NATIONAL AGRICULTURE DEVELOPMENT PROGRAMME (NADP)

DISTRICT AGRICULTURE PLAN

NAMAKKAL

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

NATIONAL AGRICULTURE DEVELOPMENT PROGRAMME (NADP / RKVY)

NADP

DISTRICT AGRICULTURE PLAN

NAMAKKAL

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

2017

CONTENTS

LIST OF TABLES

LIST OF FIGURES

Executive Summary

The Namakkal district agriculture plan aims at projecting the requirements for development of agriculture and allied sectors of the district keeping in view the natural resources and technological possibilities in the district. The plan thus, presents the vision for agriculture and allied sectors within the overall development perspectives of the district apart from the financial requirement and the sources of financing the agricultural development plans in a comprehensive way.

A series of sensitization workshops were conducted to sensitize the various line department officials to identify and prioritize the developmental needs of Namakkal district pertaining to agriculture and allied sectors. Based on the baseline information and proposal, the draft action plan was prepared and submitted in the District Collector's meeting on 01.02.2016 under the chairmanship of Namakkal District Collector. The meeting was attended by the scientists from TNAU, officials from line departments and the representatives of other department officials.

Namakkal District comes under the North Western Agro Climatic Zone (Excluding TiruchengodeTaluk) of Tamil Nadu. It is situated in the dividing portion of two watersheds between Cauvery and the Vellar System. Namakkal district experiences semi-arid tropical climate wherein four distinct season viz., South West Monsoon (June-September), North East Monsoon (October-December), Winter Season (January-Febuary) and Summer season (April-May) are experienced. The average rainfall of the district is 776 mm. Nearly 80 per cent of the total rainfall is received during SWM and NEM season. Among these two seasons SWM receives 40 per cent of rainfall and NEM 40.6 per cent.

The source of irrigation is wells, canals and tanks. The well irrigation is the main soruce of irrigation covering 71272 ha. An area of 8868 ha is covered by Canal irrigation. Other sources of irrigations like lift irrigation and odai are 6512 Ha. The groundwater potential of the district is very poor. Most of the blocks comes under category of dark and grey. Only Kollihills and Tiruchengode blocks are classified as white category. The soils found in the district are red loam, lateritic soil, black soil, sandy coastal alluvial, red sandy soil and pockets of clay loan.

The district is endowed with a very good base of agro industries. The poultry and allied industries, sago manufacturing industries, coconut shell powder industries and the textile industries are well known for their integration and efficiency.

The cropping pattern followed in Namakkal district for the past three years indicates that the major crops grown are fodder crops, groundnut, tapioca, sugarcane, cholam, paddy, pulses and maize. There is a general decline of area under paddy and cholam and there is an increase in the area under maize, fodder cholam, tapioca, horticultural crops and sugarcane crops over the years. The shift in area towards annual and long duration crops perhaps might be due to the increased water and labour scarcity faced by the farmers in the district where the average rainfall was consistently lower in the these years. The share of rainfed area in the total area is very high for all these crops except for paddy.

In the wet lands, sugarcane, banana and betel vine are the annual crops grown and paddy and gingelly are the rotation crops in double crop sequence. In the garden land, tapioca, sugarcane, maize are grown in single crop sequence and in the double crop sequence, paddy and cholam with groundnut, gingelly, cotton and pusles are grown. In dry land situation groundnut, fodder cholam, pulses and cholam are grown.

Paddy and Pulses have the highest yield gap followed by millets, cotton, oilseeds and sugarcane. Department wise strategies and the related interventions are devised to counter and reduce the gap. SWOC analysis was also conducted and presented to know the real situation of the district and the results paved way for further scope for development.

Line departments of Namakkal district namely, Agriculture, Horticulture, Agricultural marketing and Agribusiness, Agricultural Engineering, Animal Husbandry and Dairy Development and Fisheries have participated in preparing the block level Agricultural plan as well as overall plan for Namakkal district. Various issues were identified, department wise and prioritized for preparation of specific proposals for the next five years. The total budget outlay for the proposed projects worked out to ₹. **276914.82 Lakh**. The Department wise requirement is presented in the following table.

Budget Abstract forNamakkal district

(₹in Lakh)

Sl. No.	Components	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Agriculture	1833.94	3858.90	3103.99	1763.67	1742.63	12303.06
2	Horticulture	41831.00	34992.82	42202.76	42388.75	42620.00	204035.00
3	Agricultural Engineering	2927.93	3171.44	3129.71	3044.41	3026.16	15299.63
4	Agricultural Marketing	2566.73	663.79	1893.44	2080.91	2590.09	9794.95
5	Seed Certification & Organic Certification	5.00	16.46	3.10	3.10	3.10	30.76
6	Animal Husbandry	1754.60	1317.25	1191.90	1031.90	1036.55	6332.20
7	Animal Science Research (TANUVAS)	916.79	916.79	192.39	267.79	775.79	3069.55
8	Dairy Development	2434.75	2519.75	11459.75	2484.75	2484.75	21383.75
9	Fisheries	175.59	170.59	176.59	183.59	165.59	871.96
10	Fisheries Research (TNFU)	64.76	63.16	13.16	0.26	0.26	141.60
11	Water Resource Organization	0.00	90.00	99.00	90.00	325.00	604.00
12	Civil Supplies & Co-Operation	1046.72	863.84	646.04	217.67	274.10	3048.36
	Grand total	**55557.81**	**48644.79**	**64111.83**	**53556.80**	**55044.02**	**276914.82**

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 Namakkal district, was done by gathering the secondary data about district and block with respect to rainfall, land use pattern, demography, livestock, machinery, infrastructure so far created etc. In addition, the constraints in production and marketing of agricultural and livestock produce, crop/animal production and gaps between expected and actual yield and the reasons for such gaps were also discussed among the various stakeholders and incorporated in this plan document. Besides, in consultation with the line department officials and based on the data received from respective districts, a detailed year-wise action plan i.e. from 2017-18 to 2021-22 with physical and financial implications were presented.

CHAPTER II

PROFILE OF THE DISTRICT

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

2.1 Namakkal district at a glance

Namakkal district, a newly created district, is functioning from 01.01.1997. The district is bounded by Salem on the North, Karur on the South, Trichy on the east and Erode on the west. ‘Thiruvaraikkal' as it is mentioned in the inscription found on the north west and south walls of the deserted temple on the hill is now called as an "Egg City". Since it produces major part of Eggs to resent other parts of our country, and is also called "Poultry Town" for it contains quite a number of poultries.

The Rock Fort in Namakkal is a special feature of the town. The fort covers an area of one and half acres of flat surface and is accessible from southwest by a flight of narrow steps. Namakkal was in the hands of Attilcula King called Gunasila who had marriage with Pallava King. Later the Taluk was overrun by the Cholas in the KonguMandalam which has over run by the cholas in the 9th Century and passed on to Vijaynagar under the Viuroyultry of Madura Namakkal was held by Killedhar (Caption) on Hyder Ali until it was captured by the British in 1768.

The Northern portion of Namakkal are mountainous and the southern area flat. The Chief rivers are Cauvery, Aiyaru, Kararipottan Aaru and Thirumanimuthu Aaru. The Cauvery flows south and southeast hugging the border.

The Garden of Namakkal District is Kolli Hills which is governed by panchayat union comprising 14 village panchayats are called "Nadu" with an area of 371.03 Sq. Kms, and 1300Mtrs, height above sea level. In Kolli Hills the malaiyalis are the pre historic tribals. Walvill On' one of the kadaiyeluvallal hold ruled this hilly area. The famous siva temple Arappaleeswara was originally a retreat of the jam and monks prior to its Hindusation.

Namakkal finds a place of importance in the map of India because of its Lorry Body Building Industry, a unique feature of the town. More than 150 Lorry Body Building Work Shops with a number of subsidiary industries of auto body works are operating since 1960's. There are 7698 Lorries, 1879 Trailors and 652 L.P.G. tanker Lorries in Namakkal District. Therefore it is also called as Transport City'.

2.2 Area, Location and Geographical features

The geographical area of the district is 3404 square kilometer which lies between 11.0^0 and 11.36^0 North latitude and 77.28^0 and 78.30^0 East longitude.

Table 2.1 Taluks, Blocks and Agricultural Divisions in the Namakkal Districts

Name of the Taluks (5)	Name of the Blocks (15)	Name of Agrl. Division (15)
Namakkal	Elacipalayam	Elacipalayam
Rasipuram	Erumapatty	Erumapatty
Tiruchengodu	Kabilarmalai	Kabilarmalai
Paramathi-Velur	Kollihills	Kollihills
Kolli Hills	Mallasamudram	Mallasamudram
	Mohanur	Mohanur
	Namakkal	Namakkal
	Namagiripet	Namagiripet
	Puduchatram	Puduchatram
	Paramathy	Paramathy
	Pallipalayam	Pallipalayam
	Rasipuram	Rasipuram
	Sendamangalam	Sendamangalam
	Tiruchengode	Tiruchengode
	Vennandur	Vennandur

Source : Namakkal Cencus of India 2011

2.3 Administrative Structure of Namakkal district

For Administrative purposes the district has been divided into 2 Revenue Divisions, 5 Taluks, 30 Revenue firkas. For local arrangements, the district has been divided into 5 Municipalities, 15 Panchayats Unions, 19 Town Panchayats and 322 Village Panchayats. Thiruvaraikkal as it is mentioned in the inscription found on the North West and south walls of the deserted temple on the Hill.

Fig. 1 District Map of Namakkal District

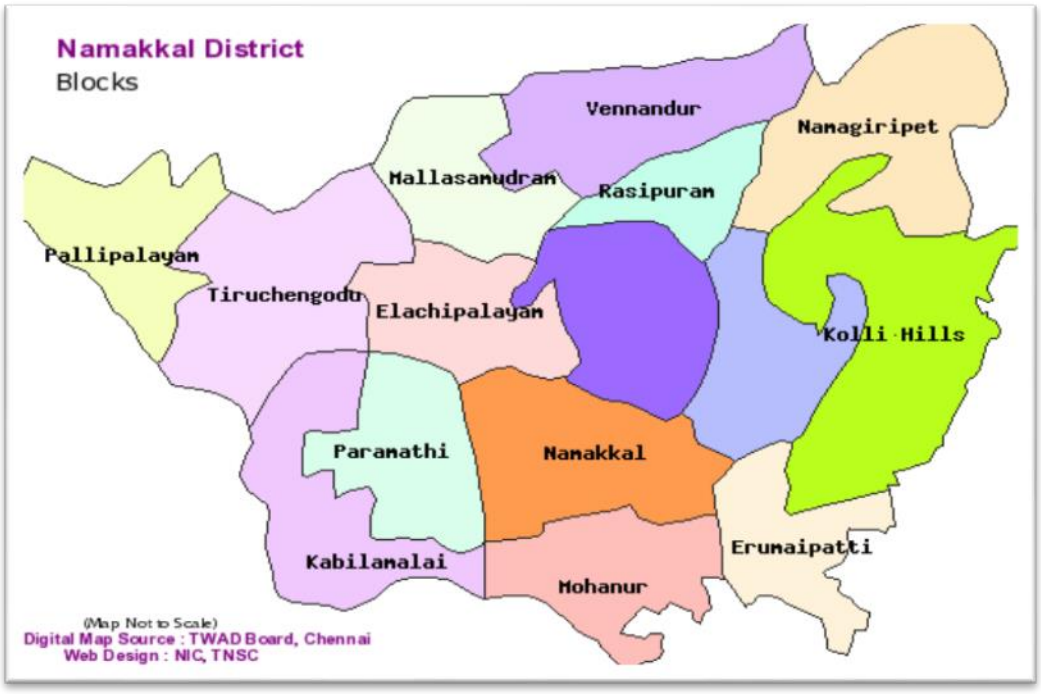


Fig.2 Blocks in Namakkal District

2.4 Demographic profile

2.4.1. Population

The rural and urban populations of the district are presented in Table 2.2. The population pattern indicated that majority of the people were living in rural areas of the district. Similarly, the male outnumbered the female in the district.

Table 2.2 Population details

Namakkal	Population		
	Persons	Male	Female
Total	1,726,601	869,280	857,321

Source : Namakkal Census of India 2011

2.4.2 Literacy Level

Average literacy rate of Namakkal in 2011 were 74.63 compared to 67.41 of 2001. If things are looked out at gender wise, male and female literacy were 82.64 and 66.57 respectively. For 2001 census, same figures stood at 77.56 and 57.00 in Namakkal District. Total literate in Namakkal District were 1,176,131 of which male and female were 653,312 and 522,819 respectively. In 2001, Namakkal District had 903,802 in its district. The block wise literacy level is presented in table 2.3

Table 2.3 Literacy Level in Namakkal District

Description	2011	2001
Actual Population	1,726,601	1,493,462
Male	869,280	759,551
Female	857,321	733,911
Population Growth	15.61%	12.91%
Area Sq. Km	3,420	3,420
Density/km2	505	439
Proportion to Tamil Nadu Population	2.39%	2.39%
Sex Ratio (Per 1000)	986	966
Child Sex Ratio (0-6 Age)	914	889
Average Literacy	**74.63**	**67.41**
Male Literacy	**82.64**	**77.56**
Female Literacy	**66.57**	**57.00**

Total Child Population (0-6 Age)	150,699	152,685
Male Population (0-6 Age)	78,754	80,809
Female Population (0-6 Age)	71,945	71,876
Literates	**1,176,131**	**903,802**
Male Literates	**653,312**	**526,412**
Female Literates	**522,819**	**377,390**
Child Proportion (0-6 Age)	8.73%	10.22%
Boys Proportion (0-6 Age)	9.06%	10.64%
Girls Proportion (0-6 Age)	8.39%	9.79%

Source : Namakkal Census of India 2011

Table 2.4 Literacy Level in Namakkal District

District	Population		
	Persons	Male	Female
Nammakal	1,176,131	6,53,312	5,22,819

Source : Namakkal Cencus of India 2011

2.4.3 Working Population

There were a total of 898,245 workers, comprising 158,473 cultivators, 253,726 main agricultural labourers, 38,797 in household industries, 447,249 other workers, 59,093 marginal workers. The detail of working population is presented in table 2.5.

Table 2.5 Working population

Workers and Non Workers	Category	Number	Percentage
Total Workers (Main and Marginal)	Persons	898,245	52.02
	Males	531,463	61.14
	Females	366,782	42.78
(i) Main Workers	Persons	839,152	48.60
	Males	505,257	58.12
	Females	333,895	38.95
(ii) Marginal Workers	Persons	59,093	3.42
	Males	26,206	3.01
	Females	32,887	3.84
Category of Workers (Main & Marginal)			
(i) Cultivators	Persons	158,473	17.64
	Males	84,711	15.94

	Females	73,762	20.11
(ii)Agricultural Labourers	Persons	253,726	28.25
	Males	111,879	21.05
	Females	141,847	38.67
iii)Workers in household industry	Persons	38,797	4.32
	Males	18,820	3.54
	Females	19,977	5.45
(iv) Other Workers	Persons	447,249	49.79
	Males	316,053	59.47
	Females	131,196	35.77

Source : Namakkal Census of India 2011

2.5 Topography

Namakkal district is bounded by Salem district on the north; on the east by Attur taluk of Salem district, Perambalur and TiruchirapallI districts by Karur District on the south and on the west by Erode district.(Namakkal District profile, South India Online) Namakkal District comes under the North Western Agro climatic zone of Tamil Nadu. It is situated in the dividing portion of two watersheds between Cauvery and the Vellar System with the Taluks of Attur, Rasipuram and Namakkal on the East and Salem, Omalur and Mettur on the West. Tiruchengode taluk alone is placed under Western Agro- climatic zone Namakkal District, Govt of Tamil Nadu Besides the above two zones, Kolli and a few isolated hills and ridges are scattered over Namakkal, Rasipuram and Tiruchengode and along with the valleys and rolling hills, make up the characteristic topography of the district.

Namakkal district forms part of the upland plateau region of Tamil Nadu with many hill ranges, hillocks and undulating terrain with a gentle slope towards east. The prominent geomorphic units identified in the district through interpretation of Satellite imagery are 1) Structural hills, 2) Bazada zone, 3) Valley fill, 4) Pediments, 5) Shallow Pediments and 6) Deep Pediments. A number of hill ranges are located in the eastern and northeastern parts of the district, whereas the southern, western and northern parts of the district are plain to undulating, dotted with a few isolated hillocks. The important hill ranges in the district are Kollimalai hills, Bodamalai hills, Naraikinaru hills and Pachamalai hills. The highest peak in the district is the Kollimalai hill peak with an elevation of 1293 m above MSL. Other important peaks are Kedda Malai (1284 m) and Melur hill in the Bodamalai hill range

2.5.1 Soil type

The soils of Namakkal district can be broadly classified into 5 major soils types viz., Red Soil, Black Soil, Brown soil, Alluvial and Mixed Soil. Major part of the district covered by Red Soil. Block soils are mostly seen in Namakkal taluk. Brown Soil occupies only a small portion of Tiruchengode taluk and the Alluvial Soil is seen along the river courses in Namakkal, Paramathi and Tiruchengode taluks. Mixed soil is the second major soil type occurring 12 per cecnt all the taluks of the districts.

Table 2.6 Soil type in Namakkal District

Sl.No.	Soil Type	Per cent	Area (ha)
1.	Red Soil	77	179740
2.	Alluvial Soil	6	14005
3.	Brown Soil	5	11671
4.	Mixed Soil	12	28012.57
	Total	**100.00**	**233428.57**

Source: *Season and Crop Report (2014-15), Department of Economics and Statistics, Government of Tamil Nadu. Figures in parentheses denote percentage to total annual rainfall.*

From the above table inferred that red soil occupied the major portion of 1,79,740 ha which accounts 77 per cent of the total area followed by alluvial and brown soil, accounted 14,005 ha and 11,671 ha respectively. Area under different soil series in Namakkal district are presented in the Table2.7.

Table 2.7Distribution of Soil

Sl.No	Type of Soil	Places in District
1.	Red Loam	Namakkal,Elachipalayam,Puduchatram,MallasamudRam, Rasipuram,Tiruchengode,Paramathi & Parts of Palliplalayam
2.	Lateritic Soil	Kollihills
3.	Black Soil	Erumapatti,Kabilaramalai,Mohanur,Namagiripet& Parts of Pallipalayam
4.	Sandy Coastal Alluviam	Kabilarmalai
5.	Red Sandy Soil	Puduchatram
6	Clay Loam	Sendamangalam,Vennandur,Erumapatti

Source: *Season and Crop Report (2014-15), Department of Economics and Statistics, Government of Tamil Nadu. Figures in parentheses denote percentage to total annual rainfall.*

Table 2.8 Namakkal District Soil Series

Sl.No	Soil Series	Symbol	Area (ha)	% of the Total Area
1	Irugur	Igr	28,220	8.07
2	Tulukkanur	Tlk	1,34,196	38.38
3	Pilamedu	Plm	30,930	8.84
4	Somayyanur	Smy	4,599	1.31
5	Upparapatti	Upi	10,968	3.14
6	Pallipalayam	Ppm	6,292	1.80
7	Mallasamudram	Msm	1,294	0.37
8	Chittalandur	Chl	11,654	3.33
9	Pichanur	Pch	550	0.16
10	Palladam	Pld	10,097	2.89
11	Palathurai	Pth	8,178	2.34
12	Vellalur	Vlr	20,934	5.99
13	Hill Soils	-	49,922	14.28
14	Soil Associations	-	6,663	1.91
15	Miscellaneous Land Type	Mlt	974	0.28
16	Forest and Water Bodies (unsurveyed)	-	24,200	6.91
	Total		**3,36719**	**100.00**

Source: *Season and Crop Report (2014-15), Department of Economics and Statistics, Government of Tamil Nadu. Figures in parentheses denote percentage to total annual rainfall.*

2.6 Climate Condition and Rainfall

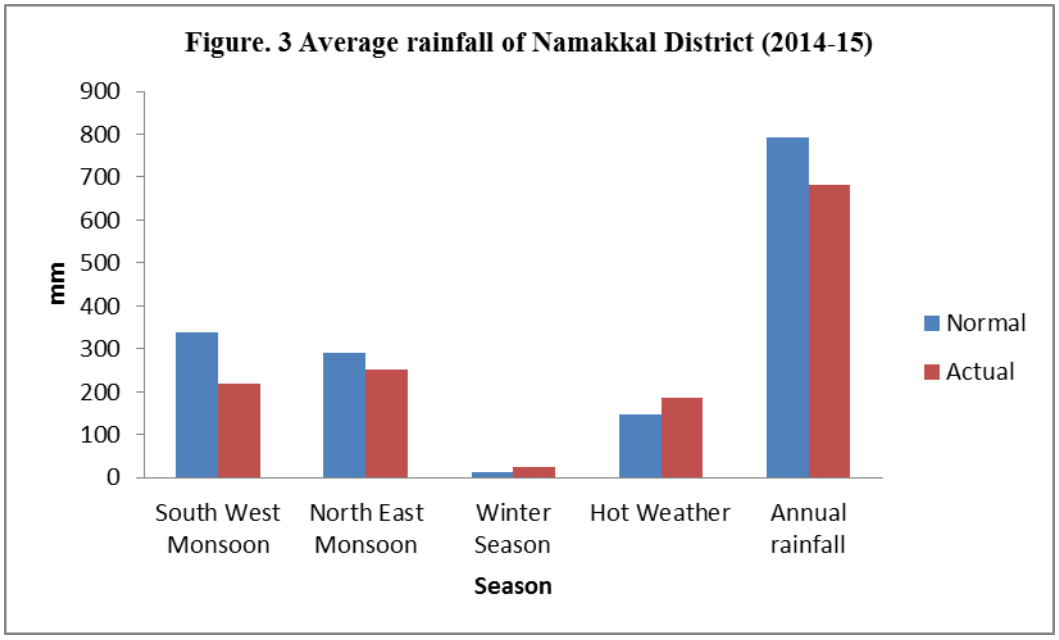
Rainfall is an important climatic factor influencing the agriculture production. It is also prime source of production for rainfed farming and ground water recharge. Namakkal district gets rainfall from both monsoons. The rainfall pattern of the Namakkal district is presented in the Table 2.9and Figure3. The Namakkal district receives high rainfall (36.85 per cent) in north east monsoon followed by south west monsoon (32.18 per cent).

Table2.9 Monthwise / Season wise rainfall distribution in Namakkal District

Sl.No.	Season / Month	2014-2015	
		Actual	Normal
South West Monsoon			
1	June	35.7	44
2	July	34.8	68
3	August	67.3	97.4
4	September	81.9	129.9

	Total	**219.7 (32.18)**	**339.3**
North East Monsoon			
5	October	195.5	156.8
6	November	44.8	98.8
7	December	11.3	36
	Total	**251.6 (36.85)**	**291.6**
Winter Season			
8	January	24.5	6.5
9	February	1.1	7.4
	Total	**25.6 (3.75)**	**13.9**
Hot Weather			
10	March	2.7	12.7
11	April	107.8	44.1
12	May	75.4	91.8
	Total	**185.9 (27.23)**	**148.6**
	Annual rainfall	**682.8**	**793.4**

Source: *Season and Crop Report (2014-15), Department of Economics and Statistics, Government of Tamil Nadu. Figures in parentheses denote percentage to total annual rainfall.*



2.7 Land

The land use pattern of the Namakkal district is presented in the Table 2.10 and Figure 4. The total geographical area of the district is 3.36 Lakh hectares. The current fallow and other fallow in the district were 46029 and 9293 hectares respectively. Since the district is having more than 55,000 hectares of fallow lands, there is an opportunity to increase cultivable area by improving fallow lands in the district. The net sown area was 1, 59,001 ha and it accounted 47.22 per cent of total geographical area.

Table 2.10 Land Use Pattern (2014-2015)

Sl.No	Particulars	2014-15	per cent
1	Geographical Area	336719	100.00
2	Forest	43909	13.04
3	Barren & Unculturable Area	24539	7.29
4	Land Put to Non-agricultural Uses	38755	11.51
5	Permanent Pastures & Other grazing lands	6664	1.98
6	Misc.tree crops & groves not incl. in the net area sown	3769	1.12
7	Current Fallow	46029	13.67
8	Other Fallow	9293	2.76
9	Net area sown	159001	47.22
10	Area sown more than once	65895	19.57
11	Gross area sown	224896	66.79
	Total	**959469**	

Source: *Season and Crop Report (2014-15), Department of Economics and Statistics.*

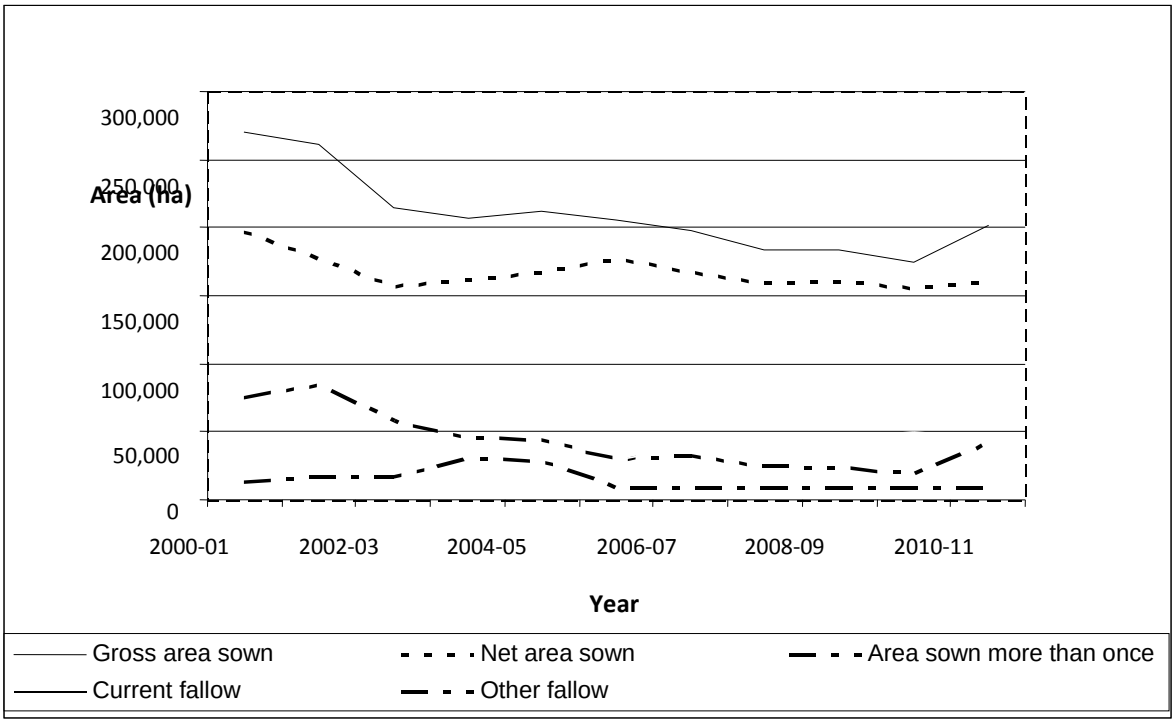


Fig.4 Land Use Pattern of Namakkal District

Land use pattern of the different blocks of the district is presented in Annexure II. Current fallow and other fallows of Namagiripettai, Erumapatti, Pallipalayam and Namakkal were more than five thousand hectares. Further, the cropping intensity was also less than 110 percent in Pallipalayam, Kabilarmalai, Paramathivelur and Tiruchengodu blocks of the district. Hence, there is a scope for increase the crop acreage and intensity among these blocks of the district.

