NATIONAL AGRICULTURE DEVELOPMENT PROGRAMME (NADP)

DISTRICT AGRICULTURE PLAN

KRISHNAGIRI

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

NATIONAL AGRICULTURE DEVELOPMENT PROGRAMME (NADP / RKVY)

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TAMIL NADU AGRICULTURAL UNIVERSITY
COIMBATORE - 641 003

2017

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EXECUTIVE SUMMARY

Krishnagiri District was bifurcated from the while Dharmapuri district and it has come into existence from February 9, 2004 consisting of Hosur and Krishnagiri Revenue Divisions. After the bifurcation of Krishnagiri District from Dharmapuri, the present Krishnagiri is located approximately between 11°12'N and 12°49'N of the north latitude and between 77°27'E and 78°38'E of east longitude. This District is elevated from 300 m to 1400 m above the mean sea level. The total Geographical extent of Krishnagiri District is 5,14,326 hectares, of which net sown area (182891ha) and the Gross area sown accounted for 1,82,891 ha respectively. Red soil in the predominant soil type of thedisrtict and occupied 45 per cent to the geographical area. Different types of the soils such as black or mixed loamy, red and gravel are found in the district. The literacy rate of the district is 72.41 per cent.The district have 2, 03,965 hectares of forest land which constituted nearly 40 percent of the total geographical area of the district. Krishnagiri District has two Municipalities, 10 Panchayat Unions, seven Town Panchayats, 352 Village Panchayats and 636 Revenue Villages. Shoolagiri, Thally and Veppanapalli blocks have vast stretches of forest area with large tribal population.

The district is referred to as the belt of horticultural crops. Most of the fruit crops, vegetables, flowers, spices, plantation crops and medicinal plants are being grown larger extent. The polyhouse cultivation of flowers and vegetables has become popular. Important crops grown in the district are paddy, ragi, cholam, red gram, horesegram, mango, coconut, cabbage, tomato etc., and the major cash crops are groundnut, flowers and cotton. The current fallow and barren lands occupying eight percent of area can be reduced considerably encouraging mango garden plantations. Meanwhile, the productivity of the crops has to be increased so as to compensate the reduction in land under agriculture by adopting modern practices and high yielding hybrid varieties.

The major irrigated crops in the district are paddy, ragi, turmeric, sugarcane, banana, tomato, groundnut, cotton, coconut and flowers. The irrigated area under vegetables, fruit and flowers if increased by judicious use of water with modern water management techniques, yield of those crops can be boosted and thereby export potential can be explored. The productivity of food crops like paddy, ragi and pulses can also be increased to the target levels by high yielding varieties and proper water management practices. This district has a great potential for agribusiness and export of agricultural products. The establishment of

industrial complexes and special economic zones will further contribute to the development of the district.

The cropping pattern provides an insight into the major crops grown in this district. Paddy, ragi and samai are the predominant cereal crops grown and among the pulses, horse gram and red gram are predominantly grown. Groundnut is the major oilseed crop grown and among the cash crops, mango, cotton and banana are grown predominantly.

There is ample scope for selective mechanization in the district by large scale use of power tiller, thrasher, cultivators, transplanter and harvesters. Also other allied sectors like animal husbandry, dairy development, sericulture, forestry and PWD (WRO) has large scope for a development in the district. The strength for the district is excellent climate suitable for more than agri industry. Next are the industrial complexes for the processors, production of quality commodities for the export. Yet the fragmentation of land holdings and migration of agricultural labour to the industries and over exploitation of ground water is constrained for the improvement of the livelihood of the people. The major threat of agriculture is the migration of major people to the urban areas and the increased input costs for the seeds, fertilizers, equipment's, labour charges, chemicals etc.,

With the strengths and opportunities, the weakness and threats can be overcome by adoption of identified strategies for the next five year plan period. The various strategies are establishment of agri export zones, recharging of wells and tanks by connecting rivers and ponds, creation of water harvesting structures, popularization of new varieties, proper use of processing industries, agricultural mechanization, promotion of precision farming techniques for the potential agricultural and horticultural crops, promotion of organic farming, promotion of agroforestry models, establishment of research stations and centres for horticultural crops particularly mango and other flowers, establishment of horticultural college in the district to create awareness of hi tech horticulture farming, establishment of marketing facilities, effective utilization of fodder resources, increasing milk processing facilities, strengthening of existing farms of agricultural and allied sectors, popularization of agricultural and horticultural machineries, promotion of water harvesting structures, organizing workshops, conferences, melas for transfer of technologies to the farmers, training and demonstrations, organizing exposure visits to the farmers at outside and within the state.

The potential of the district has to tap from agricultural and other allied sectors. The interventions or strategies identified for this five year plan period will aim to attain the maximum developmentof the district. The budget of the interventions proposed for the five year plan period 2017-18 to 2021-22 is given in the table.

Budget Abstractfor Krishnagiri district

(₹ in Lakhs)

Sl. No	Sectors	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Agriculture	7833.65	12224.70	11939.16	9689.05	12226.18	53912.68
2	Agricultural Research (TNAU)	347.00	136.00	56.00	86.00	10.00	635.00
3	Horticulture	9599.31	11039.88	12107.45	13000.63	14137.01	59884.26
4	Agricultural Engineering	1344.63	1165.22	1174.42	1161.37	1159.85	6005.49
5	Agricultural Marketing	2368.42	3978.35	1845.65	1800.65	2095.65	12088.72
6	Seed Certification & Organic Certification	20.86	2.00	2.40	16.36	128.40	170.02
7	Animal Husbandry	4351.93	2326.33	2359.73	1916.33	1887.53	12841.85
8	Animal Science Research (TANVAS)	0.00	0.00	0.00	0.00	0.00	0.00
9	Dairy Development	1552.75	2449.75	9520.00	2230.25	1556.50	17309.25
10	Fisheries	604.02	126.42	139.42	196.17	97.57	1163.60
11	Fisheries Research (TNFU)	270.26	290.56	400.26	200.26	0.26	1161.60
12	Public Works Department (WRO)	296605.68	0.00	0.00	0.00	0.00	296605.68
13	Civil Supplies & Co-Operation	1235.19	859.22	825.91	94.71	11.25	3026.28
	Total	**326133.70**	**34598.43**	**40370.40**	**30391.78**	**33310.20**	**464804.43**

The total budget requirement for implementation of various interventions by different departments in Krishnagiri district is Rs. **464804.43**lakhs

CHAPTER I

INTRODUCTION

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

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

Objectives of RKVY

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

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

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

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

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

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

District and State Agriculture Plans

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

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

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

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

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

The Process

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

Revision and Updation of DAP and SAP in Tamil Nadu

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

Methodology followed

The revision of the District Agricultural Plan of Krishnagiri 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 BLOCKS AND DISTRICT

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

2.1 Krishnagiri at a Glance

Krishnagiri District was bifurcated from the erstwhile Dharmapuri and it has come into existence from February 9, 2004 consisting of Hosur and Krishnagiri as major Revenue Divisions. The district is surrounded by the states of Karnataka and Andhra Pradesh on the North, Vellore and Tiruvannamalai districts on the East, Dharmapuri district on the South and again by the state of Karnataka on the West.

