocks	92	460	0	0	0	0	0	0	0	0	92	460
	Grand Total					**1320.77**		**743.96**		**758.07**		**773.38**		**795.80**		**4391.98**

B1- Thiruvannamalai, B2- Thurinjapuram, B3- Kilpennathur, B4- Chengam, B5- Thandrampattu, B6- Pudupalayam, B7- Polur, B8- Kalasapakkam, B9- Chetpet, B10- Arni, B11- Westarni, B12- Vandavasi, B13- Thellar, B14- Peranamallur, B15- Cheyyar, B16- Anakkavoor, B17- Vembakkam

4.1.8. Enhancing the livelihood of farmers through training in Thiruvannamalai District

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 level trainings to Extension officials for all blocks.
- ✓ Exposure visits of farmers about rodent pest management, nutrient application for all blocks.
- ✓ Training of farmers within the districts about groundnut, IFS, major and minor millets, moisture conservation on paddy, pulses, value addition for all blocks.

Budget

It is proposed to incur **₹. 711.93 Lakhs** over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

The project will result in better income to farmers. They may learn many things to update their knowledge of cultivation if they attend this programme which will further improve the income of the farmers.

Implementing agency

Department of Agriculture will implement the project and report the progress to the District-level officials.

Table 4.8 Budget Requirement for Agriculture Sector in Training **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	All Blocks	17	21.25	17	21.25	17	21.25	17	21.25	17	21.25	85	106.25
2	Inter State Training of Farmers	Nos.	1.75	All Blocks	13	22.75	16	28.00	13	22.75	16	28.00	12	21.00	70	122.50
3	Training of 536 Groups of Seed Village Farmers in quality Seed Production technology.	Nos.	0.1	All Blocks	89	8.90	91	9.10	87	8.70	89	8.90	87	8.70	443	44.30
4	Training of Farmers under Mission Soil Health Card	Nos.	0.15	All Blocks	70	10.50	62	9.30	59	8.85	62	9.30	65	9.75	318	47.70
5	With in the district training of Farmers	Nos.	0.1	All Blocks	78	7.80	79	7.90	77	7.70	85	8.50	82	8.20	401	40.10
6	With in the State training of Farmers	Nos.	1.2	All Blocks	17	20.40	17	20.40	17	20.40	17	20.40	17	20.40	85	102.00
	Training of Farmers With in the district															
7	Awareness campaigns	Nos.	0.1	All Blocks	17	1.70	17	1.70	17	1.70	17	1.70	17	1.70	85	8.50
8	Cotton	Nos.	0.1	All Blocks	17	1.70	17	1.70	17	1.70	17	1.70	17	1.70	85	8.50
9	Groundnut	Nos.	0.1	All Blocks	17	1.70	17	1.70	17	1.70	17	1.70	17	1.70	85	8.50
10	IFS	Nos.	0.1	All Blocks	17	1.70	17	1.70	17	1.70	17	1.70	17	1.70	85	8.50
11	Major & Minor Millets	Nos.	0.1	All Blocks	17	1.70	17	1.70	17	1.70	17	1.70	17	1.70	85	8.50
12	Moisture conservation practices	Nos.	0.1	All Blocks	17	1.70	17	1.70	17	1.70	17	1.70	17	1.70	85	8.50
13	oil Palm	Nos.	0.1	All Blocks	17	1.70	17	1.70	17	1.70	17	1.70	17	1.70	85	8.50
14	Organic cultivation practices	Nos.	0.1	All Blocks	17	1.70	17	1.70	17	1.70	17	1.70	17	1.70	85	8.50
15	Paddy	Nos.	0.1	All Blocks	17	1.70	17	1.70	17	1.70	17	1.70	17	1.70	85	8.50
16	Pulses	Nos.	0.1	All Blocks	17	1.70	17	1.70	17	1.70	17	1.70	17	1.70	85	8.50
17	Sugarcane	Nos.	0.1	All Blocks	17	1.70	17	1.70	17	1.70	17	1.70	17	1.70	85	8.50
18	Value addition training	Nos.	0.1	All Blocks	17	1.70	17	1.70	17	1.70	17	1.70	17	1.70	85	8.50

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
	Exposure visit of Farmers															
19	Rodent Pest Management Demonstration	Nos.	0.04	All Blocks	102	4.08	110	4.40	91	3.64	105	4.20	69	2.76	477	19.08
20	With in State Exposure visit	Nos.	0.4	All Blocks	40	16.00	39	15.60	37	14.80	34	13.60	41	16.40	191	76.40
21	Organisation of Kisangosthies on Soil test based nutrient application (Campaign)	Nos.	0.15	All Blocks	21	3.15	14	2.10	20	3.00	15	2.25	17	2.55	87	13.05
22	With in the district exposure visit	Nos.	0.15	All Blocks	57	8.55	54	8.10	42	6.30	50	7.50	54	8.10	257	38.55
	TOTAL					**143.78**		**146.55**		**137.79**		**144.30**		**139.51**		**711.93**

B1- Thiruvannamalai, B2- Thurinjapuram, B3- Kilpennathur, B4- Chengam, B5- Thandrampattu, B6- Pudupalayam, B7- Polu, B8- Kalasapakkam, B9- Chetpet, B10- Arni, B11- Westarni, B12- Vandavasi, B13- Thellar, B14- Peranamallur, B15- Cheyyar, B16- Anakkavoor, B17- Vembakkam

4.1.9. Infrastructure Development in Thiruvannamalai District

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. Storage Godown, Seed Processing Unit Machineries, Construction of Uzhavar Maiyam/Farmers Hub, IAEC and Sub-AEC, Strengthening of STL, MSTL, FCL, CCL, BFQCL, PTL, Organic Fertlizer Testing Lab and Bio-fertilizer production unit operating in the State are doing yeomen services to the farming community and public by providing technical advices and expertise for the holistic development of the farmers. They also prioritize their actions so as to ensuring food and nutritional security. However, they are not endeavored with adequate infrastructure, which is absolutely essential for growth and development. Strengthening the existing and creating new assets/amenities would bring profound influence on the constructive and technical services effectively.

Project components

- ✓ Storage godown for Polur, Chetpet, Vandavasi, Peranamallur, Cheyyar and Anakkavoor.
- ✓ Provide dunnage, electronic platform balance and moisture meter, bag closure, tarpaulin, seed rack and other amenities for all blocks except Kilpennathur, Thandrampet, Pudhupalayam, Chetpet, Anakkavoor and Vembakkam.
- ✓ Construction I IAEC for Tiruvanamalai, Chengam, Polur, Chetpet, Cheyyar and Anakkavoor.
- ✓ Strengthening of STL and MSTL in Tiruvanamalai, Chengam, Thurinjapuram, Polur, Arni, West arni, Peranamallur and Cheyyar.
- ✓ Strengthening of boifertilizer production unit in Polur.
- ✓ Construction of uzhavar mayiam in kalasapakam.
- ✓ Construction of organic fertilizer testing lab in Polur, kilpennathur and Cheyyar
- ✓ Construction of lignite storage godown in Chengam and Cheyyar.

Budget

It is proposed to incur **Rs. 10375.78 lakhs** over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

The implementation of the above project will result in better activities which in turn results in better infrastructure facilities and higher agricultural production.

Implementing agency

Department of Agriculture will implement the project and report the progress to the District-level officials.

Table 4.9.Budget Requirement for Agriculture Sector in Infrastructure

(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
1	Seed godown (300 MT)	Nos.	2500000	B7,B9,B12,B14,B15,B16	3	75.00	4	100.00	2	50.00	1	25.00	1	25.00	11	275.00
2	Seed Processing Unit Machineries	Nos.	2650000	B7,B12,B14,B17	0	0.00	2	53.00	2	53.00	1	26.50	0	0.00	5	132.50
3	Additional Seed Godown	Nos.	1250000	B1,B4,B7,B8,B9,B15,B16,B17	4	50.00	5	62.50	2	25.00	2	25.00	1	12.50	14	175.00
4	Construction of Integrated Agricultural Extension Centre with vehicle shed and compound wall	Nos.	2500000	B1,B2,B4,B7,B9,B15,B16	5	1250.00	1	250.00	1	250.00	0	0.00	0	0.00	7	1750.00
5	Construction of Sub-Agricultural Extension Centre (498 Nos.)	Nos.	3000000	B1,B2,B4,B7,B8,B9,B12,B13,B15,B16	7	210.00	4	120.00	3	90.00	0	0.00	0	0.00	14	420.00
6	Strengthening of Soil Testing Laboratory	Nos.	6000000	B1,B2,B4,B7,B9,B10,B11,B14,B15	1	60.00	0	0.00	0	0.00	0	0.00	0	0.00	1	60.00
7	Strengthening of Mobile Soil Testing Laboratory	Nos.	3000000	B1,B2	1	30.00	0	0.00	0	0.00	0	0.00	0	0.00	1	30.00
8	Strengthening of Bio-fertilizer production unit	Nos.	6000000	B7	0	0.00	1	60.00	0	0.00	0	0.00	0	0.00	1	60.00
9	Construction of Uzhavar Maiyam (Farmers Hub)	Nos.	3000000	B8	2	300.00	4	600.00	6	900.00	10	1500.00	11	1650.00	33	4950.00
10	Construction of Lignite Storage/ Liquid bio fertilizer storage godown	Nos.	5000000	B4,B15	1	50.00	0	0.00	0	0.00	0	0.00	0	0.00	1	50.00
11	Construction of Organic Fertilizer Testing Lab.	Nos.	6000000	B7,B15	0	0.00	0	0.00	0	0.00	1	60.00	0	0.00	1	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	Establishment of Threshing floor/drying yard	Nos.	500000	B4,B7,B8,B14,B17	20	100.00	33	165.00	34	170.00	46	230.00	69	345.00	202	1010.00
13	Dunnage	Nos.	7500	All blocks except B3, B5,B6,B9,B16	1155	86.63	675	50.63	625	46.88	650	48.75	570	42.75	3675	275.63
14	Moisture meter	Nos.	25000	All blocks except B3,B5,B6,B9, B16	9	2.25	6	1.50	2	0.50	3	0.75	2	0.50	22	5.50
15	Bag closure	Nos.	10000	All blocks except B3,B5,B6,B9, B16	15	1.50	11	1.10	6	0.60	7	0.70	6	0.60	45	4.50
16	Electronic platform balance	Nos.	150000	All blocks except B3,B5,B6,B9, B16	15	22.50	8	12.00	5	7.50	5	7.50	6	9.00	39	58.50
17	Seed rack	Nos.	30000	All blocks except B3, B5,B6,B9,B16	13	3.90	28	8.40	10	3.00	10	3.00	12	3.60	73	21.90
18	Tarpaulin	Nos.	25000	All blocks except B3, B5,B6,B9,B16 ,B17	59	14.75	67	16.75	65	16.25	75	18.75	75	18.75	341	85.25
19	Office Furnishings and other amenities	Nos.	200000	All blocks except B3,B5,B6,B9, B16	25	50.00	34	68.00	30	60.00	30	60.00	32	64.00	151	302.00
20	Strengthening of training institute / nursery / FTC / KVK	Nos.	50000000	All Blocks	0	0.00	0	0.00	1	500.00	0	0.00	0	0.00	1	500.00
21	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					**2406.53**		**1568.88**		**2172.73**		**2055.95**		**2171.70**		**10375.78**

B1- Thiruvannamalai, B2- Thurinjapuram, B3- Kilpennathur, B4- Chengam, B5- Thandrampattu, B6- Pudupalayam, B7- Polu, B8- Kalasapakkam, B9- Chetpet, B10- Arni, B11- Westarni, B12- Vandavasi, B13- Thellar, B14- Peranamallur, B15- Cheyyar, B16- Anakkavoor, B17- Vembakkam

4.1.10. Soil Health Management in Thiruvannamalai District

It has been observed that the average productivity of major crops in Tamil Nadu is only about 60 per cent 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

- ✓ Green manuring for all blocks except Kilpennathur, Kalasapakam.
- ✓ Establishment of permanent and HDPE vermicompost units in all blocks except Kilpennathur, Kalasapakam.
- ✓ Distribution of soil health card in all blocks except Tiruvanamalai, Kilpennathur, West arni, Vandavasi.
- ✓ Establishment of model organic villages in all blocks except Thurinjapuram, Kilpennathur, Kalasapakam, Vandavasi, Peranamallur, Anakkavoor, Vembakkam.
- ✓ Composting of farm waste through pleurotus in Thurinjapuram, Chengam, Polur, Chetpet, Cheyyar, and Pudhupalayam.

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 Thiruvannamalai district is **₹. 6093.11 Lakhs.**

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.

Table 4.10.Budget Requirement for Agriculture Sector in Soil Health Management

(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
1	Permanent Vermi compost units	Cluster Nos.	50000	All blocks except B3,B8	232	116.00	242	121.00	309	154.50	294	147.00	399	199.50	1476	738.00
2	HDPE Vermi compost units	Kit Nos	12000	All blocks except B3,B8	177	21.24	227	27.24	289	34.68	404	48.48	459	55.08	1556	186.72
3	Reclamation of Alkali Soil	MT	50000	B4,B9,B10,B11,B13,B15,B16	405	202.50	430	215.00	580	290.00	605	302.50	630	315.00	2650	1325.00
4	Reclamation of Acid Soil	L. No.	6000	B4,B10,B11,B13,B16	290	17.40	290	17.40	415	24.90	415	24.90	415	24.90	1825	109.50
5	Green Manuring	Nos	4000	All blocks except B3,B8	2415	96.60	2605	104.20	2680	107.20	3480	139.20	3730	149.20	14910	596.40
6	Establishment of Model organic villages	Ha	1000000	B1,B1,B4,B5, B6,B7,B9,B10, B11,B13,B15	34	340.00	40	400.00	45	450.00	52	520.00	55	550.00	226	2260.00
7	Adoption of PGS certification through cluster approach	Nos	1495000	B4,B7,B16	3	44.85	5	74.75	9	134.55	11	164.45	11	164.45	39	583.05
8	Procurement and Distribution of Blue Green Algae	Nos	2500	B2,B4,B7,B9, B15,B16	28	0.70	32	0.80	37	0.93	37	0.93	37	0.93	171	4.28
9	Production of Enriched FYM	MT	2500	B2,B4,B7,B9, B15,B16	157	3.93	267	6.68	577	14.43	1077	26.93	2107	52.68	4185	104.63
10	Composting of Farm Waste Through Pluerotus (Production and Distribution of Kits)	MT	200	B2,B4,B7,B9, B15,B16	5235	10.47	5435	10.87	5485	10.97	5535	11.07	5585	11.17	27275	54.55
11	Distribution of Soil Health Card	Ha	300	All blocks except B1,B3,B11,B12	6718	20.15	6718	20.15	6718	20.15	6718	20.15	6718	20.15	33589.7	100.77
12	Distribution of Enriched Pressmud (37.5 Mt/ha)	units	1000	B2,B9,B15	602	6.02	605	6.05	605	6.05	605	6.05	605	6.05	3022	30.22
	Total					**879.86**		**1004.14**		**1248.35**		**1411.65**		**1549.10**		**6093.11**

B1- Thiruvannamalai, B2- Thurinjapuram, B3- Kilpennathur, B4- Chengam, B5- Thandrampattu, B6- Pudupalayam, B7- Polu, B8- Kalasapakkam, B9- Chetpet, B10- Arni, B11- Westarni, B12- Vandavasi, B13- Thellar, B14- Peranamallur, B15- Cheyyar, B16- Anakkavoor, B17- Vembakkam

4.1.11. Rainfed Area Development in Thiruvannamalai District

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. Livelihood support to farmers of rainfed areas through poverty reduction.

Project components

- ✓ Milch Animal (1 no) + 1 ha cropping system with inter crop & border plantation like castor/sesbania *etc* in Thurinjapuram, Kilpennathur, Chengam, Polur, Kalasapakam, Chetpet, Cheyyar and Vembakkam.
- ✓ Promotion of Farmers club for Sustainable Dryland Agriculture in all blocks.
- ✓ Stress management in crops for Thurinjapuram, Kilpennathur, Chengam, Polur, Kalasapakam, Chetpet and Cheyyar.
- ✓ Small ruminant + 1 ha tree based farming system in Thurinjapuram, Kilpennathur, Chengam, Polur, Kalasapakam, Chetpet, Cheyyar and Vembakkam.
- ✓ Creating of farm pond at Thurinjapuram, Chengam, Polur, Kalasapakam, kilpennathur, Cheyyar and Vembakkam

Budget

It is proposed to incur **₹. 13357.20 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 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.