2.8 Land Holdings Pattern

Size of operational holding is an important factor to determine farm mechanization and farm efficiency. Average operational holding by different size group of farmers and institutions are presented in Table 2.11. It could be inferred from the table that nearly 65.04 per cent of the farmers were marginal farmers and 21.32 percent were small farmers in the district. The average size of holding of all size classes was nearly one hectare. Hence, it is concluded that the district is predominantly covered by marginal and small farmers.

Table 2.11 Number and Average Size of Holding by size groups in Namakkal district (2014-15)

Sl. No	Size of Holdings (hectares)	Individual Holdings		Institutional Holdings		Total Holdings	
		Numbers	Average Size (ha)	Numbers	Average Size (ha)	Numbers	Average Size (ha)
1.	Marginal (<1)	136059 (65.04)	0.42	10 (29.41)	0.48	136069 (65.03)	0.42
2.	Small (1-2)	44603 (21.32)	1.42	10 (29.41)	1.61	44613 (21.32)	1.42
3.	Semi-medium (2-4)	22627 (10.82)	2.70	6 (17.65)	2.72	22633 (10.82)	2.70
4.	Medium (4-10)	5721 (2.73)	5.35	6 (17.65)	5.69	5727 (2.74)	5.35
5.	Large (>10)	193 (0.09)	14.20	2 (5.88)	10.48	195 (0.09)	14.16
6.	All Size classes	209203 (100.0)	1.03	34 (100.0)	2.72	209237 (100.0)	1.03

2.9 Cropping Pattern

Sugarcane, Betelvine, Tapioca are grown as single crop. Betalvine sowed during June – July whereas Tapioca sown in December. Sugarcane sown during Dec – Jun. Paddy & Millets are grown as double crops in irrigated areas. Paddy is sown in Aug –

September, millets or pulses sown in February as a second crop. Dry land single crops: Millets are sown in May – June and pulses are sown in August – September.

Table 2.12 : Cropping Pattern of the Nammakkal District

Sl.No	Cropping Pattern
1	Command Area (Mettur East Bank Canal Area) Paddy (September- October To December – January)- Gingelly (January-February To April – May) Sugarcane (October – November To August- September)
2	Other Canal Area Paddy(June – July To September – October) – Sugarcane (August – September To September –October)
3	Tank Fed Area Sunflower/Cotton(June –July To September – October)– Paddy (October – November To February –March) Paddy (October –November To February – March)
4	Well Irrigated Areas Groundnut/Sunflower/Millets (June – July To September – October) - Paddy
	(October –November To February –March) Millets/Pulses (February – March To May – June)
	Paddy(August-September To December- January)- Groundnut/Millets/(January-February To April – May)
	Paddy (August – September To December – January)- Cotton (January – February To June July)
	Sugarcane (October – November To September – October)
	Millets (August – September To December – January) Millets (Maize)- January – February To May – June)
	Millets (June-Sep)- Onion (Nov- Jan)
	Tapioca (Dec- Nov.)
	Banana – June Planting.
5	Rain Fed Areas
	Pulses (Green gram) (April-May To June –July) – Millets (July –August To November –December)
	Groundnut (May – June To September –October)–Millets (October – November To December – January)
	Groundnut (May – June To September – October)– Pulses (October –November To December – January)
	Groundnut (August – September To December – January)
	Tapioca (Dec- Nov)
6	Kolli Hills
	Paddy (May –June To November – December)- Paddy (December –January To March –April)
	Tapioca (Dec- Nov)
	Coffee (Perennial)
	Pine Apple (June Planting)
	Hill Banana, Red Banana
	Pepper (Perennial)

2.9.1 Major crops grown

The cultivation generally depends on monsoon rains, wells and tanks. Nearly 90 percent of the cultivated area is under food crops. The principal cereal crops of this district are paddy, cholam, cumbu and ragi. Panivaragu, Kuthiraivali, Samai, Varagu and Thinai are some of the millets cultivated. Amongpulses, the major crops are red gram, blackgram, greengram and horsegram.

Among oil seeds groundnut, castor and gingelly (sesame) occupy important places. Of the commercial crops, sugarcane, cotton and tapioca are some of the important crops. Tapioca is used for the manufacture of sago.

Table 2.13 Area under major crops (2014-15)

(in Ha)

Sl. No.	Crops	Area (ha)	Triennium ending 2014-15
1	Paddy	10416	8380.333
2	Cholam	85992	76375.33
3	Maize	10926	9802
4	Green gram	6860	6870.333
5	Groundnut	28854	27656.33
6	Coconut	8237	7830
7	Cotton	2365	2336
8	Tapioca	17685	16354.33
9	Sugarcane	16849	17897.33
10	Turmeric	2205	2255.667
11	Banana	1299	1596.333
12	Mango	2540	2504.667
13	Onion	1869	1749.333
	Total	**196097**	**181608**

Source: *Season and Crop Report (2014-15), Department of Economics and Statistics.*

Table 2.14 Block wise Area under different crops in Namakkal District 2014-15

(in ha)

Sl.No	Block	Paddy	Millets	Pulses	Oil seeds	Cotton	Sugar Cane	Total
1	Namakkal	150	5600	700	1500	150	140	8240

Sl.No	Block	Paddy	Millets	Pulses	Oil seeds	Cotton	Sugar Cane	Total
2	Puduchatram	50	8000	3800	1900	20	40	13810
3	Sendamangalam	1900	7100	500	900	75	1600	12075
4	Erumapatty	2200	7500	300	1400	100	200	11700
5	Mohanur	2150	7300	600	1000	0	1400	12450
6	Kollihills	1250	400	100	0	0	30	1780
7	Rasipuram	150	6800	1000	1400	250	50	9650
8	Namagiripet	2200	8500	800	600	50	150	12300
9	Vennandur	300	6900	300	800	400	130	8830
10	Tiruchengodu	300	4300	1600	6100	20	3200	15520
11	Pallipalayam	4100	1700	1200	1200	0	3500	11700
12	Elachipalayam	50	5200	1800	6400	400	30	13880
13	Mallasamudram	200	6000	2100	5500	400	30	14230
14	Paramathi	200	5000	900	2500	135	2400	11135
15	Kabilarmalai	800	5100	800	1800	0	5100	13600
	Total	**16000**	**85400**	**16500**	**33000**	**2000**	**18000**	**170900**

Source: *Season and Crop Report (2014-15), Department of Economics and Statistics.*

Table 2.15 Horticulture Crops in Namakkal 2014-15

Sl. No	Crops	Area in Ha.	Production in MT
1	Fruit Crops	5433	533250
2	Vegetable Crops	21036	531665
3	Spices	4080	10689
4	Plantation Crops	1620	11566
5	Flowers	147	387
6	Medicinal Plants	59	163
	Total	**32375**	**1087720**

Source: *Season and Crop Report (2014-15), Department of Economics and Statistics.*

2.10 Sources of Irrigation

Water is an important determinant factor for production of crops in agriculture sector. Intensive and extensive cultivation of land depend mainly on the availability of water. Medium and minor irrigation schemes are implemented in the state for augmenting

the irrigation for agriculture. Various sources of irrigation in the state are canals, tanks, tube wells and open wells.

Table 2.16Taluks in Wells used for Irrigation Purpose

Sl. No.	Taluk	Canals	Length (Km.)	Wells used for irrigation purpose only	Wells used for Domestic purpose only	Tanks (Nos.)
1	Namakkal			28586	2023	85
2	Rasipuram			17194	1027	40
3	Tiruchengode	1	25	16725	5525	54
4	ParamathiVelur	2	50	14414	291	80
	Total	**3**	**75**	**76919**	**8866**	**259**

Source: Minor Irrigation Census

The area under different source of irrigation is presented in Table 2.17. Open wells were the major source of irrigation, average gross and net irrigated area by open wells in the district were 73025.33 ha and 53982 ha respectively followed bytube wellsand canals. Average gross area irrigated by tube and canals were 9889 ha and 3583.33 ha respectively.

Table 2.17 Irrigation by Different Sources in Namakkal District during 2014-15

(in ha)

Sl.No.	Particulars		2012-13	2013-14	2014-15	Average
1	Canals	Gross	3114	1053	6583	3583.33
		Net	2510	887	5219	2872.00
2	Tanks	Gross	98	3	0	33.67
		Net	74	3	0	25.67
3	Tube wells / Bore wells	Gross	8355	8480	12832	9889.00
		Net	6962	6729	10306	7999.00
4	Open wells	Gross	65353	74346	79377	73025.33
		Net	51175	55701	55070	53982.00
5	Other Sources	Gross	3805	4062	1087	2984.67
		Net	3444	3172	640	2418.67

Source: *Season and Crop Report (2014-15), Department of Economics and Statistics.*

Table 2.18 Area Irrigated by Crops (2014-15)

Sl.No	Crop	Area (in '000' ha.)
1	Paddy	10363
2	Cholam	16950
3	Cumbu	178
4	Groundnut	5668
5	Sugarcane	16849
6	Cotton	1476
7	Pulses	1884
8	Others	37405.71
	Total	**90773.70**

Source: *Season and Crop Report (2014-15), Department of Economics and Statistics.*

Table 2.19 Consumption of Chemical Fertilizers and Pesticides (2014-15)

Fertilizers (in '000' Tons)				Pesticides		Urea ('000'Tonne)
Nitrogenous (N)	Phosphatic (P2 05)	Potassium (K2 0)	Total (NPK)	Dust (MT.)	Liquid (Lit.)	
8392	1859	2861	13112	45.00	24	7850

Source: Joint Director of Agriculture

2.11 Agricultural Machineries and Implements

The requirement of adequate number of machineries like oil engine, electric motors, paddy translators, tractors and combined harvesters and major implements like hand and power operated sprayers, weeders and so on is to be assessed after enumerating the number of such machineries and equipments available at present with the farmers of the district. The provision of additional machineries and equipments is strengthened in phased manner in the next 10 year period considering the demand for them. The custom hire centers for leasing out agricultural machineries like combined harvesters and tractors to farmers, especially marginal and small farmers, may also be established in every block of the district.

Table 2.20 Agricultural Implements and Machinery

Sl.No.	Item	2014	2013
1.	Ploughs		
	a) Wooden	9864	12614

Sl.No.	Item	2014	2013
	b) Iron	3967	4658
	c) Total	13561	17272
2.	Water Pumps for Irrigation Purpose		
	a) Worked by Oil Engine	56	215
	b) Worked by Electric Power	77160	77678
	c) Total	77216	77893
3.	Tractors		
	a) Government	89	125
	b) Private	88206	87624
	c) Total	88295	87749
4.	Sugarcane Crushers		
	a) Worked by Power	543	567
	b) Worked by Bullocks	-	-
	c) Total	543	567
5.	Oil Ghanis		
	a) 5 Kg. & above	-	-
	b) Less than 5 Kg.	-	-
	c) Total	-	-

Source: Based on Agricultural Census

2.12 Regulated Markets

Regulated markets in Namakkal district are presented in Table 2.21. There are sixregulated markets in the district viz., Namakkal, Rasipuram, Tiruchengodu, Namagiripettai, Paramathi-Velur and Cholakkadu. Regulated markets in Namakkal district are functioning under Salem district market committee. Two regulated markets are functioning in their own buildings and rests are operating in rented buildings. Currently, storage facilities are available only in Namagiripettai regulated market. The construction of market yard and cold storage facilities are under progress in Paramathi-Velur regulated market. Banana ripening centre is present in Mohanur block of the district. Regulated markets in the districts can be strengthened to increase the agricultural production in the district.

Table 2.21 Regulated markets in Namakkal district

Sl. No	Market	Market yard	Storage Godown	Cold storage
1.	Namakkal	Rented Building	-	-

2.	Rasipuram	Rented Building	_	-
3.	Namagiripettai	1097 Sq.ft	25 tonnes	2000 tonnes
4.	Paramathi-Velur	Rented Building	Construction is under progress	
5.	Tiruchengodu	Rented Building	-	-
6.	Cholakkadu	187 Sq.ft	-	-

(Source: Uzhavar Vazhikaatti, Deputy Director (Agricultural Marketing), Namakkal)

2.13 Storage Facilities

Currently, storage facilities are available only in Namagiripettai regulated market. The construction of market yard and cold storage facilities are under progress in Paramathi-Velur regulated Market. Banana ripening centre is present in Mohanur block of the district. Regulated markets in the districts can be strengthened to increase the agricultural production in the district.

2.14 Co-operation

Table 2.22 Co-operation

Sl. No	Type of Societies	No. of Societies	Member ship	Share Capital/ Working Capital	Loans Advanced (Outstanding and overdue)	No. of Employees
1	PACB	164	309030	3028.38	63285.70	786
2	FSCS	1	9844	63.93	4191.49	8
3	Co-op Urban Bank	5	87412	557.30	18252.60	101
4	PARD	7	37098	196.48	1818.93	17
5	PAP Coop Marktg.Society	3	105601	29.21	16177.77	332
6	Emp. Co-op Thrift & Credit Society	30	8655	821.65	7371.59	22
7	Lift. Irrign. Co-op. Society	14	7095	55.93	-	7
8	Dist Co-op Printing Press	1	249	8.11	-	10
9	Dist. Co-op. Union	1	955	-	-	1

Sl. No	Type of Societies	No. of Societies	Member ship	Share Capital/ Working Capital	Loans Advanced (Outstanding and overdue)	No. of Employees
10	Dist Consumer Cooperative whole sale store	1	235	15.80	-	22
11	Urban Credit Societies	1	3549	4.814	658.10	3
12	LAMP	3	15114	79.06	1774.78	31
13	Automobile Store	1	639	4.54	-	1
14	Primary Co-op Stores and Students Co-op Stores	81	6716	2.08	-	6
	Total	**313**	**592192**	**4867.28**	**113530.96**	**1347**

Source: *Season and Crop Report (2014-15), Department of Economics and Statistics.*

Table 2.23 Namakkal Co-operative Sugar Mills LTD Mohanur

1	Location	The Salem Coop. Sugar Mills is situated on the River bank of Cauvery in Mohanur Block at a distance of 20 Kms. From Namakkal, which is the nearest town.		
2	Extent of the mill	Sugar factory located in an extent of 148 acres of Pettapalayam Village of Mohanur Block, Namakkal District. It includes residential quarters, Matricultaion School, Polytechnic College and Distillery Unit.		
3	Area of operation	The area of operation of the mill comes in three following Dist.		
		District	**Taluk**	**No.officials**
		1. Namakkal	Namakkal P.Velur Tiruchengode Rasipuram	11 (full) 4 (full) 1(part) 2 (Villages) 4 (full) 1 (full)
		2. Salem	Salem	3 (full)
		3. Trichy	Thottiam Musiri Thuraiyur	3 (full) 2 (full) 1 (part) 2 (villages) 1 (full)
	Total	**3**	**8**	**31**
4	Crushing	The mill commenced its maiden crushing on 7.4.1964 with a		

	capacity and Date of commencement	crushing capacity of 1000 M.Ts of cane per day.The Crushing capacity was enhanced from 1000 M.T to 1750 M.T per day from 1973-1974 crushing season and subsequently enhanced from 1750 to 2500 M.T from 1977-1978 crushing season and modernization done during 1993-94 (Mill House D.C Drive Motor) and 2013-2014 (Evaporator modernization) crushing season with the approved total man power strength of 506 for crushing unit.
5	Distillery Unit	The Government of India issued license to establish distillery unit during the year 1990 with a production capacity of 55,000 lits. of RS and 10,000 lits. of ENA per day with the approved total man power strength of 47 for distillery unit.
6	Ethanol plant	The Govt. of Tamil Nadu has also issued license to establish an Ethanol plant on 17.10.2006. The production capacity of Ethanol plant is 30,000 lits/day by utilising the same man-power approved to the distillery unit.

2.15 Sericulture

2.15.1 Silk Worm Layings and Cocoon Production

Namakkal Farmers are lifting the layings by means of young silk worms through the private young age Silk worm Rearing Centre (CRC) (Rearing from brushing to eight days)

Location of Private CRCS.

- Thangam Young age silk worm rearing centre - M. Kattipalayam, Vennandhur Block.
- SreeKarpagaViruchagam Young age silk worm rearing centre - Panchapalayam, Paramathi block.
- SreeNirmala Young age silk worm rearing centre -Alavaipatti, Vennandhur block.

Namakkal Sericulture Farmers are lifting the silk worm bivoltine hybrid layings from Krishnagiri Govt. granages and cross breed layings from Hosur and Trichy Govt. CB granages. Normally Namakkal Farmers harvesting their cocoons by 70% to 80% and selling their cocoons through Salem and Dharmapuri Govt. cocoon markets.

2.15.2 Silk Reeling

Location of private silk reeling centre	Gandhi Ashiramam, Kuthagoundampalayam Thiruchengode block.
Silk weavers centre loom	There are more than 50 private hand and power loom silk weaving centre located in Rasipuram and Thiruchengode blocks.

Table 2.24 Sericulture in Namakkal District

Name of the Blocks (15)	Area under Mulberry (in Hectares)	Production of Cocoons (In Kg)	Value in Rupees
Elacipalayam	76.34	26874	3548075
Erumapatty	24.18	7832	1067570
Kabilarmalai	56.82	32310	8935750
Kollihills	41.65	10736	1678940
Mallasamudram	68.54	45632	5683710
Mohanur	28.69	11480	3265740
Namakkal	36.52	7654	968735
Namagiripet	98.60	67140	9647260
Puduchatram	34.61	23472	1168790
Paramathy	37.28	16860	4625780
Pallipalayam	4.32	4680	568710
Rasipuram	52.84	19815	2798540
Sendamangalam	39.67	22650	3856820
Tiruchengode	46.12	21670	3457068
Vennandur	106.37	56180	7986030
Total	**752.55**	**374985**	**59257518**

Source: Additional Director, Sericulture, Namakkal 2014-15

2.16 Animal husbandry and dairy development

The livestock population in Namakkal district is presented in table 2.24. Of the total livestock in Namakkal district, poultry population was highest (3.51 crore) followed by goat (3.65 Lakh) and cattle (2.20 Lakh).

Table 2.25 Livestock Population

(Numbers)

Sl. No.	Particulars	Population
1	Cattle	220700
2	Buffaloes	107830
3	Sheep	95484
4	Goats	365326
5	Horses and ponies	79
6	Donkeys	2
7	Camels	2
8	Pigs	11756
	Total Livestock	**801179**
9	Dogs	62499
10	Rabbits	839
	Poultry	
11	Bank yard Poultry	553144

12	Farm Poultry	34639991
	Total Poultry	**35193135**

Source: 19th Livestock Census, 2012.

Table 2.26 Veterinary Institutions

Sl.No.	Name of the Block	Veterinary Institutions		Sub centre	Other Units	Animals treated	Castration performed
		Hospitals	Dispen -saries		Mobile Units		
1	Namakkal	1	2	3	1	53024	2573
2	Mohanur	-	4	3	-	52687	2401
3	Erumaipatti	-	4	2	-	58982	2112
4	**S**enthamangalam	-	3	2	-	4723	2318
5	Kollikills	-	2	3	1	2464	1164
6	Namagiripettai	-	3	4	-	49753	6650
7	Rasipuram	-	4	2	-	28676	1887
8	Venanthur	-	4	4	-	74359	5348
9	Puthuchathram	-	4	3	-	4868	2464
10	Tiruchencode	1	5	3	1	7635	2242
11	Pallipalyam	1	2	2	-	4687	2897
12	Mallasumudram	-	3	2	-	67638	2901
13	Elachipalayam	-	6	1	-	79546	4373
14	Paramthi	1	3	2	-	72687	3522
15	Kabilarmalai	-	3	5	-	60745	33279
	Total	**4**	**55**	**41**	**3**	**622474**	**76131**

Source: District Animal Husbandry Office.

2.18 Poultry development

Poultry City Namakkal has egged on Tamil Nadu as India's second-largest egg producing centre, after Andhra Pradesh. About 80 percent of the layer farms in Tamil Nadu are concentrated in and around Namakkal. The region is a dry, semi-arid zone with little water, so agriculture is not a viable option.Poultry farming in Namakkal took off in the early 1970s with the vision of one farmer who started out with a 100 layer chicken egg farm in a thatched poultry shed. A few farmers started preparing their own feed as well. By the early 1980s, several breeders started rearing poultry under tiled roofs.

There is 3.76 crores of layer and 7.2 lakhs of breeder birds are available in Namakkal district. Poultry enterprises and poultry population is presented in table 2.25.1.

Table 2.26.1 Poultry Enterprises and Poultry Population

Layer	Broiler	Breeder	Desi	Turkey	Quail
3.76 Crores	5.09 Lakhs	7.2 Lakhs	24,000	7,000	15,000

Commercial Layer Farms		Commercial Broiler Farms	
Farm Size	**No.of Farms**	**No.of. Farms**	**No.of. Birds (Rs.in lakhs)**
Below 50,000	758	102	5.09
50,000-1 lakhs	117	-	-
1 lakh-3 lakhs	104	-	-
Above 3 lakhs	9	-	-
Total	**988**	**102**	**5.09**

Source: District Poultry Development Office.

Among the taluk, Namakkal taluk has produced more number of Eggs per day which accounted 13468865 eggs and 10689 persons employed followed by Tiruchencodetaluk. Total egg production in this district is 23944767 and 20473 persons are employed in egg production and this is shown in table 2.26.

Table 2.27Egg Production in Namakkal District

Sl.No	Name of the Taluk	No.of Farms	No.of Birds	Total No of Eggs produced per day	No.of Person Employed (3 Shifts)
1	Namakkal	369	23876875	13468865	10689
2	Rasipuram	123	6176830	3615450	3674
3	Paramathi-Velur	54	3121754	2832647	1630
4	Tiruchencode	148	6798680	4027805	4480
	Total	**696**	**39974139**	**23944767**	**20473**

Source:District Poultry Development Office.

2.19 Fishery

Fisheries are 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 for the people. Tamil Nadu ranks fifth among the states. In Namakkal district, only Kabilarmalai block (20 families) engaging the fishery activities and it is presented in table 2.27.

Table 2.28 Fishery in Namakkal District

Sl.No	Name of the Block	No.of Families engaged
1	Namakkal	NIL
2	Sendamangalam	NIL
3	Erumapatti	NIL
4	Puduchatram	NIL
5	Kolli Hills	NIL
6	Mohanur	NIL
7	Rasipuram	NIL
8	Vennandur	NIL
9	Namagripettai	NIL
10	Paramathi	NIL
11	Kabilarmalai	20
12	Trichencode	NIL
13	Pallipalayam	NIL
14	Mallasamuthiram	NIL
15	Elachipalayam	NIL

Source: Statistical Handbook of Tamil Nadu 2015

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:

3.1 Assessing the trends in area, production and productivity of major crops and projection till the 12th Plan period (2015-16)

3.2 Yield gap analysis for the major crops

3.3 Strategies for agricultural development

3.4 Crop-wise critical technologies for increasing productivity

3.1 Trends in area, production and productivity of major crops

Compound Growth Rate (CGR) tool was used to measure the annual rate of growth in area, production and productivity of major crops cultivated in the district and it was expressed in percentage. The compound growth rate had been estimated using 15 year time series data from 2005-06 to 2014-15. This was owing to the fact that the district was bifurcated from the erstwhile Salem district on 1st January 1999. The equation used to estimate the annual compound growth rate was: $Y_t = ab^te$

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

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

CGR(r) = [Antilog b-1] × 100

where,

Y_t = Area or Production or Yield

a = Intercept

b = Regression coefficient of t

t = Time variable

r = Compound Growth Rate

The following table 3.1 furnished the triennium average of area production and productivity of Namakkal district. Among the crop cultivation, five crops were selected based on percentage share to gross cropped area (i.e. cumulative percentage 80%). There are paddy, tapioca, banana, coconut and rubber.

Table 3.1 Area under major crops in Namakkal District 2014-15 (Triennium average)

(Ha)

Sl. No.	Crops	Area (ha)	Production	Yield
1	Paddy	8380.333	40018.88	4775.33
2	Cholam	76375.33	111227.94	1456.33
3	Maize	9802	68627.07	7001.33
4	Green gram	6870.333	1843.54	268.33
5	Ground nut	27656.33	52049.21	1427.00
6	Coconut*	7830	145439.64	8172.33
7	Cotton	2336	7324.92	355.00
8	Tapioca	16354.33	558734.78	34164.33
9	Sugar cane	17897.33	110796.40	81.67
10	Turmeric	2255.667	10332.46	5013.33
11	Banana	1596.333	52882.79	33157.67
12	Mango	2504.667	17089.34	6823.00
13	Onion	1749.333	18923.12	10817.33
	TOTAL	**181608**	-	-

*In nuts/ha

The trends in area production and Productivity of major crops are presented in Table.3.1. The highest growth rate of area was reported in the crop maize (36.023 per cent), followed by coconut (13.215 per cent), sugarcane (11.370 per cent) and turmeric (6.66 per cent). However, the area growth of food grains and oilseeds crops like paddy (-3.364 per cent), green gram (-9.581per cent), and groundnut (-7.836 per cent) were negative. This trend showed that there was a shift from food grains and oilseeds to the commercial crops in the district.

The production growth rate was significant among the crops like maize (57.899 per cent), coconut (13.569 per cent) and turmeric (9.302 per cent) whereas the growth rate was negative in green gram (-12.120 per cent), groundnut (-5.23 per cent), and paddy (-2.67 per cent). Similar to area trends, tends in production showed that negative growth rates reported in food grains and oilseeds and positive growth rates reported in commercial crops during the study period. The productivity growth of the crops like maize (16.084 per cent), coconut (4.663 per cent), small onion (3.053 per cent), cotton (6.434 per cent) and turmeric (2.470 per cent) were positive and other food grains and oilseeds crops were negative.