2.2 Area, Location and Geographical features

After the bifurcation from Dharmapuri, the present Krishnagiri district is located approximately between 11°12'N and 12°49'N of the North Latitude and between 77°27'E and 78°38'E of the East Longitude. This district is elevated from 300 M to 1400 M above the Mean Sea Level. The total geographical area of the district is 5143 sq.km and the average annual rainfall is 830 mm.

2.3 Administrative Structure of Krishnagiri District

The district has been divided into two revenue divisions *viz.*, Krishnagiri and Hosur. There are five revenue Taluks namely Krishnagiri, Pochampalli, Denkanikottai, Uthangarai and Hosur. There are 10 Panchayat Unions namely Kelamangalam, Thally, Hosur, Shoolagiri, Veppanapalli, Krishnagiri, Kaveripattinam, Bargur, Mathur and Uthangarai. The district has also accommodates 7 Town Panchayats, 352 Village Panchayats and 636 Revenue Villages as given in Table 2.1.

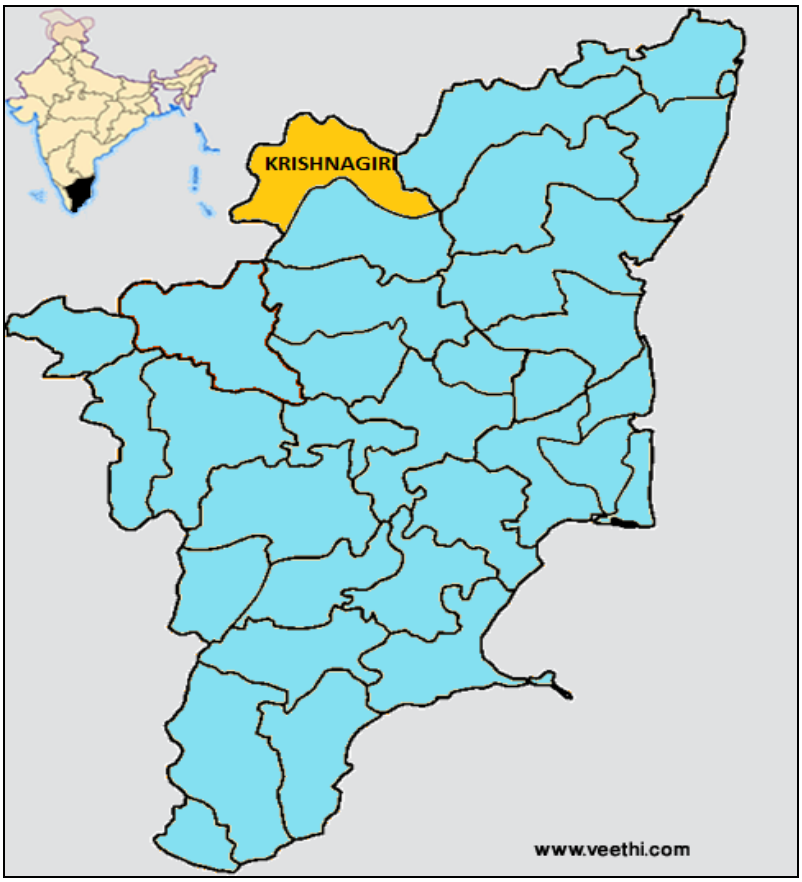

Fig. 1 Map of Krishnagiri District in Tamil Nadu

Fig. 2 Location Map of Krishnagiri District

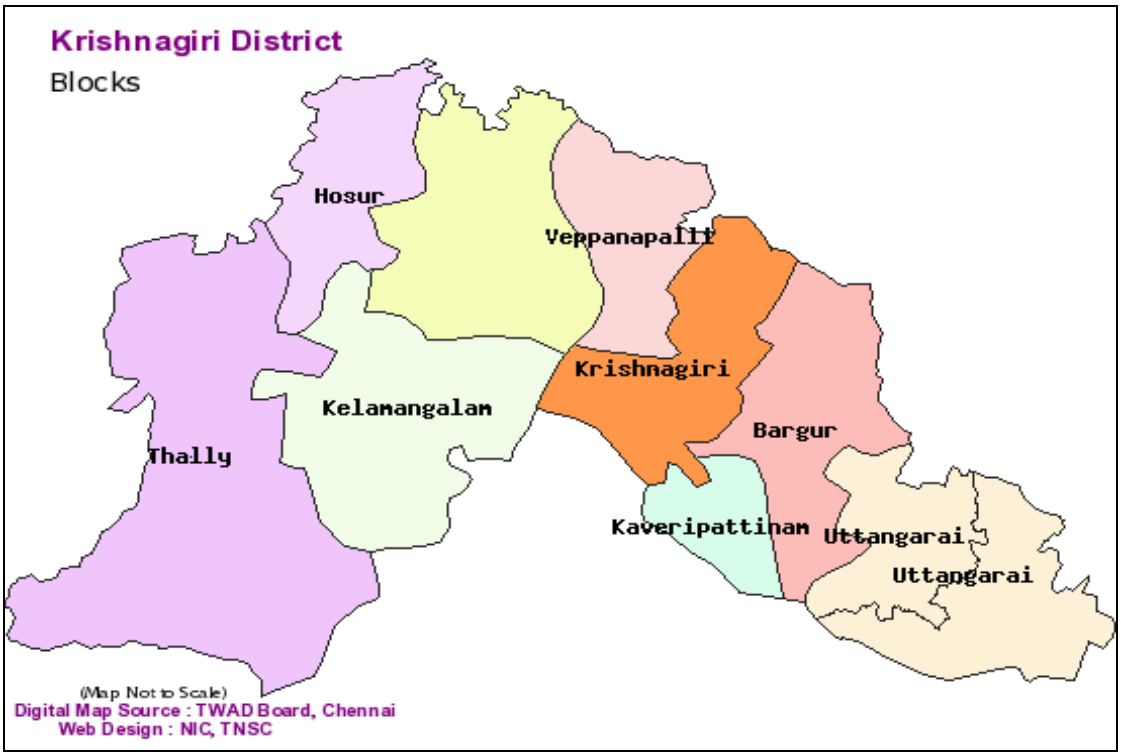

Fig.3 Location Map of Blocks in the Krishnagiri District

Table 2.1 Administrative Division of Krishnagiri District

Revenue Divisions	Revenue Taluks	Blocks	
Krishnagiri	Krishnagiri	Kelamangalam	Krishnagiri
Hosur	Hosur	Thally	Kaveripattinam
	Pochampalli	Hosur	Bargur
	Uthangarai	Shoolagiri	Mathur
	Denkanikottai	Vepanapalli	Uthangarai

Source: Krishnagiri District Profile

2.4 Demographic Profile

2.4.1 Population

The block wise populations in the district were furnished in the Table 2.2. There are 1571147 persons were in 10 blocks of the district. Of which, Hosur block hold the highest population (221792 persons) including 114584 males and 107208 females. This is followed by Bargur block which holds 191483 persons with 97328 males and 94155 females. The least populous block in the district is Veppanapalli with 94483 persons in the district.