Table 4.11 .Budget Requirement for Agriculture Sector in Rainfed area development

(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
1	Stress Management in crops by the Application of Pink Pigmented Facultative Methylotrophs (PPFM spray)/ Kcl Spray			B2,B3,B4,B7, B8,B9,B15	625	2.5	925	3.7	1175	4.7	1375	5.5	1575	6.3	5675	22.7
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	0.004	B2,B3,B4,B7, B8,B9,B15,B 17	450	247.5	600	330	620	341	740	407	735	404.25	3145	1729.75
3	Small ruminant (9+1)+ 1 ha Tree based farming system (Cropping system with inter crop & border plantation like castor/sesbania etc.) @ Rs.23500/ as subsidy per Unit	Ha	0.55	B2,B3,B4,B7, B8,B9,B15,B 17	400	188	495	232.65	565	265.55	685	321.95	980	460.6	3125	1468.75
4	Organic Mulching	Ha	0.47	B2,B4,B7,B8, B15	850	51	950	57	1600	96	1650	99	2250	135	7300	438.00
5	Creation of Farm pond	Ha	0.06	B2,B4,B7,B8, B15,B17,B3	1277	957.75	1397	1047.75	1577	1182.75	1677	1257.75	2777	2082.75	8705	6528.75
6	Soil Moisture conservation strategies(contour bunding/Dust mulching/Polythene	Nos.	0.75	B2,B4,B7,B8, B15	660	66	1185	118.5	1220	122	1295	129.5	1850	185	6210	621
7	Promotion of Farmers club for Sustainable Dryland Agriculture	Ha.	0.1	All blocks	18	1528.95	12	1019.30	0	0	0	0	0	0	30	2548.25
	Grand Total					**3041.70**		**2808.90**		**2012**		**2220.7**		**3273.9**		**13357.20**

B1- Thiruvannamalai, B2- Thurinjapuram, B3- Kilpennathur, B4- Chengam, B5- Thandrampattu, B6- Pudupalayam, B7- Polu, B8- Kalasapakkam, B9- Chetpet, B10- Arni, B11- Westarni, B12- Vandavasi, B13- Thellar, B14- Peranamallur, B15- Cheyyar, B16- Anakkavoor, B17- Vembakkam

4.1.12 Integrated Pest Management (IPM)

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 Thurinjapuram, Kilpennathur,Chengam,Polur, Kalasapakam, Chetpet and Cheyyar.
2. Field days in Thurinjapuram, Kilpennathur, Chengam, Polur, Kalasapakam, Chetpet, Cheyyar and Vembakkam.
3. Integrated Pest Management Villages in Thurinjapuram, Kilpennathur,Chengam, Polur, Kalasapakam, Chetpet, Cheyyar and Vembakkam.
4. Establishment of Coconut Parasite Breeding Station at Thurinjapuram, Kilpennathur, Chengam, Polur, Kalasapakam and Cheyyar.
5. Establishment of Sugar cane Parasite Breeding Station at Thurinjapuram, Chengam, Polur, Kalasapakam, Cheyyar and Vembakkam.
6. Establishment of Bio-pesticide production unit at Thurinjapuram, Kilpennathur, Chengam, Polur, Kalasapakam and Cheyyar.
7. Establishment of IPM School for all blocks.

Budget

It is proposed to incur **₹. 1707.80 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 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

Table 4.12 .Budget Requirement for Agriculture Sector in Integrated Pest Management

(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
1	Farmers Field Schools (FFS)	Nos.	20000	B2,B3,B4, B7,B8,B9,B15	95	19.00	104	20.80	100	20.00	102	20.40	107	21.40	508	101.60
2	Field days	No.	20000	B2,B3,B4,B7, B8,B9,B15,B17	79	15.80	96	19.20	94	18.80	96	19.20	103	20.60	468	93.60
3	Integrated Pest Management Villages	Nos.	100000	B2,B3,B4,B7, B8,B9,B15,B17	68	68.00	70	70.00	74	74.00	74	74.00	77	77.00	363	363.00
4	Establishment of Coconut Parasite Breeding Station	Nos.	3500000	B2,B4,B7,B8,B15	1	35.00	1	35.00	1	35.00	1	35.00	1	35.00	5	175.00
5	Establishment of Sugar cane Parasite Breeding Station	Nos.	3500000	B2,B4,B7, B8,B15,B17	1	35.00	1	35.00	1	35.00	1	35.00	1	35.00	5	175.00
6	Establishment of Bio-pesticide production unit	Nos.	12000000	B2,B4,B7,B8,B15	1	120.00	1	120.00	2	240.00	1	120.00	1	120.00	6	720.00
7	IPM School	Nos.	40000	All blocks	34	13.60	35	14.00	41	16.40	43	17.20	46	18.40	199	79.60
	Total					**306.40**		**314.00**		**439.20**		**320.80**		**327.40**		**1707.80**

B1- Thiruvannamalai, B2- Thurinjapuram, B3- Kilpennathur, B4- Chengam, B5- Thandrampattu, B6- Pudupalayam, B7- Polu, B8- Kalasapakkam, B9- Chetpet, B10- Arni, B11- Westarni, B12- Vandavasi, B13- Thellar, B14- Peranamallur, B15- Cheyyar, B16- Anakkavoor, B17- Vembakkam

4.1.13. Farm Mechanization in Thiruvannamalai District

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 Thiruvannamalai district.

Project component

- Distribution of tractor, rotovator, tractor drawn seed cum fertilizer drill, paddy transplanter for all blocks.
- Distribution of pump set for all blocks except Kilpennathur, Thandrampet and Pudhupalayam.
- Distribution of PVC pipes to carry irrigation water from source to field for all blocks.
- Distribution of power and battery operated sprayers for all blocks.
- Distribution of mini tractor for all blocks except West arni, Thellar, Anakkavoor and Vembakkam
- Distribution of conoweeder for all blocks except Kilpennathur, Thandrampet, Pudhupalayam, Polur, Chetpet, Anakkavoor and Vembakkam.
- Distribution of combine harvester for all blocks.

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 **₹. 37591.70 Lakhs.**

Expected outcome

Distribution of farm machinery / implements to the 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.

Table 4.13 .Budget Requirement for Agriculture Sector in Farm Machineries

(Rs. in lakhs)

Sl. No	Components	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	Solar light trap	No.	4000	All blocks except B9	700	28.00	850	34.00	985	39.40	1055	42.20	1100	44.00	4690	187.60
2	Battery operated sprayer	Nos.	4000	All blocks	485	19.28	525	20.88	615	24.48	735	29.28	785	31.28	3145	125.18
3	Power operated sprayer	Nos.	8000	All blocks	955	74.40	1035	79.80	1190	91.20	1300	99.00	1380	104.40	5860	448.80
4	Hand operated sprayer	Nos.	1500	All blocks	865	14.60	940	15.73	1090	17.98	1175	19.25	1270	20.68	5340	88.23
5	Distribution of Baler	Nos	350000	All blocks except B3,B12,B14, B16	54	189.00	57	199.50	66	231.00	77	269.50	102	357.00	356	1246.00
6	Distribution of chaff cutter	Nos	25000	All blocks except B3,B5,B6,B9,B10,B11,B12,B13,B14,B17	47	23.50	55	25.50	75	30.50	87	33.50	100	36.75	364	149.75
7	Distribution of combine harvester	Nos	1700000	All blocks	36	612.00	41	697.00	49	833.00	51	867.00	56	952.00	233	3961.00
8	Distribution of cono weeder	Nos	2000	All blocks except B3,B5,B6,B7,B9,B16,B17	1055	21.10	1260	25.20	1480	29.60	1740	34.80	2140	42.80	7675	153.50
9	Distribution of Laser leveller	Nos	380000	All blocks except B11,B17	68	242.30	73	261.30	78	280.30	85	306.90	92	333.50	396	1424.30
10	Distribution of Manual Weeder	Nos	2000	All blocks except B2,B7,B9,B11, B16,B17	363	8.62	468	10.72	543	12.22	593	13.22	603	13.42	2570	58.20
11	Distribution of MB plough	Nos	80000	All blocks except B3,B8,B9,B17	99	79.20	114	91.20	138	110.40	153	122.40	168	134.40	672	537.60
12	Distribution of Mini Tractor	Nos	300000	All blocks except B16,B17	89	269.50	93	281.50	114	344.50	126	380.50	141	425.50	563	1701.50
13	Distribution of Mobile Sprinklers	Ha	30000	All blocks except B11,B13,B16, B17	872	264.10	987	298.60	1217	367.60	1277	385.60	1337	403.60	5690	1719.50
14	Distribution of multicrop thrasher	Nos	400000	All blocks except B3,B5,B6,B9,B12,B	32	141.00	37	161.00	51	217.00	58	245.00	65	273.00	243	1037.00

Sl. No	Components	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
				14,B16,B17												
15	Distribution of Paddy transplanter	Nos	1200000	All blocks	74	888.00	80	960.00	92	1104.00	112	1344.00	127	1524.00	485	5820.00
16	Distribution of Power Weeder	Nos	65000	All blocks except B3,B5,B6,B7,B 9,B16,B17	332	215.80	447	290.55	522	339.30	577	375.05	577	375.05	2455	1595.75
17	Distribution of Powertiller	Nos	150000	All blocks	244	379.50	265	411.00	312	481.50	349	537.00	404	619.50	1574	2428.50
18	Distribution of Pumpset	Nos	30000	All blocks except B3,B5,B6,B16, B17	194	58.20	207	62.10	222	66.60	235	70.50	237	71.10	1095	328.50
19	Distribution of Rain guns	Ha	40000	All blocks except B10,B13,B16,B 17	727	290.80	887	354.80	1352	540.80	1812	724.80	2222	888.80	7000	2800.00
20	Distribution of Rotary Power weeder	Nos	70000	All blocks except B3,B5,B6,B17	137	95.90	152	106.40	199	139.30	251	175.70	301	210.70	1040	728.00
21	Distribution of Rotavator	Nos	80000	All blocks	465	368.40	499	395.60	651	517.20	803	638.80	910	724.40	3328	2644.40
22	Distribution of Tarpaulins	Nos	8000	All blocks	520	41.40	570	45.40	700	55.80	1020	81.40	1280	102.20	4090	326.20
23	Distribution of Tractor	Nos	600000	All blocks	98	562.00	104	598.00	112	646.00	119	688.00	128	742.00	561	3236.00
24	Distribution of Tractor Drawn Seed cum Fertilizer Drill	Nos	70000	All blocks	157	109.90	158	110.60	185	129.50	185	129.50	186	130.20	871	609.70
25	PVC Pipes to carry Irrigation water from source to field	Unit	40000	All blocks except B3,B5,B6	871	352.00	1116	450.00	1631	656.00	1861	748.00	2081	836.00	7560	3042.00
26	Solar power pump system	Nos	600000	All blocks except B1,B3,B5,B6,B 7,B9,B10,B11,B 13,B16,B17	29	163.30	32	181.30	47	271.30	50	289.30	50	289.30	208	1194.50
	Total					**5511.80**		**6167.67**		**7576.47**		**8650.20**		**9685.57**		**37591.70**

B1- Thiruvannamalai, B2- Thurinjapuram, B3- Kilpennathur, B4- Chengam, B5- Thandrampattu, B6- Pudupalayam, B7- Polu, B8- Kalasapakkam, B9- Chetpet, B10- Arni, B11- Westarni, B12- Vandavasi, B13- Thellar, B14- Peranamallur, B15- Cheyyar, B16- Anakkavoor, B17- Vembakkam

4.1.14 Strengthening of State Seed Farm

Seed is the basic and most critical input for sustainable agriculture. The response of all other inputs depends on quality of seeds to a large extent. It is estimated that the direct contribution of quality seed alone to the total production is about 15–20% depending upon the crop and it can be further raised up to 45% with efficient management of other inputs. The total seed requirement of the country amounts to 2.56 lakh tonnes. However, about 20 per cent of the total seed requirement is met as quality seeds, while the rest is managed by farm saved seeds. The main reason for wider gap in agricultural crops especially pulses and oilseeds was that most of the private and multinational companies are concentrating on high value and low volume crops like hybrid cotton, millets and vegetables whereas only public institutions are producing and marketing high volume and low value crops like pulses and oilseeds. Hence, high emphasis has to be given for the production and supply of quality seeds of pulses and oilseeds to farmers and increase the Seed Replacement Rate. Hence there is an urgent need for the State Seed Corporations also to transform themselves in tune with the industry in terms of infrastructure, technologies, approach and the management culture to be able to survive in the competitive market and to enhance their contribution in the national endeavour of increasing food production to attain food & nutritional security.Therefore, the infrastructurefacilities at the SSFs like levelled land, more area, assured irrigation, thrashing floor, drying yard, processing units, storage etc., are essential to produce, process and pack quality seeds. Therefore, the strengthening of state seed farms is aimed for quality seed production in Tamil Nadu.

Project components

- Soil Fertility Improvement and Land development works in Thandrampet.
- Provision of Irrigation facilities viz., Solar pump sets, Deepening of bore wellLaying of pipelines, Rain gun, Mobile sprinkler, Laying of drip, New bore well with EB connection, Deepening of open well and Farm Pond in Tiruvanamalai, Thandrampet.
- Supply of machineries at Thandrampet.
- Infrastructure development for seed production such as new threshing floor and farm connectivity at Thandrampet.

Budget

It is proposed to incur ₹.**136.75 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 it will Enhance production of quality seeds of Crop varieties and Ensure timely delivery of seeds to farmersand it will increase supply of good quality seed which increase the production of the crops and the income of the farmers of Tamil Nadu.

Implementing Agency

Department of Agriculture will implement the project and report the progress to the District-level officials.

Table 4.14.Budget Requirement for Agriculture Sector in SSF

(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
I	**Soil Fertility Improvement and Land development works in SSF**	ac	2	B5	5	10	0	0	0	0	0	0	0	0	**5**	**10**
II	**Irrigation Component**															
1	Solar pumpsets	nos	6	B5	1	6	0	0	0	0	0	0	0	0	**1**	**6**
2	Deepening of bore well	nos	4	B5	1	4	0	0	0	0	0	0	0	0	**1**	**4**
3	Laying of pipelines	mt	0.05	B5	50	2.5	50	2.5	50	2.5	0	0	0	0	**150**	**7.5**
4	Rain gun	nos	0.4	B5	4	1.6	1	0.4	1	0.4	1	0.4	1	0.4	**8**	**3.2**
5	Mobile sprinkler	nos	0.3	B1,B5	3	0.9	1	0.3	1	0.3	1	0.3	1	0.3	**7**	**2.1**
6	Laying of drip	nos	2	B1	1	2	1	2	1	2	1	2	1	2	**5**	**10**
7	New bore well with EB connection	nos	8	B5	2	16	0	0	0	0	0	0	0	0	**2**	**16**
8	New open well+ Pumpset	nos	10	B5	1	10	0	0	0	0	0	0	0	0	**1**	**10**
III	**Machineries**															
9	Dunnage (Poly Pallets)	nos	0.075	B5	20	1.5	0	0	5	0.375	0	0	0	0	**25**	**1.875**
10	Paddy Transplanter	nos	5	B5	1	5	0	0	0	0	0	0	0	0	**1**	**5**
11	Rotavator	nos	1	B5	1	1	0	0	0	0	0	0	0	0	**1**	**1**
12	Tractor and accessories	nos	10	B5	1	10	0	0	0	0	0	0	0	0	**1**	**10**
13	Power Tiller	nos	3	B5	1	3	0	0	0	0	0	0	0	0	**1**	**3**
14	Tarpaulin	nos	0.1	B5	4	0.4	0	0	0	0	0	0	0	0	**4**	**0.4**
15	Generator	nos	7	B5	2	14	0	0	0	0	0	0	0	0	**2**	**14**
IV	**Civil Works**															
16	New Threshing floor	nos	5	B5	2	10	0	0	0	0	2	10	0	0	**4**	**20**
17	Farm connectivity	Meter	0.015	B5	800	12	0	0	0	0	0	0	0	0	**800**	**12**
	Total					**109.9**		**5.2**		**5.575**		**12.7**		**2.7**		**136.75**

B1- Thiruvannamalai, B2- Thurinjapuram, B3- Kilpennathur, B4- Chengam, B5- Thandrampattu, B6- Pudupalayam, B7- Polu, B8- Kalasapakkam, B9- Chetpet, B10- Arni, B11- Westarni, B12- Vandavasi, B13- Thellar, B14- Peranamallur, B15- Cheyyar, B16- Anakkavoor, B17- Vembakkam

4.1.15. Agricultural Information Technology in Thiruvannamalai District

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.

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 **₹. 128.57 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.

Project components

- Procurement of hardware for replacement of old hard ware in Tiruvanamalai, Thurinjapuram, Chengam, Arni, West arni and Cheyyar.
- Xerox machines for all blocks except Tiruvanamalai, Kilpennathur, Vandavasi, Peranamallur and Vembakkam.