The Compound growth rates are shown in Table 3.2

Table 3.2 Compound Growth Rate of Area, Production and Productivity under major crops in Namakkal District during 2000-2015 (% per year)

Sl. No.	Crops	CGR %		
		Area	Production	Productivity
1	Paddy	-3.364	-2.673	0.716
2	Cholam	-1.140	-7.056	-5.984
3	Maize	36.023	57.899	16.084
4	Green gram	-9.581	-12.120	-2.288
5	Gournd nut	-7.836	-5.238	2.822
6	Coconut	13.215	13.569	4.663
7	Cotton	-5.517	4.167	6.434
8	Tapioca	4.883	0.634	-4.051
9	Sugar cane	11.370	5.781	-1.482
10	Turmeric	6.668	9.302	2.470
11	Banana	5.996	7.873	1.772
12	Mango	6.072	7.504	1.349
13	Onion	-3.666	-0.725	3.053

3.2. Projected Area, Production and Yield of the Selected Crops

Existing and projected yield and production based on yield gap analysis are presented in Table.3.3 and projected increase in yield and production for important food crops from 2011-12 to 2022-23 are presented in Table.3.4. The production projection was made based on strategy of keeping area under different crops constant over the years. The yield gap was worked out based on the maximum yield potential of the new varieties and triennium average yield of the crops. The projected production for 2022-23 was made with the objective of achieving the potential yield of the crop in that year with the linear increase in the yield of the crop over the years. The percentage increase in total production in the year 2022-23 over the year 2010-11 ha is also presented. The projected percentage increase in production for sorghum, castor, green gram and turmeric is more than 100 percent. However, it is nearly 40 percent for paddy, coconut and small onion. But, the production potential is very less for tapioca, cotton and groundnut with 9, 10 and 28.21 percent respectively. The growth rate required to narrow down the yield gap of paddy is 2.85 per cent per annum whereas for sorghum and green gram, it is higher than paddy with 9.32 and 4.53 respectively. The growth rate required narrow down yield gap of turmeric and tapioca is nearly 9 per cent. However, it is comparatively lower for groundnut and small onion with 2.12 and 2.04 per cent respectively

Table 3.3 Projected Area, Production and Yield of the Selected Crop

Description	Paddy			Cholam			Maize			Greengram			Groundnut		
	Area	Prod	Yield	Area	Prod	Yield	Area	Prod	Yield	Area	Prod	Yield	Area	Prod	Yield
Compound Growth Rate (%)	-3.364	-2.673	0.716	-1.140	-7.056	-5.984	36.023	57.899	16.084	-9.581	-12.120	-2.288	-7.836	-5.238	2.822
Triennium Average ending	10958	45216	4178	13157	10251	807	7025	44553	6161	4793	2437	530	29576	62479	2116
2012-13	10157	41873	4123	15100	9555	633	15688	128404	8185	2481	1379	565	24426	49569	2030
2013-14	9816	40754	4152	14928	8881	595	21340	202748	9502	2243	1212	552	22512	46973	2087
2014-15	9486	39664	4182	14758	8254	559	29027	320137	11030	2028	1065	539	20748	44512	2146
2015-16	9166	38604	4212	14590	7672	526	39483	505493	12804	1834	936	527	19122	42181	2206

Description	Coconut			Cotton			Tapioca			Sugar			Turmeric		
	Area	Prod	Yield	Area	Prod	Yield	Area	Prod	Yield	Area	Prod	Yield	Area	Prod	Yield
Compound Growth Rate (%)	13.215	13.569*	4.663*	-5.517	4.167	6.434	4.883	0.634	-4.051	11.370	5.781	-1.482	6.668	9.302	2.470
Triennium Average ending	6914	1218	17716	2634	9369	604	25147	852937	33420	19076	2547857	134	3637	29554	7805
2012-13	9624	1584	19290	2198	10027	655	29105	956943	32879	26753	2985021	128	3300	23929	7251
2013-14	10896	1798	20189	2077	10444	698	30527	963012	31547	29795	3157573	127	3520	26155	7430
2014-15	12336	2042	21131	1962	10880	742	32017	969120	30268	33182	3340099	125	3755	28589	7613
2015-16	13966	2320	22116	1854	11333	790	33581	975267	29042	36955	3533177	123	4005	31248	7802

Description	Banana			Mango			Onion		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
CGR	5.996	7.873	1.772	6.072	7.504	1.349	-3.666	-0.725	3.053
Triennium Average ending	2513	109882	43797	2003	10723	5367	2183	30712	14382
2012-13	2823	136225	48251	2066	11139	5391	1945	27085	13923
2013-14	2993	146950	49106	2192	11975	5464	1874	26889	14348
2014-15	3172	158520	49976	2325	12874	5537	1805	26694	14786
2015-16	3362	171001	50861	2466	13840	5612	1739	26500	15238

*Area in Hectares; Production in Tonnes; Yield in Kg/ha (*Denotes growth rates from 2004 to 2011)*

Table.3.4 Existing and projected yield and production of major crops in Namakkal district

Year	Paddy	Sorghum	Green gram	Groundnut	Castor	Cotton	Small onion
Area (Ha)							
2008-09	13909	17385	1835	59329	1875	3090	2292
2009-10	1087	9754	2926	46377	1674	2816	2088
2010-11	14058	19800	6941	76371	2438	2188	1889
Triennium average ending 2010-11**	12885	15646	3901	31126	1996	2698	2090
Projected area for 2022-23	12885	15646	3901	31126	1996	2698	2090
Varieties	CO (R) 48, CO (R) 49, CO (R) 50, ADT (R) 46, ADT (R) 49 &ADT (R) 50	CO (FS) 27, Co(S)28, Co 30 and Hybrid Co 5	Co 6, Co(Gg) 7, Co 8, VBN(Gg) 2, VBN(Gg) 3 & VRM(Gg) 1	COGn 6, VRIGn 7 Co 4, VRI 6 and TMV 13	TMV 5, TMV 6 and Hybrid YRCH 1	Surabi MCU 12, MCU 13 and TCHB 213	Co4 and Co (on) 5
Maximum Potential yield	6100	2400	1000	2500	600^{+}	3.500$^{@\$}$	18000

Year	Paddy	Sorghum	Green gram	Groundnut	Castor	Cotton	Small onion
(Kgs/Ha)*							
Average yield for Triennium average ending 2010-11 (Kgs/Ha)**	4325	741	577	1937	279	3.217[$]	14085
Yield Gap (Kgs/Ha)	1775	1659	423	563	321	0.283[$]	3915
Projected Production for 2022-23 (tonnes)	78598.5	37550	3901	77815	1198	9443[$]	37620
Production for Triennium average ending 2010-11 (tonnes)**	55734.3	11244	1949	60692.3	560	8579[$]	28925
Percentage of increase in production over 2010-11	41.02	234	100.15	28.21	114	10	42

* Based on Crop Production Guide. [+] Intercrop yield. [@]Includes potential of Bt Hybrids, [$] bales of 170 kgs of lint

Year	Maize	Tapioca	Coconut	Sugarcane	Turmeric	Banana	Mango
Area (Ha)							
2008-09	7937	28312	6082	18959	2149	2705	1584
2009-10	5323	26856	6623	19050	2240	2610	1698
2010-11	9097	21549	6654	18445	2946	2002	2012
Triennium average ending 2010-11**	7452	25572	6453	18818	2445	2439	1765
Projected area for 2022-23	7452	25572	6453	18818	2445	2439	1765
Varieties	TNAU maize Hybrid Co 6	H 226, Co 2, Co 3, Co (TP) 4, Mulluvadi-1	VPM 3, ALR 1, ALR 2, West Coast Tall	CoV 92192, Co Si(Sc) 6, Co G (Sc) 5, Co C(Sc) 22	Co 1, BSR 1, BSR 2	Grand Naine, Rasthali, Poovan& Robusta	Bangalora, Banganapalli&Neelam

Year	Maize	Tapioca	Coconut	Sugarcane	Turmeric	Banana	Mango
Maximum Potential yield (Kgs/Ha)*	7400	40000	150[@]	150	25000	50000	8100
Average yield for Triennium average ending 2010-11 (Kgs/Ha)**	5943	35885	102[@]	129.6	7430	44050	5540
Yield Gap (Kgs/Ha)	1457	4115	48[@]	20.4	17570	5950	2560
Projected Production for 2022-23 (tonnes)	55145	1022880	1694[+]	2822700	61125	121950	14297
Production for Triennium average ending 2010-11 (tonnes)**	45452	938170	1152[+]	2440492	18424	107318	9938
Percentage of increase in production over 2010-11	21.33	9.03	47	15.66	232	13.64	30.50

** Based on Crop Production Guide. [@] nuts/tree/year [+]Lakh nuts*

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

Table.3.5 Projected increase in yield and production for major crops from 2011-12 to 2022-23

(Yield: Kgs/Ha, Production: Tonnes)

Year	Paddy		Sorghum		Green gram		Groundnut		Castor		Cotton[$]		Small onion	
	Yield	Prodn	Yield	Prodn	Yield	Prodn	Yield	Prodn	Yield	Prodn	Yield	Prodn	Yield	Prodn
Triennium average ending 2010-11	4325	55734	741	11244	577	1949	1937	60692	279	560	3.217	8579	14085	26131
2011-12	4473	57634	879	13757	612	2388	1984	61751	306	610	3.241	8743	14411	30120
2012-13	4621	59539	1018	15920	648	2526	2031	63212	333	664	3.264	8807	14738	30801
2013-14	4769	61445	1156	18083	683	2663	2078	64672	359	717	3.288	8870	15064	31483
2014-15	4917	63351	1294	20246	718	2801	2125	66132	386	770	3.311	8934	15390	32165

Year	Paddy		Sorghum		Green gram		Groundnut		Castor		Cotton[$]		Small onion	
	Yield	Prodn	Yield	Prodn	Yield	Prodn	Yield	Prodn	Yield	Prodn	Yield	Prodn	Yield	Prodn
2015-16	5065	65257	1432	22409	753	2938	2172	67593	413	824	3.335	8998	15716	32847
2016-17	5213	67163	1571	24572	789	3076	2219	69053	440	877	3.359	9061	16043	33529
2017-18	5360	69069	1709	26735	824	3213	2265	70513	466	931	3.382	9125	16369	34211
2018-19	5508	70975	1847	28898	859	3351	2312	71974	493	984	3.406	9189	16695	34893
2019-20	5656	72881	1985	31061	894	3488	2359	73434	520	1037	3.429	9252	17021	35574
2020-21	5804	74787	2124	33224	930	3626	2406	74894	547	1091	3.453	9316	17348	36256
2021-22	5952	76693	2262	35387	965	3763	2453	76355	573	1144	3.476	9379	17674	36938
2022-23	6100	78599	2400	37550	1000	3901	2500	77815	600	1198	3.500	9443	18000	37620
Required Growth Rate (%)		**2.85**		**9.32**		**4.53**		**2.12**		**7.43**		**0.7**		**2.04**

[$]bales of 170 kgs of lint

Year	Maize		Tapioca		Coconut		Sugarcane		Turmeric		Banana		Mango	
	Yield	Prodn	Yield	Prodn	Yield[@]	Prodn[+]	Yield[$]	Prodn	Yield	Prodn	Yield	Prodn	Yield	Prodn
Triennium average ending														
2010-11	5943	45452	35885	938170	102	1152	129.6	2440492	7430	18424	44050	107318	5540	9938
2011-12	6064	45192	36228	926420	106	1197	131	2470803	8894	21746	44546	108647	5540	9938
2012-13	6186	46097	36571	935189	110	1242	133	2502794	10358	25326	45042	109857	5753	10155
2013-14	6307	47002	36914	943958	114	1287	135	2534785	11823	28906	45538	111066	5967	10531

Year	Maize		Tapioca		Coconut		Sugarcane		Turmeric		Banana		Mango	
	Yield	Prodn	Yield	Prodn	Yield[@]	Prodn[+]	Yield[$]	Prodn	Yield	Prodn	Yield	Prodn	Yield	Prodn
Triennium average ending														
2014-15	6429	47906	37257	952727	118	1333	136	2566775	13287	32486	46033	112275	6180	10908
2015-16	6550	48811	37600	961497	122	1378	138	2598766	14751	36066	46529	113485	6393	11284
2016-17	6672	49716	37943	970266	126	1423	140	2630756	16215	39646	47025	114694	6607	11661
2017-18	6793	50621	38285	979035	130	1468	142	2662747	17679	43226	47521	115903	6820	12037
2018-19	6914	51526	38628	987804	134	1513	143	2694738	19143	46805	48017	117113	7033	12414
2019-20	7036	52430	38971	996573	138	1558	145	2726728	20608	50385	48513	118322	7247	12790
2020-21	7157	53335	39314	1005342	142	1604	147	2758719	22072	53965	49008	119531	7460	13167
2021-22	7279	54240	39657	1014111	146	1649	148	2790709	23536	57545	49504	120741	7673	13543
2022-23	7400	55145	40000	1022880	150	1694	150	2822700	25000	61125	50000	121950	7887	13920
Required Growth Rate (%)		1.82		9.04		3.19		1.22		9.60		1.06		3.15

[@] nuts/tree/year, [+]Lakh nuts, [$] tonnes/ha

3.2.1 Projection on area

Area projection of the predominant crops for the year 2023 based on the growth trends is presented in Table.3.6. The projection results of the crops indicated that the maize would occupy major area in the districts with the share of 60 percent of the gross cropped area followed by sugarcane with 18 percent. Area of the crops like tapioca, sorghum and coconut would be around 11 percent in the gross cropped area of the district. However, area under paddy would be reduced to less than 4 percent in the district. Share other crops would be less than 2 percent in the same period in this district.

Table.3.6 Area projection (2023) for predominant crops in Namakkal district

Crops	Change in area				Projected area	
	1996-97		2008-11		2023	
	Triennium average Area (in Ha)	Triennium Area share of Crops (%)	Triennium average Area (in Ha)	Triennium Area share of Crops (%)	Projected area (in Ha)	Projected Area share of Crops (%)
Paddy	24663.00	15.13	12884.67	6.91	7187	3.39
Sorghum	16798.00	10.30	15646.33	8.39	23793	11.21
Green Gram	5262.67	3.23	3900.67	2.09	3380	1.59
Groundnut	74840.67	45.89	31125.67	16.70	13239	6.24
Castor	11162.30	6.84	1995.67	1.07	307	0.14
Maize	651.00	0.40	7452.33	4.00	128639	60.60
Tapioca	26098.70	16.00	25572.33	13.72	24881	11.13
Coconut	2007.33	1.23	6453.00	3.46	23981	11.30
Sugarcane	9404.00	5.77	18818.00	10.09	38597	18.18
Turmeric	1077.33	0.66	2445.00	1.31	5317	2.50
Cotton	2853.67	1.75	2698.00	1.45	1966	0.93
Small onion	3588.33	2.20	2089.67	1.12	1029	0.48
Banana	2044.67	1.23	2439.00	1.31	3231	1.52
Mango	1321.33	0.81	1764.67	0.95	3236	1.53

3.2.2 Projection of production

Production projection of predominant crops for the year 2023 of Namakkal district is presented in Table.3.7. The production increase would be the highest in tapioca followed by turmeric (867.9 per cent), maize (613.7 per cent), sugarcane (173.53 per cent) and small

onion (18.2 per cent). However, the production growth of the other crops would be negative in Namakkal district during the year 2023.

Table3.7 Projected production (2023) of predominant crops in Namakkal district

(tonnes)

Crops	Triennium Average Production 1996-99	Triennium Average Production 2008-11	Projected production in 2023
Paddy	104913.00	55734.33	25633
Sorghum	23013.30	11244.00	7910
Green gram	4330.00	1949.00	956
Groundnut	125473.00	60692.33	33505
Castor	3293.33	559.67	115
Maize	1210.00	45452.33	2606278
Tapioca	751953.00	938170.33	738018
Coconut	195.33	1152.00	9148
Sugarcane	1348357.00	2440492.33	4696997
Turmeric	4403.33	18423.67	66184
Cotton*	6152.33	8578.66	11679
Small onion	26131.30	28925.33	32262
Banana	54627.30	107317.67	240996
Mango	3584.33	9938.00	53487

* in bales of 170 kgs

3.3. Yield Gap analysis

The yield gap analysis of predominant crops is presented in Table.3.8. The results indicated that the yield gap I i.e., the difference between progressive yield and potential yield, for paddy was 1.15 tonnes per hectare. However, yield gap II i.e., the difference between average yield and progressive yield, for paddy was 1.77 tonnes per hectare. The overall yield gap of paddy i.e., the sum of yield gap I and yield gap II was 2.92 tonnes per hectare. Yield gap of the most of the other cereals was less than one tonne per hectare. In contrast, the overall yield gap of sugarcane was the highest with 20.32 tonnes per hectare. Similar to sugarcane, the overall yield gap of turmeric was 17.52 tonnes per hectare. However, the yield gap of tapioca was comparatively less with 4.12 tonnes per hectare and the yield gap I and II were 1.80 and 2.32 tonnes per hectare respectively. The overall yield gap of cotton

was 0.68 with yield gap I and yield gap of 0.4 and 0.28 bales per hectare respectively. The yield gap I of mango and banana were 3.9 and 10 tonnes per hectare respectively. However, the yieldgap II of the above crops was only 2.56 and 5.50 tonnes per hectare respectively. The yield gap analysis indicated that there is a scope for increasing production of the crops by increasing their productivity in the district.

Table 3.8 Yield gap analysis for predominant crops in Namakkal district

(tonnes/ha)

Crops	Average[1] yield (A)	Progressive[2] yield (B)	Potential [3] yield (C)	Yield Gap I (B-C)	Yield Gap II (A-B)	Overall Yield Gap
Paddy	4.33	6.10	7.25	1.15	1.77	2.92
Sorghum	0.74	1.70	2.40	0.70	0.96	1.66
Greengram	0.58	0.80	1.00	0.20	0.22	0.42
Groundnut	1.94	2.46	2.50	0.04	0.52	0.56
Castor	0.28	0.75	1.00	0.25	0.47	0.72
Maize	5.94	7.10	7.40	0.30	1.16	1.46
Tapioca	35.88	38.20	40.00	1.80	2.32	4.12
Coconut*	120.00	140.00	150.00	10.00	20.00	30.00
Sugarcane	129.68	135.00	150.00	15.00	5.32	20.32
Turmeric	7.48	10.20	25.00	14.80	2.72	17.52
Cotton**	3.22	3.50	3.90	0.40	0.28	0.68
Small onion	14.08	15.30	18.00	2.70	1.22	3.92
Mango	5.54	8.10	12.00	3.90	2.56	6.46
Banana	44.50	50.00	60.00	10.00	5.50	15.50

**Nuts/tree/year, ** bales of 170 kgs of lint [1] Average yield based on crop cutting experiments, [2] Progressive farmer yield based on crop cutting experiment, [3] potential yield of crop based on ART trials*

3.3 Strategies for agricultural development

Strategies suggested for increasing agricultural production in Namakkal district

It could be observed that area growth rates of most of the commercial crops were positive and food grains and oilseeds are negative in the district. Similar to area trends, tends in production showed that positive growth rates for commercial crops and negative growth rates in foodgrains and oilseeds during the study period. The productivity growth of the crops like maize, coconut, small onion, cotton and turmeric are positive and other food grains and oilseeds crops were negative. The agricultural production could be increased either by increase in area or by increase in productivity in the district. The area under crops could be increased by increase in cropping intensity or by converting additional area under cultivation.

Area under paddy could be increased in Pallipalayam block by increasing irrigation intensity. Further, area under pulses could be increased in Namagiripettai and Vennandur blocks of the district. Pulses area could be increased by adopting rice fallow pulse cropping pattern. The area under groundnut and sorghum could be increased in the blocks like Kabilarmalai, Paramathi-Velur and Mohanur. Soils of these blocks are highly suitable for groundnut and sorghum cultivation. Area under cotton could be increased by increasing area in Erumapatti, Senthamangalam and Rasipuram blocks of the district. The castor area coverage could be increased by increasing intercropping in groundnut. Production of maize, coconut, sugarcane and turmeric could be sustained by increasing productivity by implementing critical technology.

Cropping intensity of Pallipalayam, Kabilarmalai, Paramathivelur and Tiruchengodu blocks could be increased by increased irrigation availability. The irrigation intensity of Pallipalayam and Kabilarmalai blocks could be increased by implementing lift irrigation from the river Cauvery. Marketing infrastructure could be strengthened by constructing market yard and godown facilities in the regulated markets.

Crop-wise critical technologies for increasing productivity in Namakkal district

Rice:

Seasons	Varieties/Hybrids
Kar (May - Jun)	ADT 37, ASD 16, ADT 43, CO 47, ADT (R) 45, ADT (R) 47, CO 51, CORH 3
Samba (Aug)	CO 43, TRY 1*, TRY (R) 3*, CO (R) 48, CO (R) 49, CO (R) 50, ADT (R) 46, ADT (R) 49, ADT (R) 50, TNAU Rice CO 4
Navarai (Dec - Jan)	ADT 37, ASD 16, ADT 43, CO 47, ADT (R) 45, ADT (R) 47, CO 51, CORH 3

** suitable for salt affected soils*

2. Seed Treatment

- Seed upgradation using egg floatation technique (with salt water of 1.13 specific gravity
- Bio-priming- *Pseudomonas fluorescens* (Pf-1) @ 10g/kg

3. Extensive cultivation of rice under with complete SRI package

- SRI adoption in a laser levelled field without missing the two most critical elements viz., young (14-16 days old) seedlings and wider spacing (25x 25 cm).
- In non-SRI areas, mechanical transplanting with young seedlings and wider spacing

4**.** Enhancing the soil health through green manure, biofertilizers and micro nutrients

- Gypsum & MN mixture, Green manure - Daincha / sunhemp& Bio fertilizer

5. Crop Sanitation (Weed Management)

-Pre emergence herbicide Butachlor or Pretilachlor

6. Foliar Nutrition in flowering stage
7. Pest and disease monitoring and Management

-Integrated Pest and Disease Management

8. Farm mechanization

-Laser leveling + SRI

-Mechanical transplanting

-Seed-cum-fertilizer drill

Maize:

1. Cultivation of New High yielding varieties and Hybrids (Co 6 and other hybrids)
2. Seed treatment with Metalaxyl @6g/kg of seed for protection against downy Mildew
3. Planting in Ridges and furrows (60x25cm spacing)
4. Weedicide spray on 3rd day after sowing (Atrazine @0.25kg/ha) followed by life irrigation
5. If intercropping of pulses is done, spray pendimethalin 0.75 kg ai/ha
6. Drip irrigation wherever possible
7. Split application of fertilizers
    - Basal (25%N:100%P:50%K)
    - 25th day after sowing (50%N alone)
    - 45th day after sowing (25%N: 0P:50%K)
8. Foliar spraying of Maize maxim at the time of flowering and grain filling stage @ 3kg/ac

Sorghum (Irrigated)

1. Cultivation of sorghum variety CO (FS) 27, Co(S)28 and Co 5 Hybrid
2. Adoption of 10 kg/ha of seed rate and 45 x 15 cm spacing
3. Application of recommended dose of fertilizer 90:45:45 kg NPK/ha
4. Split application of Nitrogen @ 50 % :25 % :25 % at 0, 15 and 30 DAS and full dose of P and K applied as basal
5. Sorghum paired row planting with Intercropping of blackgram / cowpea
6. Need based application of chemicals (Pest/Disease)
    - Shoot fly management : Quinalphos 5 G 15 kg/ha / Phorate 10 G 8 kg/ha
    - Downy Mildew : Seed treatment with Metalaxyl @3g/kg of seeds

Sorghum (Rainfed)

1. Sorghum sowing can be done during September and October
2. Summer ploughing can be done for moisture conservation
3. Adopt the seed rate of 15 kg/ha
4. Seed hardening with2% potassium dihydrogen phosphate solution Pre soaking seeds for drought tolerance
5. Adopt the spacing of 45 x 15 cm to achieve population of 15 plants /m^2
6. Application of the recommended dose of fertilizer (N P K at 40:20:0 kg/ha)
7. Application of Atrazine 0.25 kg ai /ha for weed control

Green Gram

1. Selection of right season/location specific varieties
   Kharif:Co 6, Co(Gg) 7*, Co 8*, VBN(Gg) 2, VBN(Gg) 3, VRM(Gg) 1
   Rabi :Greengram : Co 6, VBN (Gg) 2, VBN(Gg) 3
   * synchronised maturing varieties
2. Using good quality seeds to maintain optimum plant population per unit area (Spacing 30x10cm)
3. Seed treatment with Imidachloprid /*T.viride or P. fluorescens/Rhizobium* (COG 15 greengram) and PSB (*B.subtilis)* strains
4. Use of pre emergence (Pendimethalin) and post emergence (Imazethapyr)herbicides
5. Adoption of foliar spraying of 2% DAP spray/pulse wonder
6. Adoption of Integrated Pest Management
   - Application of Dimethoate for sucking pests and Indoxocarb (Avaunt) for Maruca pod borer
7. Raising greengram and blackgram in rice field bunds
8. Cultivating green gram as a Intercrop with cotton, maize and sugarcane

Groundnut

1. Adoption of improved varieties likeCOGn 6 and VRIGn 7 in kharif season and Co 4, VRI 6 and TMV 13 in rabi season.
2. Seed treatment with bio-fertilizers and bio-control agents to fix atmospheric nitrogen in the soil, making phosphorous availability to the growing plants and to control stem rot and root rot diseases in early stage to ensure optimum population in the field.

3. Seed treatment with *Trichoderma viride* @ 4g/kg and soil application of *T. viride* @ 2.5 kg/ha (mixed with 100 kg FYM) as basal and treating the seeds with biofertilizer *viz.,* Rhizobium and Phosphobacteria @ 600g each before sowing.
4. Application of micronutrient mixture @ 12.5 kg/ha as basal to ensure availability of micro nutrients to the plants to enhance pod numbers and their development.
5. Application of "***groundnut rich"*** micro nutrient formulation developed by the TNAU
   Spraying groundnut rich micro nutrient formulations @ 1% (5 kg/ha) during 35^{th} and 50^{th} days will enhance flower production and pod development
6. Application of Gypsum @ 400kg/ha in groundnut
   Application of gypsum 200 kg/ha as basal and another 200 kg/ha on 45^{th} days of sowing followed by earthing up would enhance peg formation and pod development.

Castor

1. Cultivation of high yielding varieties like TMV 5, TMV 6 and Hybrid YRCH 1 in rainfed areas and Hybrid YRCH 1 in irrigated areas
2. Seed priming with 1% KCl for 3 hours and sowing a week before onset of monsoon
3. Application of 12.5 kg $ZnSO_4$ and 25 kg Fe SO_4 /ha in addition to recommended dose of NPK

Tapioca

1. Cultivation of High yielding varieties like H 226, Mulluvadi-1, Co-2, Co-3 & Co(TP)-4
2. Planting Season for Irrigated: December and January, Rainfed: September and October
3. Select sets from disease free plant in the middle with 15 cm thickness
4. Set treatment with carbandazim (1g in 1liter of water) for disease resistance and set treatment with potassium chloride (5g in 1 liter of water) for drought resistance
5. Application of Azospirillum and phosphobacteria during planting
6. Application of Gypsum 100 kgs per acre during planting
7. Application of micro nutrients like Iron sulphate 10g, Zink sulphate 5g, urea 20g in one litre water during 60, 75 and 90 days after planting
8. Application of fertilizers before rhizome formation of the crop is mandatory
9. IPM practices for pest and disease management of crops

Coconut

1. Cultivation of High yielding varieties like VPM3, ALR 1, ALR 2 and West Coast Tall
2. Selection of seed nuts from healthy and high yielding mother plant
3. Select 9-12 months old seedling, which have 6-8 leaves and 10-12 cm collar girth

4. Planting the seedlings in the main field pit 3'x3'x3 with the spacing of 25' X 25' with 175 plants/hectare
5. Plant the seedlings during June-July and December-January.
6. Adopt drip irrigation system to manage water scarcity during summer
7. Root feed TNAU coconut tonic @200 ml/palm once in six months for nut bearing coconut

Sugarcane

1. Follow the planting season of December –January or June- September
2. Plant high yielding and disease resistant varieties like CoV 92102, Co Si(Sc)6, Co G (Sc)5 and Co C (Sc)22
3. Follow pit method of sugarcane planting under drip fertigation system
4. Prepare a pit to pit with 1.5 x 1.5 m spacing, 0.9m diameter and 0.38m depth
5. Plant 32 single budded setts per pit and 4,444 pits /ha
6. Apply fertilizer based on soil test and blanket recommendation is 275:62.5:112.5 NPK/ha
7. Adopt drip irrigation and fertigation for better water and nutrient management
8. Drip design -lateral to lateral spacing 3.0 m (alternate rows)
9. 8 mm micro tubes on either side of the lateral to a length of 1.0 m with one 8 LPH drippers / pit
10. Assess the maturity by hand refractometer brix survey and 18 to 20 per cent brix indicates optimum maturity for harvest

Cotton

1. Adopt MCU 12, MCU 13 and Surabi varieties and TCHB 213 varieties for higher yield
2. 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)
3. Treat the delinted seeds with talc formulation of Trichodermaviride @ 4g/kg of seed or with Carbendazim (or) Thiram @ 2g/kg of seed
4. Apply fertilizer based on soil testing and blanket recommendation is 80:40:40 NPK kg/ha for variety and 120:60:60 NPK kg/ha for Hybrid
5. Follow integrated weed and pest management for higher yields
6. 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.
7. Harvest in the morning hours upto 10 to 11 a.m only when there is moisture so that dry leaves and bracts do not stick to the kapas and lower the market value

Small onion

1. Adopt high yielding small onion varieties like Co4 and Co (on) 5
2. Plant medium sized bulbs during April – May and October – November
3. Sow the bulbs on both the sides of the ridges at 10 cm apart
4. Plough the land to a fine tilth and form ridges and furrows at 45 cm spacing.
5. After sprouting, irrigate at weekly intervals. Withhold irrigation 10 days before harvest.
6. Apply FYM 25 t/ha, *Azospirillum* 2 kg and *Phosphobacteria* 2 kg/ha, N 30 kg, P 60 kg and K 30 kg/ha as basal and 30 kg N/ha on 30th day of sowing
7. Follow IPM for better management of pest and diseases
8. Spray Maleic hydrazide at 2500 ppm 15 days before harvest to extend the shelf life of small onion.