The population of male is higher than the female population where 804411 male and 766736 female respectively.

Table 2.2 Block wise population (2011-12)

Sl. No	Name of the block	Population (in No's)		
		Persons	Male	Female
1	Krishnagiri	154441	77386	77055
2	Veppanapalli	94483	48033	46450
3	Bargur	191483	97328	94155
4	Kaveripattinam	169252	86120	83132
5	Uthangarai	144375	74219	70156
6	Mathur	107520	55298	52222
7	Hosur	221792	114584	107208
8	Shoolagiri	177900	91463	86437
9	Kelamangalam	128884	66564	62320
10	Thally	181017	93416	87601
	Total	**1571147**	**804411**	**766736**

Source: Census of India (2011), Block wise Primary Abstract Data (PCA)-Krishnagiri

In 2011 census, Krishnagiri had population of 15,71,147 of which male and female were 8,04,411 and 7,66,736 respectively. In 2001 census, Krishnagiri had a population of 1,561,118 of which males were 803,077 and remaining 758,041 were females. Among them, 92.38 per cent were in rural and 7.62 per cent were in urban areas as per the 2011 census.

Table 2.3 Demographic features of Krishnagiri district

Population	2001	2011
Male Population	803077	804411
Female Population	758041	766736
Urban Population	268407	119722
Rural Population	1292711	1451425
Density Sq. Km.	301	370
Literacy rate (%)	58.11	72.41
Literacy rate of men (%)	67.11	79.65
Literacy rate of women (%)	48.62	64.86
Total Population	**1561118**	**1571147**

Source: http://www.krishnagiri.tn.nic.in/profile.html

This would clearly indicate that still agrarian situation is prevailing for Krishnagiri district. The percentage of literacy in the district as per 2001 census was 58.11 per cent and it rose to 72.41 per cent as per 2011 census (Table 2.3). The percentage of rise in literacy rate by women is higher than the men i.e. men from 67.11 per cent to 79.65 per cent while women are of 48.62 per cent to 64.86 per cent respectively. This indicates the change of

women empowerment is being increased in the district. The taluk wise population and workers classification are given in Table 2.3 and Table 2.7

2.4.2 Literacy level

Increase of literacy rate in any district indicates the development of the district folk. The total literates in the different blocks of the district are furnished in the Table 2.4. The highest literate population in the district is in the Hosur block (161244 persons) which is said to be the capital of the district. Totally 838547 literate folks are present in the district during 2011 census. Next to Hosur, Krishnagiri block holds the second highest literate population of 112028 persons of which constitutes 63568 males and 48460 females. The least literate peoples are living in the Veppanapalli block which constituting 38458 persons where 23421 males are literate and only 15037 literate females are present in the block. Promotion of awareness programme on education has to plan in the next five year plan.

Table 2.4 Block wise literacy rate in the district (2012-13)

Sl. No	Name of the block	Literates (in No's)		
		Persons	Male	Female
1	Krishnagiri	112028	63568	48460
2	Veppanapalli	38458	23421	15037
3	Bargur	101616	59240	42376
4	Kaveripattinam	96286	57258	39028
5	Uthangarai	77303	46176	31127
6	Mathur	49064	29507	19557
7	Hosur	161244	94826	66418
8	Shoolagiri	64126	36779	24347
9	Kelamangalam	66076	40187	25889
10	Thally	72346	44870	27476
	Total	**838547**	**498832**	**339715**

Source: Statistical handbook of Krishnagiri district (2012-13)

The male and female literacy rates for the whole district are presented in the Table 2.5. The total male literate population in the district is 667062 no's while females were 520896. The urban population is in highest per cent (90.00) of literacy in case of male and female (80.90 per cent).

Table 2.5 Literacy rate in the district (2011)

Male						Female					
Literates			Literacy Rate			Literates			Literacy Rate		
Rural	Urban	Total	Rural	Urban	Tot	Rural	Urban	Total	Rural	Urban	Tot
494718	172344	667062	75.4	90.0	78.7	370541	150355	520896	58.9	80.9	63.9

Source: Statistical handbook of Krishnagiri district (2012-13)

2.4.3 Working population

The working population in the taluks of the district is furnished in the Table 2.6. The working forces were classified as farmers, agricultural labourers, industrial labourers and other than labourers. The highest working population is present in the Krishnagiri taluk of about 250591 folks and this is followed by Hosur (171742 folks) and Denkanikottai taluk (153287). Among the farming categories, Farmers are in larger groups constitute about 83144 no's in Krishnagiri, 35038 no's in Uthangarai, 72316 no's in Denkanikottai, 51990 no's in Hosur and 27160 no's in Pochampalli. The lowest groups are the industrial labourers in all the taluks.

Table 2.6 Taluk level working population in the district (2014-15)

Sl. No	Name of the Taluk	Total labourers	Category wise				Other than Laborers
			Farmers	Agricultural Farmers	Industrial laborers	Others	
1	Krishnagiri	250591	83144	47715	4312	115420	262268
2	Uthangarai	94775	35038	28825	1710	29202	87672
3	Pochampalli	82399	27160	21624	1150	32445	75571
4	Hosur	171742	51990	25515	2983	91254	226290
5	Denkanikottai	153287	72316	23735	3623	53613	156523

Source: Statistical report of the district (2014-15)

Table 2.7 Total Workers Classification in Krishnagiri District (2011 census)

Classification of workers	Population	Percentage
Total workers	877779	100.00
i. Rural workers	715139	81.47
ii. Urban workers	162640	18.48
a. Main workers	742001	84.53
b. Marginal workers	135778	15.47
1. Cultivators	236038	26.89
2. Agricultural labourers	263328	29.99
3. Household industry workers	21918	2.50
4. Other workers	356495	40.61
Non workers	1002030	

Source: Krishnagiri District Statistical Hand Book, 2012-2013

In the classification of main workers, cultivators accounted for 26.89 percent and agricultural labourers were 29.99 per cent of the total population. The house hold industrial workers are the least which constitute only 2.50 per cent. The numbers of rural and urban workers are furnished in the Table 2.7.