- Provide 4G internets for Thurinjapuram, Chengam, Thandrampet, Pudhupalayam, Polur, Chetpet, West arni, Cheyyar and Vembakkam.
- Provide GPS instrument for Thurinjapuram, Chengam, Polur, Kalasapakam, Chetpet, Arni, West arni, Cheyyar and Anakkavoor.
- Provide android mobile for Thurinjapuram, Chengam, Thandrampet, Pudhupalayam, Polur, Chetpet, west arni, Cheyyar, Thellar and Peranamallur.
- AV aids to Thurinjapuram, Chengam, Polur, Chetpet, Arni, West arni, Cheyyar, Anakkavoor.
- Provide handy camera to Thurinjapuram, Chengam, Pudhupalayam, Kalasapakam, Arni, West arni, Thellar and Cheyyar.

Implementing Agency

Department of Agriculture will implement the project and report the progress to the District-level officials.

Table 4.15 Budget Requirement for Agriculture Sector in Information Technology

(Rs. in lakhs)

Sl. No	Components	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
				Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Procurement of Hardware for replacement of old hardware	B1,B2,B4,B10,B11,B15	7	3.50	14	7.00	4	2.00	4	2.00	5	2.50	34	17.00
2	Connectivity Charges	B1,B2,B4,B8,B10,B11,B15,B16	13	1.43	24	2.64	9	0.99	9	0.99	9	0.99	64	7.04
3	Printer cum Scanner	B2,B4,B5,B6,B7,B8,B9,B10,B11,B13,B15,B16	17	3.40	3	0.60	2	0.40	0	0.00	2	0.40	24	4.80
4	UPS and Electrical Accessories	B2,B4,B5,B6,B7,B8,B9,B10,B11,B13,B15	19	6.65	2	0.70	1	0.35	0	0.00	2	0.70	24	8.40
5	Xerox machine	B2,B4,B5,B6,B7,B8,B9,B10,B11,B13,B15,B16	15	11.25	2	1.50	1	0.75	0	0.00	1	0.75	19	14.25
6	Laptop/Desktop	B2,B4,,B7,B8,B9,B10,B11,B13,B15	25	12.50	4	2.00	2	1.00	1	0.50	1	0.50	33	16.50
7	Anti -virus software	B2,B4,,B7,B8,B9,B10,B11,B13,B15	21	0.53	13	0.33	8	0.20	8	0.20	8	0.20	58	1.45
8	Television	B4,B5,B6,B8,B10,B11,B13,B15	8	8.00	1	1.00	0	0.00	0	0.00	0	0.00	9	9.00
9	Colour printer	B4,B5,B6,B7,B8,B9,B10,B11,B13,B15,B16	12	1.80	1	0.15	0	0.00	0	0.00	0	0.00	13	1.95
10	4G Internet - Dongle	B2,B4,B5,B6,B7,B9,B11,B15,B17	16	0.40	5	0.13	2	0.05	2	0.05	2	0.05	27	0.68
	Equipments for Documentation													
11	Handycam	B2,B4,B6,B8,B10,B11,B13,B15	10	3.00	2	0.60	0	0.00	0	0.00	0	0.00	12	3.60
a	Camera	B2,B4,B5,B9,B10,B11,B15,B15	7	1.75	2	0.50	0	0.00	0	0.00	0	0.00	9	2.25
b	GPS instrument	B2,B4,B7,B8,B9,B10,B11,B15,B16	13	2.60	2	0.40	0	0.00	0	0.00	0	0.00	15	3.00
c	Android mobile	B2,B4,B5,B6,B7,B9,B11,B13,B15	50	7.50	8	1.20	0	0.00	0	0.00	0	0.00	58	8.70
d	External Hard disk	B2,B4,B7,B9,B15	4	0.20	2	0.10	0	0.00	0	0.00	0	0.00	6	0.30
12	Audio - visual Aids	B2,B4,B7,B9,B10,B11,B15,B16	11	16.50	1	1.50	0	0.00	0	0.00	0	0.00	12	18.00
	LCD projector	B2,B4,B7,B9,B15,B16	5	3.75	2	1.50	0	0.00	0	0.00	0	0.00	7	5.25
13	Air conditioner for computer room	B2,B4,B6,B7,B8,B9,B10,B11,B13,B15,B16	14	5.60	2	0.80	0	0.00	0	0.00	0	0.00	16	6.40
	Total			**90.36**		**22.64**		**5.74**		**3.74**		**6.09**		**128.57**

B1- Thiruvannamalai, B2- Thurinjapuram, B3- Kilpennathur, B4- Chengam, B5- Thandrampattu, B6- Pudupalayam, B7- Polu, B8- Kalasapakkam, B9- Chetpet, B10- Arni, B11- Westarni, B12- Vandavasi, B13- Thellar, B14- Peranamallur, B15- Cheyyar, B16- Anakkavoor, B17- Vembakkam

Table 4.16. Consolidated Agriculture Budget for Thiruvannamalai District

(₹. in lakhs)

Sl. No	Components	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Paddy	3732.46	3981.25	4423.25	4609.14	5087.73	21833.83
2	Millet	1335.34	1391.88	1444.87	1774.04	1907.91	7854.04
3	Pulses	1580.55	1689.48	1757.19	1767.71	1799.65	8594.58
4	Oilseeds	3868.91	4067.73	4381.32	4634.03	4381.02	21333.01
5	Oilpalm	101.63	154.15	197.25	234.75	258.89	946.67
6	Cotton	0.00	0.00	0.00	0.00	0.00	0.00
7	Sugarcane	4497.32	4832.75	5128.33	5725.83	5711.66	25895.89
8	Coconut	1320.77	743.96	758.07	773.38	795.80	4391.98
9	Training	143.78	146.55	137.79	144.30	139.51	711.93
10	Infrastructure	2406.53	1568.88	2172.73	2055.95	2171.70	10375.79
11	Soil Health Management	879.86	1004.14	1248.35	1411.65	1549.10	6093.10
12	Rainfed Area Development	3041.70	2808.90	2012.00	2220.70	3273.90	13357.20
13	Integrated Pest Management	306.40	314.00	439.20	320.80	327.40	1707.80
14	Farm Mechanization	5511.80	6167.67	7576.47	8650.20	9685.57	37591.71
15	Strengthening of State Seed Farm	109.90	5.20	5.58	12.70	2.70	136.08
16	Agriculture Information Technology	90.36	22.64	5.74	3.74	6.09	128.57
	Grand total	**28927.31**	**28899.18**	**31688.14**	**34338.92**	**37098.63**	**160952.18**

4.2 Research infrastructure requirement for Tiruvannamalai

The major thrust were given on creation of infrastructure facilities for enhancing the productivity of major crops grown in the State, creation of value addition facilities, skill development through hands-on training to farmers and women and establishing modern nurseries for production and supply of genuine planting materials in flowers and spice crops.

Biocontrol laboratory

The main objective of bio-control laboratories is to control pests/disease through the use of natural predators and biofertilizers instead of using chemical pesticides. To encourage the use of bio fertilizers / bio pesticide, Govt. of Tamil Nadu has established few bio-control laboratories. These labs produce biofertilizers like Azospirillum, Phosphobacteria and VAM and bio-pesticides viz.*Trichoderma, Pseudomonas*, *Beauveria* and *Verticilium* in their laboratories and supplied to the farmers of various regions. The proposed intervention is also focused on establishment of bio control laboratories at stations for research and development.

Automated nematode extraction units

Much progress has been made in developing efficient procedures for extracting nematodes from soil, but investigations of nematode numbers as related to crop damage and other studies dealing with population dynamics are frequently of limited value because of unmanageable variation in sampling and extraction**.** A major problem with all extraction procedures is obtaining a representative sub sample of larger soil samples collected from plots or fields.

Construction of soil science lab, post-harvest laboratory and biofertilizer laboratory

The causes for low productivity in agriculture are decline in soil organic matter, soil fertility status, land degradation and use of poor quality water apart from lack of awareness on balanced fertilization among farmers and insufficient soil analytical timely advisory services. Soil and water sampling and analysis will help to monitor the changes in soil fertility, water quality and support in planning for crop and location specific balanced fertilization based on soil test value to enhance crop productivity by construction of soil science lab, post-harvest laboratory and biofertilizer laboratory with the budget of Rs. **100.00** lakhs.

Project components

- Creation of Millet Processing and Value Addition Facility in Athiyandal at Tiruvanamalai.

- Establishment of Department libraries (PBG lab, AV lab, Physical science lab, ENS lab, Field lab) at Thandrampet.
- Establishment of biocontrol laboratory at Thandrampet.
- Establishment of Food Processing Laboratory at Thandrampet.
- Establishment of automated nematode extraction units, work shops at Thandrampet.
- Creation of infrastructure facilities like glass house, poly house and cattle shed at Thandrampet.
- Development of nursery with sales out let at Tiruvanamalai and Thandrampet.
- Establishment of Micro analytical laboratory at Thandrampet.

Overall budget

The projects on infrastructure, research and development will be implemented with a budget out lay of Rs. **725.00 lakhs.**

Project implementing agency

The projects will be implemented by Tamil Nadu Agricultural University in the various colleges and research stations. The progress of the projects will be monitored/reviewed by the Vice-Chancellor and Director of CARDS, Nodal officer once in a year**.**

Project outcome

The creation of infrastructure will enhance the quality of the research and it paves way for the state-of-art for the young researchers. The research and developmental activities is a continuous process, the innovative ideas that emerges from the young minds will help in identifying solutions to the field problem.

Table 4.17 Research infrastructure requirement for Tiruvannamalai district

(₹. in lakhs)

Sl. No.	Interventions	Blocks Covered	Unit Cost in lakhs	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	Millet Processing and Value Addition Facility in Athiyandal	Thiruvannamalai	100	0	0.00	1	100	0	0	0	0	0	0	1	100.00
2	Establishment of Department libraries (PBG lab, AV lab, Physical science lab, ENS lab, Field lab)	Thandrampet	10	2	20.00	2	20	2	20	2	20	2	20	10	100.00
3	Establishment of biocontrol laboratory	Thandrampet	80	1	80.00	1	80	0	0	0	0	0	0	2	160.00
4	Establishment of Food Processing Laboratory	Thandrampet	50	1	50.00	0	0	0	0	0	0	0	0	1	50.00
5	Establishment of automated nematode extraction units, work shops	Thandrampet	10	1	10.00	0	0	0	0	0	0	0	0	1	10.00
6	Creation of infrastructure facilities like glass house, poly house and cattle shed	Thandrampet	10	1	10.00	1	10	1	10	0	0	0	0	3	30.00
7	Development of nursery with sales out let	Thandrampet & Tiruvannamalai	25	1	25.00	1	25	1	25	0	0	0	0	3	75.00
8	Establishment of Micro analytical laboratory	Thandrampet	50	0	0.00	0	0	1	50	0	0	0	0	1	50.00
9	Seed production and storage	Thandrampet	15	0	0.00	0	0	0	0	0	0	1	15	**1**	**15.00**
10	Entrepreneurial Development centre/ incubator	Thandrampet	135	0	0.00	0	0	0	0	1	135	0	0	**1**	**135.00**
	Total				**195.00**		**235**		**105**		**155**		**35**		**725.00**

4.3. Horticulture

Enhancing the productivity of horticultural crops

Horticulture plays a vital role in the food and nutritional security of the people as well as in earning foreign exchange through export of raw and value added horticultural crops. The farmers are ready to go in for the cultivation of horticultural crops which prove remunerative. The challenge lies in taking the technologies to 90 per cent of farmers who are small and marginal farmers. In all, horticulture crops are grown in 10.01 lakh hectares, of which vegetables, spices, plantation crops, flowers and medicinal plants are the major crops cultivated in the State. Totally, 86 horticultural crops are grown in the State which clearly indicates the crop diversity and also the possibility of augmenting the income of farmers. The major strategies suggested are as follows:

Area expansion of Horticultural crops

Fruit Crops

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.

Project components

- Area expansion of UHDP in papaya, mango, guava, pomegranate, acidlime, in Kilpennathur, Arni, West arni, Vembakam.
- HDP in mango, guava, litchi, pomegranate for all blocks.
- Normal planting for lime, guava, sapota, amla, papaya, jackfruit, pomegranate for all blocks.
- Banana leaf production in Kilpennathur, Thandrampet, Pudhupalayam, Chetpet, Arni, West arni, Vandavasi, Peranamallur, Cheyyar.

Vegetable crops

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.

Project components

- Area expansion of vegetables such as brinjal, bhendi, green chilli, tomato, gourds, peas, beans, greens, onions, cauliflower, moringa, cabbage, cucumber, beetroot, tapiaco for all blocks.
- Commercial production of breadfruit, Brussels, sprout, broccoli, spring onion, knolkhol, turnip, cabbage, lettuce, butter bean in Kalasapakam, Peranamallur, Cheyyar.
- Commercial production of location specific vegetables such as athalaka, mulukathiri, palu pavaka, poiyurkathiri, kottapattikathiri in Kilpennathur, Polur, Kalasapakam, Chetpet, Arni, West arni, Vandavasi, Peranamallur, Cheyyar.

Flower crops

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.

Project components

- Area expansion of flower crops such as alstromaria, golden rod, in all blocks.
- Cultivation of orchid, eustroma, anthurium under polyhouse shadenet in all blocks.

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.

Project components

- Area expansion of bulbous spices viz., garlic in Kilpennathur, Arni, West arni, Vandavasi, Vandavasi.

Plantation crops

Plantation crops are high value commercial crops of greater economic importance and play a vital role in our Indian economy. These crops help to conserve the soil and ecosystem. The crops include tea, coffee, rubber, cocoa, coconut, arecanut, oil palm, palmyrah, cashew, cinchona etc. So the promotion of cultivation of plantation crops in the potential districts will increase the economy of the farmer and also Indian economy.

Project components

- Area expansion of coconut in Kilpennathur, Arni, West arni, West arni.

Improving Infrastructural facilities for production

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, ivory gourd could be raised in trellies. High value vegetables like capsicum, beans and flowers like carnation, roses etc could be raised in poly houses.

Project components

- Improving protected cultivation in all blocks.

Organic farming

Organic farming is an alternative agricultural system which originated early in the 20th Century in reaction to rapidly changing farming practices. It relies on fertilizers of organic origin such as compost, manure, green manure, and bone meal and places emphasis on

techniques such as crop rotation, companion planting. Biological pest control, mixed cropping and fostering of insect predators are encouraged. Since 1990, the market for organic food and other products has grown rapidly, reaching $63 billion worldwide in 2012. This demand has driven a similar increase in organically managed farmland that grew from 2001 to 2011 at a compounding rate of 8.9 per cent per annum. As of 2011, approximately 3.70 lakh hectares worldwide were farmed organically, representing approximately 0.9 per cent of total world farmland. Organic farming encourages crop diversity. The science of agro ecology has revealed the benefits of polyculture (multiple crops in the same space), which is often employed in organic farming. Planting a variety of vegetable crops supports a wider range of beneficial insects, soil microorganisms, and other factors that add up to overall farm health. Crop diversity helps environments thrive and protects species from going extinct. The profitability of organic agriculture can be attributed to a number of factors. First, organic farmers do not rely on synthetic fertilizer and pesticide inputs, which can be costly. In addition, organic foods currently enjoy a price premium over conventionally produced foods, meaning that organic farmers can often get more for their yield.

The price premium for organic food is an important factor in the economic viability of organic farming. Organic agriculture can contribute to ecologically sustainable, socio-economic development, especially in poorer countries. The application of organic principles enables employment of local resources (e.g., local seed varieties, manure, etc.) and therefore cost-effectiveness. Local and international markets for organic products show tremendous growth prospects and offer creative producers and exporter's excellent opportunities to improve their income and living conditions.

Project components

- Organic farming and PGS certification in 50 acre cluster in all blocks.
- HDPE vermibed in all blocks.

Capacity building

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.

Project components

- Exposure visit to farmers (inside and outside India) for all blocks.
- Training to farmers at HTC in Kilpennathur, Arni, and Anakkavoor.
- HRD for supervisors and entrepreneurs in all blocks.

Micro Irrigation, Water harvesting and Management

With increasing demand on water from various sectors, the availability of water is under severe stress. Agriculture sector is the largest use of water. While irrigation projects (Major and medium) have contributed to the development of water resources, conventional methods of irrigation are inefficient and lead to wastage of water. It has been recognized that the use of modern irrigation methods like drip and sprinkler irrigation are the ways for the efficient use of surface as well as ground water resources.

Majority of fruit trees / orchards are under rainfed cultivation. It is advisable to bring a minimum percentage of the area under irrigation by providing and strengthening the water harvesting system. This includes provision of drip irrigation facilities wherever possible, recharge of defunct bore wells, provision of pipes and protected distribution system, provision of water lifting devices, Insitu water conservation and the like.

Project components

- Provide water/irrigation in Kilpennathur, Chengam, Thandrampet, Polur, Arni, West arni, Vandavasi, Peranamallur, Cheyyar, and Anakkavoor.

Special Interventions

Pandal / Trellis cultivation, Propping / Support / Staking for all blocks

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 at Cheyyar

'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.

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.