Mango

1. Varieties suitable for Tamil Nadu are Banganapalli, Bangalora, Neelum, Rumani, Mulgoa, Alphonso, Senthura, Kalepad and Imam Pasand
2. Plant the seedling during July to December
3. Dig pits of 1 m x 1 m x 1 m. Fill in with topsoil mixed with 10 kg of FYM and 100 g Lindane 1.3% dust per pit
4. Mango is normally planted at 7 to 10 m either way. However under high density planting, it varies between 5 x 5 m and 6 x 6 m.
5. Apply drip Irrigation system for better water management in the district
6. Apply fertilizer based on the recommendation of soil testing
7. NAA @ 20 ppm is sprayed at flowering to increase the fruit retention
8. Spray 0.5% Urea (5 g/lit.) or 1% Potassium Nitrate (10g/lit.) during February to induce flowering, if trees do not flower by that time
9. Follow IPM for better pest and disease management
10. Dip the fruits in 52 ± 1°C hot water immediately after harvest for 5 minutes followed by 8% plant wax (Fruitox or Waxol) to reduce anthracnose disease in mango during storage.

Banana

1. Cultivate Varieties like Grand Naine, Rasthali, Poovan and Karpooravalli
2. Select sword suckers of 1.5 to 2.0 kg weight which are free from diseases and nematodes
3. Pre-treat the suckers with 40 g Carbofuran 3G. If pre-treatment is not done, apply 40 g of Carbofuran around each plant one month after planting
4. High density planting can be adopted for higher productivity. Plant 3 suckers / pit at a spacing of 1.8 x 3.6m (4600 plants/ha) for Cavendish varieties and 2 m x 3 m for Nendran (5000 plants/ha).
5. Use drip irrigation @ 5-10 litres/plant/day from planting to 4th month, 10-15 litres/plant/day from 5th to shooting and 15 litres /plant/day from shooting to till 15 days prior to harvest.
6. Follow IPM for effective pest and disease management.

CHAPTER IV

DISTRICT PLAN

4.1. 1. Enhancing the Paddy productivity

Paddy is being cultivated in both Kar and Samba Seasons in Namakkal district. The total Paddy area is around 10950 ha. In kar season less than 5 per cent of the area under paddy is being cultivated and the balance is being cultivated during Samba season. The Mettur East Bank Canal Irrigation is also available in Pallipalayam Block of Namakkal district. The major cultivating season happens to be in Samba which coincides with the North-East monsoon for the preparation of field as well as nursery raising. The average productivity of Paddy in this district is 4178 kg of rice per hectare. Since productivity of paddy mainly depends on adoption of SRI technology, use of quality seed materials, production and distribution of hybrid seed and high yielding varieties is highly essential for improving the productivity of the crop among the rice growers.

Project components

- Promotion of SRI Technology in Pallipalayam, Sendamangalam, Thiruchengode blocks
- Distribution of certified seeds in all blocks except Elachipalayam, Kollihills and Vennandur blocks
- Distribution of MN mixture in Pallipalayam block
- Distribution of bio fertilizers in all blocks except Elachipalayam, Puduchatram and Rasipuram blocks
- Distribution of portray in Kabilarmalai and Paramathi blocks

Budget

It is proposed to incur ₹.684.16 Lakh over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

The expected outcome will be increased area under paddy at least 15-20 percent with improved varieties along with the package of practices resulting in an increase in the paddy production.

Implementing Agency

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

Table 4.1 Budget for Paddy in Namakkal District

(₹. in Lakh)

Sl. No.	Interventions	Unit	Unit Cost (in Rs.)	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	Promotion of SRI	Ha	15000	B9, B13, B14	0	0.00	511	76.65	510	76.50	510	76.50	510	76.50	2041	306.15
2	Distribution of High Yielding Varieties	MT	35000	All Blocks except B1, B4,B15	26.6	9.31	51	17.85	51	17.85	51	17.85	51	17.85	231	80.71
3	Distribution of Foundation	MT	40000	B9	0	0.00	5	2.00	5	2.00	5	2.00	5	2.00	20	8.00
4	seed production - Foundation	MT	32000	B9	0	0.00	5	1.60	5	1.60	5	1.60	5	1.60	20	6.40
5	seed production - Certified class	MT	26000	B3,B5,B6, B7,B8, B9, B10, B13, B14, B15	0	0.00	47	12.22	47	12.22	47	12.22	47	12.22	188	48.88
6	Incentives for paddy machine planting	Ha	10000	B9	0	0.00	150	15.00	150	15.00	150	15.00	150	15.00	600	60.00
7	Distribution of Protray	No	80	B3,B9	800	0.64	0	0.00	0	0.00	0	0.00	0	0.00	800	0.64
8	Distribution of MN mixture/ Copper Sulphate	Ha	1000	B9	180	1.80	160	1.60	165	1.65	170	1.70	175	1.75	850	8.50
9	Distribution of biofertilizer / PPFM / bioinputs / plant nutrient mobilizing bacteria	Ha	300	All Blocks except B1, B11, B12	255	0.77	623	1.87	630	1.89	643	1.93	650	1.95	2801	8.40
10	Distribution of Zinc sulphate (Soil application & foliar)	Ha.	1000	All Blocks except B1,B11, B12	521	5.21	400	4.00	425	4.25	450	4.50	475	4.75	2271	22.71
11	Distribution of biocontrol agents/biopesticides	Ha..	1000	B4	20	0.20	25	0.25	30	0.30	35	0.35	40	0.40	150	1.50
12	Distribution of herbicides	Ha.	1000	All Blocks except B1, B4, B11, B12	386	3.86	443	4.43	450	4.50	453	4.53	455	4.55	2187	21.87
13	Polyvinyl coated Tarpaulin (6m x 5m)	No.	2000	B3,B7,B8,B9,B10, B12, B14	0	0.00	130	2.60	130	2.60	130	2.60	130	2.60	520	10.40
14	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					**41.79**		**160.07**		**160.36**		**160.78**		**161.17**		**684.16**

Elachipalayam- B1, Erumapatti – B2, Kabilarmalai – B3, Kollihills – B4, Mallasamudram – B5, Mohanur – B6, Namagiripettai – B7, Namakkal – B8, Pallipalayam – B9, Paramathi – B10, Puduchatram – B11, Rasipuram – B12, Sendamangalam – B13, Thiruchengode – B14, Vennandur – B15

4.1.2 Millets

Enhancing the Millets productivity

Millets like fodder sorghum, maize are being cultivated approximately in area of 20172 ha, and mostly sorghum under rain fed condition in Namakkal district. The productivity of sorghum in this district is around 807 kg/ha. Rainfed cholam crop is being cultivated without much care by the farmers as it is raised only for fodder purpose. Maize cultivating area is also increasing day by day due to demand from poultry sector. In Namakkal district, Maize is cultivated only under irrigated conditions during December and January. The farmers prefer private hybrid seeds. There are large numbers of poultry units and poultry feed production units functioning in the district. The farmers are taking maize cultivation in the same field after Paddy harvest in summer depending upon the water availability.

Project components

- Minor millet processing unit in Erumapatti block
- Supply of MN mixtures in sorghum (all blocks except Elachipalayam, Kollihills, Mohanur, Rasipuram and Vennandur blocks)
- Demonstration - Supply of sorghum seed, seed treatment in Namagiripettai, Paramathi and Rasipuram blocks
- Initiative for Nutritional Security through Intensive Millet Promotion (INSIMP) in all blocks

Budget

It is proposed to incur ₹.301.46 Lakh over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

The expected outcome will be increased area under maize and other minor millets at least 15-20 percent with improved varieties along with the package of practices resulting in an increase in the millets production.

Implementing Agency

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

Table 4.2 Budget for Millets in Namakkal District

(₹. in Lakh)

Sl. No.	Components	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Millets															
1	Millet Processing unit - Minor millet	Nos.	2.5	B2	0	0.00	2	5.00	2	5.00	2	5.00	2	5.00	8	20.00
2	Soil moisture conservation practices	Ha	0.05	All Blocks	175	8.75	125	6.25	150	7.50	130	6.50	125	6.25	705	35.25
3	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	60.00
	Sorghum															
4	Demonstration (Supply of seed, seed treatment, MN mixture & Organic package)	Ha	0.05	B7,B10, B12	0	0.00	100	5.00	100	5.00	100	5.00	100	5.00	400	20.00
5	Distribution of biofertilizers - Liquid / Carrier	Ha	0.003	B2,B3, B5, B7, B8, B9, B10, B11, B13, B14	3962	11.89	875	2.63	880	2.64	885	2.66	890	2.67	7492	22.48
6	Distribution of MN mixture (12.5kg/ha)	Ha	0.007	B1, B3, B5, B7, B8,B10, B11, B12, B13, B14, B15	2751	19.26	605	4.24	610	4.27	615	4.31	620	4.34	5201	36.41
7	Seed distribution	MT	0.7	B1, B2, B5,B10, B11, B12	5	3.74	5	3.50	5	3.50	5	3.50	5	3.50	25	17.74
	Maize															
8	Demonstration (Supply of seed, seed treatment & MN mixture, organic package)	Ha	0.05	B3, B7, B8, B9, B10, B12, B13	0	0.00	137	6.85	137	6.85	137	6.85	137	6.85	548	27.40
9	Distribution of biofertilizers - Liquid /	Ha	0.003	B8	0	0.00	50	0.15	50	0.15	50	0.15	50	0.15	200	0.60

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
	Carrier															
10	Distribution of herbicides	Ha	0.008	B2,B7, B8, B10, B12, B13	0	0.00	245	1.96	245	1.96	245	1.96	245	1.96	980	7.84
11	Drip irrigation for maize	Ha	1	B7,	0	0.00	10	10.00	10	10.00	10	10.00	10	10.00	40	40.00
	Ragi															
12	Demonstration (supply of seed, seed treatment, MN mixture & organic package)	Ha	0.05	B9	0	0.00	2	0.10	2	0.10	2	0.10	2	0.10	8	0.40
13	Seed Distribution	MT	0.66	B1, B5, B7, B8, B10, B12, B14, B15	4	2.92	4	2.51	4	2.57	4	2.64	4	2.71	20	13.35
	Total					**58.55**		**60.18**		**61.54**		**60.66**		**60.53**		**301.46**

Elachipalayam- B1, Erumapatti – B2, Kabilarmalai – B3, Kollihills – B4, Mallasamudram – B5, Mohanur – B6, Namagiripettai – B7, Namakkal – B8, Pallipalayam – B9, Paramathi – B10, Puduchatram – B11, Rasipuram – B12, Sendamangalam – B13, Thiruchengode – B14, Vennandur – B15

4.1.3 Pulses

Enhancing the productivity of pulses

Pulses are one of the major crops in Namakkal district. Black gram, Green gram, Red gram, Cowpea and Horse Gram are being cultivated intensively as rain fed as well as irrigated condition. Green gram is major crop among the pulse crop in Namakkal district usually being grown during June-July and November- December. months depending upon the rainfall and irrigation status. There is huge potential to increase the production and productivity of pulses crop from 20 to 30 per cent from existing production and productivity level. Hence it is proposed to introduce new variety and short duration varieties with all integrated, improved package of practices and post-harvest technologies in pulses for improving the yield up to potential yield in the district.

Project components

- Production of foundation/certified seeds in all blocks except Kollihills
- Distribution of certified seeds in all blocks except Kollihills, Mallasamudram, Mohanur, Namakkal and Puduchatram blocks
- Supply of pulse wonder/DAP spray in all blocks except Kollihills, Mallasamudram, Mohanur and Namakkal blocks
- Distribution of plant protection chemicals in all blocks except Kollihills
- Pure crop demonstration (black gram and green gram) in Kabilarmalai, Rasipuram and Vennandur blocks

Budget

It is proposed to incur ₹. 566.50 Lakh over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

The project will increase the Pulses productivity especially green gram, black gram and red gram yield per hectare. Based on the profitability in pulses cultivation, it is expected that the pulses area would increase from 15 to 20 per cent from the exiting area under pulses especially green and black gram cultivation.

Implementing Agency

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

Table 4.3 Budget for Pulses in Namakkal District

(₹. in Lakh)

Sl. No.	Interventions	Unit	Unit cost (in Rs.)	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 B4	0	0.00	7	17.50	7	17.50	7	17.50	7	17.50	28	70.00
2	Production of Foundation/ Certified pulses seeds	MT	86000	All Blocks except B4	44	37.67	51	43.86	51	43.86	51	43.86	51	43.86	248	213.11
3	Distribution of Certified Seeds	MT	100000	All Blocks except B4, B5, B6, B8, B11	5	5.10	27	27.00	27	27.00	27	27.00	27	27.00	113	113.10
4	Distribution of Biofertilizer/ Organic packages (Rhizobium + Phosphobacteria) - Liquid / Carrier	Ha	600	B8, B9, B12, B13, B14	414	2.48	350	2.10	350	2.10	350	2.10	350	2.10	1814	10.88
5	Distribution of Micro Nutrients(5 kgs/ Ha)	Ha	350	B2, B8, B9, B14	38	0.13	120	0.42	120	0.42	120	0.42	120	0.42	518	1.81
6	DAP Spray	Ha	700	All Blocks except B4, B5, B6, B8	1350	9.45	1140	7.98	1150	8.05	1160	8.12	1170	8.19	5970	41.79
7	Bund Cropping	Ha	300	All Blocks except B4, B5, B6, B8	110	0.33	255	0.77	260	0.78	265	0.80	270	0.81	1160	3.48
8	Line sowing	Ha	2250	All Blocks except B4, B5, B6, B8	250	5.63	443	9.97	450	10.13	458	10.31	465	10.46	2066	46.49

Sl. No.	Interventions	Unit	Unit cost (in Rs.)	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
9	Distribution of Yellow sticky trap /pheromone trap	ha	1000	B3	0	0.00	0	0.00	0	0.00	0	0.00	44	0.44	44	0.44
10	Distribution of weedicide	Ha	1000	B3, B12, B15	0	0.00	250	2.50	250	2.50	250	2.50	250	2.50	1000	10.00
11	Plant Protection Chemicals	Ha	1000	All Blocks except B4	700	7.00	565	5.65	575	5.75	585	5.85	595	5.95	3020	30.20
12	Pure crop demonstration - Black gram and green gram	Ha	6300	B3, B12, B15	0	0.00	100	6.30	100	6.30	100	6.30	100	6.30	400	25.20
	Total					**67.79**		**124.04**		**124.39**		**124.75**		**125.53**		**566.50**

Elachipalayam- B1, Erumapatti – B2, Kabilarmalai – B3, Kollihills – B4, Mallasamudram – B5, Mohanur – B6, Namagiripettai – B7, Namakkal – B8, Pallipalayam – B9, Paramathi – B10, Puduchatram – B11, Rasipuram – B12, Sendamangalam – B13, Thiruchengode – B14, Vennandur – B15

4.1.4 Oilseeds

Enhancing the productivity of oilseeds

In Namakkal District, Groundnut is a major crop among oilseeds cultivated under Irrigated condition during December, January to April. The source of irrigation is mainly well. The area under irrigated Groundnut is 29576 ha with a productivity of 2116 kg per hectare. The groundnut cultivation is reducing year by year because of non-availability of farm labourers as well as less profit. There is scope for increasing the yield in Groundnut as in Irrigated condition. Therefore, it is necessary to provide the needed assistance to the farmers by way of integrated approach technologies and promotion of technologies for increasing the productivity of oilseeds.

Project components

- Distribution of certified seeds in all blocks
- Production of foundation seeds in all blcks
- Application of gypsum to groundnut in all blocks
- Distribution of bio pesticide, fungicide in Kollihills, Namagiripettai and Paramathi blocks
- Distribution of bio fertilizer in all blocks
- Seed drill sowing of groundnut with pulses as intercrop in all blocks
- Distribution of minikit in all blocks
- Micro Irrigation (Raingun / Microsprinkler) to be implemented in all blocks

Budget

It is proposed to incur₹. 2817.25 Lakh over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

The project results will be an increasing the oilseed especially groundnut yield per hectare. The oilseed area would also increase from 15 to 20 per cent from the exiting area especially Groundnut in this district.

Implementing Agency

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

Table 4.4 Budget for Oilseeds in Namakkal District

(₹. in Lakh)

Sl. No.	Components	Unit	Unit Cost (in Lakhs.)	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	**OILSEEDS**															
1	Purchase of Breeder seed	Mt	1.5	All Blocks except B4	14	21.00	14	21.00	14	21.00	14	21.00	14	21.00	70	105.00
2	Herbicide	Ha	0.01	B3	100	1.00	400	4.00	400	4.00	400	4.00	300	3.00	1600	16.00
3	Bio pesticide/fungicide	Ha	0.01	B4, B7, B10	50	0.50	350	3.50	350	3.50	350	3.50	300	3.00	1400	14.00
4	Compact Block Demonstration - Groundnut	Ha	0.2	B12, B14	20	4.00	70	14.00	70	14.00	70	14.00	50	10.00	280	56.00
5	Microirrigation (Raingun / Microsprinkler)	Ha	0.55	All Blocks	50	27.50	50	27.50	50	27.50	75	41.25	60	33.00	285	156.75
6	Distribution of IPM kit	Nos.	0.1	All Blocks	1000	100.00	1500	150.00	1500	150.00	1000	100.00	1000	100.00	6000	600.00
7	Growth regulator / DAP	Ha	0.005	All Blocks	100	0.50	100	0.50	150	0.75	150	0.75	150	0.75	650	3.25
	Groundnut															
8	Strengthening seed chain by foundation seed production	Mt	0.76	All Blocks	2	1.82	15	11.40	15	11.40	15	11.40	15	11.40	62	47.42
9	Strengthening seed chain by certified seed production	Mt	0.73	All Blocks except B4	239	174.69	126	91.98	127	92.71	128	93.44	130	94.90	750	547.72
10	Distribution of Certified seeds	Mt	0.84	All Blocks	120	100.86	101	84.42	102	85.26	103	86.10	105	87.78	529	444.42
11	Distribution of Seed	Kg	0.0015	All Blocks	8	0.01	213	0.32	213	0.32	213	0.32	213	0.32	860	1.29

Sl. No.	Components	Unit	Unit Cost (in Lakhs.)	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
	Treatment Chemicals and Bioagents (T.Viridi)															
12	Application of Gypsum to Groundnut Crop	Ha	0.016	All Blocks	50	0.80	1060	16.96	1060	16.96	1060	16.96	1060	16.96	4290	68.64
13	Distribution of Micro Nutrient Mixture	Ha	0.015	All Blocks	0	0.00	25	0.38	25	0.38	25	0.38	25	0.38	100	1.50
14	Distribution of Biofertilizer	Ha	0.006	All Blocks	757	4.54	790	4.74	755	4.53	760	4.56	765	4.59	3827	22.96
15	Distribution of Liquid Biofertilizer	Ha	0.006	All Blocks	5148	30.89	755	4.53	755	4.53	755	4.53	755	4.53	8168	49.01
16	Distribution of Rhizobium/ PSB Culture	Ha	0.006	B3, B7, B12	0	0.00	10	0.06	10	0.06	10	0.06	10	0.06	40	0.24
17	Castor as Bund crop	Ha	0.006	All Blocks	1869	11.21	420	2.52	420	2.52	420	2.52	420	2.52	3549	21.29
18	Seed Drill Sowing / Line sowing of Groundnut with Pulses as intercrop (hiring charges only)	Ha	0.03	All Blocks	0	0.00	4000	120.00	4000	120.00	4000	120.00	4000	120.00	16000	480.00
19	Seeddrill Sowing of Groundnut with Redgram as Intercrop	Ha	0.04	All Blocks	0	0.00	1095	43.80	1095	43.80	1095	43.80	1095	43.80	4380	175.20
	GINGELLY					0.00		0.00		0.00		0.00		0.00	0	0.00
20	Production of Certified Seeds	Mt	1.09	B5, B7, B12, B15	0	0.00	1	0.76	1	0.76	1	0.76	1	0.76	3	3.05

Sl. No.	Components	Unit	Unit Cost (in Lakhs.)	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
21	Distribution of certified seeds	Mt	1.25	B3, B4, B11, B14	0	0.00	1	0.88	1	0.88	1	0.88	1	0.88	3	3.50
	Total					**479.33**		**603.24**		**604.85**		**570.20**		**559.62**		**2817.25**

Elachipalayam- B1, Erumapatti – B2, Kabilarmalai – B3, Kollihills – B4, Mallasamudram – B5, Mohanur – B6, Namagiripettai – B7, Namakkal – B8, Pallipalayam – B9, Paramathi – B10, Puduchatram – B11, Rasipuram – B12, Sendamangalam – B13, Thiruchengode – B14, Vennandur – B15

4.1.5. Oil palm

Enhancing the productivity of Oil palm

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

Project components

- Oil palm area expansion programme in Erumapatti, Kabilarmalai, Mallasamudram, Paramathi, Sendamangalam
- Inputs for intercropping in all blocks
- Supply of diesel pumpsin Mallasamudram block
- Supply of wire mesh in Kabilarmalai and Mallasamudram blocks

Budget

It is proposed to incur ₹.21.14 Lakh 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 and report the progress to the District-level officials.

Table 4.5 Budget for Oil Palm in Namakkal District

(₹. in Lakh)

Sl. No.	Intervention	Unit	Unit Cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
I	**NMOOP -Mini Mission - II (Oilpalm)**															
1	Oilpalm Area Expansion Programme	Ha	0.14	B2, B3, B5, B10, B13	8	1.12	0	0.00	0	0.00	0	0.00	0	0.00	8	1.12
2	Cultivation maintenance	Ha	0.1	B2, B3, B5, B10, B13	27	2.70	0	0.00	0	0.00	0	0.00	0	0.00	27	2.70
3	Inputs for Intercropping	Ha	0.1	B2,	27	2.70	0	0.00	0	0.00	0	0.00	0	0.00	27	2.70
4	Supply of Diesel pumps	No	0.3	B5	1	0.30	0	0.00	0	0.00	0	0.00	0	0.00	1	0.30
5	Construction of Borewells	No	1	B1	1	1.00	0	0.00	0	0.00	0	0.00	0	0.00	1	1.00
6	Alumium portable ladder	No	0.06	B3,B5, B9, B12	1	0.06	0	0.00	0	0.00	0	0.00	0	0.00	1	0.06
7	Wire mesh	No	0.1	B3,B5	13	1.30	0	0.00	0	0.00	0	0.00	0	0.00	13	1.30
8	Oilpalm Cutter	No	0.03		2	0.06	0	0.00	0	0.00	0	0.00	0	0.00	2	0.06
II	**NMOOP -Mini Mission - III (Tree Borne Oilseeds)**															
9	Neem/ Pungam Area Expansion Programme	Ha	0.2	All Blocks	35	7.00	2	0.40	2	0.40	2	0.40	2	0.40	43	8.60
10	Cultivation maintenance	Ha	0.05	All Blocks	11	0.55	3	0.15	3	0.15	3	0.15	3	0.15	23	1.15
11	Inputs for Intercropping	Ha	0.05	All Blocks	35	1.75	2	0.10	2	0.10	2	0.10	2	0.10	43	2.15
	Grand total					**18.54**		**0.65**		**0.65**		**0.65**		**0.65**		**21.14**

Elachipalayam- B1, Erumapatti – B2, Kabilarmalai – B3, Kollihills – B4, Mallasamudram – B5, Mohanur – B6, Namagiripettai – B7, Namakkal – B8, Pallipalayam – B9, Paramathi – B10, Puduchatram – B11, Rasipuram – B12, Sendamangalam – B13, Thiruchengode – B14, Vennandur – B15

4.1.6 Cotton

Enhancing the productivity of Cotton

Cotton is cultivated in this district during summer as well as winter seasons. 75 per cent of the cotton area falls in winter and the rest 25 per cent in summer season. The area under cotton is majorly cultivating in the blocks of Vennandur, Elachipalayam and Rasipuram approximately 2000 ha in 2014-15 . Major area under cotton is covered by Surabi variety. Bt Cotton is also being cultivated in Namakkal district. It observed that significant area under cotton decreased from 2900 ha to 2000 ha from last five years due to non-availability of labours and poor return from cotton. There is a good scope for increasing the area and productivity of Cotton crop in namakkal district. The district has suitable soil and climatic conditions for the cultivation of cotton. The farmers are also well experienced in cotton cultivation.

Project components

- Cotton seed treatment and distribution of bio fertilizer in Mallasamudram block
- Frontline demo on ICM cotton in Namagiripettai block
- Field days in Erumapatti, Namakkal, Sendamangalam blocks
- Exposure visits in Sendamangalam block

Budget

It is proposed to incur ₹.145.19 Lakh over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

The expected outcome is Immediate output would be increasing the Cotton productivity per hectare. Based on the profitability in Cotton cultivation, it is expected that the cotton area would increase from 15 to 20 per cent from the exiting area under cotton or previous area under 3000 ha could be achieved.

Implementing Agency

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

Table 4.6. Budget for Cotton in Namakkal District

(₹. in Lakh)

Sl. No.	Intervention	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	Cotton seed treatment	Ha	300	B5	0	0.00	25	0.08	25	0.08	25	0.08	25	0.08	100	0.30
2	Distribution of biofertilizer	Ha	300	B5	0	0.00	25	0.08	25	0.08	25	0.08	25	0.08	100	0.30
3	Distribution of biopesticides / Bio agents	Ha	1000	B3, B4, B6, B9, B11, B14	30	0.30	205	2.05	210	2.10	225	2.25	235	2.35	905	9.05
4	Distribution of MN Mixture	Ha	1000	B2, B3, B4, B6, B7, B8, B9, B10, B11	20	0.20	127	1.27	135	1.35	142	1.42	150	1.50	574	5.74
5	Distribution of PP chemicals	Ha	1000	B3, B4, B6, B9, B11, B14	30	0.30	270	2.70	280	2.80	290	2.90	300	3.00	1170	11.70
6	Exposure visits	No	40000	B13	0	0.00	1	0.40	1	0.40	1	0.40	1	0.40	4	1.60
7	Farmers training	No	20000	B2, B8, B13	0	0.00	5	1.00	5	1.00	5	1.00	5	1.00	20	4.00
8	Field days	No	10000	B2, B8, B13	0	0.00	2	0.20	2	0.20	2	0.20	2	0.20	8	0.80
9	TNAU Cotton plus distribution (6 Kg./ Ha)	Ha	1200	B2, B8, B13	0	0.00	50	0.60	50	0.60	50	0.60	50	0.60	200	2.40
10	Frontline demo on ICM in cotton	Ha	7000	B7	0	0.00	10	0.70	10	0.70	10	0.70	10	0.70	40	2.80
11	Application of weedicide	Ha	3000	B2, B7, B8, B12	0	0.00	90	2.70	90	2.70	90	2.70	90	2.70	360	10.80
12	Topping of cotton	Ha	1000	B2, B7, B8, B12	0	0.00	180	1.80	180	1.80	180	1.80	180	1.80	720	7.20
13	Summer ploughing	Ha	7500	B2, B7, B8, B12, B13	0	0.00	295	22.13	295	22.13	295	22.13	295	22.13	1180	88.50
	Grand total					**0.80**		**35.70**		**35.93**		**36.25**		**36.53**		**145.19**

Elachipalayam- B1, Erumapatti – B2, Kabilarmalai – B3, Kollihills – B4, Mallasamudram – B5, Mohanur – B6, Namagiripettai – B7, Namakkal – B8, Pallipalayam – B9, Paramathi – B10, Puduchatram – B11, Rasipuram – B12, Sendamangalam – B13, Thiruchengode – B14, Vennandur – B15

4.1.7 Sugarcane

Enhancing the productivity of sugarcane

Sugarcane is being cultivated nearby Cauvery basin blocks in Namakkal District of Kabilarmalai,Thiruchengodu,Pallipalayam and Paramathi which is accounted area of 18000 ha . Existing of Salem Cooperative Sugar Mill at Mohanur facilitated the farmers to grow more under sugarcane. Sugarcane yield is an average of 100 to 125 tonnes per hactare which could be increased upto 150 to 170 tonnes per hectare. There is huge scope to introduce Sugarcane sustainable Initiatives (SSI) in sugarcane cultivation to reduce water requirements and increase productivity so as to improve the profitability of the farmers. Therefore, promotion of sugarcane cultivation not only provides higher income and more employment opportunities to farmers and farm labourers.