2.5 Topography

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

2.5.1 Soil type

Different types of the soils such as black or mixed loamy, red and gravel are found in the district. The Black of rigor loam is very fertile due to its moisture absorbing character. Red soils are seen in Hosur, Shoolagiri, Thally and Kelamangalam. In general, the soil in the district is quite loose and fresh with its colour from red to dark brown. The soil has low nitrogen and phosphate content with marked variation between different taluks. Coarse textured red sandy loam occupied 80 per cent of the total soil types seen in the district followed by lateritic and black soils types.

The different types of soils in the district are given in the Table 2.8. Soils like red, clay, vandal and forest soils are present. Red soil is the predominant and covers an area of 234623 ha which shares 45.60 per cent of the total geographical area. Red soil is predominant in the taluks like Denkanikottai, Hosur, Krishnagiri, Uthangarai and Pochampalli while Forest and barren soil covers 39.40 per cent of the total area occurs in Krishnagiri and Uthangarai taluks. Other types of soil are also present but in least area in this district.

Table 2.8 Soil types in the Krishnagiri District

Sl. No	Types of soil	Places in district (Taluks)	Area in Ha.	% in total geographical area
1	Red soil	Denkanikottai, Hosur, Krishnagiri, Uthangarai, Pochampalli	234623	45.60
2	Clay soil	Krishnagiri, Uthangarai	50068	9.70
3	Kava soil	-	0.00	0.00
4	Vandal soil	All Taluks	550	0.10
5	Barren	-	23957	4.70
6	Other soil	All Taluks	2719	0.50
7	Forest & Barren	All Taluks	202409	39.40
8	Catchments area	-	0.00	0.00
Total geographical area			**514326**	**100.00**

Source: Statistical handbook of the Krishnagiri District (2012-13)

The details on different types of soil distributed in the district as per the Remote Sensing and GIS Centre, Tamil Nadu Agricultural University, Coimbatore are represented in Fig.4. The detailed soil classification is depicted in Table 2.8.

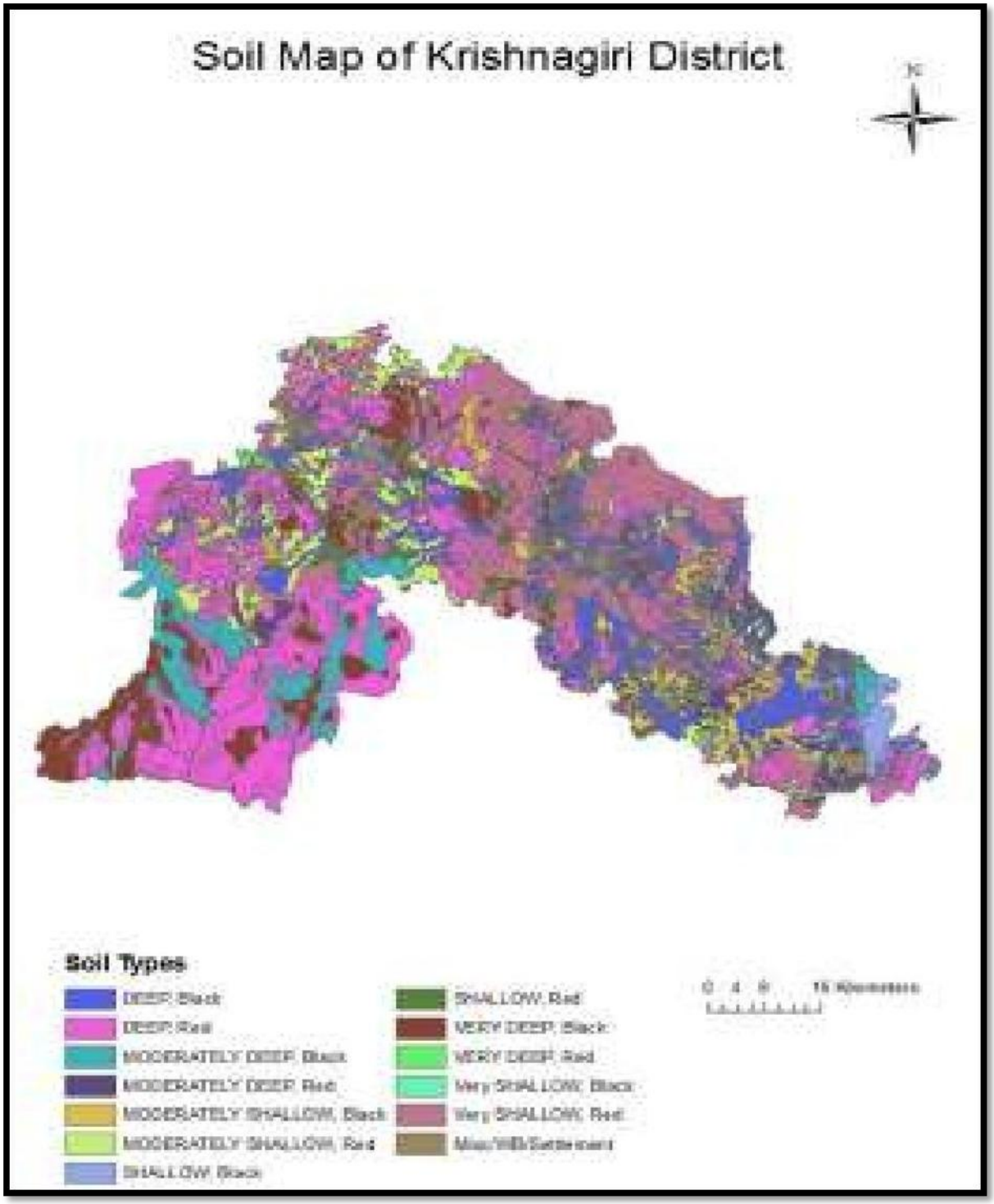

Fig.4 Soil Map of Krishnagiri District

Table 2.9 Soil classification in the district

(in Ha)