Project components

- AESA based IPM in fruits and vegetables in all blocks.
- Coastal area development programme in public and private for all blocks.

Establishment of Mushroom unit in all blocks

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 Cusines and in everday 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.

Rainfed Area Development Programme (RADP)

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 variability’s.

Project components

- Rainfed area development programme at Thandrampet.
- Encourage integrated farming system of horticulture based farming in all blocks.

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.

Project components

- Establishment of District Horticulture information and training centre in all blocks except Tiruvanamalai, Thurinjapuram, Chengam, Thandrampet, Thandrampet, Thellar, Anakkavoor, and Vembakam.

Community Seed Bank for all blocks

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.

Provide Crop Insurance for all blocks

Crop Insurance coverage has to be done for major crops like paddy, millets, pulses, oilseeds, sugarcane, cotton, cash crops and all Horticulture crops in the notified areas.

Horticultural mechanization

With increasing agricultural labour Shortage in India, a calculated shift to mechanization is imperative. Not only does mechanization provide for optimal utilization of factor resources (viz., land, labour, water, capital and expensive farm inputs), it also helps farmers to save valuable time and effort. Judicious use of time, labour and resources helps facilitate sustainable intensification (multi-cropping) and timely planting of crops and towards giving crops more time to mature, leading to improved productivity.

Project components

- Distribution of manual sprayer, tractor mounted sprayer, power operated sprayer for al blocks.
- Distribution of nets for safe harvesting of fruits at Chengam.
- Distribution of pepper spike thresher, oil engine for Vembakam.

Budget

The budget requirement for fulfilling the various interventions is ₹**.26038.74** Lakhs. The details of budget requirement for each intervention across the blocks are shown in Table 4.3.

Implementing agency

The projects will be implemented by the Department of Horticulture.

Table 4.18 Budget requirement for Horticulture

(₹ 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	TC Banana & TC Pineapple	Ha	1.25	B3,B10,B11,B18	20	25.00	22	27.50	24	30.25	27	33.28	29	36.60	122	152.63
2	Banana / Hill Banana sucker & Pine apple sucker	Ha	0.875	All Blocks	60	52.50	66	57.75	73	63.53	80	69.88	88	76.87	366	320.52
3	HDP in Mango, Guava, Litchi, Pomegranate	Ha	1	All Blocks	36	36.00	40	39.60	44	43.56	48	47.92	53	52.71	220	219.78
4	Normal Planting in lime / lemons	Ha	0.6	All Blocks	20	12.00	22	13.20	24	14.52	27	15.97	29	17.57	122	73.26
5	Normal Planting in Mango	Ha	0.6	All Blocks	20	12.00	22	13.20	24	14.52	27	15.97	29	17.57	122	73.26
6	Normal planting in Guava	Ha	0.6	All Blocks	20	12.00	22	13.20	24	14.52	27	15.97	29	17.57	122	73.26
7	Normal planting in Sapota	Ha	0.6	All Blocks	20	12.00	22	13.20	24	14.52	27	15.97	29	17.57	122	73.26
8	Normal planting in Amla	Ha	0.6	All Blocks	20	12.00	22	13.20	24	14.52	27	15.97	29	17.57	122	73.26
9	Normal planting in Papaya	Ha	0.6	All Blocks	30	18.00	33	19.80	36	21.78	40	23.96	44	26.35	183	109.89
10	Normal planting in Jack	Ha	0.6	B3,B6,B8,B11,B14	10	6.00	11	6.60	12	7.26	13	7.99	15	8.78	61	36.63
11	Normal planting in Pomegranate	Ha	0.6	B3,B5,B6,B9,B10,B11,B12,B14,B15	10	6.00	11	6.60	12	7.26	13	7.99	15	8.78	61	36.63
II	**Area expansion of vegetable crops**															
12	Brinjal	Ha	0.5	All Blocks	50	25.00	55	27.50	61	30.25	67	33.28	73	36.60	305	152.63
13	Bhendi	Ha	0.5	All Blocks	50	25.00	55	27.50	61	30.25	67	33.28	73	36.60	305	152.63
14	Green Chillies	Ha	0.5	All Blocks	50	25.00	55	27.50	61	30.25	67	33.28	73	36.60	305	152.63
15	Tomato	Ha	0.5	All Blocks	75	37.50	83	41.25	91	45.38	100	49.91	110	54.90	458	228.94
16	Gourds including pumpkin and tinda	Ha	0.5	All Blocks	100	50.00	110	55.00	121	60.50	133	66.55	146	73.21	611	305.26

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.
17	Peas & Beans	Ha	0.5	All Blocks	50	25.00	55	27.50	61	30.25	67	33.28	73	36.60	305	152.63
18	Greens	Ha	0.5	All Blocks	50	25.00	55	27.50	61	30.25	67	33.28	73	36.60	305	152.63
19	Small Onion	Ha	0.5	All Blocks	20	10.00	22	11.00	24	12.10	27	13.31	29	14.64	122	61.05
20	Annual Moringa	Ha	0.5	All Blocks except B6	18	9.00	20	9.90	22	10.89	24	11.98	26	13.18	110	54.95
21	Radish	Ha	0.5	All Blocks except B1,B5,B6,B9,B13,B17	20	10.00	22	11.00	24	12.10	27	13.31	29	14.64	122	61.05
22	Melons	Ha	0.5	All Blocks	50	25.00	55	27.50	61	30.25	67	33.28	73	36.60	305	152.63
23	Cluster bean	Ha	0.5	All Blocks	30	15.00	33	16.50	36	18.15	40	19.97	44	21.96	183	91.58
24	Tapioca	Ha	0.5	B3,B8,B10, B11,B12,B14,B15	100	50.00	110	55.00	121	60.50	133	66.55	146	73.21	611	305.26
25	Yams and colacassia	Ha	0.5	B8,B14,B15	20	10.00	22	11.00	24	12.10	27	13.31	29	14.64	122	61.05
26	Sweet potato	Ha	0.5	B3,B7,B8,B9,B10,B11, B12,B14,B15	20	10.00	22	11.00	24	12.10	27	13.31	29	14.64	122	61.05
III	**Area expansion of Medicinal and Aromatic plants**															
27	Coleus	Ha	0.5141	B3,B11,B12,B14	650	334.17	715	367.58	787	404.34	865	444.77	952	489.25	3968	2040.11
28	Lemon grass/palmarosa	Ha	0.32	B3,B8,B9,B10,B11,B12,B14,B18	50	16.00	55	17.60	61	19.36	67	21.30	73	23.43	305	97.68
IV	**Area expansion of Spices crops**															
29	Seed and Rhizomatic spices (Coriander, Turmeric, Ginger, Dry Chilly, Cumin, Fennel, Fenu greek, Dil, Cardamom etc.,)	Ha	0.3	B3,B10,B11,B12,B18	35	10.50	39	11.55	42	12.71	47	13.98	51	15.37	214	64.10
30	Perennial spices (Pepper, Curry leaf, All spice,	Ha	0.5	All Blocks	25	12.50	28	13.75	30	15.13	33	16.64	37	18.30	153	76.31

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.
	Cinnamon, Clove, Tamarind, Nut meg etc.,)															
V	**Area expansion of Flower crops**															
31	Loose flowers - Jasminum sp, Crossandra, Marigold, Rose, Chrysanthemum, Nerium, Torenia	Ha	0.4	All Blocks	100	40.00	110	44.00	121	48.40	133	53.24	146	58.56	611	244.20
32	Bulbous flowers - Tube rose, Gladioli, Dahlia, Bird of paradise, Heliconia, Tulip	Ha	1.5	All Blocks	50	75.00	55	82.50	61	90.75	67	99.83	73	109.81	305	457.88
VI	**Area expansion /Gap filling of Plantation crops**															
33	Arecanut	Ha	0.5	B3,B10,B11,B12	10	5.00	11	5.50	12	6.05	13	6.66	15	7.32	61	30.53
VII	**Rejuvenation/INM-IPM/Mulching/Anti bird net**															
34	INM/IPM for Horticultural crops	Ha	0.04	All Blocks	200	8.00	220	8.80	242	9.68	266	10.65	293	11.71	1221	48.84
35	Mulching	Ha	0.32	All Blocks	30	9.60	33	10.56	36	11.62	40	12.78	44	14.06	183	58.61
VIII	**Pollination Support through Bee Keeping**															
36	Bee hive & Colony	No	0.04	All Blocks	550	22.00	605	24.20	666	26.62	732	29.28	805	32.21	3358	134.31
37	Honey Extractor	No	0.2	All Blocks	55	11.00	61	12.10	67	13.31	73	14.64	81	16.11	336	67.16
IX	**Organic Farming**															
38	Organic farming and PGS certification in 50 acre cluster	1 cluster	14.95	B5	1	14.95	1	16.45	1	18.09	1	19.90	1	21.89	6	91.27
39	HDPE Vermibed	No	0.16	All Blocks	100	16.00	110	17.60	121	19.36	133	21.30	146	23.43	611	97.68
X	**Rainfed Area development**															
40	Green manuring	Ha	0.04	All Blocks	36	1.44	40	1.58	44	1.74	48	1.92	53	2.11	220	8.79
41	Moisture stress management -	Ha	0.1	All Blocks	250	25.00	275	27.50	303	30.25	333	33.28	366	36.60	1526	152.63

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.
	Minimum irrigation gurantee by PUSA hydrogel															
B	**Infra structures and Assets creation**															
I	Protected cultivation															
1	Poly Green House	1000 Sq.m	9.35	All Blocks	17	158.95	19	174.85	21	192.33	23	211.56	25	232.72	104	970.41
2	Shadenet	1000 Sq.m	7.1	All Blocks	19	134.90	21	148.39	23	163.23	25	179.55	28	197.51	116	823.58
II	**Mushroom production**															
1	Cottage mushroom unit	1 No.	1	B3,B5,B10	3	3.00	3	3.30	4	3.63	4	3.99	4	4.39	18	18.32
III	**Vermicompost unit**															
1	Permanent Vermicompost Unit	600 cu.ft	1	All Blocks	54	54.00	59	59.40	65	65.34	72	71.87	79	79.06	330	329.68
IV	**Supporting structures for Horticulture crop production**															
1	Staking/ Trellies/ Propping	Ha	1	All Blocks except B1,B2,B4,B5,B9,B13,B16,B17	450	450.00	495	495.00	545	544.50	599	598.95	659	658.85	2747	2747.30
2	Permanent Pandhal structure	Ha	4	All Blocks	55	220.00	61	242.00	67	266.20	73	292.82	81	322.10	336	1343.12
V	**District Horticulture information and training centre**															
VI	**Community seed bank**															
C	**Special interventions**															
1	Offseason Annual Moringa production - Pod	Ha	1.25	All Block except B6	17	21.25	19	23.38	21	25.71	23	28.28	25	31.11	104	129.73
2	Promotion of Roof top Garden/ Potager garden Kit	No	0.005	B15	500	2.50	550	2.75	605	3.03	666	3.33	732	3.66	3053	15.26
3	Banana Bunch Sleeve	Ha	0.25	B3,B6,B7,B8,B10,B11,B12,B14,B	450	112.50	495	123.75	545	136.13	599	149.74	659	164.71	2747	686.82

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.
				15,B18												
4	AESA based IPM in fruits and vegetables Pheramone trap	Ha	0.04	All Blocks	120	4.80	132	5.28	145	5.81	160	6.39	176	7.03	733	29.30
5	AESA Based IPM in fruits and vegetables Yellow sticky trap	Ha	0.04	All Blocks	120	4.80	132	5.28	145	5.81	160	6.39	176	7.03	733	29.30
6	AESA Based IPM in fruits and vegetables Light trap	Ha	0.08	All Blocks	120	9.60	132	10.56	145	11.62	160	12.78	176	14.06	733	58.61
F	**Mechanization - Machineries, Equipments & Tools**															
1	Power tiller/Tractor/Minitractor	Nos	1	All Blocks	18	18.00	20	19.80	22	21.78	24	23.96	26	26.35	110	109.89
2	Land development, tillage and seed bed preparation equipments	Nos	0.3	All Blocks	18	5.40	20	5.94	22	6.53	24	7.19	26	7.91	110	32.97
3	Manual Sprayer-Knapsack/Foot operated Sprayer	Nos	0.12	All Blocks	100	12.00	110	13.20	121	14.52	133	15.97	146	17.57	611	73.26
4	Post Hole Digger/Augur, Pneumatic/ other Planter		1.26	B3,B10	2	2.52	2	2.77	2	3.05	3	3.35	3	3.69	12	15.38
5	Mulch laying machine	No	0.7	B14	1	0.70	1	0.77	1	0.85	1	0.93	1	1.02	6	4.27
6	Hand operated sprayer with face mask	Nos	0.025	All Blocks	18	0.45	20	0.50	22	0.54	24	0.60	26	0.66	110	2.75
7	Power operated sprayer	Nos	0.05	All Blocks	18	0.90	20	0.99	22	1.09	24	1.20	26	1.32	110	5.49
8	Plastic crates for vegetable & fruits handling	No of sets containing 10crates	0.075	All Blocks	100	7.50	110	8.25	121	9.08	133	9.98	146	10.98	611	45.79
9	Turmeric Boiler		2.5	B18	1	2.50	1	2.75	1	3.03	1	3.33	1	3.66	6	15.26

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	Turmeric Polishing Machine		0.88	B18	1	0.88	1	0.97	1	1.06	1	1.17	1	1.29	6	5.37
11	5 layered Polythene spread sheets for drying horticulture produce	No	0.16	All Blocks	18	2.88	20	3.17	22	3.48	24	3.83	26	4.22	110	17.58
12	Aluminium Ladders for Harvesting	No	0.2	B3,B4,B5,B7,B10,B11,B12,B14,B15,B16	10	2.00	11	2.20	12	2.42	13	2.66	15	2.93	61	12.21
G	**Water / Irrigation Management**															
1	Micro Irrigation - Drip	Ha	1.12	All Blocks	1440	1612.80	1584	1774.08	1742	1951.49	1917	2146.64	2108	2361.30	8791	9846.31
2	Rain gun	Ha	0.34	All Blocks	126	42.84	139	47.12	152	51.84	168	57.02	184	62.72	769	261.54
3	Sprinkler	No	0.195	All Blocks	906	176.67	997	194.34	1096	213.77	1206	235.15	1326	258.66	5531	1078.59
H	Capacity Building															
1	Training to farmers within the State. 2 days Rs.1000/farmer/ day	No	0.02	All Blocks except B12	95	1.90	105	2.09	115	2.30	126	2.53	139	2.78	580	11.60
2	Training to farmers outside the state. 30 farmers/Batch	No	0.105	B3,B10,B16	3	0.32	3	0.35	4	0.38	4	0.42	4	0.46	18	1.92
3	Exposure visit to farmers for 5 days. Rs.1000/farmer/ day	No	0.05	All Blocks	18	0.90	20	0.99	22	1.09	24	1.20	26	1.32	110	5.49
4	Training to farmers at HTC	No	0.0025	All Blocks	100	0.25	110	0.28	121	0.30	133	0.33	146	0.37	611	1.53
5	Training to staff outside the state / Batch of 5 members	No	0.04	All Blocks	18	0.72	20	0.79	22	0.87	24	0.96	26	1.05	110	4.40
11	Computerization & governance	No	1	All Blocks	18	18.00	20	19.80	22	21.78	24	23.96	26	26.35	110	109.89

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.
I	**Crop Insurance and Risk Mitigating schemes**															
	Crop Insurance	Ha	0.025	All Blocks	900	22.50	990	24.75	1089	27.23	1198	29.95	1318	32.94	5495	137.36
	Grand Total					**4265.08**		**4691.59**		**5160.75**		**5676.82**		**6244.50**		**26038.74**

B1- Thiruvannamalai, B2- Thurinjapuram, B3- Kilpennathur, B4- Chengam, B5- Thandrampattu, B6- Pudupalayam, B7- Polu, B8- Kalasapakkam, B9- Chetpet, B10- Arni, B11- Westarni, B12- Vandavasi, B13- Thellar, B14- Peranamallur, B15- Cheyyar, B16- Anakkavoor, B17- Vembakkam

4.4. Agricultural 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 in all blocks.
- 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 in all blocks.
- 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, Leveler Blade, Ridger, Reversible Mechanical Plough, Rotavator, Reversible Hydraulic Plough, Reaper, Seed driller, Balers for all blocks.
- Provision of suitable financial assistance to establish farm machinery banks for custom hiring for appropriate locations and crops for all blocks.
- Establishment of hi-tech machinery hubs for high value crops like sugarcane, cotton etc at all blocks.
- Increases the tractor hire services in the farms of small and marginal farmers in all blocks.

- 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 in all blocks.
- 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 in all blocks.
- 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 in all blocks.
- 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 in all blocks.
- 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 in all blocks.
- Promotion of training to AED engineers on post-harvest techniques and bio energy at all blocks.