Project components

- Distribution of single bud seedlings in Erumapatti, kabilarmalai, Mallasamudram, Namakkal and Pallipalayam blocks
- Distribution of MN mixture and $FeSO_4$ spray in Pallipalayam block
- Distribution of Trichogramma in Erumapatti, Kollihills, Mallasamudram and Mohanur blocks
- Distribution of micro irrigation- drip in all blocks

Budget

It is proposed to incur ₹.1061.51 Lakh over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

Immediate output would be increasing the sugarcane per hectare so as to improve the production further at State level. Based on the profitability in sugarcane cultivation, it is expected that the sugarcane area & productivity would increase from 10 to 15 per cent from the exiting area under sugarcane or previous area under 18000 ha and productivity is up to 150-170 tonnes could be achieved.

Implementing Agency

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

Table 4.7 Budget for Sugarcane in Namakkal District

(₹. in Lakh)

Sl. No.	Intervention	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Distri. of biofertilizer (Ha)	Ha	0.006	B9	0	0.00	150	0.90	150	0.90	150	0.90	150	0.90	600	3.60
2	Distri. of weedicide (Ha)	Ha	0.01	B3, B10	0	0.00	425	4.25	400	4.00	400	4.00	400	4.00	1625	16.25
3	Distribution of Chip Cutter	Nos	0.05	B3, B7, B10	60	3.00	4	0.20	4	0.20	4	0.20	4	0.20	76	3.80
4	Distribution of FeSO4 Spray	Ha	0.005	B9	0	0.00	10	0.05	10	0.05	10	0.05	10	0.05	40	0.20
5	Distribution of Micro Nutrient Mixture	Ha	0.02	B9	0	0.00	5	0.10	5	0.10	5	0.10	5	0.10	20	0.40
6	Distribution of Parasite Trichogramma	Ha	0.00125	B2, B4, B5, B6	20	0.03	590	0.74	590	0.74	590	0.74	650	0.81	2440	3.05
7	Distribution of Protray (2500 nos/ha)	Nos	0.0008	B3, B10, B13	0	0.00	210	0.17	210	0.17	210	0.17	210	0.17	840	0.67
8	Microirrigation - Drip (1.2x0.6)	ha	1.24	All Blocks	84	104.41	140	173.60	140	173.60	140	173.60	140	173.60	644.2	798.81
9	Sustainable Sugarcane Initiative (SSI)															
10	A. Establishment of Shadenet	Nos	1.5	B3, B10	33	49.50	0	0.00	0	0.00	0	0.00	0	0.00	33	49.50
11	B.Distribution of Single Bud Seedling	Ha	0.225	B2, B3, B5, B8, B9	410	92.43	0	0.00	0	0.00	0	0.00	0	0.00	410	92.43
12	Trash Mulching	Ha	0.04	All Blocks	0	0.00	580	23.20	580	23.20	580	23.20	580	23.20	2320	92.80
	Grand Total					**249.36**		**203.21**		**202.96**		**202.96**		**203.00**		**1061.51**

Elachipalayam- B1, Erumapatti – B2, Kabilarmalai – B3, Kollihills – B4, Mallasamudram – B5, Mohanur – B6, Namagiripettai – B7, Namakkal – B8, Pallipalayam – B9, Paramathi – B10, Puduchatram – B11, Rasipuram – B12, Sendamangalam – B13, Thiruchengode – B14, Vennandur – B15

4.1.8 Coconut

Enhancing the productivity of Coconut

In Namakkal district, the area under Coconut is nearly 4500 ha.The productivity level of 80 to 100 nuts per tree is comparatively lower than the average. There is a good scope to increase the area as well as the production under coconut in Namakkal district. Namakkal district is having average temperature, good soil and suitable cultivation of coconut. To get higher yield with high yielding varieties and through improved high production technologies.

Project components

- Distribution of quality hybrid seedlings (T X D) in all blocks except Kollihills
- Supply of MN mixtures in all blocks except Erumapatti, Kollihills, Nmakkal, Puduchatram and Rasipuram blocks
- Supply of drip irrigation in Kabilarmalai, Namagiripettai, Paramathi, Rasipuram and Sendumangalam blocks
- Distribution of tree climbers in Kabilarmalai, Paramathi, and Sendumangalam blocks

Budget

It is proposed to incur ₹. 292.09 Lakh over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

High yielding hybrid coconut seedlings couple with improved technologies will result in an increase in the yield and production of coconut.

Implementing Agency

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

Table 4.8 Budget for Coconut in Namakkal District

(₹. in Lakhs

Sl. No.	Intervention	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Distribution of T x D hybrid seedlings	No	0.0006	All Blocks except B4	0	0.00	5700	3.42	5800	3.48	5900	3.54	6000	3.60	23400	14.04
2	Distribution of Tall Seedlings	No	0.0004	All Blocks except B1, B4, B5, B6, B15	0	0.00	2900	1.16	2900	1.16	2900	1.16	2900	1.16	11600	4.64
3	Distribution of MN mixture	Ha	0.1	All Blocks except B2, B4, B8, B11, B12	0	0.00	300	30.00	307	30.70	315	31.50	325	32.50	1247	124.70
4	Distribution of Pheromone traps for Red palm weevil/ Rhinocerous beetle	Ha	0.016	B3, B7, B10, B13, B15	0	0.00	210	3.36	212	3.39	215	3.44	220	3.52	857	13.71
5	Distribution of tree climbers	No	0.15	B3, B10, B13	0	0.00	15	2.25	15	2.25	15	2.25	15	2.25	60	9.00
6	Drip irrigation	Ha	0.35	B3, B7, B10, B12, B13	0	0.00	45	15.75	45	15.75	45	15.75	45	15.75	180	63.00
7	Intercropping with green manures	Ha	0.03	All Blocks except B1, B4, B11, B15	0	0.00	175	5.25	175	5.25	175	5.25	175	5.25	700	21.00
8	Demonstration on Integrated fertiliser management	Ha	0.75	B3, B7, B10, B12, B13	0	0.00	14	10.50	14	10.50	14	10.50	14	10.50	56	42.00
	Grand total					**0.00**		**71.69**		**72.48**		**73.39**		**74.53**		**292.09**

Elachipalayam- B1, Erumapatti – B2, Kabilarmalai – B3, Kollihills – B4, Mallasamudram – B5, Mohanur – B6, Namagiripettai – B7, Namakkal – B8, Pallipalayam – B9, Paramathi – B10, Puduchatram – B11, Rasipuram – B12, Sendamangalam – B13, Thiruchengode – B14, Vennandur – B15

4.1.9. Training to farmers

Enhancing the livelihood of farmers through training

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

1. District level trainings to farmers for major and minor millet, paddy, pulses and sugarcane (all blocks)
2. Exposure visits (with in state) in all blocks
3. Organization of kisan gosthies on soil test based nutrient application in all blocks

Budget

It is proposed to incur ₹. 55.35 Lakh over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing Agency

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

Table 4.9. Budget requirement for training

(₹in Lakh)

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
I	**District Level**															
	Training of Farmers With in the district															
1	Awareness campaigns	Nos.	0.1	B3, B4, B5, B12	0	0.00	10.2	1.02	102	1.02	10.2	1.02	10.2	1.02	40.8	4.08
2	Cotton	Nos.	0.1	B8, B9	0	0.00	4.2	0.42	4.2	0.42	4.2	0.42	4.2	0.42	16.8	1.68
3	Groundnut	Nos.	0.1	B6, B7, B11	0	0.00	13.2	1.32	13.2	1.32	13.2	1.32	13.2	1.32	52.8	5.28
4	IFS	Nos.	0.1	B4, B5, B12	0	0.00	1	0.10	1	0.10	1	0.10	1	0.10	4	0.40
5	Major & Minor Millets	Nos.	0.1	All Blocks	0	0.00	13.2	1.32	13.2	1.32	13.2	1.32	13.2	1.32	52.8	5.28
6	Paddy	Nos.	0.1	All Blocks	0	0.00	8.2	0.82	8.2	0.82	8.2	0.82	8.2	0.82	32.8	3.28
7	Pulses	Nos.	0.1	All Blocks	0	0.00	9.2	0.92	9.2	0.92	9.2	0.92	9.2	0.92	36.8	3.68
8	Sugarcane	Nos.	0.1	All Blocks	0	0.00	4.2	0.42	4.2	0.42	4.2	0.42	4.2	0.42	16.8	1.68
	Exposure visit of Farmers															
9	With in State Exposure visit	Nos.	0.4	All Blocks	0	0.00	12.2	4.88	12.2	4.88	12.2	4.88	12.2	4.88	48.8	19.52
10	Organisation of Kisan gosthies on Soil test based nutrient application (Campaign)	Nos.	0.15	All Blocks	0	0.00	5	0.75	5	0.75	5	0.75	5	0.75	20	3.00
11	With in the district exposure visit	Nos.	0.15	All Blocks	0	0.00	11.45	1.72	13.45	2.02	11.45	1.72	13.45	2.02	49.8	7.47
	Grand total					**0.00**		**13.69**		**13.99**		**13.69**		**13.99**		**55.35**

Elachipalayam- B1, Erumapatti – B2, Kabilarmalai – B3, Kollihills – B4, Mallasamudram – B5, Mohanur – B6, Namagiripettai – B7, Namakkal – B8, Pallipalayam – B9, Paramathi – B10, Puduchatram – B11, Rasipuram – B12, Sendamangalam – B13, Thiruchengode – B14, Vennandur – B15

4.1.10. Infrastructure

Facilities for Seed production

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

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

Establishment of Laboratories

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

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

The major interventions are

1. Establishment of Thrashing floor/drying yard in Kollihills
2. Office furnishing and other amenities in all blocks

Budget

It is proposed to incur ₹. 561.00 Lakh over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing Agency

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

Table 4.10. Budget requirement for Infrastructure

(₹in Lakh)

Sl. No.	Components	Unit	Unit Cost (in Rs.)	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	Establishment of Threshing floor/drying yard	Nos.	500000	B4	0	0.00	10	50.00	20	100.00	25	125.00	30	150.00	85	425.00
2	Office Furnishings and other amenities	Nos.	200000	All Blocks	15	30.00	8	16.00	15	30.00	15	30.00	15	30.00	68	136.00
	Total					**30.00**		**66.00**		**130.00**		**155.00**		**180.00**		**561.00**

Elachipalayam- B1, Erumapatti – B2, Kabilarmalai – B3, Kollihills – B4, Mallasamudram – B5, Mohanur – B6, Namagiripettai – B7, Namakkal – B8, Pallipalayam – B9, Paramathi – B10, Puduchatram – B11, Rasipuram – B12, Sendamangalam – B13, Thiruchengode – B14, Vennandur – B15

4.1.11. Soil Health Management

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

Project Component:

- Production of enriched FYM and composting of farm waste through *Pluerotus*in Pallipalayam and Thiruchengode blocks
- Establishment of permanent vermicompost units in Elachipalayam, Namakkal, Puduchatram blocks
- Production of HDPE vermi compost unit in Kabilarmalai, Mallasamudram and Namagiripettai blocks

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 Namakkal district is ₹.72.32 Lakh.

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 4.11. Budget requirement for Soil Health Management

(₹in Lakh)

Sl. No.	Intervention	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
	Soil Health Management															
1	Permanent Vermi compost units	Cluster Nos.	50000	B1, B8, B11	3	1.50	3	1.50	3	1.50	3	1.50	3	1.50	15	7.50
2	HDPE Vermi compost units	Kit Nos	12000	B3, B5, B7, B10, B12	0	0.00	24	2.88	24	2.88	24	2.88	24	2.88	96	11.52
3	Green Manuring	Nos	4000	B2, B3, B7, B9, B10, B12, B13	60	2.40	295	11.80	295	11.80	295	11.80	295	11.80	1240	49.60
4	Production of Enriched FYM	MT	2500	B2, B3, B10, B13	0	0.00	33	0.83	33	0.83	33	0.83	33	0.83	132	3.30
5	Composting of Farm Waste Through Pluerotus (Production and Distribution of Kits)	MT	200	B9, B14	40	0.08	40	0.08	40	0.08	40	0.08	40	0.08	200	0.40
	Grand total					**3.98**		**17.09**		**17.09**		**17.09**		**17.09**		**72.32**

Elachipalayam- B1, Erumapatti – B2, Kabilarmalai – B3, Kollihills – B4, Mallasamudram – B5, Mohanur – B6, Namagiripettai – B7, Namakkal – B8, Pallipalayam – B9, Paramathi – B10, Puduchatram – B11, Rasipuram – B12, Sendamangalam – B13, Thiruchengode – B14, Vennandur – B15

4.1.12. Rainfed Area Development

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

Project components

- Promotion of Farmers club for Sustainable Dryland Agriculture in all blocks

Budget

It is proposed to incur ₹. 4501.90 Lakh 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 4.12. Budget requirement for Rainfed Area Development

(₹in Lakh)

Sl. No.	Intervention	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Promotion of Farmers club for Sustainable Dryland Agriculture	Cluster	84.9415	All Blocks	10	849.42	25	2123.54	17	1444.01	1	84.94	0	0.00	53	4501.90
	Grand total					**849.42**		**2123.54**		**1444.01**		**84.94**		**0.00**		**4501.90**

Elachipalayam- B1, Erumapatti – B2, Kabilarmalai – B3, Kollihills – B4, Mallasamudram – B5, Mohanur – B6, Namagiripettai – B7, Namakkal – B8, Pallipalayam – B9, Paramathi – B10, Puduchatram – B11, Rasipuram – B12, Sendamangalam – B13, Thiruchengode – B14, Vennandur – B15

4.1.13. 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 all blocks except Puduchatram block
2. Field days in Pallipalayam block
3. IPM school in all blocks except Kollihills, Mallasamudram and Puduchatram blocks

Budget

It is proposed to incur ₹. 34.80 Lakh 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 4.13. Budget requirement for IPM

(₹in Lakh)

Sl. No.	Intervention	Unit	Unit Cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Farmers Field Schools (FFS)	Nos.	20000	All Blocks except B11	0	0.00	17	3.40	17	3.40	17	3.40	17	3.40	68	13.60
2	Field days	No.	20000	B9	0	0.00	5	1.00	5	1.00	5	1.00	5	1.00	20	4.00
3	IPM School	Nos.	40000	All Blocks except B4, B5, B11	0	0.00	10	4.00	11	4.40	11	4.40	11	4.40	43	17.20
	Grand total					**0.00**		**8.40**		**8.80**		**8.80**		**8.80**		**34.80**

Elachipalayam- B1, Erumapatti – B2, Kabilarmalai – B3, Kollihills – B4, Mallasamudram – B5, Mohanur – B6, Namagiripettai – B7, Namakkal – B8, Pallipalayam – B9, Paramathi – B10, Puduchatram – B11, Rasipuram – B12, Sendamangalam – B13, Thiruchengode – B14, Vennandur – B15

4.1.14. Machineries

Farm Mechanization

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

Project Component:

- Distribution of mini tractor in Namakkal block
- Distribution of power tiller in all blocks except Erumapatti, Kabilarmalai, Kollihills, Paramathi and Rasipuram blocks
- Solar light trap in all blocks except Kabilarmalai, Nmagiripettai, Pallipalayam, Paramathi and Rasipuram blocks
- Distribution of rotovator in all blocks except Kollihills, Elachipalayam, Vennanur blocks
- Distribution of rain guns in 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 ₹.907.22 Lakh.

Expected Outcome:

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

Implementing Agency:

The projects will be implemented by the Department of Agriculture.

Table 4.14. Budget requirement for Machineries

(₹in Lakh)

Sl. No.	Intervention	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
	Farm Mechanization															
1	Solar light trap	No.	4000	All Blocks except B3, B7, B9, B10, B12	530	21.20	40	1.60	45	1.80	50	2.00	50	2.00	715	28.60
2	Battery operated sprayer	Nos.	4000	All Blocks except B1, B15	0	0.00	135	5.40	135	5.40	135	5.40	135	5.40	540	21.60
3	Power operated sprayer	Nos.	8000	All Blocks	6	0.48	98	7.84	109	8.72	112	8.96	116	9.28	441	35.28
4	Hand operated sprayer	Nos.	1500	B3, B4, B7, B10, B12	0	0.00	90	1.35	90	1.35	90	1.35	90	1.35	360	5.40
5	Distribution of Mini Tractor	Nos	300000	B8	0	0.00	1	3.00	1	3.00	1	3.00	1	3.00	4	12.00
6	Distribution of Mobile Sprinklers	Ha	30000	All Blocks	0	0.00	10	3.00	10	3.00	10	3.00	10	3.00	40	12.00
7	Distribution of Powertiller	Nos	150000	All Blocks excpet B2, B3, B4, B10, B12	1	1.50	12	18.00	12	18.00	11	16.50	11	16.50	47	70.50
8	Distribution of Rain guns	Ha	40000	All Blocks	10	4.00	45	18.00	45	18.00	45	18.00	45	18.00	190	76.00
9	Distribution of Rotavator	Nos	80000	All Blocks except B1, B4, B15	3	2.40	68	54.40	68	54.40	68	54.40	68	54.40	275	220.00

Sl. No.	Intervention	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
10	Distribution of Tarpaulins	Nos	8000	All Blocks except B6	0	0.00	260	20.80	262	20.96	266	21.28	270	21.60	1058	84.64
11	Distribution of Tractor Drawn Seed cum Fertilizer Drill	Nos	70000	All Blocks	0	0.00	5	3.50	5	3.50	5	3.50	5	3.50	20	14.00
12	PVC Pipes to carry Irrigation water from source to field	Unit	40000	All Blocks	12	4.80	197	78.80	199	79.60	203	81.20	207	82.80	818	327.20
	Grand total					**34.38**		**215.69**		**217.73**		**218.60**		**220.83**		**907.22**

Elachipalayam- B1, Erumapatti – B2, Kabilarmalai – B3, Kollihills – B4, Mallasamudram – B5, Mohanur – B6, Namagiripettai – B7, Namakkal – B8, Pallipalayam – B9, Paramathi – B10, Puduchatram – B11, Rasipuram – B12, Sendamangalam – B13, Thiruchengode – B14, Vennandur – B15

4.1.15. Information Technology in Agriculture

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

Role of IT in Agriculture

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

Components include input devices, output devices, processors, storage devices, software, networking devices, transmission media and other accessories in all blocks

Budget

It is proposed to incur ₹. 281.17 Lakh over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing Agency

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

Table 4.15. Budget requirement for Information Technology

(₹in Lakh)

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	Procurement of Hardware for replacement of old hardware	Nos	50000	All Blocks	0	0.00	33	16.50	0	0.00	17	8.50	30	15.00	80	40.00
2	Connectivity Charges	Nos	11000	All Blocks	0	0.00	18	1.98	18	1.98	18	1.98	18	1.98	72	7.92
3	Printer cum Scanner	Nos	20000	All Blocks	0	0.00	32	6.40	0	0.00	0	0.00	32	6.40	64	12.80
4	UPS and Electrical Accessories	Nos	35000	All Blocks	0	0.00	33	11.55	16	5.60	16	5.60	30	10.50	95	33.25
5	Xerox machine	Nos	75000	All Blocks	0	0.00	17	12.75	0	0.00	0	0.00	16	12.00	33	24.75
6	Laptop/Desktop	Nos	50000	All Blocks	0	0.00	31	15.50	0	0.00	16	8.00	15	7.50	62	31.00
7	Anti -virus software	Nos	2500	All Blocks	0	0.00	33	0.83	33	0.83	33	0.83	33	0.83	132	3.30
8	Television	Nos	100000	All Blocks	0	0.00	15	15.00	0	0.00	0	0.00	0	0.00	15	15.00
9	Colour printer	Nos	15000	All Blocks	0	0.00	16	2.40	0	0.00	15	2.25	15	2.25	46	6.90
10	4G Internet - Dongle	Nos	2500	All Blocks	0	0.00	32	0.80	32	0.80	32	0.80	32	0.80	128	3.20
11	**Equipments for Documentation**															
a	Handycam	Nos	30000	All Blocks	0	0.00	12	3.60	0	0.00	12	3.60	0	0.00	24	7.20
b	Camera	Nos	25000	All Blocks	0	0.00	15	3.75	0	0.00	15	3.75	0	0.00	30	7.50
c	GPS instrument	Nos	20000	All Blocks	0	0.00	15	3.00	0	0.00	3	0.60	12	2.40	30	6.00
d	Android mobile	Nos	15000	All Blocks	0	0.00	88	13.20	0	0.00	0	0.00	3	0.45	91	13.65
e	External Hard disk	Nos	5000	All Blocks	0	0.00	48	2.40	0	0.00	0	0.00	0	0.00	48	2.40

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
12	Audio - visual Aids	Nos	150000	All Blocks	0	0.00	18	27.00	0	0.00	0	0.00	12	18.00	30	45.00
	LCD projector	Nos	75000	All Blocks	0	0.00	16	12.00	0	0.00	0	0.00	3	2.25	19	14.25
	pico Projector	Nos	35000	All Blocks	0	0.00	3	1.05	0	0.00	0	0.00	0	0.00	0	1.05
13	Air conditioner for computer room	Nos	40000	All Blocks	0	0.00	15	6.00	0	0.00	0	0.00	0	0.00	15	6.00
	Grand total					**0.00**		**155.71**		**9.21**		**35.91**		**80.36**		**281.17**

Elachipalayam- B1, Erumapatti – B2, Kabilarmalai – B3, Kollihills – B4, Mallasamudram – B5, Mohanur – B6, Namagiripettai – B7, Namakkal – B8, Pallipalayam – B9, Paramathi – B10, Puduchatram – B11, Rasipuram – B12, Sendamangalam – B13, Thiruchengode – B14, Vennandur – B15

Table 4.16. Budget Abstract for Namakkal District

(₹ in Lakh)

Sl. No.	Crops	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Paddy	41.79	160.07	160.36	160.78	161.17	684.16
2	Millets	58.55	60.18	61.54	60.66	60.53	301.46
3	Pulses	67.79	124.04	124.39	124.75	125.53	566.50
4	Oilseeds	479.33	603.24	604.85	570.20	559.62	2817.25
5	Oilpalm	18.54	0.65	0.65	0.65	0.65	21.14
6	Cotton	0.80	35.70	35.93	36.25	36.53	145.19
7	Sugarcane	249.36	203.21	202.96	202.96	203.00	1061.51
8	Coconut	0.00	71.69	72.48	73.39	74.53	292.09
9	Training	0.00	13.69	13.99	13.69	13.99	55.35
10	Infrastructure	30.00	66.00	130.00	155.00	180.00	561.00
11	Soil Health Management	3.98	17.09	17.09	17.09	17.09	72.32
12	Rainfed Area Development	849.42	2123.54	1444.01	84.94	0.00	4501.90
13	Integrated Pest Management	0.00	8.40	8.80	8.80	8.80	34.80
14	Farm Mechanization	34.38	215.69	217.73	218.60	220.83	907.22
15	Strengthening of State Seed Farm	0.00	0.00	0.00	0.00	0.00	0.00
16	Agriculture Information Technology	0.00	155.71	9.21	35.91	80.36	281.17
	Grand total	**1833.94**	**3858.90**	**3103.99**	**1763.67**	**1742.63**	**12303.06**

4.2 Horticulture sector

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

a. 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 TC banana/pineapple in Erumapatti, Kabilarmalai, Mohanur, Namagiripettai, Paramathi, Rasipuram and Sendamangalam blocks.

b. 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 brinjal, bhendi, tomato, green chillies in all blocks except Kollihills block are the components to be promoted for increasing the productivity and marketing of vegetables.

c. 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 jasminum sp, crossandra, marigold, rose, chrysanthemum, nerium, torenia in all blocks are needed.

d. 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 seed and Rhizomatic spices (coriander, turmeric, ginger) dry chilli, cumin, fennel, fenu greek, cardamom in all blocks except Kollihillsblock has very much scope to meet that demand by huge production.

e. 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 coffee in Kollihills, Arecanut in Erumapatti, Kabilarmalai, Nmagiripettai, Pallipalayam blocks, betelvine in Kabilarmalai and Mohanur blocks will increase the economy of the farmer and also Indian economy.

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

Maintenance of Plantation

The existing fruit trees have to be maintained properly until they attain fruit bearing stage and thereafter up to economically profitable bearing stage. This calls for proper maintenance of fruit trees with appropriate intercultural operations periodically. Regular maintenance of orchards / fruit trees would enhance the production / productivity as well.

Area expansion by Precision Farming Technology

By providing inputs like water soluble fertilizers, hybrid / high yielding vegetable seeds and plant protection chemicals, the area under annual crops like vegetables, flowers, spices, medicinal plants and one year long season crops like banana, tapioca, annual moringa and turmeric could be raised under precision farming technology.

Area expansion by high density planting

By adopting high density planting in mango, guava and sapota, the area under fruit trees in all blocks except Kollihills could be increased. This includes supply of pedigree planting materials, integrated nutrient management and integrated pest management.

Area expansion by Normal Planting

Besides precision farming and high density planting, the area could be increased by normal planting as well by using pedigree planting materials in lemon, mango, guava in Elachipalayam, jack in Kollihills. Similarly, by extending support for the planting materials of high value vegetables, the protected cultivation of vegetable area could also be increased. Likewise, cultivation of cut flowers and filler foliage also need to be encouraged.

Protected cultivation

Precision Farming through Hi tech cultivation Practices It is proposed to plan for increasing the production of crops by adopting advanced technology like high tech cultivation practices which includes high density planting, use of quality planting materials, tissue culture planting materials, canopy management, micro irrigation fertigation, mulching, use of bunch sleeves for banana, protected cultivation, shade net nursery and mechanization in horticulture crop cultivation by popularizing the same among the growers to enhance productivity. It is proposed to adopt high density planting in mango, guava and sapota in select districts of the State by providing subsidy.

Rejuvenation of Old Orchards – Mango and Guava in all blocks except Kollihills, Sendamangalam blocks

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

Organic farming in Kollihills

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.

Post-Harvest Management in Erumapatti, Mallasamudram, Puduchatram, Rasipuram and Vennandur blocks

In agriculture, postharvest handling is the stage of crop production immediately following harvest, including cooling, cleaning, sorting and packing. Postharvest treatment largely determines final quality, whether a crop is sold for fresh consumption, or used as an ingredient in a processed food product. The most important goals of post-harvest handling is to avoid moisture loss and slow down undesirable chemical changes, and avoiding physical damage such as bruising, to delay spoilage. Sanitation is also an important factor, to reduce the possibility of pathogens that could be carried by fresh produce, for example, as residue from contaminated washing water.