Soil Description	Area
Deep, fine, mixed, Alfisols	78206.81
Very shallow, loamy skeletal, mixed, Entisols	64448.70
Deep, loamy skeletal, mixed, Alfisols	57030.54
Deep, fine, mixed, Inceptisols	55261.87
Moderately shallow, fine loamy, mixed, Entisols	32168.53
Very deep, contrasting particle size, mixed, Entisols	31559.21
Moderately deep, clayey skeletal, mixed, Inceptisols	29291.41
Deep, fine loamy, mixed, Alfisols	26026.66
Moderately shallow, loamy skeletal, mixed, Entisols	19444.86
Moderately deep, fine, mixed, Alfisols	19385.98
Moderately shallow, fine, mixed, Inceptisols	14320.77
Very deep, fine loamy, mixed, Inceptisols	11207.55
Very deep, fine silty, mixed, Entisols	6794.49
Moderately shallow, fine, montmorillonitic, Inceptisols	6186.36
Shallow, loamy skeletal, mixed, Alfisols	6014.10
Shallow, clayey, mixed, Inceptisols	5811.45
Moderately deep, fine loamy, mixed, Inceptisols	4417.35
Deep, fine, montmorillonitic, Vertisols	3483.92
Moderately deep, clayey skeletal, mixed, Alfisols	2604.03
Very deep, fine, mixed, Alfisols	2235.24
Deep, fine, montmorillonitic, Inceptisols	1819.78
Deep, coarse loamy, mixed, Ultisols	1513.74
Shallow, clayey skeletal, mixed, Inceptisols	1281.39
Shallow, loamy, mixed, Inceptisols	1204.31
Moderately deep, fine loamy, mixed, Alfisols	1004.02
Moderately deep, fine, montmorillonitic, Vertisols	908.18
Shallow, loamy skeletal, mixed, Entisols	889.51
Shallow, clayey, mixed, Alfisols	677.76
Moderately deep, coarse loamy, mixed, Inceptisols	540.18
Deep, coarse loamy, mixed, Inceptisols	372.27
Moderately shallow, fine, mixed, Alfisols	257.31
Shallow, clayey, mixed, Ultisols	245.93
Shallow, loamy skeletal, mixed, Inceptisols	206.58
Deep, fine loamy, mixed, Entisols	191.71
Very shallow, loamy, mixed, Entisols	121.81
Moderately shallow, coarse loamy, mixed, Entisols	79.79

2.6 Climatic Condition and Rainfall

Krishnagiri district is an agrarian district. However, the quantity and quality of agricultural operations and crop production depend upon monsoons. Krishnagiri is a border district of Tamil Nadu having a large number of small hills and is generally a dry district. The Climatic condition of the district is hot and dry in summer i.e. from March to May. In winter, it is very cold and misty i.e. from November to February North East monsoon provides more rain. The normal rainfall of the District was 771.3 mm during the average of three years 2012-13 to 2014-15 and the actual rainfall of the District was 964.00 mm. More than 75 percent of the area cultivated is under rainfed conditions. Rainfall distribution is uneven and it is unevenly distributed throughout the crop period. Because of erratic distribution of rainfall, crop production often fails causing economic loss besides unemployment problem. Drought is a regular phenomenon in this district. Figure 6 depicted the agro climatic region of the district.

Table 2.10 Time series data of Rainfall (3 Years Average)

Year	South West Monsoon (mm)		North East Monsoon (mm)		Winter Season (mm)		Hot Weather season (mm)		Total (mm)	
	Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual
2012-13	242.5	440	300	315	7.2	0.0	145.4	217	695.1	972
2013-14	377.7	457	235.2	232	1.7	2.0	203.8	229	818.4	921
2014-15	272.6	399	279.5	289.4	8.7	10.7	239.6	151.6	800.4	850.7
Average	**297.6**	**432**	**271.5**	**278.8**	**5.87**	**4.23**	**196.3**	**199.2**	**771.3**	**914.57**

Source: Season and Crop Report, 2016

The mean month wise or season wise rainfall for the year 2014-15 is furnished in the Table 2.11 and Figure 5. During this year, the maximum quantity of rainfall was received in the North-East monsoon of about 279.5 mm of actual over normal rainfall of 289.40 mm. During the South-West monsoon, about 272 mm of rainfall was received over normal quantity of 399 mm. The least quantity of rainfall was received during the winter season 8.76 mm which is lesser than the normal quantity of rainfall 10.70 mm. This indicates the planning of crop cultivation during the receipt of North-East monsoon and South West monsoon will be more benefit for the farmers which will prevent them from crop failure.

Table 2.11 Month wise / season wise rainfall distribution in Krishnagiri District

Season / Month	2014-15	
	Actual	Normal
South West Monsoon		
June	77.1	55.90
July	39.6	75.40
August	71.1	96.40
September	84.8	171.30
Total	**272.6 (34.06)**	**399.00 (26.20)**
North East Monsoon		
October	213.1	176.90
November	33.5	77.90
December	32.9	34.60
Total	**279.5 (34.92)**	**289.40 (19.01)**
Winter Season		
January	6.5	4.90
February	2.2	5.80
Total	**8.7 (1.09)**	**10.70 (0.70)**
Hot Weather		
March	18.9	12.30
April	106.7	39.90
May	114	99.40
Total	**239.6 (29.94)**	**151.60 (9.96)**
Annual Rainfall	**800.4 (100.00)**	**850.70 (100.00**

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

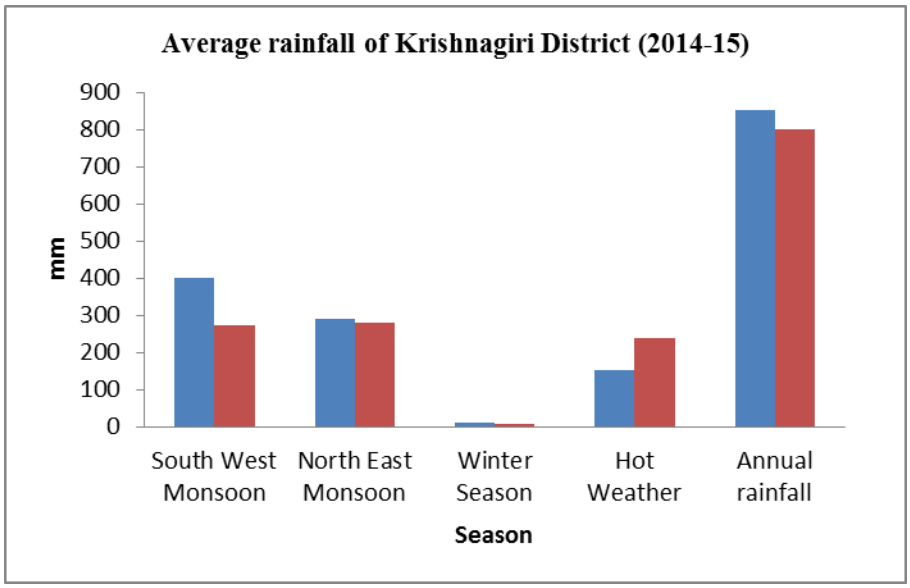

Fig.5 Season wise Average Rainfall (2014-15)