- 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 in all blocks.
- Prevention of sea water intrusion through construction of subsurface dyke, Village Pond / Community Pond, Farm Pond, Recharge shaft and Weir/Bed Dam in all blocks.

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 Major component required to implement in this district are capacity building of farmers and end users with the budget of ₹12.60 lakhs, Financial assistance for the procurement of Agricultural Machinery, Post-harvest machinery and equipments in rural areas with the budget of ₹5194.23 lakhs, Establishment of Farm Machinery Banks, Hi-tech productive equipment hub, Promotion of Farm Mechanization in Selected Villages with the budget of ₹2300.50 lakhs and also implementation of minor irrigation, Tractor hiring scheme, Solar energy, Innovative schemes of AED, Pilot mechanization Demonstration, Post-harvest technology and management machinery with budget of ₹809.75 lakhs are required to implement in this district to enhance the Agricultural Productivity. The overall budget requirement for implementation of above interventions is ₹8317.08 lakhs. The details of budget requirement for each intervention across the blocks are shown in Table 4.19

Implementing agency

The projects will be implemented by the Department of Agricultural Engineering

Table 4.19. Budget requirement for Agricultural Engineering **(₹. in lakhs)**

Sl No	Components	Unit	unit cost	Blocks	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**	13.00	0.52	13.00	0.52	13.00	0.52	13.00	0.52	13.00	0.52	65.00	2.60
2	Training of farmers	All Blocks	No's/Ha	**0.04**	20.00	0.80	20.00	0.80	20.00	0.80	20.00	0.80	20.00	0.80	100.00	4.00
3	Training of Rural Youth in workshops	All Blocks	No's/Ha	**0.04**	20.00	0.80	20.00	0.80	20.00	0.80	20.00	0.80	20.00	0.80	100.00	4.00
4	Demonstration of Post Harvest Technologies	All Blocks	No's/Ha	**0.04**	10.00	0.40	10.00	0.40	10.00	0.40	10.00	0.40	10.00	0.40	50.00	2.00
5	Financial assistance for Post Harvest Equipment	All Blocks	No's/Ha	**4.00**	1.00	4.00	1.00	4.00	1.00	4.00	1.00	4.00	1.00	4.00	5.00	20.00
6	Tractor (8-15 PTO HP)	All Blocks	No's/Ha	**3.00**	10.00	30.00	10.00	30.00	10.00	30.00	10.00	30.00	10.00	30.00	50.00	150.00
9	Tractor (15-20 PTO HP)	All Blocks	No's/Ha	**4.00**	10.00	40.00	10.00	40.00	10.00	40.00	10.00	40.00	10.00	40.00	50.00	200.00
10	Tractor (Above 20-40 PTO HP)	All Blocks	No's/Ha	**6.00**	12.00	72.00	12.00	72.00	12.00	72.00	12.00	72.00	12.00	72.00	60.00	360.00
11	Tractor (40-70 PTO HP)	All Blocks	No's/Ha	**8.50**	13.00	110.50	13.00	110.50	13.00	110.50	13.00	110.50	13.00	110.50	65.00	552.50
	Power Tillers															
12	Power Tiller (below 8 BHP)	All Blocks	No's/Ha	**1.00**	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	200.00	200.00
13	Power Tiller (8 BHP & above)	All Blocks	No's/Ha	**1.75**	130.00	227.50	130.00	227.50	130.00	227.50	130.00	227.50	130.00	227.50	650.00	1137.50

Sl No	Components	Unit	unit cost	Blocks	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															
14	Self Propelled Rice Transplanter (4 rows)	All Blocks	No's/Ha	**2.50**	20.00	50.00	20.00	50.00	20.00	50.00	20.00	50.00	20.00	50.00	100.00	250.00
15	Self Propelled Rice Transplanter (Above 4-8 rows)	All Blocks	No's/Ha	**16.00**	5.00	80.00	5.00	80.00	5.00	80.00	5.00	80.00	5.00	80.00	25.00	400.00
	Self Propelled Machinery															
16	Reaper cum Binder	All Blocks	No's/Ha	**3.00**	2.00	6.00	2.00	6.00	2.00	6.00	2.00	6.00	2.00	6.00	10.00	30.00
17	Post Hole Digger / Augur	All Blocks	No's/Ha	**0.63**	3.00	1.89	3.00	1.89	3.00	1.89	3.00	1.89	3.00	1.89	15.00	9.45
	a. Land Development, tillage and seed bed preparation equipments															
18	MB Plow	All Blocks	No's/Ha	**0.30**	2.00	0.60	2.00	0.60	2.00	0.60	2.00	0.60	2.00	0.60	10.00	3.00
19	Disc Plow	All Blocks	No's/Ha	**0.30**	4.00	1.20	4.00	1.20	4.00	1.20	4.00	1.20	4.00	1.20	20.00	6.00
20	Cultivator	All Blocks	No's/Ha	**0.20**	15.00	3.00	15.00	3.00	15.00	3.00	15.00	3.00	15.00	3.00	75.00	15.00
21	Harrow	All Blocks	No's/Ha	**0.60**	3.00	1.80	3.00	1.80	3.00	1.80	3.00	1.80	3.00	1.80	15.00	9.00
	Leveler Blade	All Blocks	No's/Ha	**0.15**	4.00	0.60	4.00	0.60	4.00	0.60	4.00	0.60	4.00	0.60	20.00	3.00
22	Ridger	All Blocks	No's/Ha	**0.25**	2.00	0.50	2.00	0.50	2.00	0.50	2.00	0.50	2.00	0.50	10.00	2.50
23	Reversible Mechanical plough	All Blocks	No's/Ha	**0.50**	2.00	1.00	2.00	1.00	2.00	1.00	2.00	1.00	2.00	1.00	10.00	5.00
24	Rotavator	All Blocks	No's/Ha	**0.35**	55.00	19.25	55.00	19.25	55.00	19.25	55.00	19.25	55.00	19.25	275.00	96.25
25	Reversible Hydraulic plough	All Blocks	No's/Ha	**0.45**	5.00	2.25	5.00	2.25	5.00	2.25	5.00	2.25	5.00	2.25	25.00	11.25

Sl No	Components	Unit	unit cost	Blocks	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															
26	Post Hole Digger	All Blocks	No's/Ha	**0.80**	8.00	6.40	5.00	4.00	5.00	4.00	5.00	4.00	5.00	4.00	28.00	22.40
27	Tractor drawn reaper	All Blocks	No's/Ha	**0.95**	2.00	1.90	2.00	1.90	2.00	1.90	2.00	1.90	2.00	1.90	10.00	9.50
28	Zero till seed cum fertilizer drill	All Blocks	No's/Ha	**0.50**	10.00	5.00	10.00	5.00	10.00	5.00	10.00	5.00	10.00	5.00	50.00	25.00
29	Seed drill	All Blocks	No's/Ha	**0.40**	10.00	4.00	10.00	4.00	10.00	4.00	10.00	4.00	10.00	4.00	50.00	20.00
	c. IntercultivationEquipments															
30	Power Weeder (engine operated below 2 BHP)	All Blocks	No's/Ha	**0.25**	10.00	2.50	10.00	2.50	10.00	2.50	10.00	2.50	10.00	2.50	50.00	12.50
	d. Equipment for residue management / hay and forage equipments															
31	Sugarcane thrash Cutter	All Blocks	No's/Ha	**1.50**	10.00	15.00	10.00	15.00	10.00	15.00	10.00	15.00	10.00	15.00	50.00	75.00
32	Coconut Frond chopper	All Blocks	No's/Ha	**0.80**	7.00	5.60	7.00	5.60	7.00	5.60	7.00	5.60	7.00	5.60	35.00	28.00
33	Balers	All Blocks	No's/Ha	**2.90**	8.00	23.20	8.00	23.20	8.00	23.20	8.00	23.20	8.00	23.20	40.00	116.00
	e. Harvesting and Threshing equipments															
34	Multi crop Threshers	All Blocks	No's/Ha	**2.50**	3.00	7.50	3.00	7.50	3.00	7.50	3.00	7.50	3.00	7.50	15.00	37.50
35	Paddy Thresher	All Blocks	No's/Ha	**1.60**	3.00	4.80	3.00	4.80	3.00	4.80	3.00	4.80	3.00	4.80	15.00	24.00
36	Brush Cutter	All Blocks	No's/Ha	**0.25**	2.00	0.50	2.00	0.50	2.00	0.50	2.00	0.50	2.00	0.50	10.00	2.50
	a. Land Development, tillage and seed bed preparation equipments															
37	Cultivator	All Blocks	No's/Ha	**0.25**	5.00	1.25	5.00	1.25	5.00	1.25	5.00	1.25	5.00	1.25	25.00	6.25

Sl No	Components	Unit	unit cost	Blocks	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
38	Harrow	All Blocks	No's/Ha	**0.90**	2.00	1.80	2.00	1.80	2.00	1.80	2.00	1.80	2.00	1.80	10.00	9.00
39	Ridger	All Blocks	No's/Ha	**0.30**	2.00	0.60	2.00	0.60	2.00	0.60	2.00	0.60	2.00	0.60	10.00	3.00
40	Rotavator	All Blocks	No's/Ha	**0.80**	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	50.00	40.00	250.00	200.00
	b. Sowing, Planting, Reaping and Digging Equipments															
41	Post Hole digger	All Blocks	No's/Ha	**0.90**	2.00	1.80	2.00	1.80	2.00	1.80	2.00	1.80	2.00	1.80	10.00	9.00
42	Tractor drawn reaper	All Blocks	No's/Ha	**1.10**	2.00	2.20	2.00	2.20	2.00	2.20	2.00	2.20	2.00	2.20	10.00	11.00
43	Zero till seed cum fertilizer drill	All Blocks	No's/Ha	**0.60**	10.00	6.00	10.00	6.00	10.00	6.00	10.00	6.00	10.00	6.00	50.00	30.00
44	Seed drill	All Blocks	No's/Ha	**0.50**	10.00	5.00	10.00	5.00	10.00	5.00	10.00	5.00	10.00	5.00	50.00	25.00
	c.Inter Cultivation Equipments															
45	Power Weeder (engine operated above 2 BHP)	All Blocks	No's/Ha	**0.70**	15.00	10.50	15.00	10.50	15.00	10.50	15.00	10.50	15.00	10.50	75.00	52.50
	d. Equipments for Residue management/Hay and Forage Equipments															
46	Sugarcane thrash Cutter	All Blocks	No's/Ha	**1.75**	2.00	3.50	2.00	3.50	2.00	3.50	2.00	3.50	2.00	3.50	10.00	17.50
47	Coconut Frond chopper	All Blocks	No's/Ha	**0.90**	2.00	1.80	2.00	1.80	2.00	1.80	2.00	1.80	2.00	1.80	10.00	9.00
48	Balers	All Blocks	No's/Ha	**3.00**	2.00	6.00	2.00	6.00	2.00	6.00	2.00	6.00	2.00	6.00	10.00	30.00
	e.Harvesting& Threshing Equipments															
49	Multi crop Threshers	All Blocks	No's/Ha	**3.00**	2.00	6.00	2.00	6.00	2.00	6.00	2.00	6.00	2.00	6.00	10.00	30.00
50	Paddy Thresher		No's/Ha	**1.90**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Sl No	Components	Unit	unit cost	Blocks	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
51	Brush Cutter	All Blocks	No's/Ha	**0.30**	2.00	0.60	2.00	0.60	2.00	0.60	2.00	0.60	2.00	0.60	10.00	3.00
	f.Chaff Cutter (Operated by engine / electric motor above 3-5 hp and by power tiller and tractor of below 35 BHP tractor)															
52	Disc Plow	All Blocks	No's/Ha	**0.60**	2.00	1.20	2.00	1.20	2.00	1.20	2.00	1.20	2.00	1.20	10.00	6.00
53	Cultivator	All Blocks	No's/Ha	**0.30**	10.00	3.00	10.00	3.00	10.00	3.00	10.00	3.00	10.00	3.00	50.00	15.00
54	Rotavator	All Blocks	No's/Ha	**0.95**	75.00	71.25	75.00	71.25	75.00	71.25	75.00	71.25	75.00	71.25	375.00	356.25
	b. Sowing Planting, Reaping and Digging Equipments															
55	Zero till seed cum fertilizer drill	All Blocks	No's/Ha	**0.70**	15.00	10.50	15.00	10.50	15.00	10.50	15.00	10.50	15.00	10.50	75.00	52.50
56	Tractor drawn reaper	All Blocks	No's/Ha	**1.25**	5.00	6.25	5.00	6.25	5.00	6.25	5.00	6.25	5.00	6.25	25.00	31.25
57	Post Hole digger	All Blocks	No's/Ha	**1.05**	5.00	5.25	5.00	5.25	5.00	5.25	5.00	5.25	5.00	5.25	25.00	26.25
58	Automatic Rice NurserySowing Machine	All Blocks	No's/Ha	**2.50**	5.00	12.50	5.00	12.50	5.00	12.50	5.00	12.50	5.00	12.50	25.00	62.50
	d.Harvesting& Threshing Equipments															
59	Thresher/Multi Crop threshers	All Blocks	No's/Ha	**4.00**	10.00	40.00	10.00	40.00	10.00	40.00	10.00	40.00	10.00	40.00	50.00	200.00
60	**e.Equipments for Residue management/Hay and Forage Equipments**															
61	Sugarcane thrash Cutter	All Blocks	No's/Ha	**2.00**	2.00	4.00	2.00	4.00	2.00	4.00	2.00	4.00	2.00	4.00	10.00	20.00
62	Coconut Frond chopper	All Blocks	No's/Ha	**1.05**	5.00	5.25	5.00	5.25	5.00	5.25	5.00	5.25	5.00	5.25	25.00	26.25
63	Balers (Round)	All Blocks	No's/Ha	**3.50**	5.00	17.50	5.00	17.50	5.00	17.50	5.00	17.50	5.00	17.50	25.00	87.50

Sl No	Components	Unit	unit cost	Blocks	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	All Manual/animal drawn equipment/implements / Tools															
64	Drum Seeder (Below 4 Row)	All Blocks	No's/Ha	**0.100**	10.00	1.00	10.00	1.00	10.00	1.00	10.00	1.00	10.00	1.00	50.00	5.00
65	Drum Seeder (Above 4 Row)	All Blocks	No's/Ha	**0.150**	10.00	1.50	10.00	1.50	10.00	1.50	10.00	1.50	10.00	1.50	50.00	7.50
66	Tree climber	All Blocks	No's/Ha	**0.07**	10.00	0.70	10.00	0.70	10.00	0.70	10.00	0.70	10.00	0.70	50.00	3.50
67	**Plant protection equipments**															
68	Manual sprayer: Knapsack/foot operated sprayer	All Blocks	No's/Ha	**0.015**	55.00	0.83	55.00	0.83	55.00	0.83	55.00	0.83	55.00	0.83	275.00	4.13
69	Powered Knapsack Sprayer/Power operated Taiwan sprayer (capacity 8-12 lts)	All Blocks	No's/Ha	**0.060**	30.00	1.80	30.00	1.80	30.00	1.80	30.00	1.80	30.00	1.80	150.00	9.00
70	Powered Knapsack Sprayer/Power operated Taiwan sprayer (capacity above 12-16 lts)	All Blocks	No's/Ha	**0.080**	15.00	1.20	15.00	1.20	15.00	1.20	15.00	1.20	15.00	1.20	75.00	6.00
71	Powered Knapsack Sprayer/Power operated Taiwan sprayer (capacity above 16 lts)	All Blocks	No's/Ha	**0.10**	15.00	1.50	15.00	1.50	15.00	1.50	15.00	1.50	15.00	1.50	75.00	7.50
72	Establishment of Farm Machinery Banks for Custom Hiring	All Blocks	No's/Ha	**28.00**	8.00	224.00	8.00	224.00	8.00	224.00	8.00	224.00	8.00	224.00	40.00	1120.00
73	Establishment of Hi-Tech, High Productive Equipment Hub for Custom Hiring	All Blocks	No's/Ha	**112.00**	2.00	224.00	2.00	224.00	2.00	224.00	2.00	224.00	2.00	224.00	10.00	1120.00