Marketing Interventions

Interventions to build the marketing system are essential such that marketing expenses should be shifted as an expense towards an investment. It's important that interactions between farmers and market intermediaries should match the image of marketing portrays.

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.

Bee Keeping in all blocks

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

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

Mechanization in cultivation of horticultural crops in all blocks except Kollihills

Mechanization encourages large scale production and improves the quality of farm produce. It ensures reduction of drudgery associated with variety of farm operations and also encourages the utilization of input and thereby harnessing the potential of available resources. Provision of power operated machineries and tools including power operated saw and plant protection equipments, power machines with rotavator / equipment, power machines including accessories and equipment would strengthen the infrastructural facilities.

Micro Irrigation, Water harvesting and Management in all blocks

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.

Special Interventions

Production Enhancement through Precision Farming

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

Pandal / Trellis cultivation, Propping / Support / Stakingin all blocks except Kollihills

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 in Kabilarmalai, Namagiripettai, Sendamangalam blocks

'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 in all blocks

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

Control of coconut Red Palm weevil

Coconut is a perennial crop and longevity of the tree is about 50 to 70 years. The red palm weevil is a fatal enemy and less than 20 years coconut palm succumbs to severe damage when infected. Hence it is highly necessary to control the attack of red palm weevil pest on war footing. It is programmed to distribute 50, 000 traps of ferrolure of five traps per ha for 1.00 lakh hectare with subsides assistance of 50 per cent. The total cost for one hectare of Rs. 325/ferrolure comes to Rs.3, 250. Hence, an assistance of Rs. 1600/ha is proposed for five ferrolure per ha.

Promotion of Roof top Garden / Potager gardenin all blocks except Kollihills and Mallasamudram blocks

The traditional kitchen garden, also known as a potager is a space separate from the rest of the residential garden i.e. the ornamental plants and lawn areas. Most vegetable gardens are still miniature versions of old family farm plots, but the kitchen garden is different not only in its history, but also its design. The kitchen garden may serve as the central feature of an ornamental, all-season landscape, or it may be little more than a humble vegetable plot. It is a source of herbs, vegetables and fruits, but it is often also a structured garden space with a design based on repetitive geometric patterns. The kitchen garden has year-round visual appeal and can incorporate permanent perennials or woody shrub plantings around (or among) the annuals.

There are many types of vegetable gardens. The potager, a garden where vegetables, herbs and flowers are grown together, has become more popular than the more traditional rows or blocks.

Some popular culinary herbs in temperate climates are to a large extent still the same as in the medieval period. Herbs often have multiple uses. For example, mint may be used for cooking, tea, and pest control.

Perimetro Vegetable Cluster Development Programme

Since production of vegetables is not in accordance with the market demand and the productivity of many vegetables is less than the potential yield, farmers are to be motivated to plan for cultivation of vegetables based on market demand. Market led production of vegetables need to be taken up to ensure continuous supply of vegetables to the market andthe grower to get increased return out of sale of produce. Hence, it is necessary to go in for the productivity enhancement by advanced technologies. The project involves vegetable

Cultivation under protected condition, post-harvest management, collection centres, retail outlets and training to the growers. The vegetable produced in the project area will be immediately transported to the pack house where grading, sorting and standard packing will be done. Further to narrow down the supply chain, open retail outlets and mobile stores are proposed.

Establishing Centre of Excellence for different crops

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

Computerization and Governance

As per the Stated policy under the scheme of E-governance and computerization of the various Development Departments, desktop computers and associated equipments had been contemplated. In order to ensure effective implementation of E-Governance, computer equipments (such as laptops, personal computers, Tablets etc) are essential.

Research on Crop Diversification

Crop Diversification refers to a shift from the regional dominance of one crop to regional production of a number of crops, to meet ever increasing demand of cereals, pulses, vegetables, fruits, oilseeds, fibres, fodder, grasses etc. It aims to improve soil health and to maintain dynamic equilibrium of the agro-ecosystem. In the instant case, crop diversification is intended to promote technological innovations for sustainable agriculture and enable farmers to choose crop alternatives for increased productivity and income.

Special Development Programme – Onion

Onion Storage Structures (25 MT) in Erumapatti, Mohanur, Puduchatram, Rasipuram and Vennandur blocks

India is one of the largest producers of onion in the world. It is one of the most important vegetable crops of our country and forms a part of daily diet in almost all households. In Tamil Nadu onion was grown in an area of about 35,000 ha with a production of 3,80,000 tons. Most of the farmers bring onion directly to the market after harvest as proper storage facilities are not available with them. The present storage capacities are quite inadequate and most of the available units are traditional and unscientific.

Tissue Culture Unit

Plant tissue culture is a collection of techniques used to maintain or grow plant cells, tissues or organs under sterile conditions on a nutrient culture medium of known composition. Plant tissue culture is widely used to produce clones of a plant in a method known as micro propagation.

Plant tissue culture relies on the fact that many plant cells have the ability to regenerate a whole plant (totipotency). Single cells, plant cells without cell walls (protoplasts), pieces of leaves, stems or roots can often be used to generate a new plant on culture media given the required nutrients and plant hormones. Although some growers and nurseries have their own labs for propagating plants by the technique of tissue culture, additional number of laboratories need to be created to provide custom propagation services and commercially viable plants to propagate in a laboratory.

Establishment of Cottage Mushroom unit in Kabilarmalai block

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) in all blocks

Rainfed areas assume special significance in terms of ecology, agricultural productivity and livelihood for millions of rural households in India.

To ensure agriculture growth in the rainfed areas, the Government of India launched a new scheme "Rainfed Area Development Programme (RADP)" in the year 2011-12 as a sub-scheme under Rashtriya Krishi Vikas Yojana (RKVY).

It aims at improving quality of life of farmers especially, small and marginal farmers by offering a complete package of activities to maximize farm returns. RADP focuses on Integrated Farming System (IFS) for enhancing productivity and minimizing risks associated with climatic variabilities.

Infrastructure Development

Mushroom production

Commercial production of edible Mushrooms converts the agricultural, industrial, forestry and household wastes into nutritious food (Mushroom). Indoor cultivation of oyster mushrooms utilizes the vertical space and is regarded as the highest protein producer per unit area and time – almost 100 times more than the conventional agriculture and animal husbandry.

Supporting structures for vegetable production

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

a. Staking, trellis and propping

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

b. Pandal structure in all blocks except Kollihills

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

Crop Insurance in 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.

Micro irrigation in horticultural crops in all blocks

Micro-irrigation will generally use less than half the volume of water required by the more traditional ‘watering’ systems such as sprinkler irrigation. Lower pressures used mean less energy for pumping while precise placement of more exact water volumes enhances and improves water management. Micro Irrigation system scales down requirement of labour and takes care of application of fertilizers.

Conducting Field Days / Trainings in all blocks

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

Budget

The budget requirement for fulfilling the various interventions is ₹204035.33 Lakh.

Implementing agency

The projects will be implemented by the Department of Horticulture.

Table 4.17. Budget requirement for horticulture interventions in Namakkal district

(₹ in Lakh)

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	B2,B3,B6,B7, B10,B12 ,B13	15	18.75	19	23.13	20	25.00	22	26.88	27	33.75	102	127.50
2	Banana / Hill Banana sucker & Pine apple sucker	Ha	0.875	B4	100	87.50	110	96.25	115	100.63	115	100.63	120	105.00	560	490.00
3	HDP in Mango, Guava, Litchi, Pomegranate	Ha	1	All blocks except B4	43	43.00	52	52.00	60	60.00	65	65.00	74	74.00	294	294.00
4	Normal Planting in lime / lemons	Ha	0.6	B1	1	0.60	1	0.60	1	0.60	1	0.60	1	0.60	5	3.00
5	Normal Planting in Mango	Ha	0.6	B1	1	0.60	1	0.60	1	0.60	1	0.60	1	0.60	5	3.00
6	Normal planting in Guava	Ha	0.6	B1	0	0.00	0	0.00	0	0.00	1	0.60	0	0.00	1	0.60
7	Normal planting in Jack	Ha	0.6	B4	5	3.00	10	6.00	12	7.20	13	7.80	15	9.00	55	33.00
II	**Area expansion of vegetable crops**															
8	Brinjal	Ha	0.5	All blocks	47	23.50	63	31.50	76	38.00	93	46.50	104	52.00	383	191.50

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.
				except B4												
9	Bhendi	Ha	0.5	All blocks except B4	54	27.00	68	34.00	81	40.50	91	45.50	106	53.00	400	200.00
10	Tomato	Ha	0.5	All blocks except B4	76	38.00	90	45.00	100	50.00	109	54.50	120	60.00	495	247.50
11	Gourds including pumpkin and tinda	Ha	0.5	All blocks except B4, B6	48	24.00	60	30.00	70	35.00	81	40.50	92	46.00	351	175.50
12	Greens	Ha	0.5	All blocks except B4	50	25.00	58	29.00	71	35.50	81	40.50	92	46.00	352	176.00
13	Small Onion	Ha	0.5	All blocks except B4,B6,B8,B10,B13	212	106.00	257	128.50	281	140.50	320	160.00	349	174.50	1419	709.50
14	Cucumber/gherkin	Ha	0.5	B5,B14	2	1.00	3	1.50	5	2.50	6	3.00	7	3.50	23	11.50
15	Radish	Ha	0.5	B7	5	2.50	6	3.00	7	3.50	7	3.50	8	4.00	33	16.50
16	Melons	Ha	0.5	B6,B8,B13,B14	6	3.00	7	3.50	7	3.50	7	3.50	7	3.50	34	17.00
17	Cluster bean	Ha	0.5	B7,B14	4	2.00	6	3.00	7	3.50	8	4.00	10	5.00	35	17.50
18	Tapioca	Ha	0.5	All blocks except B1,B4,B7,B8	95	47.50	134	67.00	168	84.00	187	93.50	208	104.00	792	396.00
19	Yams and colacassia	Ha	0.5	B7	2	1.00	3	1.50	3	1.50	4	2.00	5	2.50	17	8.50

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.
20	Cultivation of hybrid Vegetables under protected structures	1000 Sq.m	1.4	B2	500	700.00	500	700.00	500	700.00	500	700.00	500	700.00	2500	3500.00
III	**Area expansion of Medicinal and Aromatic plants**															
21	Gloriosa	Ha	1.6438	B10	1	1.64	1	1.64	1	1.64	1	1.64	1	1.64	5	8.22
22	Coleus	Ha	0.5141	B6,B7,B13	7	3.60	8	4.11	8	4.11	9	4.63	10	5.14	42	21.59
IV	**Area expansion of Spices crops**															
24	Seed and Rhizomatic spices (Coriander, Turmeric, Ginger, Dry Chilly, Cumin, Fennel, Fenu greek, Dil, Cardamom etc.,)	Ha	0.3	All blocks except B4	49	14.70	60	18.00	70	21.00	80	24.00	86	25.80	345	103.50
25	Perennial spices (Pepper, Curry leaf, All spice, Cinnamon, Clove, Tamarind, Nut meg etc.,)	Ha	0.5	B4	100	50.00	110	55.00	110	55.00	115	57.50	120	60.00	555	277.50
V	**Area**															

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.
	expansion of Flower crops															
26	Loose flowers - Jasminum sp, Crossandra, Marigold, Rose, Chrysanthemum, Nerium, Torenia	Ha	0.4	All blocks	27	10.80	37	14.80	44	17.40	50	19.80	52	20.60	209	83.40
VI	**Area expansion /Gap filling of Plantation crops**															
27	Coffee	Ha	0.5	B4	100	50.00	110	55.00	110	55.00	110	55.00	115	57.50	545	272.50
28	Arecanut	Ha	0.5	B2,B3,B7,B9	13	6.50	16	8.00	18	9.00	21	10.50	24	12.00	92	46.00
29	Betelvine	Ha	0.5	B3,B6	5	2.50	7	3.50	8	4.00	9	4.50	10	5.00	39	19.50
VII	**Rejuvenation/ INM-IPM/Mulching /Anti bird net**															
30	INM/IPM for Horticultural crops	Ha	0.04	All blocks except B4,B13	350	14.00	405	16.20	465	18.60	510	20.40	560	22.40	2290	91.60
31	Mulching	Ha	0.32	All blocks except B2,B4,B9,B10,B13	11	3.52	12	3.84	14	4.48	14	4.48	15	4.80	66	21.12
32	Anti Bird net	1000 Sq.m	0.35	B1,B7,B14	3	1.05	3	1.05	3	1.05	3	1.05	3	1.05	15	5.25

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.
VIII	**Pollination Support through Bee Keeping**															
33	Bee hive & Colony	No	0.04	All blocks	660	26.40	750	30.00	835	33.40	920	36.80	1000	40.00	4165	166.60
34	Honey Extractor	No	0.2	B4,B8,B13	4	0.80	4	0.80	4	0.80	4	0.80	4	0.80	20	4.00
IX	**Organic Farming**															
35	Organic farming and PGS certification in 50 acre cluster	1 cluster	14.95	B4	0	0.00	1	14.95	0	0.00	0	0.00	1	14.95	2	29.90
36	HDPE Vermibed	No	0.16	B4,B12	7	1.12	10	1.60	13	2.08	16	2.56	20	3.20	66	10.56
X	**Rainfed Area development**															
37	Integrated farming system - Horticulture Based farming	Ha	0.5	All blocks	350	175.00	405	202.50	460	230.00	495	247.50	545	272.50	2255	1127.50
B	**Infra structures and Assets creation**															
I	Protected cultivation															
38	Poly Green House	1000 Sq.m	9.35	B4,B7	1	9.35	2	18.70	2	14.03	2	14.03	2	18.70	8	74.80
39	Shadenet	1000 Sq.m	7.1	All blocks except B1,B5,B7,B11	5500	39050.00	4500	31950.00	5500	39050.00	5500	39050.00	5500	39050.00	26500	188150.00

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.
II	**Mushroom production**															
40	Cottage mushroom unit	1 No.	1	B3	0	0.00	0	0.00	1	1.00	1	1.00	1	1.00	3	3.00
III	**Vermicompost unit**															
41	Permanent Vermicompost Unit	600 cu.ft	1	All blocks	16	16.00	16	16.00	16	16.00	16	16.00	16	16.00	80	80.00
IV	**Supporting structures for Horticulture crop production**															
42	Permanent Pandhal structure	Ha	4	All blocks except B4	15	58.00	16	64.00	18	70.00	20	80.00	23	90.00	91	362.00
V	**District Horticulture information and training centre**															
VI	**Community seed bank**															
C	**Special interventions**															
43	Promotion of Roof top Garden/ Potager garden Kit	No	0.005	All blocks except B4,B5	530	2.65	600	3.00	650	3.25	705	3.53	705	3.53	3190	15.95
44	Promotion of Roof top Garden/ Potager garden Kit with shadenet	No	0.0735	All blocks	106	7.79	120	8.82	130	9.56	141	10.36	141	10.36	638	46.89

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.
45	Banana Bunch Sleeve	Ha	0.25	B3,B7,B 13	4	1.00	5	1.25	6	1.50	7	1.75	8	2.00	30	7.50
46	AESA based IPM in fruits and vegetables Pheramone trap	Ha	0.04	All blocks	500	20.00	500	20.00	0	0.00	0	0.00	0	0.00	1000	40.00
47	AESA Based IPM in fruits and vegetables Yellow sticky trap	Ha	0.04	All blocks	500	20.00	500	20.00	0	0.00	0	0.00	0	0.00	1000	40.00
48	AESA Based IPM in fruits and vegetables Light trap	Ha	0.08	B12	500	40.00	500	40.00	0	0.00	0	0.00	0	0.00	1000	80.00
D	**Post Harvest Management**															
49	Low cost onion structure 25 mt	1 No	1.75	B2,B5,B 11,B12, B15	5	8.75	5	8.75	5	8.75	5	8.75	5	8.75	25	43.75
F	**Mechani-zation - Machineries, Equipments & Tools**															
50	Power operated sprayer	Nos	0.05	All blocks except B4	59	2.95	71	3.55	84	4.20	96	4.80	102	5.10	412	20.60
51	Plastic crates for vegetable & fruits handling	No of sets conta ining 10cr	0.07 5	All blocks except B4,B65, B8	160	12.00	195	14.63	225	16.88	260	19.50	290	21.75	1130	84.75

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.
		ates														
52	Pepper Spike Threasher Stripper, Pepper peeler cum Washer	No	0.15	B4	3	0.45	3	0.45	4	0.60	4	0.60	5	0.75	19	2.85
53	5 layered Polythene spread sheets for drying horticulture produce	No	0.16	All blocks except B3,B4,B 15	12	1.92	13	2.08	13	2.08	13	2.08	13	2.08	64	10.24
54	Aluminium Ladders for Harvesting	No	0.2	B4	1	0.20	1	0.20	1	0.20	1	0.20	1	0.20	5	1.00
G	**Water / Irrigation Management**															
55	Micro Irrigation - Drip	Ha	1.12	All blocks	825	924.00	897	1004.64	965	1080.80	1025	1148.00	1093	1224.16	4805	5381.60
56	Rain gun	Ha	0.34	B8,B9	5	1.70	5	1.70	6	2.04	7	2.38	8	2.72	31	10.54
57	Sprinkler	No	0.19 5	All blocks	73	14.24	84	16.38	96	18.72	107	20.87	118	23.01	478	93.21
H	**Capacity Building**															
58	Training to farmers within the State. 2 days Rs.1000/farmer/day	No	0.02	All blocks	210	4.20	260	5.20	290	5.80	325	6.50	330	6.60	1415	28.30
59	Training to farmers outside the state. 30 farmers/Batch	No	0.10 5	All blocks	30	3.15	30	3.15	30	3.15	30	3.15	30	3.15	150	15.75

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.
60	Training to staff outside India	No	6	All blocks	15	90.00	15	90.00	15	90.00	15	90.00	15	90.00	75	450.00
61	Computerization & governance	No	1	All blocks except B13	14	14.00	0	0.00	0	0.00	0	0.00	0	0.00	14	14.00
62	Publicity and Documenta-tion	No	0.5	All blocks except B12	14	7.00	13	6.50	14	7.00	14	7.00	14	7.00	69	34.50
I	**Crop Insurance and Risk Mitigating schemes**															
63	Crop Insurance	Ha	0.025	All blocks	240	6.00	270	6.75	305	7.63	320	8.00	360	9.00	1495	37.38
	Grand total					**41831.00**		**34992.82**		**42202.76**		**42388.75**		**42620.00**		**204035.33**

Elachipalayam- B1, Erumapatti – B2, Kabilarmalai – B3, Kollihills – B4, Mallasamudram – B5, Mohanur – B6, Namagiripettai – B7, Namakkal – B8, Pallipalayam – B9, Paramathi – B10, Puduchatram – B11, Rasipuram – B12, Sendamangalam – B13, Thiruchengode – B14, Vennandur – B15

4.3. 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 (all blocks except Kollihills) in order to ensure performance testing of agricultural machinery and equipment, capacity building of farmers and end users and promoting farm mechanization through demonstrations.
- Demonstration, Training and Distribution of post-harvest Technology and Management (PHTM) in all blocks except Kollihillsto popularize the technology for primary processing, value addition, low cost scientific storage/transport and the crop by-product management through demonstrations, capacity building of farmers and end users. Provides financial assistance for establishing PHT units.
- Promotion of ownership to small and marginal farmers for various agricultural machinery and equipments such as Tractors (all blocks), Power tillers (all blocks except Kollihills, Erumapatti and Rasipuram blocks), Reaper cum binder, post hole digger, cultivator, rotovator, tractor drawn reaper, zero till seed cum fertiliser drill, brush cutter in all blocks
- Provision of suitable financial assistance all blocks except Kollihills, Erumapatti, Namakkal and Sendamangalalm blocksto establish farm machinery banks for custom hiring for appropriate locations and crops
- Promotion of appropriate technologies and to set up farm machinery banks in identified villagesall blocks except Erumapatti and Kollihills blocks

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

equipments for grains, oil seeds and Horticultural crops (Mini Rice mill, Mini Dhall mill, Millet Mill, Oil mill with filters, Extractor, pomegranate air extractor, Custard apple pulper, Dehydration unit, Pricking Machine, Humidifier, Packing machine, power driven dehusker, thresher, Harvester, De-spiking, Deconing, Peeler, Splitter, Stripper, Boiler, Steamer, Dryer solar, Washing Machine, Grinder, Pulveriser, Polisher, Cleaner cum grader, gradient separator, Specific gravity separator) this would make sure that more value is added to farm outputs locally

- Promotion of Bio-mass gasifier unit which hold huge potential technology for decentralized electricity generation in rural villages. Biomass is a CO2 neutral fuel and, therefore, unlike fossil fuels such as diesel does not contribute to net CO2 emissions, which makes biomass based power generation systems an attractive option in mitigating the adverse effects of climate change.
- Establishment of Agricultural Engineering Extension centres (all blocks) in order to collect information related to Government subsidy on agricultural / machineries / equipment / irrigation systems etc., compilation of latest technologies related to Agricultural Engineering and Development of video cassettes library related to Processing of agricultural products, Working of important agricultural machines and equipment and Repair, maintenance and proper setting of the different agricultural Machines / and equipment
- Promotion of training to AED engineers on post-harvest techniques and bio energy
- Rehabilitation of irrigation network to bring water directly to the root zone of the crop, improve application and conveyance efficiency, thereby reduce the wastage of water due to flood irrigation.
- Prevention of sea water intrusion through construction of subsurface dyke, Village Pond / Community Pond, Farm Pond, Recharge shaft and Weir/Bed Dam.
- Reclamation of problem soils which needs special management for satisfactory crop production. Physical limitations can be managed by irrigation, drainage, mulching, manuring, tillage, and soil conservation measures such as terracing, contouring, and cover crops whichever is appropriate.

Expected outcome

Implementation of the above strategies such as supply of farm implements to carry out mechanised cultivation operations and demonstration to farmers the advantage of using Agricultural implements and machinery would increase the production and productivity. Post- Harvest Technologies to farmers would prevent loss of food grains during harvest and storage and Preserve the quality of produce in respect of perishable commodities. Disseminated technologies on renewable energies, in particular, solar

energy for agricultural activities in respect of pumping with solar powered pumps, drying farm produce for enhancement of quality to fetch reasonable market price.

Budget

Agriculture continues to be the most predominant sector of this district economy, as 70 per cent 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 ₹ 42.00 Lakh. Financial assistance for the procurement of Agricultural Machinery, Post-harvest machinery and equipments in rural areas with the budget of ₹7818.38 Lakh, Establishment of Farm Machinery Banks, Hi-tech productive equipment hub, Promotion of Farm Mechanization in Selected Villages with the budget of ₹3925.00 Lakh 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 ₹3363.93 Lakh. Some other interventions such as Bio- mass gasifier, Construction of Agricultural Engineering Extension centres (AEECs) with the budget of ₹ 150.32 Lakh are required to implement in this district to enhance the Agricultural Productivity. The overall budget requirement for implementation of above interventions is ₹15299.63 Lakh . The details of budget requirement for each intervention across the blocks are shown in Table 4.18.

Implementing agency

The projects will be implemented by the Department of Agricultural Engineering

Table.4.18. Budget requirement for Agricultural Engineering

(₹. in Lakh)

Sl. No.	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Capacity Building															
1	**Demonstration of Agricultural Machinery**	All Blocks except B4	No's /Ha	0.04	75	3.00	75	3.00	75	3.00	75	3.00	75	3.00	375	15.00
2	**Training of farmers**	All blocks	No's /Ha	0.04	75	3.00	75	3.00	75	3.00	75	3.00	75	3.00	375	15.00
3	**Training of Rural Youth in workshops**	All blocks except B4 ,B2, B11. B14 & B10	No's /Ha	0.04	30	1.20	30	1.20	30	1.20	30	1.20	30	1.20	150	6.00
4	**Demonstration of Post Harvest Technologies**	All blocks except B4	No's /Ha	0.04	30	1.20	30	1.20	30	1.20	30	1.20	30	1.20	150	6.00
5	**Financial assistance for Post Harvest Equipment**	All blocks except B8, B13, B4 & B2	No's /Ha	4	15	60.00	15	60.00	15	60.00	15	60.00	15	60.00	75	300.00
6	Tractor (15-20 PTO HP)	All Blocks	No's /Ha	4	100	400.00	100	400.00	100	400.00	100	400.00	100	400.00	500	2000.00
7	Tractor (Above 20-40 PTO HP)	All Blocks	No's /Ha	6	15	90.00	15	90.00	15	90.00	15	90.00	15	90.00	75	450.00
8	Tractor (40-70 PTO HP)	All Blocks	No's /Ha	8.5	15	127.50	15	127.50	15	127.50	15	127.50	15	127.50	75	637.50
9	**Power Tillers**															
10	Power Tiller (below 8 BHP)	All blocks except	No's /Ha	1	15	15.00	15	15.00	15	15.00	15	15.00	15	15.00	75	75.00

Sl. No.	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
		B4, B2 & B12														
11	Power Tiller (8 BHP & above)	All Blocks	No's /Ha	1.75	15	26.25	15	26.25	15	26.25	15	26.25	15	26.25	75	131.25
12	**Self Propelled Machinery**															
13	Reaper cum Binder	All Blocks	No's /Ha	3	15	45.00	15	45.00	15	45.00	15	45.00	15	45.00	75	225.00
14	**Specialized Self Propelled Machinery**															
15	Reaper	All Blocks	No's /Ha	1.1	15	16.50	15	16.50	15	16.50	15	16.50	15	16.50	75	82.50
16	Post Hole Digger / Augur	All Blocks	No's /Ha	0.63	15	9.45	15	9.45	15	9.45	15	9.45	15	9.45	75	47.25
17	**Tractor/Power Tiller (below 20 BHP) driven equipments**															
18	**a. Land Development, tillage and seed bed preparation equipments**															
19	Cultivator	All Blocks	No's /Ha	0.2	15	3.00	15	3.00	15	3.00	15	3.00	15	3.00	75	15.00
20	Rotavator	All Blocks	No's /Ha	0.35	15	5.25	15	5.25	15	5.25	15	5.25	15	5.25	75	26.25
21	**b. Sowing Planting, Reaping and Digging Equipments:**															
22	Tractor drawn reaper	All Blocks	No's /Ha	0.95	15	14.25	15	14.25	15	14.25	15	14.25	15	14.25	75	71.25
23	Zero till seed cum fertilizer drill	All Blocks	No's /Ha	0.5	15	7.50	15	7.50	15	7.50	15	7.50	15	7.50	75	37.50
24	**c. Intercultivation Equipments**															

Sl. No.	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
25	Power Weeder (engine operated below 2 BHP)	All blocks except B4	No's /Ha	0.25	30	7.50	30	7.50	30	7.50	30	7.50	30	7.50	150	37.50
26	**e. Harvesting and Threshing equipments**															
27	Brush Cutter	All Blocks	No's /Ha	0.25	30	7.50	30	7.50	30	7.50	30	7.50	30	7.50	150	37.50
28	**f. Chaff Cutter (Operated by engine / electric motor below 3 hp and by power tiller and tractor of below 20 BHP tractor)**	All Blocks	No's /Ha	0.25	100	25.00	100	25.00	100	25.00	100	25.00	100	25.00	500	125.00
29	**Tractor (above 20-35 BHP) driven equipments**															
30	**a. Land Development, tillage and seed bed preparation equipments**															
31	Cultivator	All Blocks	No's /Ha	0.25	75	18.75	75	18.75	75	18.75	75	18.75	75	18.75	375	93.75
32	Rotavator	All Blocks	No's /Ha	0.8	100	80.00	100	80.00	100	80.00	100	80.00	100	80.00	500	400.00
33	Reversible Hydraulic plough	All Blocks	No's /Ha	1.9	15	28.50	15	28.50	15	28.50	15	28.50	15	28.50	75	142.50
34	**b. Sowing, Planting, Reaping and Digging Equipments**															
35	Tractor drawn reaper	All Blocks	No's /Ha	1.1	15	16.50	15	16.50	15	16.50	15	16.50	15	16.50	75	82.50