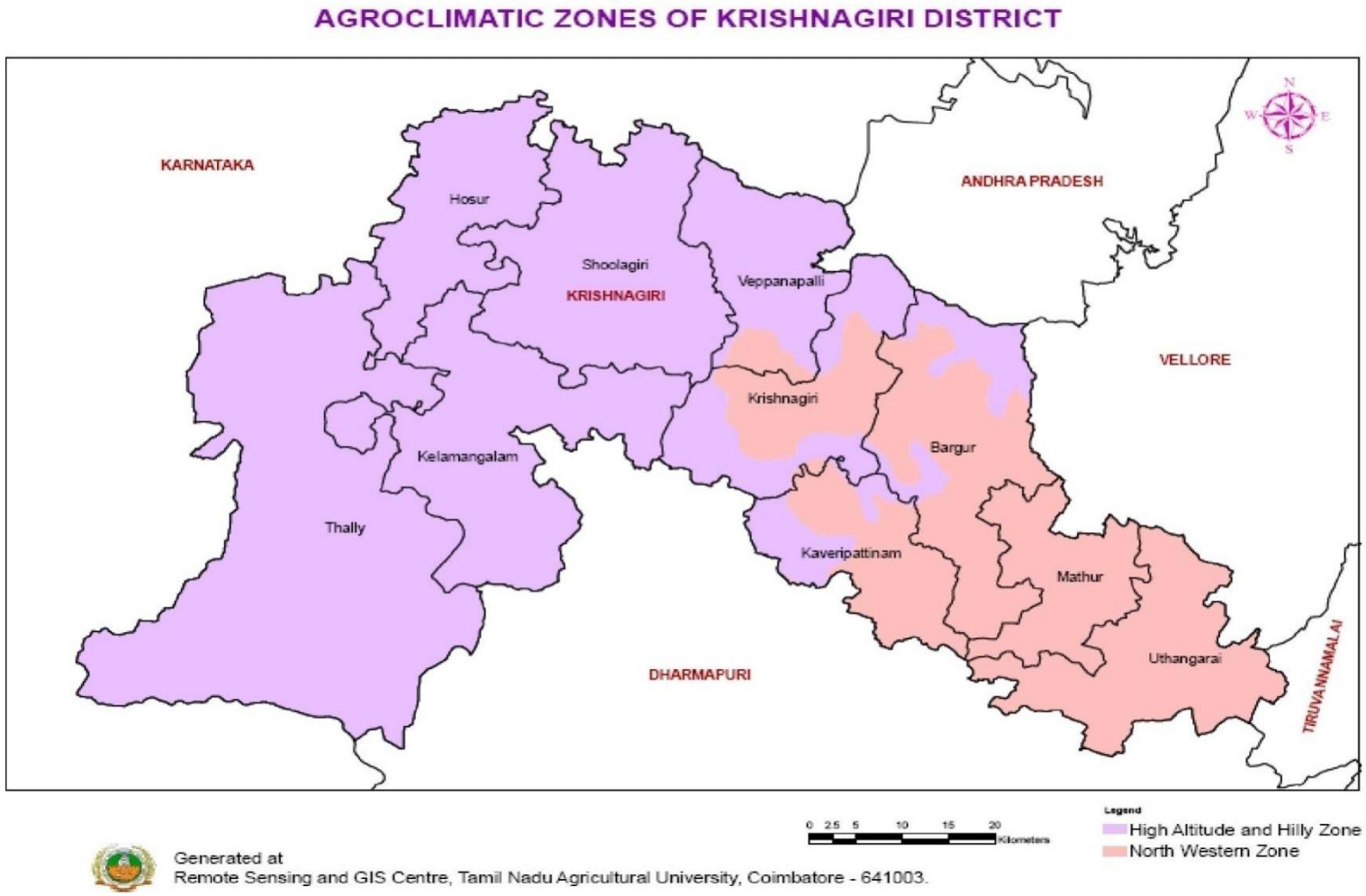

Fig. 6 Agro Climatic region of the district

2.7 Land

2.7.1 Land and its types

The total Geographical area of the district is 514326 ha, of which net sown area accounted for 182891ha and the Gross area sown accounted for 182383 ha for the triennium ending 2011. The productivity of the crops has to be increased so as to compensate the reduction in land under agriculture by adopting modern practices and high yielding hybrid varieties.

2.7.2 Land use pattern

The area under forests covered 39.66 per cent of the total geographical area. As per the National Forest Policy – 1988, the area under forest cover should be one – third of the total geographical area in order to maintain the ecological balance. However, the forest area in Krishnagiri district was much above the national goal of achieving the minimum area under forest. The share of net area sown to the total geographical area was 100 per cent reveal that investment on land reclamation, strengthening of irrigation facilities and so on would facilitate the increase in either net sown area or area under forest.

The total geographical area of the district is 514326 ha. The forest covers an area of about 203964 ha which accounts for 39.65 per cent. Among the gross cropping area of 224773 ha, 35.17 per cent of the area are covered under the net area sown (180902 ha). The area put in to non-agricultural uses was 3.24 per cent which covers 41923 ha. The current fallow land is about 5.62 per cent and barren land covers an area of 23937 ha. The land use pattern for the year 2014-15 is furnished in the Table 2.12.

Table 2.12 Land Use Pattern (2014-15)

Sl. No	Classification	Area (ha)	per cent
1	Geographical Area	514326	100
2	Forest	203964	39.65
3	Barren & Uncultivable Area	23937	4.65
4	Land Put to Non-agricultural Uses	41923	8.15
5	Permanent Pastures & Other grazing lands	7855	1.52
6	Misc. tree crops & groves not incl. in the net area sown	8344	1.62
7	Current Fallow	28909	5.62
8	Other Fallow	14147	2.75
9	Net area sown	180902	35.17
10	Area sown more than once	43871	8.52
11	Gross area sown	224773	43.71
	Total	**1292951**	

Source: Season and Crop Report (2014-15)

Table 2.13 Land Use Pattern of Krishnagiri District (2011-12) Compound Growth Rates (2000-01 to 2011-12) per annum

Sl. No.	Classification	Area (ha)	Percent	CGR (%)
1	Forest	203965	39.66	0.13
2	Barren and uncultivable uses	23937	4.65	-1.67
3	Land put to non-agricultural uses	41855	8.14	0.13
4	Cultivable waste	4468	0.87	-7.00
5	Permanent pastures and other Grazing Land	7853	1.53	-0.50
6	Land under miscellaneous tree crops and gross not included in net area sown	8639	1.68	0.29
7	Current fallow	24180	4.70	4.55
8	Other fallow land	16542	3.22	0.68
9	Net area sown	182891	35.56	-0.54
10	Total Geographical Area according to village papers	514326	100.00	0.00
11	Area sown more than once	25170		0.08
12	Total cropped area	208053		-0.43
13	Irrigated area	52120		

Source: 'G' Return

2.7.3 Land Holding Pattern

The distribution of land size holdings as shown in Table 2.14, indicated the fact that 1,34,362 farmers were holding less than 0.5 hectare and this scenario continued as the number of farmers gradually decreased with the operational holdings from 0.5 to 2. 0 hectares and thereafter drastically reduced to very small number of farmers, holding large area like 1.0 -2.0 hectares. This fact showed the difficulty of the farm mechanization in very small fragmented holdings but can be made possible if the farmers follow contract or cooperative farming to reap the gains of farm mechanization.