Sl No	Components	Unit	unit cost	Blocks	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
74	Promotion of Farm Mechanization in Selected Villages	B1, B2, B13,B12	No's/Ha	**11.50**	1.00	11.50	1.00	11.50	1.00	11.50	1.00	11.50	1.00	11.50	5.00	57.50
75	Financial assistance for promotion of Mechanized Farming operations	All Blocks	No's/Ha	**0.04**	15.00	0.60	15.00	0.60	15.00	0.60	15.00	0.60	15.00	0.60	75.00	3.00
	Tractor Hiring Scheme															
76	Purchase of Tractors for AED	B1, B2, B13,B12	No's/Ha	**8.00**	3.00	24.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	24.00
77	Purchase of Tractor drawn implemnets for AED	B1, B2, B13,B12	No's/Ha	**0.50**	5.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	2.50
78	Purchase of Bull Dozers for AED	B1	No's/Ha	**80.00**	1.00	80.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	80.00
79	Purchase of Paddy Transplanter for AED	B1	No's/Ha	**18.00**	1.00	18.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	18.00
80	Purchase of Paddy combine Harvester for AED	B1, B12	No's/Ha	**17.00**	2.00	34.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	34.00
81	Purchase of Balers for AED	B1	No's/Ha	**4.50**	1.00	4.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	4.50
	Minor Irrigation Scheme															
82	Purchase of Rotary Drill for AE	B1	No's/Ha	**72.00**	1.00	72.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	72.00
83	Hammer cum Rotary Drill for AED		No's/Ha	**150.00**												
84	Purchase of Air Compressor 750 cfm for AED	B1	No's/Ha	**25.00**	1.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	25.00
85	Purchase of ResitivityMetres for AED	B1	No's/Ha	**3.00**	1.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	3.00
	Solar Energy															
86	**5 hp**	All Blocks	No's/Ha	**3.75**	15.00	56.25	15.00	56.25	15.00	56.25	15.00	56.25	15.00	56.25	75.00	281.25

Sl No	Components	Unit	unit cost	Blocks	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
87	**7.5 hp**	All Blocks	No's/Ha	**5.30**	3.00	15.90	3.00	15.90	3.00	15.90	3.00	15.90	3.00	15.90	15.00	79.50
88	**10 hp**	B1, B2, B13,B12	No's/Ha	**6.75**	1.00	6.75	1.00	6.75	1.00	6.75	1.00	6.75	1.00	6.75	5.00	33.75
89	Computer & its accessories	B1, B2, B13,B12	No's/Ha	0.80	2.00	1.60	3.00	2.40	3.00	2.40	3.00	2.40	2.00	1.60	13.00	10.40
90	Tablet (Tab)	B1, B2, B13,B12	No's/Ha	0.25	2.00	0.50	3.00	0.75	2.00	0.50	2.00	0.50	2.00	0.50	11.00	2.75
91	Xerox machine	B1, B2, B13,B12	No's/Ha	1.50	2.00	3.00	3.00	4.50	3.00	4.50	3.00	4.50	2.00	3.00	13.00	19.50
92	Chain saw/ Wheel barrow/ Mango grader/ planter and other suitable self propelled machineries and equipments for horticulture Crops	B1, B2, B13,B12	No's/Ha	1.00	0.00	0.00	0.00	0.00	5.00	5.00	5.00	5.00	0.00	0.00	10.00	10.00
93	Aluminium Ladder/ Ladder	B1, B2, B13,B12	No's/Ha	0.20	0.00	0.00	0.00	0.00	3.00	0.60	2.00	0.40	0.00	0.00	5.00	1.00
94	Millet Mill	B1, B2, B13,B12	No's/Ha	1.50	0.00	0.00	1.00	1.50	1.00	1.50	2.00	3.00	2.00	3.00	6.00	9.00
95	Oil mill with filter press (for all type of Horticulture / Food grain / Oil seeds crop)	B1, B2, B13,B12	No's/Ha	1.20	0.00	0.00	2.00	2.40	2.00	2.40	2.00	2.40	2.00	2.40	8.00	9.60
96	Packing Machines (for all types of Horticulture / Food grain / Oil seeds crop)	All Blocks	No's/Ha	3.00	0.00	0.00	10.00	30.00	10.00	30.00	0.00	0.00	10.00	30.00	30.00	90.00
	Total					**1850.39**		**1621.44**		**1626.79**		**1598.09**		**1620.39**		**8317.08**

B1- Thiruvannamalai, B2- Thurinjapuram, B3- Kilpennathur, B4- Chengam, B5- Thandrampattu, B6- Pudupalayam, B7- Polu, B8- Kalasapakkam, B9- Chetpet, B10- Arni, B11- Westarni, B12- Vandavasi, B13- Thellar, B14- Peranamallur, B15- Cheyyar, B16- Anakkavoor, B17- Vembakkam

4.5. Agricultural Marketing

Agricultural Marketing facilities

For decades, agriculture has been associated with production of essential food crops. At present, agriculture above and beyond farming includes forestry, dairy, fruit cultivation, poultry, bee keeping, mushroom cultivation etc. Today, processing, marketing and distribution of crops and livestock products etc. are all acknowledged as part of current agriculture. Thus, agriculture could be referred as the production, processing, promotion and distribution of agricultural products. Agriculture plays a critical role in the entire life of a given economy. Agriculture is the backbone of economic system of a given country. In addition to providing food and raw material, agriculture also provides employment opportunities to very large percentage of population.

Agricultural marketing means the economic process under which agricultural goods are exchanged. Process of agricultural marketing determines the value of agriculture products in terms of money and delivers them to their final consumer. Agricultural marketing is a specific part of marketing. It is related to agricultural products only. It is the base of most of the economic activities of a country. It brings marketable surplus to the market for sale. Higher level of marketable surplus leads to greater economic development.

Agricultural marketing covers the services involved in moving an agricultural product from the farm to the consumer. Numerous interconnected activities, such as planning production, growing and harvesting, grading, packing, transport, storage, agro- and food processing, distribution, advertising and sale are involved n this. Markets plays an important role in rural development, income generation, food security, developing rural- market linkages and gender issues. Rural assembly markets are located in production areas and primarily serve as places where farmers can meet with traders to sell their products.

As economic growth proceeds, several changes take place in marketing. With economic development, the activities and marketing tasks increase. Activities such as storage processing, packaging and retail distribution become more important. Greater activity moves away from the site of production and towards marketing. This, in turn, creates employment opportunities and further specialization (diversification of the community).

For market development, rural areas must be linked effectively in terms of information and infrastructure, through the middlemen in the marketing system with urban consumption centres. With the shift in resources away from production to marketing services, small-scale

processing can expand markets by increasing demand through diversification of the end products.

Market information

Efficient market information can be shown to have positive benefits for farmers and traders. Up-to-date information on prices and other market factors enables farmers to negotiate with traders and also facilitates spatial distribution of products from rural areas to towns and between markets. Most governments in developing countries have tried to provide market information services to farmers, but these have tended to experience problems of sustainability.

Drying yard

Market Yards are a long felt need of the farming community of our country as it goes a long way in ensuring higher remuneration to them through proper weighing, cleaning, grading and better price realization of their produce. Today the farmers consider it as a boon to them where they can confidently sell their produce and get an appropriate return for the quantity and quality they produce year after year.

Storage godowns

It is a well-known fact that small farmers of the country do not have the economic strength to retain their farm produce with them till the market prices become favorable. There has been a felt need in the country to provide the farming community with facilities for scientific storage so that wastage and produce deterioration are avoided and enable farmers to meet their credit requirement without being compelled to sell their produce at unfavorable prices.

Strengthening of uzhavar sandhai

Govt. of Tamil Nadu introduced the Uzhavar Sandhai during 1999 as an alternate scheme to help the farming community to market their produce such as vegetables, fruits etc. directly to the consumers. Uzhavar Sandhai is a great concept that can go a long way in stabilizing the economy of the farming community. It provides a direct contact between the farmers and the consumers, thus enhancing the farmer's income by preventing intermediaries and distress selling. If well managed, Uzhavar Sandhai can play a big role in boosting the farmer's confidence apart from several other obvious benefits to the consumers.

Exposure visits and Marketing training

Exposure visits (within the state and outside the state) helps the farmers to know about the diversified cultivation practices in and around the state and to know about the different advanced technologies and practices from the other farmers.

Farmers frequently consider, marketing is their major problem. Eventhough, while they are able to identify such problems as poor prices, lack of transport and high post-harvest losses, they are often poorly equipped to identify potential solutions. Successful marketing requires learning of new skills, new techniques and new ways of obtaining information.

Strategies

The proposed interventions will promote the Agri-business practices and models required to support Agri-business development, allowing the sector to contribute to the economic growth especially in rural areas. New Agri-business practices will be introduced relating to (i) farmers and entrepreneurs engaging service providers to solve specific technology problems (ii) learning to work together in the value-chain (iii) making effective use of market intelligence in decision making and (iv) making investments in supply-chain infrastructure and market places.

Rather than starting from a production point of view, stakeholders are encouraged to start from understanding market requirements and opportunities. The interventions will help stakeholders to access the relevant technologies and knowledge services needed for realizing the identified profit opportunities.

Components

a) Drying yard in all blocks.
b) Storage godown for commodity group/ FPC in Tiruvanamalai and Thurinjapuram, Kilpennathur, Vandavasi, Peranamallur, Cheyyar, Anakkavoor and Vembakkam.
c) Upgradation of uzhavar sandhai at Tiruvanamalai, Thandrampet, Pudhupalayam, West arni and Vembakkam.
d) Strengthening of RM in all blocks except Thurinjapuram, Kilpennathur, Chengam, Kalasapakam and Vandavasi.
e) Establishment of FPO in all blocks except Kilpennathur, Chengam, Thandrampet, Polur, Kalasapakam, Vandavasi, Thellar and Anakkavoor.
f) Distribution of tarpaulins in all blocks.

g) Distribution of dunnages for all blocks except Thurinjapuram, Kilpennathur, Thandrampet, Pudhupalayam, Polur, Kalasapakam and Chetpet.
h) Essential oil extracting machine at Kilpennathur, Chengam, Arni, Thellar, Peranamallur, Cheyyar, Anakkavoor and Vembakkam.
i) Establishment of dhal processing unit at Thurinjapuram, Kilpennathur, Chengam, Arni, West arni, Vandavasi and Vembakkam.
j) Establishment of millet processing unit at Thurinjapuram.
k) Provide training on market led extension, food safty, supply chain management, export, and value addition for all blocks.
l) Distribution of groundnut grader to Vembakkam.
m) Distribution of solar drier for Peranamallur, Cheyyar and Vembakkam.
n) Distribution of plastic crates for Kilpennathur, Chengam, Pudhupalayam, Polur, Peranamallur, Cheyyar, Anakkavoor and Vembakkam,
o) Exposure visit (within state & outside state) for commodity group farmers to acquire post-harvest technologies and value addition technologies for all blocks except Thurinjapuram, Thandrampet, Thellar, Cheyyar, Anakkavoor and Vembakkam.

Budget

It is proposed to incur **₹.2992.44** lakhs over a period of five years (Table 4.20).

Expected Outcome

The interventions will promote entrepreneurs by organizing trainings and exposure visits. Farmers are facilitated to use drying yards, storage godowns, Agri business incubation center, Processing Technology marketing center and market provisions 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.

Table 4.20 Budget requirement for Agriculture Marketing

(₹ In lakhs)

Sl No	Components	Unit	unit cost	Blocks	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Strengthening of UzhavarSandhai and Regulated Market															
1	Drying Yard	400 Sq.m	5	All Blocks	22	110.00	25	125.00	24	120.00	25	125.00	25	125.00	121	605.00
2	construction of regulated market	Nos.	30	B10	0	0.00	1	30.00	0	0.00	0	0.00	0	0.00	1	30.00
3	Storage godown	500MT, 200MT	40.175	B1, B2, B3, B12, B14, B15, B16, B17, B18	5	335.00	4	160.00	3	120.00	4	160.00	7	280.00	23	1055.00
4	Strengthening of RM	Nos.	10	All Block execpt B2, B3,B4, B8, B12	7	70.00	2	20.00	1	10.00	2	20.00	0	0.00	12	120.00
5	Upgradation of UzhavarShadhais	1	15	B1, B5, B6, B11, B17	1	15.00	1	15.00	0	0.00	0	0.00	0	0.00	2	30.00
	Formation of FPO / Strengthening of Existing Commodity Groups															
6	FPO	Nos.	50, 30	All Block except B3, B4, B5, B7,B8,B12, B13, B16	1	30.00	4	140.00	4	120.00	1	30.00	0	0.00	10	320.00
	Provision of Market Access and Market Activities															
7	Digital Moisture Meter		0.15	B2	1	0.15	0	0.00	1	0.15	0	0.00	1	0.15	3	0.45
8	Dunnage		0.01	B1, B4, B10, B11, B12, B13, B14, B15, B16, B17,B18	144	1.44	148	1.48	128	1.28	128	1.28	128	1.28	676	6.76
9	Ghani (Wood)		2	All Blocks except B2, B5, B7, B8	14	28.00	15	30.00	14	28.00	15	30.00	15	30.00	73	146.00
10	Hammer Mill		2	B4, B13, B14, B15	0	0.00	5	10.00	3	6.00	3	6.00	0	0.00	11	22.00
11	Oven		1	B4	0	0.00	1	1.00	0	0.00	0	0.00	0	0.00	1	1.00
12	Packing Machine		4	B2, B4	2	8.00	1	4.00	0	0.00	0	0.00	0	0.00	3	12.00
13	Plastic crates	1set: 40Nos	0.1	B3, B4, B, B6, B7, B14, B15, B16, B17, B18	36	3.60	37	3.70	32	3.20	32	3.20	32	3.20	169	16.90

Sl No	Components	Unit	unit cost	Blocks	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
14	Provision of Gunnies	1 set: 40Nos	0.04	All Blocks	288	11.52	296	11.84	256	10.24	256	10.24	256	10.24	1352	54.08
15	Tarpaulin		0.1	All Blocks	72	7.20	74	7.40	64	6.40	64	6.4	64	6.40	338	33.8
16	Vending Cart		0.25	B14	1	0.25	0	0.00	0	0.00	0	0.00	0	0.00	1	0.25
	Post Harvest Infrastructure and Machinaries															
17	Branding,Packaging,Marketing		6	B11, B12, B13, B15	0	0.00	0	0.00	4	24.00	0	0.00	0	0.00	4	24.00
18	Color Sorter		12	B18	1	12.00	0	0.00	0	0.00	0	0.00	0	0.00	1	12.00
19	Dhal processing Unit		2, 30	B2, B3, B4, B10, B11, B12, B17, B18	3	6.00	2	32.00	7	14.00	5	10.00	6	12.00	23	74.00
20	Groundnut decorticator (power)		4	All Blocks except B2, B7, B8	12	48.00	13	52.00	12	48.00	15	60.00	14	56.00	66	264.00
21	Groundnut Grader		1	B18	0	0.00	1	1.00	0	0.00	1	1.00	0	0.00	2	2.00
22	Millet processing unit		1	B2	1	1.00	1	1.00	1	1.00	0	0.00	0	0.00	3	3.00
23	Paddy Winnower		1	B3, B16, B18	2	2.00	3	3.00	3	3.00	3	3.00	3	3.00	14	14.00
24	Solar Dryer		0.5	B14, B15, B18	0	0.00	3	1.50	0	0.00	0	0.00	0	0.00	3	1.50
25	Turmeric boiler		3	B4	0	0.00	0	0.00	0	0.00	1	3.00	1	3.00	2	6.00
26	Turmeric Polisher		3	B4, B13	1	3.00	1	3.00	0	0.00	1	3.00	2	6.00	5	15.00
27	Steam Boiler for Aromatic Oil Extraction	1	4	B18	1	4.00	1	4.00	1	4.00	1	4.00	1	4.00	5	20.00
28	Essential Oil extraction units		2	B3, B4, B10, B13, B14, B15,B17,B18	2	4.00	4	8.00	3	6.00	5	10.00	6	12.00	20	40.00
	Capacity building Programme															
29	Exposure Visits - within state	50 farmer	0.5	All Blocks	12	6.00	17	8.50	2	1.00	18	9.00	1	0.50	50	25.00
30	Exposure Visits - outside state - 3 days	25 farmer	1.25	All Blocks except B2, B5, B13, B15, B16, B18	2	2.50	5	6.25	1	1.25	6	7.50	4	5.00	18	22.50
31	Training on Market led Extension, Agmarkgrading&Food safety, post harvest technology,	40 farmer	0.15	All Blocks	18	2.70	18	2.70	18	2.70	36	5.40	18	2.70	108	16.20

Sl No	Components	Unit	unit cost	Blocks	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Supply Chain Management, Grading-sorting-packing, Market linkages & Exports, Food processing and value addition at district level															
	Total					**711.36**		**682.37**		**530.22**		**508.02**		**560.47**		**2992.44**

B1- Thiruvannamalai, B2- Thurinjapuram, B3- Kilpennathur, B4- Chengam, B5- Thandrampattu, B6- Pudupalayam, B7- Polur, B8- Kalasapakkam, B9- Chetpet, B10- Arni, B11- Westarni, B12- Vandavasi, B13- Thellar, B14- Peranamallur, B15- Cheyyar, B16- Anakkavoor, B17- Vembakkam

4.6. Seed Certification

Seed 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 Tamilnadu 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

  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 Air conditioner, Conductivity Meter, Dehuller/ Scarifier, Blower, Hot Air oven, Incubator and Miscellaneous are required for all blocks.