Sl. No.	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
36	Zero till seed cum fertilizer drill	All Blocks	No's /Ha	0.6	5	3.00	5	3.00	5	3.00	5	3.00	5	3.00	25	15.00
37	**e.Harvesting & Threshing Equipments**															
38	Brush Cutter	All Blocks	No's /Ha	0.3	15	4.50	15	4.50	15	4.50	15	4.50	15	4.50	75	22.50
39	**f.Chaff Cutter (Operated by engine / electric motor above 3-5 hp and by power tiller and tractor of below 35 BHP tractor)**															
40	**Tractor (above 35 BHP) driven equipments**															
41	**a.Land Development, tillage and seed bed preparation equipments**															
42	Cultivator	All Blocks	No's /Ha	0.3	100	30.00	100	30.00	100	30.00	100	30.00	100	30.00	500	150.00
43	Reversible Mechanical plough	All Blocks	No's /Ha	0.8	15	12.00	15	12.00	15	12.00	15	12.00	15	12.00	75	60.00
44	Rotavator	All Blocks	No's /Ha	0.95	100	95.00	100	95.00	100	95.00	100	95.00	100	95.00	500	475.00
45	**b. Sowing Planting, Reaping and Digging Equipments:**															
46	Zero till seed cum fertilizer drill	All Blocks	No's /Ha	0.7	15	10.50	15	10.50	15	10.50	15	10.50	15	10.50	75	52.50
47	Tractor drawn reaper	All Blocks	No's /Ha	1.25	15	18.75	15	18.75	15	18.75	15	18.75	15	18.75	75	93.75

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
48	Post Hole digger	All Blocks	No's /Ha	1.05	15	15.75	15	15.75	15	15.75	15	15.75	15	15.75	75	78.75
49	Automatic Rice NurserySowing Machine	All Blocks	No's /Ha	2.5	15	37.50	15	37.50	15	37.50	15	37.50	15	37.50	75	187.50
50	**d.Harvesting & Threshing Equipments**															
51	Thresher/Multi Crop threshers	All Blocks	No's /Ha	4	15	60.00	15	60.00	15	60.00	15	60.00	15	60.00	75	300.00
52	Paddy Thresher	All Blocks	No's /Ha	2.2	15	33.00	15	33.00	15	33.00	15	33.00	15	33.00	75	165.00
53	**e.Equipments for Residue management/Hay and Forage Equipments**															
54	Sugarcane thrash Cutter	All Blocks	No's /Ha	2	15	30.00	15	30.00	15	30.00	15	30.00	15	30.00	75	150.00
55	Balers (Round)	All Blocks	No's /Ha	3.5	15	52.50	15	52.50	15	52.50	15	52.50	15	52.50	75	262.50
56	Baler (Rectangular)	All Blocks	No's /Ha	8	15	120.00	15	120.00	15	120.00	15	120.00	15	120.00	75	600.00
57	Sugarcane ratoon manager	All Blocks	No's /Ha	1	15	15.00	15	15.00	15	15.00	15	15.00	15	15.00	75	75.00
58	**All Manual/animal drawn equipment/implements / Tools**															
59	Drum Seeder (Below 4 Row)	All Blocks	No's /Ha	0.1	15	1.50	15	1.50	15	1.50	15	1.50	15	1.50	75	7.50
60	Drum Seeder (Above 4 Row)	All Blocks	No's /Ha	0.15	30	4.50	0	0.00	0	0.00	0	0.00	0	0.00	30	4.50
61	Tree climber	All Blocks	No's /Ha	0.07	30	2.10	30	2.10	30	2.10	30	2.10	30	2.10	150	10.50
62	**Plant protection equipments**															

Sl. No.	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
63	Manual sprayer: Knapsack/foot operated sprayer	All Blocks	No's /Ha	0.015	15	0.23	15	0.23	15	0.23	15	0.23	15	0.23	75	1.13
64	Powered Knapsack Sprayer/Power operated Taiwan sprayer (capacity 8-12 lts)	All Blocks	No's /Ha	0.06	75	4.50	75	4.50	75	4.50	75	4.50	75	4.50	375	22.50
65	Powered Knapsack Sprayer/Power operated Taiwan sprayer (capacity above 12-16 lts)	All Blocks	No's /Ha	0.08	75	6.00	75	6.00	75	6.00	75	6.00	75	6.00	375	30.00
66	Powered Knapsack Sprayer/Power operated Taiwan sprayer (capacity above 16 lts)	All Blocks	No's /Ha	0.1	75	7.50	75	7.50	75	7.50	75	7.50	75	7.50	375	37.50
67	**Establish-ment of Farm Machinery Banks for Custom Hiring**	All blocks except B4	No's /Ha	28	15	420.00	15	420.00	15	420.00	15	420.00	15	420.00	75	2100.00
68	**Promotion of Farm Mechaniza-tion in Selected Villages**	All blocks except B4 & B2	No's /Ha	11.5	30	345.00	30	345.00	30	345.00	30	345.00	30	345.00	150	1725.00
69	**Financial assistance for promotion of Mechanized Farming operations**	All blocks except B4 ,B2, B15 & B5	No's /Ha	0.04	500	20.00	500	20.00	500	20.00	500	20.00	500	20.00	2500	100.00
70	**Tractor Hiring Scheme**															
71	Purchase of Tractors for AED	All Blocks	No's /Ha	8	2	16.00	2	16.00	2	16.00	2	16.00	2	16.00	10	80.00
72	Purchase of Tractor drawn implements	All Blocks	No's /Ha	0.5	12	6.00	12	6.00	12	6.00	12	6.00	12	6.00	60	30.00

Sl. No.	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	for AED															
73	Purchase of Bull Dozers for AED	All Blocks	No's /Ha	80	2	160.00	0	0.00	0	0.00	0	0.00	0	0.00	2	160.00
74	**Solar Energy**				0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
75	Solar Powered Pumping System with automatic tracking facility															
76	**5 hp**	All Blocks	No's /Ha	3.75	10	37.50	10	37.50	10	37.50	10	37.50	10	37.50	50	187.50
77	**7.5 hp**	All Blocks	No's /Ha	5.3	10	53.00	10	53.00	10	53.00	10	53.00	10	53.00	50	265.00
78	**10 hp**	All Blocks	No's /Ha	6.75	10	67.50	10	67.50	10	67.50	10	67.50	10	67.50	50	337.50
79	Solar Driers to farmers / farmers' groups for drying agricultural produce															
80	**upto 400sq.ft**	All Blocks	No's /Ha	4.25	3	12.75	3	12.75	3	12.75	3	12.75	3	12.75	15	63.75
81	**400-600sq.ft**	All Blocks	No's /Ha	6.5	3	19.50	3	19.50	3	19.50	3	19.50	3	19.50	15	97.50
82	**Any other innovative schemes of AED with Components & its unit cost**															
83	PVP pipe laying	All Blocks	No's /Ha	0.2	600	120.00	600	120.00	600	120.00	600	120.00	600	120.00	3000	600.00
84	Replacement of Submersible Motors pump setswith pipe and electrical arrangement for Bore well , 5HP&7.5HP	All Blocks	No's /Ha	0.5	150	75.00	150	75.00	150	75.00	150	75.00	150	75.00	750	375.00

Sl. No.	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
85	**Information Technology (IT) related items**															
86	Computer & its accessories	All Blocks	No's /Ha	0.8	0	0.00	11	8.80	8	6.40	0	0.00	0	0.00	19	15.20
87	Tablet (Tab)	All Blocks	No's /Ha	0.25	0	0.00	10	2.50	0	0.00	0	0.00	0	0.00	10	2.50
88	Xerox machine	B13	No's /Ha	1.5	0	0.00	2	3.00	0	0.00	0	0.00	0	0.00	2	3.00
89	**Mechanized row crop cultivation-Pilot mechanizationDemonstration**	All Blocks	No's /Ha	0.04	0	0.00	12	0.48	10	0.40	10	0.40	10	0.40	42	1.68
90	**Self propelled / other power driven Horticultural Machinery**															
91	Chain saw/ Wheel barrow/ Mango grader/ planter and other suitable self propelled machineries and equipments for horticulture Crops	All Blocks	No's /Ha	1	0	0.00	47	47.00	55	55.00	65	65.00	70	70.00	237	237.00
92	**Manual Horticultural Equipments**															
93	Aluminum Ladder/ Ladder	All Blocks	No's /Ha	0.2	0	0.00	116	23.20	100	20.00	120	24.00	120	24.00	456	91.20
94	Plucker	All Blocks	No's /Ha	0.02	0	0.00	5	0.10	5	0.10	5	0.10	5	0.10	20	0.40
95	**Post Harvest Equipments for food grains, oil seeds and Horticultural**															

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
	Equipments															
96	Mini Dal Mill	All Blocks	No's /Ha	1.7	0	0.00	15	25.50	6	10.20	7	11.90	7	11.90	35	59.50
97	Millet Mill	All Blocks	No's /Ha	1.5	0	0.00	10	15.00	3	4.50	3	4.50	4	6.00	20	30.00
98	Oil mill with filter press (for all type of Horticulture / Food grain / Oil seeds crop)	All Blocks	No's /Ha	1.2	0	0.00	15	18.00	8	9.60	7	8.40	6	7.20	36	43.20
99	Packing Machines (for all types of Horticulture / Food grain / Oil seeds crop)	All Blocks	No's /Ha	3	0	0.00	50	150.00	50	150.00	50	150.00	40	120.00	190	570.00
100	All types of Power driven Dehusker/ sheller/ Threshers/ Harvesters/ De-spiking/ Deconing Machine/ Peeler/ Splitter/ Stripper (for all type of Horticulture / Food grain / Oil seeds crop)	All Blocks	No's /Ha	1.2	0	0.00	20	24.00	12	14.40	5	6.00	10	12.00	47	56.40
101	All types of Boiler/ Steamer/ Dryer solar (for all type of Horticulture / Food grain / Oil seeds crop)	All Blocks	No's /Ha	2	0	0.00	7	14.00	10	20.00	5	10.00	5	10.00	27	54.00
102	All types of Grinder/ Pulveriser/ Polisher (for all type of Horticulture / Food grain / Oil seed crop)		No's /Ha	0.3	0	0.00	2	0.60	2	0.60	2	0.60	1	0.30	7	2.10

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
103	All types of Cleaner cum grader/ Gradient separator/ Specific gravity separator (for all types of Horticulture / Food grain / Oil seed crop)	B13	No's /Ha	0.75	0	0.00	1	0.75	0	0.00	0	0.00	1	0.75	2	1.50
104	**Bio- mass gasifier**															
105	**Construction of Agricultural Engineering Extension centres (AEECs)**	B6, B13	No's /Ha	75	0	0.00	1	75.00	1	75.00	0	0.00	0	0.00	2	150.00
106	**Training of AED Engineers on " Agricultural Processing" and " Bio- Energy"**	B6, B13, B15 & B9	No's /Ha	0.04	0	0.00	2	0.08	2	0.08	2	0.08	2	0.08	8	0.32
	Grand total					**2927.93**		**3171.44**		**3129.71**		**3044.41**		**3026.16**		**15299.63**

Elachipalayam- B1, Erumapatti – B2, Kabilarmalai – B3, Kollihills – B4, Mallasamudram – B5, Mohanur – B6, Namagiripettai – B7, Namakkal – B8, Pallipalayam – B9, Paramathi – B10, Puduchatram – B11, Rasipuram – B12, Sendamangalam – B13, Thiruchengode – B14, Vennandur – B15

4.4 Agricultural Marketing

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

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

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

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

So, to accelerate the growth substantially, a new way of linking of Agribusiness development and promoting Agribusiness is needed. Promotion of commodity groups, farmer producer agencies, marketing organization and market linkage, encouraging of private players in

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

Strategies

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

- E-learning centre in Namakkal block
- Estabilishment of block level information and advisory centre in all blocks
- Construction of Storage godown in all blocks
- Construction of drying yardsin all blocks
- Distribution of plastic crates to vegetable commodity group farmersin all blocks
- Formation of Farmer Producer Organizations (FPO) in Kabilarmalai, Kollihills, Namagiripettai, Puduchatram and Pallipalayam blocks
- Imparting value addition trainings to commodity group farmers in all blocks
- Exposure visit (within state& outside state) in all blocks for commodity group farmers to acquire value addition technologies.

Budget

- It is proposed to incur ₹.9794.95 Lakh over a period of five years.

Expected Outcome

The expected impact of the intervention will be increasingly competitive agribusiness sector leading to diversification, higher-value added products and higher incomes for farmers, farm workers and entrepreneurs and reduced rural poverty. The interventions will facilitate the development of a competitive agriculture sector, promoting diversification and contributing to the transformation of agriculture into a system producing higher value produces. The interventions will also provide higher-value for consumers, value that will be shared as distributed benefits to value chain stakeholders including farmers, entrepreneurs and workers

Implementing Agency

The Block-level officials of the Department of Agricultural Marketing and Agri-Business will implement the programs.

Table 4.19. Budget for Strengthening of Agricultural Marketing and Agri-Business in Namakkal District

(₹. in Lakh)

Sl. No.	Intervention	Unit (Nos.)	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Promotion of Commodity Groups and Market Information															
1	Agri Marketing Information Centre at District level	Nos.	100	B7		0.00		0.00	1	100.00		0.00		0.00	1	100.00
2	Establishment of blocklevel market information & advisory centres for farmers and entrepreuners at newly created Integrated Agricultural Extension Centres(IAEC)	Nos.	5	All Blocks	3	15.00	3	15.00	3	15.00	3	15.00	3	15.00	15	75.00
	Strengthening of Uzhavar Sandhai and Regulated Market	Nos.														
3	Cold Storage	Nos.	10	B10, B11, B14	0	0.00	0	0.00	1	10.00	0	0.00	1	10.00	2	20.00
4	Drying Yard	Nos.	4	All Blocks	30	120.00	30	120.00	30	120.00	30	120.00	30	120.00	150	600.00
5	construction of regulated market	Nos.	10	B7, B12, B14	2	20.00	0	0.00	2	20.00	3	30.00	3	30.00	10	100.00
6	Storage godown	Nos.	6	All Blocks	1	6.00	2	12.00	3	18.00	2	12.00	2	12.00	10	60.00
7	Ticker Board and External Electrification	Nos.	0.0025	B6, B7, B10, B11, B12, B14	455	1.14	6	0.02	0	0.00	0	0.00	0	0.00	461	1.15

8	Provision of ICT Tools to Uzhavar sandhai	Nos.	1	B6, B7, B10, B11, B12, B14	6	6.00	0	0.00	0	0.00	0	0.00	0	0.00	6	6.00
9	Daily Message on Market Rate to Uzhavar sandhai Farmers Mobile.	Nos.	0.6	B6, B7, B10, B11, B12, B14	6	3.60	6	3.60	6	3.60	6	3.60	6	3.60	30	18.00
10	Strengthening of RM	Nos.	200	B7, B12	2	400.00	0	0.00	0	0.00	0	0.00	0	0.00	2	400.00
11	Upgradation of Uzhavar Shadhais	Nos.	100	All Blocks	19	1900.00	4	400.00	15	1500.00	18	1800.00	23	2300.00	79	7900.00
	Formation of FPO / Strengthening of Existing Commodity Groups															
12	FPO	Nos.	50	B3, B4, B8, B9, B11	1	50.00	1	50.00	1	50.00	1	50.00	1	50.00	5	250.00
	Provision of Market Access and Market Activities															
13	Dunnage	Nos.	0.05	All Blocks	30	1.50	30	1.50	30	1.50	30	1.50	30	1.50	150	7.50
14	Electronic Digital Weighing Scale - 5 Kg	Nos.	0.03	B7, B11, B14	0	0.00	160	4.80	0	0.00	0	0.00	0	0.00	160	4.80
15	Plastic crates	Nos.	0.025	All Blocks	300	7.50	300	7.50	300	7.50	300	7.50	300	7.50	1500	37.50
16	Tarpaulin	Nos.	0.02	All Blocks	150	3.00	150	3.00	150	3.00	150	3.00	150	3.00	750	15.00
	Post Harvest Infrastructure and Machinaries															
17	Coconut Ladder	Nos.	0.035	All Blocks except B4	14	0.49	25	0.88	24	0.84	23	0.81	14	0.49	100	3.50

18	Dhal processing Unit	Nos.	2	B1, B5, B7, B9	0	0.00	1	2.00	1	2.00	1	2.00	1	2.00	4	8.00
19	Maize Thresher	Nos.	2.5	B1, B5, B8, B9, B15	0	0.00	2	5.00	1	2.50	0	0.00	1	2.50	4	10.00
20	Turmeric Polisher	Nos.	3	B8, B12	0	0.00	0	0.00	1	3.00	1	3.00	0	0.00	2	6.00
21	Wooden Oil Expeller	Nos.	2	All Blocks except B4	2	4.00	5	10.00	4	8.00	2	4.00	2	4.00	15	30.00
	Capacity building Programme															
22	Exposure Visits - within state	Nos.	0.4	All Blocks	15	6.00	15	6.00	15	6.00	15	6.00	15	6.00	75	30.00
23	Exposure Visits - outside state - 3 days	Nos.	1	All Blocks	15	15.00	15	15.00	15	15.00	15	15.00	15	15.00	75	75.00
24	Training on Market led Extension, Agmark grading&Food safety, post harvest technology, Supply Chain Management, Grading-sorting-packing, Market linkages & Exports, Food processing and value addition at district level	Nos.	0.4	B15	15	6.00	15	6.00	15	6.00	15	6.00	15	6.00	75	30.00
25	Conducting festivals/melas, Field days, awareness campaign, seminar, Farmers-Scientists interaction, Village meeting	Nos.	0.1	All Blocks	15	1.50	15	1.50	15	1.50	15	1.50	15	1.50	75	7.50
	Grand total					**2566.73**		**663.79**		**1893.44**		**2080.91**		**2590.09**		**9794.95**

B1- Elacipalayam, B2-Erumapatty, B3- Kabilarmalai, B4-Kollihills, B5-Mallasamudram, B6-Mohanur, B7- Namakkal, B8- Namagiripet, B9-Puduchatram, B10-Paramathy, B11-Pallipalayam, B12-Rasipuram, B13-Sedamangalam, B14-Tiruchengode, B15-Vennandur

4.5 Seed and Organic Certification

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

1. Strengthening/creation of infrastructure in laboratories and communication and networking facilities in all blocks
2. Capacity buildingin all blocks

Expected outcome

Enhancement of communication and networking would promote the quality of seed and organic certification.

Budget

The budget requirement for fulfilling those interventions is ₹. 30.76 Lakh.

Implementing agency

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

Table 4.20 Budget Requirement for Seed certification in Namakkal District

(₹in Lakh)

Sl. No.	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
I	**Strengthening of Seed Certification lab**															
1	Blower, Conductivity meter, Dehuller/Scarifier, Dehumidifier Air Conditioner, Digital moisture meter, Dunnage, Fabricated display Racks ,Geaser, Generator, Heater,Hot air oven,Humidifier,Incubator,Induction stove,Microscope,Moisture meter,Packing machine,R. O system,Sample racks,Seed Grinder,Sieve,Thermo hydro meter,Dunnage,Trolley for carriages,Working chair,Working table, Miscellaneous,	All Blocks	No's	13.36	0	0.00	1	13.36	0	0.00	0	0.00	0	0.00	1	13.36
II	**Strengthening of communication and networking facilities**															
2	Computer accessories	All Blocks	No's	0.5	10	5.00	0	0.00	0	0.00	0	0.00	0	0.00	10	5.00
III	**Capacity Building**															

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
3	Training to seed grower for quality seed production	All Blocks	No's	0.2	0	0.00	15	3.00	15	3.00	15	3.00	15	3.00	60	12.00
4	Training to seed producers on seed certification procedures	All Blocks	No's	0.1	0	0.00	1	0.10	1	0.10	1	0.10	1	0.10	4	0.40
	Total					**5.00**		**16.46**		**3.10**		**3.10**		**3.10**		**30.76**

B1- Elacipalayam, B2-Erumapatty, B3- Kabilarmalai, B4-Kollihills, B5-Mallasamudram, B6-Mohanur, B7- Namakkal, B8- Namagiripet, B9-Puduchatram, B10-Paramathy, B11-Pallipalayam, B12-Rasipuram, B13-Sedamangalam, B14-Tiruchengode, B15-Vennandur

4.6 Animal Husbandry sector

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. Increasing the availability of fodder by strengthening farm infrastructure
3. Livestock breeding management
4. Livestock health
5. Improving the livestock productivity
6. Improving the service delivery at veterinary institutions
7. Enhancing livestock management
8. 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 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.

1. Establishment of vermicomposting unit in all blocks
2. Fodder production to the farmers by hydrophonic methods in all blocks
3. Fodder development in all blocks
4. Distribution of grass cutter in all blocks

Increasing the availability of fodder by strengthening farm infrastructure

The livestock sector is handicapped due to inadequate infrastructure facilities as a result of low productivity. Infrastructure development for animal husbandry is felt essential to provide the desired veterinary services in the interior pockets of the districts so as to enable the livestock owners living in the remote areas can avail the opportunities to consider AH activities as livelihood option and maximize profit through livestock sector. Adequately providing proper infrastructure and equipment to the veterinary health care institution is necessary for the timely diagnosis and treatment of animal diseases. Further, emphasis has to be laid on optimum utilization of waste land to grow fodder.

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

Livestock breeding management

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

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

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

1. Controlled Internal Drug Release (CIDR) in all blocks

Livestock health

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

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. The intervention have been propose are

1. Distribution of sheep, goat, piggery, poultry units in all blocks
2. Distribution of buffalo in Kabilarmalai, Mohanur, Paramathi and Pallipalayam blocks
3. Development of native chicken farms in all blocks
4. Establishment of disposal unit in Kollihills block

Improving the service delivery at veterinary institutions

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

1. Deep freezer facility for storage of vaccines and medicines in all blocks
2. Establishment of infrastructure facilities, disease diagnostic lab in Rasipuram and Thiruchengode blocks
3. Establishment of surgical theatres in all blocks

Enhancing livestock management

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

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

Capacity building

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

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

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

Budget allocation

The major themes proposed in the plan for animal husbandry sector with a total budget out lay of ₹. 6332.20 Lakh**.**

Project implementing agency

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

Table 4.21. Budget Requirement for Animal Husbandry in Namakkal District

(₹in Lakh)

Sl. No.	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Increasing the Availability of Fodder through Field level Interventions															
1	Establishment of Vermicomposting unit (single bed)	Nos	0.05	All Blocks	465	23.25	465	23.25	465	23.25	465	23.25	465	23.25	2325	116.25
2	Fodder production to the farmers by Hydrophonic methods	Nos	0.1	All Blocks	465	46.50	465	46.50	465	46.50	465	46.50	465	46.50	2325	232.50
3	Fodder plot development	acre	0.05	All blocks	400	20.00	400	20.00	400	20.00	200	10.00	200	10.00	1600	80.00
4	Distribution of Grass Cutter to farmers	Nos	0.15	All Blocks	930	139.50	930	139.50	930	139.50	930	139.50	930	139.50	4650	697.50
	Increasing the Availability of Fodder by Strengthening Farm Infrastructure															
	Livestock Breeding Management															
5	CIDR (Controlled Internal Drug Release) for increasing Fertility in Cattle	Nos	0.01	All Blocks	4650	46.50	5115	51.15	5580	55.80	5580	55.80	6045	60.45	26970	269.70
	Improving the Livestock Productivity															
6	Distibution of Sheep/Goat units -semi intensive system	Unit	0.6	Al blocks	25	15.00	25	15.00	25	15.00	25	15.00	25	15.00	125	75.00
7	Distribution of Buffalo units(5 Buffaloes)	Nos	4.5	B3, B6, B10, B9	25	112.50	25	112.50	25	112.50	25	112.50	25	112.50	125	562.50
8	Integrated farming (Goat+Cattle+Fish+Agriculture /Horticulture)	Unit	2	All Blocks	5	10.00	5	10.00	5	10.00	5	10.00	5	10.00	25	50.00
9	Development of Native chicken farms	Farm	1	All Blocks	25	25.00	25	25.00	25	25.00	25	25.00	25	25.00	125	125.00
10	Establishment of disposal pits for poultry unit	Nos	1	All Blocks except B4	705	705.00	330	330.00	330	330.00	330	330.00	330	330.00	2025	2025.00
11	Distribution of Piggery units (fattening-5 Nos)	Nos	1.25	B4	5	6.25	5	6.25	5	6.25	5	6.25	5	6.25	25	31.25

	Improving the Service Delivery at Veterinary Institutions															
12	Deep freezer facility for Storage of vaccines and Medicines	Nos	10	All Blocks	0	0.00	0	0.00	15	150.00	0	0.00	0	0.00	15	150.00
13	Establishment of Infrastructure facilities for Veterinary Institutions	Nos	30	B2, B3, B5, B8, B15	5	150.00	0	0.00	0	0.00	0	0.00	0	0.00	5	150.00
14	Establishment of Mobile Disease Diagnostic Labs	Nos	20	B12, B14	2	40.00	0	0.00	0	0.00	0	0.00	0	0.00	2	40.00
15	Establishment of Mobile Veterinary Units	Nos	10	B4, B9, B10, B12, B13	5	50.00	0	0.00	0	0.00	0	0.00	0	0.00	5	50.00
16	Establishment of surgical theatres at veterinary institution	Nos	30	All Blocks	3	90.00	3	90.00	3	90.00	3	90.00	3	90.00	15	450.00
17	Package of Modern Veterinary Diagnostic Aids to Veterinary Institutions such as Computerised X rays, Ultrasound, Diathermy etc.	Nos	30	All Blocks	3	90.00	3	90.00	3	90.00	3	90.00	3	90.00	15	450.00
18	Establishment of Ambulance facility for animals	Nos	80	B8	1	80.00	1	80.00	0	0.00	0	0.00	0	0.00	2	160.00
	Livestock Management															
19	Animal Identification and Traceability	Unit of 1000 animals	0.1	All Blocks	300	30.00	30	3.00	30	3.00	30	3.00	30	3.00	420	42.00
20	Conservation of Indigenous breeds	Pack	10	All Blocks	1	10.00	1	10.00	1	10.00	1	10.00	1	10.00	5	50.00
	Capacity Building															
21	Establishment of Farmers training Centre	Nos	200	B8	0	0.00	1	200.00	0	0.00	0	0.00	0	0.00	1	200.00
22	Conducting Demonstrations, Camps and Campaigns	Nos	0.1	All Blocks	186	18.60	186	18.60	186	18.60	186	18.60	186	18.60	930	93.00
23	Creating awarness of livestock management to the farmers through Training Programmes	Nos	0.1	All Blocks	465	46.50	465	46.50	465	46.50	465	46.50	465	46.50	2325	232.50
	Grand total					**1754.60**		**1317.25**		**1191.90**		**1031.90**		**1036.55**		**6332.20**

B1- Elacipalayam B2- Erumapatty B3- Kabilarmalai B4- Kollihills B5- Mallasamudram B6- Mohanur B7- Namagiripet B8- Namakkal B9- Pallipalayam B10- Paramathy B11- Puduchatram B12- Rasipuram B13- Sendamangalam B14- Tiruchengode B15- Vennandur

4.7 Animal Science Research

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

- Animal ambulance in all blocks
- Centralized Molecular laboratories in all blocks
- Referral Water Testing Laboratories in all blocks
- Socio economic empowerment of livestock farmers in all blocks

Budget

The major themes proposed in the plan for animal science research with a total budget out lay of ₹.3069.55 Lakh.