The maximum operational holding in the district was in the size class upto 0.50 ha area which holds about 134362 No's with an area coverage of 33154.20 ha. The average size holdings follows in an ascending order i.e., 0.5 to 1.0, 1 to 2 ha, 2 to 3 ha, 3 to 4 ha, 4 to 5 ha and 5 to 7.5 ha area. The least size of land holding was between 20 ha and above which covers only 2285.55 ha from the total geographical area of the district.

Table 2.14 Average Size of Holding

Size Class (ha)	Number	Area (ha)	Average Size(Ha.)
Upto 0.5	134362	33154.2 0	0.25
0.5-1. 0	64358	464 06.93	0.72
1. 0-2. 0	48789	68431.76	1.4 0
2. 0-3. 0	15648	37591.83	2.4 0
3. 0-4. 0	6197	21303.73	3.44
4. 0-5. 0	2923	12933.91	4.42
5. 0-7.5	2477	14632.63	5.91
7.5-1 0. 0	895	7615.64	8.51
1 0. 0-2 0. 0	476	6212.49	13.05
2 0. 0 & Above	73	2258.55	30.94

Source: Records of Office of Assistant Director of Statistics, Krishnagiri

2.8 Sources of Irrigation

Water is an important determinant factor of 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 purpose. The various sources of irrigation are canals, tanks, tube wells, Open wells and springs. The Public Works Department and Panchayat union tanks, ponds and supply channels play an important role in the irrigation facilities of Krishnagiri district.

The irrigation intensity of the district has an average of 3 years about 2008-09 to 2010-11 is 1.06 (ha). Tube wells formed the major source of irrigation (66 %) followed by tanks (16 %), wells (16 %), canal (2 %) and other sources in that order. The number of tube wells in the district is 7856. In Krishnagiri district Wells and Canals are the major sources of irrigation contributing to 81.19 and 10.71 per cent of the total irrigated area of the district respectively. Tanks accounted for less than five per cent.

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

Sl. No.	Area irrigated	Net Area Irrigated	Gross Area Irrigated
1	Canals	-18.84	-18.56
2	Tanks	2.40	2.42
3	Tube wells	83.59	86.88
4	Ordinary wells	0.44	-0.48
5	Other Sources	-81.80	-81.80
	Total	**3.13**	**2.76**

From the Table 2.15, it is inferred that most of the agriculture activities are done with the source of water from tube wells. The net and gross area irrigated area through tube wells accounted for 83.59 ha and 86.88 ha respectively. Due to heavy drought that occurs over the years, the water supply from the canals started decreasing up to 18.84 ha and 18.56 ha.

Table 2.16 Sources of water supply from different taluks of the district

Sl. No	Name of the Taluk	Canals (in no's)	Length (km)	wells used for irrigation purpose only	Tube wells	Wells used for domestic purpose only	Reservoirs	Tank No's
1	Krishnagiri	15	60	21175	1034	1494	1	308
2	Pochampalli	21	17	9546	231	521	0	136
3	Uthangarai	35	33	13646	207	1196	1	223
4	Hosur	2	3	7186	5705	2817	2	312
5	Denkanikottai	41	24	4253	2377	1074	0	348

Source: Deputy Director of Statistics, 2011-12

Water for various purposes is supplied through canals, well, tube wells, reservoirs and tanks. The numbers of irrigation sources present in different taluks of the district are presented in the Table 2.16. The wells from Uthangarai taluk (13646 no's) are used for the purpose of agriculture followed by Krishnagiri (21175 no's). The water supply for agricultural use is greater than the domestic purpose.

Table 2.17 Details of dams in the district

Sl. No	Name of the dam/block	Dams			
		Catchments area (ha)	Height (ft)	Capacity (MC.Ft)	Length of canals (in km)
1	K.R.P Dam	542629.46	52.0	1666.29	32.4
2	Pambaru Dam	173600	19.6	280.00	41.0
3	Shoolagiri Sinnar Dam	143620	32.8	81.20	13.0
4	Kelavarapalli Dam	244200	44.0	481.00	48.0

Source: Deputy Director of Statistics, 2011-12

The water supply from different dams is given in the Table 2.17. The K.P.R dam situated in Krishnagiri is the largest catchment area and hold maximum water for the agricultural and drinking water purpose. Its capacity is about 1666.29 M.C.Ft in a catchment

area of 542629.46 ha. The other dams are Pambaru dam which holds area of 173600 ha, Shoolagiri Sinnar dam (143620 ha) and Kelavarapalli dam accounted for 244200 ha. The Kelavarapalli dam for the water supply from highest length of water canals (48.00 km) followers by Pambaru dam (41.00 km).

Table 2.18 Irrigation by different sources in Krishnagiri (Triennium avg ending 2014-15)

Sl. No.	Sources	Area covered (ha)	
1	Dug wells / Open wells	Gross	44407.00
		Net	30941.67
2	Tube wells / Bore wells	Gross	19748.00
		Net	16113.67
3	Tanks	Gross	8386.67
		Net	7421.33
4	Canals	Gross	1060.67
		Net	910.33

Source: Season and Crop Report, 2014-15

The wells dug under private sector with pump sets were seen in most places and private tube wells were the next source in utilizing the ground water potential. The irrigation sources of the district indicated in Table 2.18 that wells were the major source of irrigation supplemented by tanks and canals. The open wells formed an important source of irrigation for the Hosur and Denkanikottai taluks. The open wells cover a gross area of 44407 ha and tube wells of 19748 ha. The tanks cover 8386.67 ha of area where only 1060.67 ha were irrigated under the canal irrigation.