- Strengthening of communication and networking facilities by providing computer accessories to all blocks.
- Information on quality seed production techniques could be disseminated 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

Seed testing plays a pivotal role in modern agriculture. It is being carried out to analyze factors like germination, physical purity, moisture, seed health and admixture of other distinguishable varieties. Seed testing is carried out in the notified seed testing laboratories. The seed testing results are very important for the successful implementation of seed certification and seed law enforcement programmes. Apart from certified seed samples and samples received from the seed quality control wing, the service samples sent by the farmers, seed dealers and seed producers are also tested in these laboratories of Tiruvanamalai district. The budget requirement for implementation of interventions such as strengthening seed testing laboratory is**₹. 26.72 lakh** and strengthening of communication and network facilities is**₹. 10.00** The overall budget requirement for implementation of above interventions is **₹. 36.72** lakhs. The details of budget requirement for each intervention across the blocks are shown in Table 4.21

Implementing agency

The projects will be implemented by the Directorate of seed and organic certification.

Table 4.21 Budget requirement for Seed 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 laboratory facilities**															
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	0.00	0.00	1.00	13.36	0.00	0.00	0.00	0.00	2.00	26.72
II	**Strengthening of communication and networking facilities**															
2	Computer accessories	All Blocks	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**		**0.00**		**13.36**		**0.00**		**0.00**		**36.72**

4.7. Animal Husbandry

Livestock have been an integral component of India's agricultural and rural economy since time immemorial, supplying energy for crop production in terms of draught power and organic manure, and in turn deriving their own energy requirements from crop byproducts and residues. Livestock are now more valued as source of food and contribute over one-fourth to the agricultural gross domestic product and engage about 9% of the agricultural labour force. The livestock sector has been growing faster than crop sector; however, in recent years, the growth both in livestock production and productivity has decelerated considerably. India's livestock sector is one of the largest in the world. It has 56.7% of world's buffaloes, 12.5% cattle, 20.4% small ruminants, 2.4% camel, 1.4% equine, 1.5% pigs and 3.1% poultry. In 2010-11, livestock generated outputs worth Rs. 2075 billion which comprised 4% of the GDP and 26% of the agricultural GDP. The total output worth was higher than the value of food grains.

Animal Husbandry sector plays a crucial role in ensuring the welfare of rural population. A majority of farmers depend on Animal Husbandry for their livelihood. Moreover, livestock sector provides supplementary employment and sustainable source of income to many small and marginal farmers. Thus, this sector is emerging as an important sector, leveraging the rural economy. In addition, this sector provides a continuous flow of essential food products like milk, meat, eggs besides draught power, raw materials like wool and hides for industries, and manure. With increase in production of livestock products, livestock rearing is also considered as an avocation with high export potential. Distribution of livestock wealth is more egalitarian, compared to land and hence, from the equity and livelihood perspective, it is considered as an important component in poverty alleviation programmes.

Keeping view in this mind, various major interventions are being planned and proposed in the district agricultural plan to be implemented beyond 12th five year plan. The major interventions are:

1. Increasing the availability of fodder through field level interventions
2. Livestock breeding management
3. Improving the livestock productivity
4. Enhancing livestock management
5. Capacity building

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 the 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 ₹ **164.75** lakhs. To overcome these issues the following field level interventions are proposed to improve the fodder availability.

1. Distribution of Azolla trays for all blocks.
2. Establishment of fodder plot development for all blocks.

Livestock breeding management

Over the past few decades, imported exotic cow varieties have gained 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 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 budget requirement for fulfilling the below interventions is ₹ **565.00** lakhs. The following interventions will help to improve livestock breeding management, such as

1. CIDR for all blocks.
2. Distribution of sex sorted semen to veterinary institutions for all blocks.

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 implemented. The budget requirement for fulfilling the below interventions is ₹ **11195.50** lakhs. The interventions proposed are

1. Distribution of sheep, goat, buffalo for all blocks.
2. Integrated farming for all blocks.
3. Establishment of disposal pits for poultry units for all blocks.
4. Development of native chicken farms in all blocks.
5. Provide deep freezer facility for storage of vaccines and medicines for all blocks.
6. Establishment of mobile disease diagnostic labs, mobile veterinary units, surgical theaters for all blocks.
7. Establishment of ambulance facility for animals in cheyyar.

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 budget requirement for fulfilling the below interventions is ₹ **92.00** lakhs. The intervention have been propose are

1. Animal identification and traceability for all blocks.
2. Conservation of indigenous breeds for 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. The budget requirement for fulfilling the below interventions is ₹ **218.00** lakhs.

1. Establishment of farmers training Centre for all blocks.
2. Conducting demonstrations camps and campaigns for all blocks.
3. Creating awareness about livestock management to the farmers through training programmes for all blocks.

Budget allocation

The major themes proposed in the plan for animal husbandry sector with a total budget out lay of ₹. **12235.00 lakh.**

Project implementing agency

The projects proposed will be implemented by the Department of Animal husbandry sector.

Table 4.22 Budget requirement for Animal Husbandry

(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
	Increasing the Availability of Fodder through Field level Interventions															
1	Distrbution of Azolla trays	Nos	0.03	All Blocks	565	16.95	565	16.95	565	16.95	565	16.95	565	16.95	2825	84.75
2	Fodder plot development	acre	0.05	All blocks	400	20	400	20	400	20	200	10	200	10	1600	80
	Livestock Breeding Management															
3	CIDR (Controlled Internal Drug Release) for increasing Fertility in Cattle	Nos	0.01	All Blocks	1130	11.3	1130	11.3	1130	11.3	1130	11.3	1130	11.3	5650	56.5
4	Distribution of sex sorted semen to veterinary institution	Nos	0.015	All Blocks	6780	101.7	6780	101.7	6780	101.7	6780	101.7	6780	101.7	33900	508.5
	Improving the Livestock Productivity															
5	Distibution of Sheep/Goat units - semi intensive system	Nos	0.6	All Blocks	2260	1356	2260	1356	2260	1356	2260	1356	2260	1356	11300	6780
6	Distribution of Buffalo units(5 Buffaloes)	Nos	4.5	All Blocks	113	508.5	113	508.5	113	508.5	113	508.5	113	508.5	565	2542.5
7	Integrated farming (Goat+Cattle+Fish+ Agriculture /Horticulture)	Unit	2	All Blocks	5	10	5	10	5	10	5	10	5	10	25	50
8	Development of Native chicken farms	Farm	1	All Blocks	25	25	25	25	25	25	25	25	25	25	125	125
9	Establishment of disposal pits for poultry unit	Nos	1	All Blocks	25	25	25	25	25	25	25	25	25	25	125	125

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
10	Deep freezer facility for Storage of vaccines and Medicines	Nos	10	All Blocks	0	0	0	0	18	180	0	0	0	0	18	180
11	Establishment of Mobile Disease Diagnostic Labs	Nos	20	All Blocks except B13	1	20	0	0	0	0	0	0	0	0	1	20
12	Establishment of Mobile Veterinary Units	Nos	10	All Blocks except B4 and Thellar	1	10	1	10	0	0	0	0	0	0	2	20
13	Establishment of surgical theatres at veterinary institution	Nos	30	All Blocks	4	120	4	120	4	120	4	120	2	60	18	540
14	Providing solar lighting panels at veterinary institution	Nos	1	All Blocks	14	14	28	28	24	24	30	30	17	17	113	113
15	Package of Modern Veterinary Diagnostic Aids to Veterinary Institutions such as Computerised X rays, Ultrasound, Diathermy etc.	Nos	30	All Blocks	4	120	4	120	4	120	4	120	2	60	18	540
16	Establishment of Ambulance facility for animals	Nos	80	B15	1	80	1	80	0	0	0	0	0	0	2	160
	Livestock Management															
17	Animal Identification and Traceability	Unit of 1000 animals	0.1	All Blocks	300	30	30	3	30	3	30	3	30	3	420	42
18	Conservation of Indigenous breeds	Pack	10	All Blocks	1	10	1	10	1	10	1	10	1	10	5	50
	Capacity Building															
19	Establishment of Farmers training Centre	Nos	200	B15	0	0	1	200	0	0	0	0	0	0	1	200

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
20	Conducting Demonstrations, Camps and Campaigns	Nos	0.1	All Blocks	18	1.8	18	1.8	18	1.8	18	1.8	18	1.8	90	9
21	Creating awarness of livestock management to the farmers through Training Programmes	Nos	0.1	All Blocks	18	1.8	18	1.8	18	1.8	18	1.8	18	1.8	90	9
	Grand Total					**2482.05**		**2649.05**		**2535.05**		**2351.05**		**2218.05**		**12235.25**

B1- Thiruvannamalai, B2- Thurinjapuram, B3- Kilpennathur, B4- Chengam, B5- Thandrampattu, B6- Pudupalayam, B7- Polur, B8- Kalasapakkam, B9- Chetpet, B10- Arni, B11- Westarni, B12- Vandavasi, B13- Thellar, B14- Peranamallur, B15- Cheyyar, B16- Anakkavoor, B17- Vembakkam

4.8. 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 is 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 faster rate. However 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. 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 for all blocks.
2. Milk tankers for all blocks.
3. Milk pumps for all blocks.
4. Processing equipment’s for all blocks.
5. Pasteurizers for all blocks.
6. Heaters and chillers for all blocks.

7. Washer and conveyors for all blocks.
8. Pipes and fittings for all blocks.
9. Cleaning equipment's for all blocks.
10. Electrical installations (UPS, generators, stabilizers, control panel) for 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. To get a better improvement in milk production than before the following inputs have been suggested.

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

Capacity building

India is the largest milk producer in the world with an annual production of over 155.4 metric tonnes, 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 for all blocks.
2. Infertility camps for 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 for all blocks.
2. Milk product storage cabinets for all blocks.
3. Product billing system for all blocks.

Quality control

Quality is a vital ingredient for 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 for all blocks.
2. Milk testing equipment and laboratory for all blocks.

Processing and value addition

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 the focus of 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. Skim milk powder plant for all blocks.
2. Dairy processing plants for all blocks.
3. Water and effluent treatment plants for all blocks.
4. Steam raising plant for all blocks.
5. Fat handling and other dairy equipment's for 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 for all blocks.
2. BMC building for all blocks.
3. Cattle feed plants for all blocks.

4. Ware house for dairy products for all blocks.
5. Ice cream manufacturing buildings for all blocks.

Budget allocation

An outlay of **Rs.28448.25** lakhs is proposed to fulfill the aforementioned interventions for five years. By constructing dairy unit in rural areas more and more beneficiaries belonging to the weaker sections of the District are baled out of poverty, thus ensuring equitable growth and development. This foresighted implementation of developmental schemes in Dairy Sector has enabled to increase the per capita income of rural households in backward Districts. The details of budget requirement for each intervention across the blocks are shown in Table (4.23).

Implementing agency

The projects will be implemented by the Department of Dairy Development.

Table 4.23 Budget requirement for Dairy Development

(₹ in lakhs)

Sl. No	Interventions	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total Amount	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Strengthening of milk storage and processing units																
1	Electrical installation like Tranformemr, UPS, Stabilisers, Control Panel MCC etc.,	All blocks	1	25.00	1	25	1	25	1	25	1	25	1	25	5	125
2	Milk Storage Tanks of various capacities	All blocks	1	15.00	3	45	3	45	3	45	3	45	3	45	15	225
3	Tub washer, Canwashers, Crate conveyor systems.	All blocks	1	10.00	1	10	1	10	1	10	1	10	1	10	5	50
4	Point of Sale Machines and billing systems	All blocks	1	0.25	25	6	25	6	25	6	25	6	25	6	125	31
5	SS pipes and fittings	All blocks	1	5.00	2	10	2	10	2	10	2	10	2	10	10	50
6	Solar system for water heating	All blocks	1	2.00	3	6	3	6	3	6	3	6	3	6	15	30
7	Packing Machineries for milk, Butter, Ghee, SMP and Other Milk products	All blocks	1	18.00	0	0	2	36	1	18	1	18	1	18	5	90
8	Plate Heat type Chillers and pasteurizers	All blocks	1	10.00	2	20	2	20	2	20	2	20	2	20	10	100
9	Milk Tankers of various capacities	All blocks	1	25.00	1	25	1	25	1	25	1	25	1	25	5	125
10	Milk Pumps of Vaious capacities	All blocks	1	0.50	9	5	9	5	9	5	9	5	9	5	45	23
11	Generator of various capacities	All blocks	1	20.00	0	0	1	20	0	0	1	20	0	0	2	40
12	Curd processing equipments	All blocks	1	50.00	0	0	0	0	1	50	0	0	0	0	1	50
13	Cleaning In Place equipments with accessories	All blocks	1	75.00	0	0	0	0	0	0	1	75	0	0	1	75

Sl. No	Interventions	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total Amount	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Enhancing milk productions and milk processing units																
14	Veterinary Medicine	All blocks	1	2.00	7	14	7	14	7	14	8	16	9	18	38	76
15	Two wheeler for AI technician	All blocks	1	0.50	21	11	21	11	21	11	21	11	21	11	105	53
16	Computer system with accessories	All blocks	1	0.50	21	11	21	11	21	11	21	11	21	11	105	53
17	Fodder seed materials	All blocks	1	0.25	21	5	21	5	21	5	21	5	21	5	105	26
18	Fodder development equipments like chaff cutter, Mower etc.,	All blocks	1	0.20	21	4	21	4	21	4	21	4	21	4	105	21
19	Bulk Milk coolers of Various capacities	All blocks	1	15.00	10	150	10	150	10	150	10	150	10	150	50	750
20	Milk cans	All blocks	1	0.04	1000	35	1000	35	1000	35	1000	35	1000	35	5000	175
21	Electronic weighing scales of various capacities.	All blocks	1	0.30	55	17	55	17	55	17	55	17	55	17	275	83
22	Electronic milk testing equipments	All blocks	1	1.25	45	56	45	56	45	56	45	56	45	56	225	281
23	Milking machine	All blocks	1	0.80	100	80	100	80	100	80	100	80	100	80	500	400
24	Cow shed	All blocks	1	5.00	25	125	25	125	25	125	25	125	25	125	125	625
25	Society Buildings	All blocks	1	20.00	25	500	25	500	25	500	25	500	25	500	125	2500
26	Cryogenic containers	All blocks	1	0.35	30	11	30	11	30	11	30	11	30	11	150	53
27	Equipments for Artificial Insemination	All blocks	1	0.50	10	5	10	5	10	5	10	5	10	5	50	25
Capacity building																
28	Training of personnel of MPCS, Union and Federation.	All blocks	1	0.05	500	25	500	25	500	25	500	25	500	25	2500	125
29	Infertility Camps	All blocks	1	0.20	100	20	100	20	100	20	100	20	100	20	500	100
Marketing																
30	Parlour structures	All blocks	1	5.00	50	250	50	250	50	250	50	250	50	250	250	1250
31	Milk product storage cabinets	All blocks	1	0.30	100	30	100	30	100	30	100	30	100	30	500	150
32	Product Billing systems	All blocks	1	0.30	100	30	100	30	100	30	100	30	100	30	500	150

Sl. No	Interventions	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total Amount	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Quality control																
33	Adulteration detection equipments	All blocks	1	4.00	2	8	2	8	2	8	2	8	2	8	10	40
34	Milk testing equipment and Laboratory.	All blocks	1	5.00	2	10	2	10	2	10	2	10	2	10	10	50
Processing of value addition																
35	Dairy Processing Plants	All blocks	1	6000.00	0	0	1	6000	0	0	0	0	0	0	1	6000
36	Water Treatment Plants. Reverse Osmosis plant	All blocks	1	100.00	0	0	1	100	1	100	1	100	1	100	4	400
37	Effluement treatment plant	All blocks	1	100.00	0	0	0	0	0	0	2	200	0	0	2	200
38	Steam raisning plant with accessories	All blocks	1	100.00	0	0	0	0	1	100	0	0	0	0	1	100
39	Fat handling equipments	All blocks	1	200.00	1	200	1	200	0	0	0	0	0	0	2	400
40	Dairy equipments	All blocks	1	50.00	2	100	2	100	2	100	2	100	2	100	10	500
Development of dairy sector																
41	Construction of Dairy	All blocks	1	1500.00	0	0	0	0	1	1500	0	0	0	0	1	1500
42	Construction of Skim milk powder Plant	All blocks	1	1500.00	0	0	1	1500	0	0	0	0	0	0	1	1500
43	BMC buildings	All blocks	1	15.00	10	150	10	150	10	150	10	150	10	150	50	750
44	Cattle feed Plants	All blocks	1	5000.00	0	0	1	5000	0	0	0	0	0	0	1	5000
45	Ice cream and dairy product buildings	All blocks	1	2500.00	0	0	0	0	1	2500	0	0	0	0	1	2500
46	Ware house for Dairy products	All blocks	1	200.00	1	200	1	200	1	200	1	200	1	200	5	1000
47	Ware house for Dairy consumables	All blocks	1	200.00	0	0	0	0	1	200	1	200	1	200	3	600
	Grand Total					**2197**		**14853**		**6465**		**2612**		**2319**		**28448**

4.9. Fisheries sector

Fisheries sector is one of the important food production sector in the State contributing to the livelihood as well as food secuity 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.