Table 4.22. Budget Requirement for Animal Husbandry Research in Namakkal District

(₹in Lakh)

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	**Infrastructure and Assets**															
1	Animal Ambulance and referral hospitals for addressing rural veterinary care	All Blocks	No	141	1	141.00	1	141.00	1	141.00	0	0.00	0	0.00	3	423.00
2	Centralized Molecular laboratories	All Blocks	Nos	508	1	508.00	1	508.00	0	0.00	0	0.00	1	508.00	3	1524.00
3	Referral Water Testing Laboratories	All Blocks	Nos	216.4	1	216.40	1	216.40	0	0.00	1	216.40	1	216.40	4	865.60
4	Socio economic empowerment of livestock farmers	All Blocks	Nos	51.39	1	51.39	1	51.39	1	51.39	1	51.39	1	51.39	5	256.95
	Grand total					**916.79**		**916.79**		**192.39**		**267.79**		**775.79**		**3069.55**

Elachipalayam- B1, Erumapatti – B2, Kabilarmalai – B3, Kollihills – B4, Mallasamudram – B5, Mohanur – B6, Namagiripettai – B7, Namakkal – B8, Pallipalayam – B9, Paramathi – B10, Puduchatram – B11, Rasipuram – B12, Sendamangalam – B13, Thiruchengode – B14, Vennandur – B15

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 was 340 g a day as against 299 g globally. “India’s milk production has touched 155.4 metric tonnes during 2015-16. Consumption is increasing at a faster rate. However in the country more than 90 per cent of the dairying is at the subsistence level so the emerging trends have to increase the county’s milk production moreover. To fulfill the shortage in dairy sector the following interventions have been suggested.

Strengthening of milk storages and processing units

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

The major interventions are,

1. Milk storage tanks of various capacities in all blocks
2. Milk tankersin all blocks
3. Milk pumpsin all blocks
4. Generator, curd processing equipments, cleaning in place equipments in accessories in all blocks

Enhancing milk production and milk processing units

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

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

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

Capacity building

India is the largest milk producer in the world with an annual production of over 155.4 metric tonnes of milk, yet the sector faces numerous issues. One of the major challenges facing the dairy sector is the growing gap between milk supply and demand. Another major challenge arises from the fact that more than 92 percent of the animals are owned by smallholders who had little ownership of land to manage them. The small farmers do not have sufficient resources and lack training in dairy sector that leads to poor animal health and low milk yield. Furthermore, the

small farmers lack knowledge of modern breeding practices. To make the farmers as scholars in particular thing some trainings and camps has to be conducted. To make sure this the following intervention has been proposed.

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

Marketing structures

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

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

Quality control

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

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

Processing and value addition

While adding value to farm and livestock products before they reach the local and international market is one of the key aims of Vision 2030. Product diversification has become an important aspect of business strategy with reasons for this increased focus being increased profitability, reduction in risk, increasing competition, higher growth and more efficient resource

allocation. Value addition in the dairy value chain is still a challenge in our country. Value addition has been hailed as one of the solutions to the perishability challenge of milk by converting it to a more durable form and hence reducing farm losses. But only few of them undertake the value addition In India. To maximize the value addition in rural areas the following interventions have been suggested

1. Dairy processing plants in all blocks
2. Water and effluent treatment plants in all blocks
3. Steam raising plant in all blocks
4. Fat handling and other dairy equipment's in all blocks

Development for dairy sector

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

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

Budget allocation

An outlay of ₹.21383.75 Lakh is proposed to fulfill the aforementioned interventions for five years. This foresighted implementation of developmental schemes in Dairy Sector has enabled to increase the per capita income of rural households in backward Districts.

Implementing agency

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

Table 4.23. Budget requirement for Dairy Development sector

(₹in Lakh)

Sl. No.	Intervention	Unit	Unit Cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Electrical installation like Transformer, UPS, Stabilizers, Control Panel MCC etc.,	1	25	All blocks	1	25.00	1	25.00	1	25.00	1	25.00	1	25.00	5	125.00
2	Milk Storage Tanks of various capacities	1	15	All blocks	1	15.00	1	15.00	1	15.00	1	15.00	1	15.00	5	75.00
3	Tub washer, Can washers, Crate conveyor systems.	1	10	All blocks	0	0.00	1	10.00	1	10.00	1	10.00	0	0.00	3	30.00
4	Point of Sale Machines and billing systems	1	0.25	All blocks	25	6.25	25	6.25	25	6.25	25	6.25	25	6.25	125	31.25
5	SS pipes and fittings	1	5	All blocks	1	5.00	1	5.00	1	5.00	1	5.00	1	5.00	5	25.00
6	Solar system for water heating	1	2	All blocks	1	2.00	1	2.00	1	2.00	1	2.00	1	2.00	5	10.00
7	Packing Machineries for milk, Butter, Ghee, SMP and Other Milk products	1	18	All blocks	1	18.00	1	18.00	1	18.00	1	18.00	1	18.00	5	90.00
8	Plate Heat type Chillers and pasteurizers	1	10	All blocks	2	20.00	2	20.00	1	10.00	1	10.00	1	10.00	7	70.00
9	Milk Tankers of various capacities	1	25	All blocks	2	50.00	2	50.00	2	50.00	2	50.00	2	50.00	10	250.00
10	Milk Pumps of Various capacities	1	0.5	All blocks	5	2.50	5	2.50	5	2.50	5	2.50	5	2.50	25	12.50
11	Generator of various capacities	1	20	All blocks	1	20.00	1	20.00	1	20.00	1	20.00	1	20.00	5	100.00
12	Curd processing equipments	1	50	All blocks	0	0.00	0	0.00	1	50.00	1	50.00	1	50.00	3	150.00
13	Cleaning In Place equipments with accessories	1	75	All blocks	0	0.00	1	75.00	1	75.00	0	0.00	0	0.00	2	150.00
	Procurement and Input															
14	Veterinary Medicine	1	2	All blocks	5	10.00	5	10.00	5	10.00	5	10.00	10	20.00	30	60.00
15	Two wheeler for AI	1	0.5	All blocks	20	10.00	20	10.00	20	10.00	20	10.00	20	10.00	100	50.00

Sl. No.	Intervention	Unit	Unit Cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	technician															
16	Computer system with accessories	1	0.5	All blocks	20	10.00	20	10.00	20	10.00	20	10.00	20	10.00	100	50.00
17	Fodder seed materials	1	0.25	All blocks	12	3.00	12	3.00	12	3.00	12	3.00	12	3.00	60	15.00
18	Fodder development equipments like chaff cutter, Mower etc.,	1	0.2	All blocks	25	5.00	25	5.00	25	5.00	25	5.00	25	5.00	125	25.00
19	Bulk Milk coolers of Various capacities	1	15	All blocks	5	75.00	5	75.00	5	75.00	5	75.00	5	75.00	25	375.00
20	Milk cans	1	0.035	All blocks	500	17.50	500	17.50	500	17.50	500	17.50	500	17.50	2500	87.50
21	Electronic weighing scales of various capacities.	1	0.3	All blocks	100	30.00	100	30.00	100	30.00	100	30.00	100	30.00	500	150.00
22	Electronic milk testing equipments	1	1.25	All blocks	200	250.00	200	250.00	200	250.00	200	250.00	200	250.00	1000	1250.00
23	Milking machine	1	0.8	All blocks	50	40.00	50	40.00	50	40.00	50	40.00	50	40.00	250	200.00
24	Cow shed	1	5	All blocks	50	250.00	50	250.00	50	250.00	50	250.00	50	250.00	250	1250.00
25	Society Buildings	1	20	All blocks	50	1000.00	50	1000.00	50	1000.00	50	1000.00	50	1000.00	250	5000.00
26	Cryogenic containers	1	0.35	All blocks	50	17.50	50	17.50	50	17.50	50	17.50	50	17.50	250	87.50
27	Equipments for Artificial Insemination	1	0.5	All blocks	10	5.00	10	5.00	10	5.00	10	5.00	10	5.00	50	25.00
	Capacity building															
28	Training of personnel of MPCS, Union and Federation.	1	0.05	All blocks	200	10.00	200	10.00	200	10.00	200	10.00	200	10.00	1000	50.00
29	Infertility Camps	1	0.2	All blocks	200	40.00	200	40.00	200	40.00	200	40.00	200	40.00	1000	200.00
	Marketing															
30	Parlour structures	1	5	All blocks	50	250.00	50	250.00	50	250.00	50	250.00	50	250.00	250	1250.00
31	Milk product storage cabinets	1	0.3	All blocks	300	90.00	300	90.00	300	90.00	300	90.00	300	90.00	1500	450.00
32	Product Billing systems	1	0.3	All blocks	50	15.00	50	15.00	50	15.00	50	15.00	50	15.00	250	75.00
	Quality control															
33	Adulteration detection equipments	1	4	All blocks	2	8.00	2	8.00	2	8.00	2	8.00	2	8.00	10	40.00
34	Milk testing equipment and Laboratory.	1	5	All blocks	2	10.00	2	10.00	2	10.00	2	10.00	2	10.00	10	50.00
	Processing															

Sl. No.	Intervention	Unit	Unit Cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
35	Dairy Processing Plants	1	6000	All blocks	0	0.00	0	0.00	1	6000.00	0	0.00	0	0.00	1	6000.00
36	Refrigeration Plants	1	500	All blocks	0	0.00	0	0.00	1	500.00	0	0.00	0	0.00	1	500.00
37	Water Treatment Plants. Reverse Osmosis plant	1	100	All blocks	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	1	100.00
38	Effluent treatment plant	1	100	All blocks	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	1	100.00
39	Steam raising plant with accessories	1	100	All blocks	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	1	100.00
40	Fat handling equipments	1	200	All blocks	0	0.00	0	0.00	1	200.00	0	0.00	0	0.00	1	200.00
41	Dairy equipments	1	50	All blocks	1	50.00	1	50.00	1	50.00	1	50.00	1	50.00	5	250.00
	Civil work Infrastructure															
42	Construction of Dairy	1	1500	All blocks	0	0.00	0	0.00	1	1500.00	0	0.00	0	0.00	1	1500.00
43	BMC buildings	1	15	All blocks	5	75.00	5	75.00	5	75.00	5	75.00	5	75.00	25	375.00
44	Ware house for Dairy products	1	200	All blocks	0	0.00	0	0.00	1	200.00	0	0.00	0	0.00	1	200.00
45	Ware house for Dairy consumables	1	200	All blocks	0	0.00	0	0.00	1	200.00	0	0.00	0	0.00	1	200.00
	Grand total					**2434.75**		**2519.75**		**11459.75**		**2484.75**		**2484.75**		**21383.75**

Elachipalayam- B1, Erumapatti – B2, Kabilarmalai – B3, Kollihills – B4, Mallasamudram – B5, Mohanur – B6, Namagiripettai – B7, Namakkal – B8, Pallipalayam – B9, Paramathi – B10, Puduchatram – B11, Rasipuram – B12, Sendamangalam – B13, Thiruchengode – B14, Vennandur – B15

4.9 Fisheries sector

Fisheries' as a sector is one of the thrust areas in the overall Economic development of the State playing a predominant role in its economic activity by its contribution to direct and indirect employment for more than 11 lakh fishers, contributing food security to a considerable portion of population and earning substantial revenue, especially from foreign exchange. 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.

I. Creation of infrastructure facilities

With increasing pressure on the world's inland and coastal marine fisheries, increases in production and quality of yield are being sought through the application of a range of enhancement techniques. Which of these is applied depends on the attitude to the natural resource by societies at different levels of economic development. The range of enhancement techniques involves increasing levels of human input and control which raise productivity significantly, but which also raise costs. Introductions have raised production in many areas of the world at the price of the risk of environmental disruption. Stocking is extremely widespread but has generally been applied uncritically. A variety of models are proposed to serve as a basis for more rigorous evaluation of biological and economic effectiveness of this practice. Fertilization of water bodies is used to raise levels of production further. Elimination of unwanted species then becomes necessary to maximize benefits from the target species. Adjustments to the habitats within the water body assist in raising general levels of productivity which culminate in the conversion of areas of the water into fish ponds or for cage culture. This process has important implications for the social, economic and policy context which necessitates shifts in ownership, finance and education among populations where these types of development occur**.**

Fish Farming is an age old activity and in practice from ancient times. The successful fish culture requires ploughing of pond, addition of manure, stocking of fish seed; eradication of unwanted aquatic plants and animals, watering the pond; harvesting the crop and marketing of the produce. The fish culture technologies and economics are simple and understandable to the fish farmers. 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.

The interventions are

1. Biological Control of Aquatic Weeds by Stocking of Grass Carps in Aquatic Weed Infested water bodies in all blocks
2. Increasing Fishing Efficiency of Inland Fishermen and Fish Farmers in all blocks
3. Enhancement of Fish production in irrigation tanks and panchayat tanks by stocking fish seedsin all blocks
4. Promotion of quality fish marketing by traditional fishers by providing moped with ice box in all blocks except Mallasamudram, Namagiripettai blocks
5. Propagation of Fish Culture in Multi-purpose farm ponds in Tamil Nadu in Elachipalayam, Kabilarmalai, Kollihills, Mohanur, Namakkal, Paramathi and Vennandur blocks

II. Capacity building

Effective extension support is essential for the promotion of Aquaculture in freshwater and brackish water areas. It is necessary to establish the information centers/data dissemination centers in Fishermen villages, animation camps in fisheries villages, seminars, exhibitions and workshop, and awareness centers for linking the fishing villages, marketing centers and the district offices. Hence in this district it is necessary to give training to fish farmers in all blocks, organization of fish festival in Namakkal and Pallipalayam blocks and exposure visit to other states in Namakkal and Pallipalayam blocks are proposed

Budget

The budget requirement for fulfilling the above interventions is ₹. 871.96 Lakh

Implementing agency

Department of Fisheries will be implementing the project

Table 4.24. Budget Requirement for Fishery in Namakkal District

(₹in Lakh)

Sl. No.	Intervention	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Enhancement of fisheries															
1	Propagation of Fish Culture in Multi-purpose farm ponds in Tamil Nadu	Elachypalayam, Kabilarmalai, Kollihills, Mohanoor, Namakkal, Paramathy, vellore, Vennandhur	2.5	0.348	4	1.39	4	1.39	4	1.39	4	1.39	4	1.39	20	6.96
2	Promotion of quality fish marketing by traditional fishers by providing mobbed with icebox	Elachypalayam,Erumapatti, Kabilarmalai, Kollihills, Mohanoor,Namakkal, Pallipalayam, Paramathy, vellore, Rasipuram, Sendhamangalam, Thiruchengodu, Vennandhur	25	0.5	55	27.50	55	27.50	50	25.00	50	25.00	50	25.00	260	130.00
3	Increasing fishing efficiency of inland fishermen and fish farmers	All Blocks	100	0.15	260	39.00	260	39.00	260	39.00	260	39.00	240	36.00	1280	192.00
4	Enhancement of Fish production in irrigation tanks and Panchayat tanks by stocking fish seeds	All Blocks	500	0.04	1500	60.00	1500	60.00	1500	60.00	1500	60.00	1500	60.00	7500	300.00
5	Biological Control of Aquatic Weeds by	All Blocks	250	0.02	850	17.00	1100	22.00	1600	32.00	1950	39.00	1200	24.00	6700	134.00

Sl. No.	Intervention	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Stocking of Grass Carps in Aquatic Weed Infested water bodies															
	Capacity building programme					0.00		0.00		0.00		0.00		0.00	0	0.00
6	Exposure visit to farmers to other states	Namakkal and Pallipalayam	50	0.06	20	1.20	20	1.20	20	1.20	20	1.20	20	1.20	100	6.00
7	Organisation of Fish festivel	Namakkal and Pallipalayam	1	5	2	10.00	0	0.00	0	0.00	0	0.00	0	0.00	2	10.00
8	Training to fish farmers	All Blocks	250	0.03	650	19.50	650	19.50	600	18.00	600	18.00	600	18.00	3100	93.00
	Grand total					**175.59**		**170.59**		**176.59**		**183.59**		**165.59**		**871.96**

4.10 Fisheries Research

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. In India, fisheries have always been playing a vital role in providing gainful employment to people, besides securing their food and nutritional security, especially in rural areas. India is the third largest producer of inland capture fish in the world after China and Myanmar. Inland fish production in the country registered an impressive growth of 8 fold in the last 50 years.

Tamil Nadu with its 1076 km of coastline (13 per cent of country's coastline), 1.9 lakh sq. km of Exclusive Economic Zone (EEZ) (9.4 per cent of India's EEZ) and a continental shelf of about 41,412 sq km is one of the leading producers of both marine and inland fish. Tamil Nadu has 3.7 Lakh hectare of water spread area suitable for fish culture. It comprises of major reservoirs (52,000 ha.), big/small irrigation tanks (98000 ha.), small lakes and Rural Fishery Demonstration Tanks (158000 ha.) and brackish water areas, swamps, estuaries (63,000 ha.) which are suitable for both capture and culture fisheries. Tamil Nadu is also endowed with rich cold water fishery resources. Apart from this 7400 km length of rivers and canals offer good scope for fisheries development. The Inland Fisheries policy of the state focuses in maximizing the fish production utilizing available inland water resources by adopting scientific freshwater aquaculture management and quality seed production.

Tamil Nadu Fisheries University (TNFU) is the State funded, unitary professional Fisheries University in India imparting education, research and training to enhance fish production and utilization by following the State Agricultural University (SAU) pattern and syllabi. The prominent area of research in the area of aquaculture are: improving the quality of progeny by developing sperm bank, development of techniques for the culture of fin fishes in cages, enhancing the water use efficiency and productivity by bio-floc technology, developing the improved methods of ornamental fish culture and breeding techniques and inventing techniques to prevent and cure fish diseases. Stock assessment of important fishery resources, mapping the fauna and understanding the biology of commercially important and rare species, coastal area and inland waters monitoring for the major pollutants and waste water management are the focus areas of research. Value addition to fish has been a major focus area and

technologies for fish pickle, fish noodles and ready to eat products like fish curry, fish puff, fish cutlet and fish burger have been evolved. Quality control wing of fish processing has evolved several rapid techniques for detection of human pathogens. A separate laboratory for quality monitoring will be built to help the industry.

In the Twelfth Five Year Plan period, the fisheries sector in Tamil Nadu was driven the following goal and objectives:

Goal

The goal is to help the fisheries sector to be resilient and to help fishermen and farmers to increase their income through fisheries research.

Objectives

- To impart quality education in different branches of fisheries science
- To evolve breeds/technologies for sustained increase in yield and to meet the end users expectations in terms of quality and food safety.
- To harness research output of frontier sciences to increase value added fish products, storage and processing.
- To provide extension services to fish farmers, fisher folk, unemployed youth and entrepreneurs in fisheries sciences.

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 25kg 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 Kanyakumari 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

The following are the steps in this project:

- Enhancement of per capita consumption of fish in Namakkal block
- Ensuring nutritional security through fish and fishery products in Namakkal block

Budget

The proposed intervention will be implemented with a budget outlay of ₹141.60 Lakh.

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 Requirement for Fisheries Research in Namakkal District

(₹in Lakh)

Sl. No.	Interventions	Blocks covered	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
	Harvest and Post harvest														
	Enhancement of per capita consumption of fish														
1	Awareness campaign on health beneficial attributes of fish	Namakkal	0.005	52	0.26	52	0.26	52	0.26	52	0.26	52	0.26	260	1.30
2	Production of short films on nutritive value of fish and screening in theatres and television channels	Namakkal	50	0	0.00	1	50.00	0	0.00	0	0.00	0	0.00	1	50.00
g	**Ensuring nutritional security through fish and fishery products**														
3	supply of preserved ready to eat and ready to cook fish products through public distribution sytems	Namakkal	12.9	0	0.00	0	0.00	1	12.90	0	0.00	0	0.00	1	12.90
4	Supply of fish and fish products in mid day meal programme	Namakkal	12.9	0	0.00	1	12.90	0	0.00	0	0.00	0	0.00	1	12.90
5	Supply chain management to promote consumption of farmed freshwater fishes	Namakkal	64.5	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**

4.11 Public Works Department

Increasing the ground water level

The water resource organization of the Public Works Department have indicated a number of proposals for harnessing water resources as well as for reducing the losses from existing canals irrigation projects. As many of the old irrigation systems are in deteriorating condition and in a state of disrepair, it is absolutely necessary to rehabilitate and/or to carry out the repair works so as to economize the water use and improve the conveyance efficiency and water use efficiency as well. It is hoped that better water control and delivery could be achieved by these measures so that the productivity per unit of water could be enhanced sufficiently.

Project components

- Construction of recharge structure in downstream side of the causeway across Periyarriver in Periyakombai Village in Rasipuram blocks of Namakkal district.
- Construction of checkdam across vatchukal river in unanthangal village in Namagiripettai Block in Rasipuram taluk of Namakkal district.
- Construction of checkdam across koraiyar river in Moolapallipatti village of Rasipuram block in Namakkal district.
- Rehabilitation of the distributaries in Mettur east bank canal in Namakkal district.

Budget

It is proposed to incur ₹.604.00 Lakh over a period of five years.

Expected outcome

The project will increase the Ground water table level and carrying capacity of canals during the heavy rain period and thereby increasing the crop cultivation area. This will result in the ensuring of food security for the people.

Implementing agency

Department of Public Works will be implementing the project.

Table 4.26. Budget Estimate for PWD works in Namakkal district

(₹.in Lakh)

Sl. No.	Intervention	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Construction of Recharge Structure in Downstream Side of the Causeway across Periyar River in Periyakombai Village in Rasipuram Taluk of Namakkal District.	Namagiripettai	Ha	4.49	0	0.00	20.05	90.00	0	0.00	0	0.00	0	0.00	20.05	90.00
2	Construction of Checkdam in S.F.No:3 across vatchukal River in Unanthangal Village in Namagiripettai Block in Rasipuram Taluk of Namakkal District.	Namagiripettai	Ha	6.41	0	0.00	0	0.00	15.45	99.00	0	0.00	0	0.00	15.45	99.00
3	Construction of Checkdam across koraiyar River in S.F.No:145 in Moolapallipatti Village of Rasipuram Taluk in Namakkal District.	Namagiripettai	Ha	4.62	0	0.00	0	0.00	0	0.00	19.5	90.00	0	0.00	19.5	90.00
4	Rehabilitation of the Distributories from LS 53600 M to 63400 M in Mettur East Bank Canal in Namakkal District.	Pallipalayam	Ha	0.43	0	0.00	0	0.00	0	0.00	0	0.00	752.55	325.00	752.55	325.00
	Grand total					**0.00**		**90.00**		**99.00**		**90.00**		**325.00**		**604.00**

4.12. Cooperation

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

- Construction of compound walls in all blocks
- Construction of office building in Namakkal, Erumapatty, Rasipuram, Puduchatram, Sendamangalam and Paramathi blocks
- Godown construction in Namakkal and Namagiripettai blocks
- Construction of ryots vehicle shed in Thiruchengode block

Budget

It is proposed to incur ₹. 3048.36 Lakh over a period of five years.

Implementing agency

Department of Cooperation will be implementing the project.

Table. 4.27. Budget estimate for Co- operation

(₹.in Lakh)

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 Compound wall	All Blocks	60	538.50	7	66.69	7	65.50	6	56.00	9	107.50	89	834.19
2	Construction of Godown	B1 and B3	0	0.00	2	20.00	1	20.00	0	0.00	0	0.00	3	40.00
3	Construction of Office Building	B1, B2, B3, B4, B5, B6, B8 and B11	5	302.00	21	450.60	0	0.00	0	0.00	0	0.00	26	752.60
4	Construction of Road	B10 and B13	0	0.00	0	0.00	1	60.00	0	0.00	1	60.00	2	120.00
5	Construction of Ryots Vehicle Shed	B10	0	0.00	0	0.00	1	15.00	0	0.00	0	0.00	1	15.00
6	Construction of Tender Hall	B1 and B13	1	32.40	1	38.30	0	0.00	0	0.00	0	0.00	2	70.70
7	Establishment of Auction yard	B2, B3, B10, B13	0	0.00	1	7.00	1	25.00	1	75.00	1	25.00	4	132.00
8	Establishment of Processing unit	B1, B5, B9 and B10	10	54.51	3	37.46	0	0.00	0	0.00	1	2.50	14	94.47
9	Renovation of Auction yard	B1, B10 and B13	0	0.00	0	0.00	2	9.75	3	15.00	2	10.00	7	34.75
10	Renovation of compound wall	B10 and B13	0	0.00	0	0.00	1	20.00	0	0.00	1	20.00	2	40.00
11	Renovation of Godown	All Blocks except B2, B6 and B7	1	10.00	6	43.61	16	146.50	2	10.00	2	10.00	27	220.11
12	Renovation of Office Building	All Blocks except	7	11.40	9	69.20	16	88.00	3	3.00	1	1.00	36	172.60

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
		B3, B4, B6												
13	Renovation of Ryots Rest Hall	B10	0	0.00	1	7.20	0	0.00	0	0.00	0	0.00	1	7.20
14	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	343	97.91	384	123.78	301	189.79	123	58.67	36	38.10	1187	508.24
15	Amenities for Cooperative Centres (RO Water unit, Sanitation, Vehicle Parking Shed, Construction and renovation of Marriage Hall, Construction and renovation of amenity centres)	All Blocks	0	0.00	0	0.00	2	6.50	0	0.00	0	0.00	2	6.50
	Total			**1046.72**		**863.84**		**646.04**		**217.67**		**274.10**		**3048.36**

Namakkal – B1, Mohanur – B2, Namagiripet – B3, Erumapatty – B4, Rasipuram - B5, Puduchatram – B6, Vennandur – B7, Sendamangalam- B8, Kollihills – 9, Tiruchengode – B10, Paramathi – B11, Elachipalayam – B12, Mallasamudram – B13, Kabilarmalai – B14

Table 4.28.Consolidated Budget Abstract for Namakkal district

(₹ in Lakh)

Sl. No.	Components	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Agriculture	1833.94	3858.90	3103.99	1763.67	1742.63	12303.06
2	Horticulture	41831.00	34992.82	42202.76	42388.75	42620.00	204035.00
3	Agricultural Engineering	2927.93	3171.44	3129.71	3044.41	3026.16	15299.63
4	Agricultural Marketing	2566.73	663.79	1893.44	2080.91	2590.09	9794.95
5	Seed Certification & Organic Certification	5.00	16.46	3.10	3.10	3.10	30.76
6	Animal Husbandry	1754.60	1317.25	1191.90	1031.90	1036.55	6332.20
7	Animal Science Research (TANUVAS)	916.79	916.79	192.39	267.79	775.79	3069.55
8	Dairy Development	2434.75	2519.75	11459.75	2484.75	2484.75	21383.75
9	Fisheries	175.59	170.59	176.59	183.59	165.59	871.96
10	Fisheries Research (TNFU)	64.76	63.16	13.16	0.26	0.26	141.60
11	Water Resource Organization	0.00	90.00	99.00	90.00	325.00	604.00
12	Civil Supplies & Co-Operation	1046.72	863.84	646.04	217.67	274.10	3048.36
	Grand total	**55557.81**	**48644.79**	**64111.83**	**53556.80**	**55044.02**	**276914.82**

The total budget requirement for the implementation of various interventions by different departments in Namakkal district is **₹ 276914.82 Lakh.**


KARNATAKA
KERALA
SRI LANKA