Enhancement of fisheries production

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 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 interventions to enhance the production and growth of fisheries with budget cost of ₹ 112.00 lakhs.

The interventions are

- ✓ Promotion of ornamental fish culture at Tiruvanamalai, Polur, Kalasapakam, Chetpet, Thandrampet, Vandavasi and Arni blocks.
- ✓ Introduction of IMC seeds in riverine check dams at Tiruvanamalai, Kilpennathur, Thurinjapuram, Pudhupalayam and Thandrampet blocks.
- ✓ Increasing fish production in existing fish shrimp farms at Tiruvanamalai, Kalasapakam and Thandrampet blocks.
- ✓ Diversification of fishing by promoting squid jigging at Tiruvanamalai, Thandrampet, Cheyyar, Vandavasi, Peranamallur, Arni and West arni blocks.
- ✓ Provide trainers training and exposure visit to departmental staff at Tiruvanamalai.
- ✓ Training to fish farmers at Tiruvanamalai and Thandrampet blocks.

Infrastructure and assets

The budget requirement for the establishment of District Extension and Training centres is ₹ 50.00 lakhs.

Capacity Building

Effective extension support for the promotion of Aquaculture in freshwater and brackish water areas is the major activity contemplated under the scheme. Fisheries Information centres are envisaged under this project.

Budget

The budget requirement for fulfilling the above interventions is ₹ **164.60** lakhs (Table 4.24).

Implementing agency

Department of Fisheries will be implementing the project.

Table 4.24 Budget requirement for Fishery

(₹ 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	**Enhancement of fisheries production**															
1	Increasing Fishing Efficiency of Inland Fishermen and Fish Farmers	B1, B5, B9	1	0.15	0	0.00	0	0.00	0	0.00	0	0.00	80	12.00	80	12.00
2	Enhancement of Fish production in irrigation tanks and panchayat tanks by stocking fish seeds	B1, B9, B11, B14, B16, B17, B18	1	0.04	0	0.00	50	2.00	75	3.00	275	11.00	250	10.00	650	26.00
3	Promotion of quality fish marketing by traditional fishers by providing moped with ice box	B1, B4, B5, B6, B9, B14, B17	1	0.5	0	0.00	0	0.00	10	5.00	110	55.00	20	10.00	140	70.00
4	Introduction of short seasonal fish species in existing farm ponds	B1, B2, B3, B8, B9	990 Sq.m	0.79	0	0.00	0	0.00	0	0.00	5	3.95	0	0.00	5	3.95
II	**Creation of infrastructure facilities**															
5	Establishment of District Extension and Training centres	B1	1	50	0	0.00	0	0.00	0	0.00	1	50.00	0	0.00	1	50.00
III	**Capacity Building Program**															
6	Training to fish farmers	B1, B9, B10	1	0.03	0	0.00	0	0.00	0	0.00	0	0.00	80	2.40	80	2.40
7	Providing trainers training and exposure visit to Departmental staff	B1	1	0.05	0	0.00	0	0.00	0	0.00	5	0.25	0	0.00	5	0.25
						0		**2.00**		**8.00**		**120.20**		**34.40**		**164.60**

B1- Thiruvannamalai, B2- Thurinjapuram, B3- Kilpennathur, B4- Chengam, B5- Thandrampattu, B6- Pudupalayam, B7- Polur, B8- Kalasapakkam, B9- Chetpet, B10- Arni, B11- Westarni, B12- Vandavasi, B13- Thellar, B14- Peranamallur, B15- Cheyyar, B16- Anakkavoor, B17- Vembakkam

4.8.1 Fisheries Research

Cage Culture of fast growing food fishes in Seasonal Tanks

Indian freshwater resources have been estimated to be 5.47 million ha. Tamil Nadu has 0.37 million ha of freshwater resources. About 8 districts are blessed with good water resources and the scope for culture in the long and short term seasonal ponds and tanks and irrigation tanks is promising. The productivity in all these seasonal wild waters is found to be very low (less than 25 kg per ha) due to extensive nature of culture in the natural open waters. There is a scope for intensifying the stocking and production through cage farming in all these open water bodies.

Open water bodies like tanks and lakes with large extend of water spread are reported to give a very low fish production in the country due to various reasons. The low stocking and poor control over the stock due to the large extend of the water span are the major reasons behind such low production and this can be rectified by the adoption of cage farming in the open waters. Natural fertility in the open water bodies can be used for the successful growth of fishes by adoption suitable stocking density and culture practice so as to have high survival and better growth. This has been proved beyond doubt in many east Asian countries where the per unit production is around 50kg per sq. m. Such high productivity is also possible in Indian water bodies if suitable cages are framed and erected in the open water bodies like natural tanks, lakes, pools and reservoirs where the control of the fish stock will be possible in the cages.

The proposal for cage farming in seasonal tanks aims at popularizing and adopting cage farming technology for carps (preferably common carp and Mrigal) and other highly preferred air breathing fishes like *Pagassius* spp in which high stocking densities are possible. The cage farming methodology will be demonstrated in selected water bodies initially in Tirunelveli where the farmers can take this technology and practice for large scale adoption in all the districts.

Project strategy

The present proposal is to demonstrate and train the inland fish farmers in cage farming of fishes and crustaceans for enhancing the production and revenue. The selected water bodies in the State districts will serve as a demo ground and dissemination centre for the technology. Appropriate cages of various sizes (from 1 to 10 m^2) will be procured from the standard cage manufacturers in the country or abroad and used for the farming purposes.

Project component

- ✓ Make awareness campaign on health beneficial attributes of fish in Tiruvanamalai block.
- ✓ Production of short films on nutritive value of fish and screening in theatres and television channel at Tiruvanamalai block.
- ✓ Supply of preserved ready to eat and ready to cook fish products through public distribution system in Tiruvanamalai block.
- ✓ Supply of fish products in mid day meal programme at Tiruvanamalai block.
- ✓ Supply chain management to promote consumption of farmed freshwater fishes in Tiruvanamalai block.

Budget

The proposed intervention will be implemented with a budget outlay of**₹. 141. 60** lakhs.

Project implementing agency

The project will be implemented by the Tamil Nadu Fisheries University. The progress of the work will be monitored by the Vice Chancellor and Nodal Officer of the concerned project.

Expected outcome

The implementation of the project will trigger the adoption of cage farming in the inland fisheries system.

Table 4.25 Budget for implementation of fisheries research in Tiruvanamalai district

(₹ 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	**Harvest and Post harvest**														
a	**fish processing technology**														
b	**Enhancement of per capita consumption of fish**														
	Awareness campaign on health beneficial attributes of fish	0.005	Thiruvannamalai	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	Thiruvannamalai	0	0.00	1	50.00	0	0.00	0	0.00	0	0.00	1	50.00
c	**Ensuring nutritional security through fish and fishery products**														
	supply of preserved ready to eat and ready to cook fish products through public distribution sytems	12.9	Thiruvannamalai	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	Thiruvannamalai	0	0.00	1	12.90	0	0.00	0	0.00	0	0.00	1	12.90
	Supply chain management to promote consumption of farmed freshwater fishes	64.5	Thiruvannamalai	1	64.50	0	0.00	0	0.00	0	0.00	0	0.00	1	64.50
	Grand total				**64.76**		**63.16**		**13.16**		**0.26**		**0.26**		**141.60**

4.10. Public Works Department (WRO)

Increasing the ground water level

Canal, well, bore well and tank are the sources of irrigation in Tiruvannamalai district. Well irrigation forms the major source of irrigation in all the blocks in the district. Canal irrigation forms the second important major source of irrigation followed by bore wells. There are 1966 PWD tanks situated in the district and covered under 18.36 % of area of total net irrigated area. Most of the canals are silted and bushes like *Prosopis* and *Acassia* spp occupied major part of the tanks and there by storage capacity of the tank are 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 anaicut area may be increased.

Project components

a) Construction of anaicut across the different rivers(furnished in table) in chetpet, Arni and Pudhupalayam blocks.
b) Construction of check dams across the rivers (furnished in table) in Pudhupalayam, Kilpennathur, Vandavasi, Thandramopet, Anakavoor and Arni blocks.
c) Excavation of Link canal to interconnect Pennaiyar river and palar through Cheyyar in Chengam, Tiruvanamalai, Kalasapakam, Polur, Chetpet, Arni, Vandavasi, Cheyar and Kilpenathur blocks.

Budget

It is proposed to incur ₹.**66185** Lakhs over a period of five years (Table 4.26).

Expected outcome

The project will increase the Ground water table level and thereby increasing the crop

Implementing agency

Department of Public Works will be implementing the project

Table 4.26 Budget estimate for PWD works

(₹.in lakhs)

Sl. No.	Name of Scheme	Block	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
1	Construction of an Anicut across Cheyyar river near Karaipoondi village to feed Mandakolathur and Eyakolathur tanks in Polur taluk.	Chetpet	Ha	2.78	302	840.00	0	0.00	0	0.00	0	0.00	0	0.00	302	840.00
2	Construction of an Anicut across Naganadhi river near Ammapalayam village to feed Melnagar Tank in Arni	Arni	Ha	1.39	222	310.00	0	0.00	0	0.00	0	0.00	0	0.00	222	310.00
3	Construction of Check dam across Cheyyar river near Kanchi Village in Chengam taluk.	Pudupallayam	Ha	6.17	45	280.00	0	0.00	0	0.00	0	0.00	0	0.00	45	280.00
4	Construction of Anicut across Kamandalanaganadhi river near Kamakkur village to feed Mullipattu tank in Arni taluki .	Arni	Ha	10.49	43	450.00	0	0.00	0	0.00	0	0.00	0	0.00	43	450.00
5	Construction of check dam across Thurinjalar river near Konalur village in polur taluk	Kilpennathur	Ha	7.09	0	0.00	34	240.00	0	0.00	0	0.00	0	0.00	34	240.00
6	Construction of Anicut across Cheyyar river near Alliyandal village to feed Oravanthavadi tank in Chengam taluk.	Pudupallayam	Ha	1.68	0	0.00	244	410.00	0	0.00	0	0.00	0	0.00	244	410.00
7	Construction of Check dam across Suganadhi river	Vandawasi	Ha	10.57	0	0.00	33	350.00	0	0.00	0	0.00	0	0.00	33	350.00

Sl. No.	Name of Scheme	Block	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
	near Kilkodungalur Village in Vandawasi taluk.															
8	Construction of Check Dam across Varattar river near Narayanakuppam village in Thandrampattu taluk.	Thandrampattu	Ha	6.47	0	0.00	0	0.00	41	265.00	0	0.00	0	0.00	41	265.00
9	Excavation of Link canal to interconnect Pennaiyar river and palar through Cheyyar and Agumenting supply to Nandan Canal in Thiruvannamalai	Chengam, Tiruvannamlai, Thandrambattu, Kalsapakkam, Polur, Chetpet, Arni, Vandawasi, Cheyyar, Kancheepuram, Uthiramerur, Gingee, Villupuram, Kilpennathur	Ha	3.22	0	0.00	0	0.00	18651	60000.00	0	0.00	0	0.00	18651	60000.00
10	Construction of Check Dam across Cheyyar river near Anakavoor village in Cheyyar taluk.	Anakavoor	Ha	5.50	0	0.00	0	0.00	0	0.00	300	1650.00	0	0.00	300	1650.00
11	Construction of checkdam across Naganadhi river near Kattukanallur Village in Arni Taluk.	Arni	Ha	11.73	0	0.00	0	0.00	0	0.00	32	380.00	0	0.00	32	380.00
12	Construction of Check dam across Cheyyar river near Thellur Village in Arni taluk.	Arni	Ha	21.61	0	0.00	0	0.00	0	0.00	0	0.00	32	700.00	32	700.00
13	Construction of Check Dam across Pambanar river near Malamanjanur (Vannandurai) village in Thandrampattu taluk.	Thandrampattu	Ha	19.14	0	0.00	0	0.00	0	0.00	0	0.00	16	310.00	16	310.00
	TOTAL					**1880.00**		**1000.00**		**60265.00**		**2030.00**		**1010.00**		**66185.00**

4.11. Co-operation

In Tamil Nadu, Cooperatives play a prominent role in the day to day affairs of the common man. They help the farmer to improve agricultural production by providing crop loans and by supplying agricultural inputs such as fertilizers and insecticides. They also enable the farmer to store and market his produce. In most districts, cooperatives run the fair price shops which provide the rural and urban poor essential commodities at highly subsidized prices. The policy of the State Government is to ensure adequate availability of essential commodities of acceptable quality at an affordable price to the general public particularly the poor. Public Distribution System has been one of the most crucial elements in food policy and food security system in the country.

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 of economic 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, price support for agricultural commodities through Cooperative Wholesale stores, Public Distribution system etc. The office infrastructure has to be improved. The intervention is proposed for creating of infrastructure facilities.

Project components

- Office Infrastructure such as construction of office building at Tiruvanamalai and Thellar blocks.
- Construction of compound wall in all blocks.
- Office building renovation in all blocks except Jawadhuhills.
- Establishment of modern counters at Kilpenathur, Cheyyar, Anakavoor, Vembakam, Vandavasi, Peranamallur, Thellar, and Arni west and Arni blocks.
- Provide generator to Cheyyar, Anakavoor, Vembakam, Vandavasi, Thellar, Arni west and Arni blocks.

Capital Asset Creation

- Godown renovation at all blocks except Chetpet, Pudhupalayam, Peranamllur, and Thellar.

- Establishment of processing unit at Vandavasi.
- Establishment of printing press at Tiruvanamalai.

Budget

It is proposed to incur **Rs. 2258.62** lakh over a period of five years.

Implementing agency

Department of Cooperation will be implementing the project.

Table 4.27 Budget requirement for Co-operative

(Rs. 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
1	Construction of Office Building	B1 and B16	1	13.50	0	0.00	1	46.00	0	0.00	0	0.00	2	59.50
2	Construction of Compound wall	All Blocks	58	543.34	30	314.72	16	219.59	24	241.88	24	247.82	152	1567.35
3	Renovation of Office Building	All Blocks except B7	17	59.41	15	45.35	5	24.55	12	41.61	9	22.05	58	192.97
4	Renovation of Godown	All Blocks except B6, B9, B15,B16	20	122.88	12	68.90	7	63.71	6	20.95	5	34.15	50	310.59
5	Establishment of Processing unit	B14	1	9.59	0	0.00	0	0.00	0	0.00	0	0.00	1	9.59
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 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)	All Blocks	22	65.52	6	17.00	2	6.40	7	18.00	4	11.70	41	118.62
	Total			**814.24**		**445.97**		**360.25**		**322.44**		**315.72**		**2258.62**

Thiruvannamalai-B1, Thurinijapuram-B2, Kilpennathur-B3,Polur-B4, Kalasapakkam-B5, Chetpet-B6, Jawadhu-B7, Chengam-B8, Pudhupalaiyam-B9, Thandarampattu-B10, Cheyyar-B11, Anakkavoor-B12, Vembakkam-B13, Vandavasi-B14, Peranamallur-B15, Thellar-B16, Arni (West)-B17, Arni-B18

Table 4.28 Budget Abstract for Tiruvannamalai District

(₹.in lakhs)

Sl. No	Sectors	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Agriculture	28927.31	28899.18	31688.14	34338.92	37098.63	160952.18
2	Agricultural Research (TNAU)	195.00	235.00	105.00	155.00	35.00	725.00
3	Horticulture	4265.08	4691.59	5160.75	5676.82	6244.50	26038.74
4	Agricultural Engineering	1850.39	1621.44	1626.79	1598.09	1620.39	8317.10
5	Agricultural Marketing	711.36	682.37	530.22	508.02	560.47	2992.44
6	Seed Certification and Organic Certification	23.36	0.00	13.36	0.00	0.00	36.72
7	Animal Husbandry	2482.05	2649.05	2535.05	2351.05	2218.05	12235.25
8	Animal Sciences Research (TANUVAS)	0.00	0.00	0.00	0.00	0.00	0.00
9	Dairy Development	2197.45	14853.45	6465.45	2612.45	2319.45	28448.25
10	Fisheries	0.00	2.00	8.00	120.00	34.00	164.00
11	Fisheries Research (TNFU)	64.76	63.16	13.16	0.26	0.26	141.60
12	Water Resource Organization (PWD)	1880.00	1000.00	60265.00	2030.00	1010.00	66185.00
13	Civil Supplies &Co operation	814.24	445.97	360.25	322.44	315.72	2258.62
	Total	**43411**	**55143.21**	**108771.17**	**49713.05**	**51456.47**	**308494.9**


KARNATAKA
ANDHRA PRADESH
KERALA
SRI LANKA