2.9 Cropping pattern

2.9.1 Major crops grown

Krishnagiri district is more suitable for cultivation of horticulture crops. Other Plantation crops, medicinal plants, fruits, vegetables, spices, and flowers are grown well by way of its moderate climate, high altitude and fertility of the soil. Important crops grown in the district are paddy, ragi, cholam, red gram, black gram, mango, coconut, cabbage, banana, tomato etc., and the major cash crops are groundnut, flowers and cotton. The current fallow and barren lands occupying eight percent of area can be reduced considerably encouraging mango garden plantations. Meanwhile, the productivity of the crops has to be increased so as to compensate the reduction in land under agriculture by adopting modern practices and high yielding hybrid varieties. Different types of the soils

such as black or mixed loamy red and gravel are found in the district. The black of rigor loam is very fertile due to its moisture absorbing character. Red soils are seen in Hosur, Shoolagiri, Thally and Kelamangalam. In general, the soil in the district is quite loose and fresh with its colour from red to dark brown. The irrigation sources of the district indicate that wells are the major source of irrigation supplemented by tanks and canals. The tube wells form an important source of irrigation for the Hosur and Denkanikottai taluks.

The major irrigated crops in the district are paddy, ragi, turmeric, sugarcane, banana, tomato, groundnut, cotton, coconut and flowers. The irrigated area under vegetables, fruit and flowers if increased by judicious use of water with modern water management techniques, yield of those crops can be boosted and thereby export potential can be explored. The productivity of food crops like paddy, ragi and pulses can also be increased to the target levels by proper water management practices. This district has a great potential for agribusiness and export of agricultural products. The establishment of industrial complexes and special economic zones will further contribute to the development of the district. The cropping pattern provides an insight into the major crops grown in this district. Paddy, ragi and samai are the predominant cereal crops grown and among the pulses, horse gram and red gram are predominantly grown. Groundnut is the major oilseed crop grown and among the cash crops, banana, cotton and mango are grown predominantly. The details of major crops and varieties grown in the district are given in Table 2.19. This district has a great potential agribusiness and export of agricultural products. The establishment of industrial complexes and special economic zones will further contribute to the development of the district. The details of varieties are furnished in the Table 2.19.

Table 2.19 Major Crop and Varieties (Block wise)

Crop	Variety	Duration (days)	Specific block
Paddy	ADT 39	120 to 125	Krishnagiri,Kaveripattinam
	Paiyur 1	135	Krishnagiri,Kaveripattinam
	White Ponni	140	Krishnagiri,Kaveripattinam
	BPT 5204	140	Krishnagiri,Kaveripattinam
Millets			
Ragi	GPU 28	120	Hosur, Denkanikottai, Thally, Kelamangalam
Cumbu	ICMV 221	80	Veppanapalli,Mathur, Kaveripattinam
Maize	COHM 5	90	Hosur, Uthangarai
	GANGA 5	100	Hosur, Uthangarai
Pulses			
Red gram	SA1	180	Throughout District
	HY3 C	180	Hosur,Shoolagiri, Kelamangalam,Thally
Blackgram	T9	70	Throughout District
	VBN 3	70	Throughout District
	TMV 1	70	Throughout District
	VBN 1	65	Throughout District
Greengram	KM 2	70	Kaveripattinam, Bargur
	VBN (GG2)	70	Kaveripattinam, Bargur
Cowpea	Pusa 152	75	Throughout District
	VBN 1	65	Throughout District
Horsegram	Paiyur 2	0	Throughout District
LabLab	CO 1	140	Throughout District
Cotton	Surabi	160	Uthangarai Mathur
Sugarcane	COC 92061	330	Throughout District
	COC 90063	330	Throughout District
Oilseeds			
Groundnut	TMV 7	105	Throughout District
	JL 24	105	Hosur,Shoolagiri,Kelamangalam Thally
Gingelly	TMV 3	85	Veppanapalli,Kaveripattinam
Castor	TMV 3	240	Throughout District

Source: Records of Office of Assistant Director of Statistics, Krishnagiri

The major paddy varieties grown in this district are ADT 39, Paiyur 1, White Ponni, BPT 5204 and they were grown mostly in Krishnagiri and Kaveripattinam blocks. COHM 5 and Ganga 5 were the maize varieties grown in Hosur and Uthangarai blocks. In ragi, GPU 28 was the predominant variety grown in the district and as regards pulses, the local; Tindivanam and Vamban varieties were used by farmers. In case of oilseeds also, Tindivanam varieties were grown in most blocks and in sugarcane, COC varieties were preferred by farmers.

Table 2.20 Area under major crops (2014-15 and Triennium ending 2014-15)

(in ha)

Sl. No.	Crops	2014-15	%	Triennium ending 2014-15	%
1	Paddy	19264	14.20	22240.33	15.42
2	Ragi	42550	31.37	47836	33.16
3	Cholam	4415	3.25	4348.67	3.01
4	Red gram	10850	7.99	10037.33	6.95
6	Coconut	15526	11.44	15713.67	10.89
7	Mango	35607	26.25	36508.33	25.32
8	Tomato	7429	5.47	7538.33	5.24
	Total	**135641**	**100.00**	**144222.7**	**100**

Ragi, mango, paddy, ground nut and coconut are the major crops grown in the district. Besides other crops like cholam, red gram and tomato also cultivated. Ragi was grown in an area of 47836 ha constitutes 33.16 per cent of the total cropping area. Cholam covers only 3.01 per cent of the total area. The details of major crops grown and percentage of coverage are furnished in the Table 2.20.

2.9.2 Area under major horticultural crops (across & within block)

Factors such as fertility of land, monsoon behaviour, rainfall, irrigation, application of fertilizers, climatic conditions, marketing facilities, prices, availability of agricultural labour etc., determine the area, production and productivity of any crop.

Across the blocks, among the major horticultural crops, mango is grown predominantly in Bargur, Kaveripattinam, Mathur and Uthangarai. Banana is grown in Krishnagiri and Veppanapalli block while Sapota is another fruit crops grown in larger areas at Bargur and Kaveripattinam blocks. Vegetables are grown predominantly at Hosur, Shoolagiri, Thally and Kelamangalam blocks. Turmeric is the cash crop which grown only in the Mathur and Uthangarai block's. Flower crops like jasmine is cultivated largely at Bargur and Kaveripattinam block and very lesser area at Krishnagiri and Veppanapalli. Since marigold is one of the important crop, that grows almost in all the blocks of the district. It is principally grown in Thally and Kelamangalam block.

Within the blocks, mango is the most important crop that growing in larger proportion when compared with the other crops. It occupies about 56.66 per cent area un Krishnagiri and Veppanapalli block, 90.23 per cent in Bargur and Kaveripattinam block and 86.43 per cent in Mathur and Uthangarai block. In case of Shoolagiri, Hosur, Thally and Kelamangalam

blocks, tomato is the predominant crop grown in most of the areas in the district. The percentage of area under each crop across the blocks and within the blocks is presented in Table 2.21 and Table 2.22.

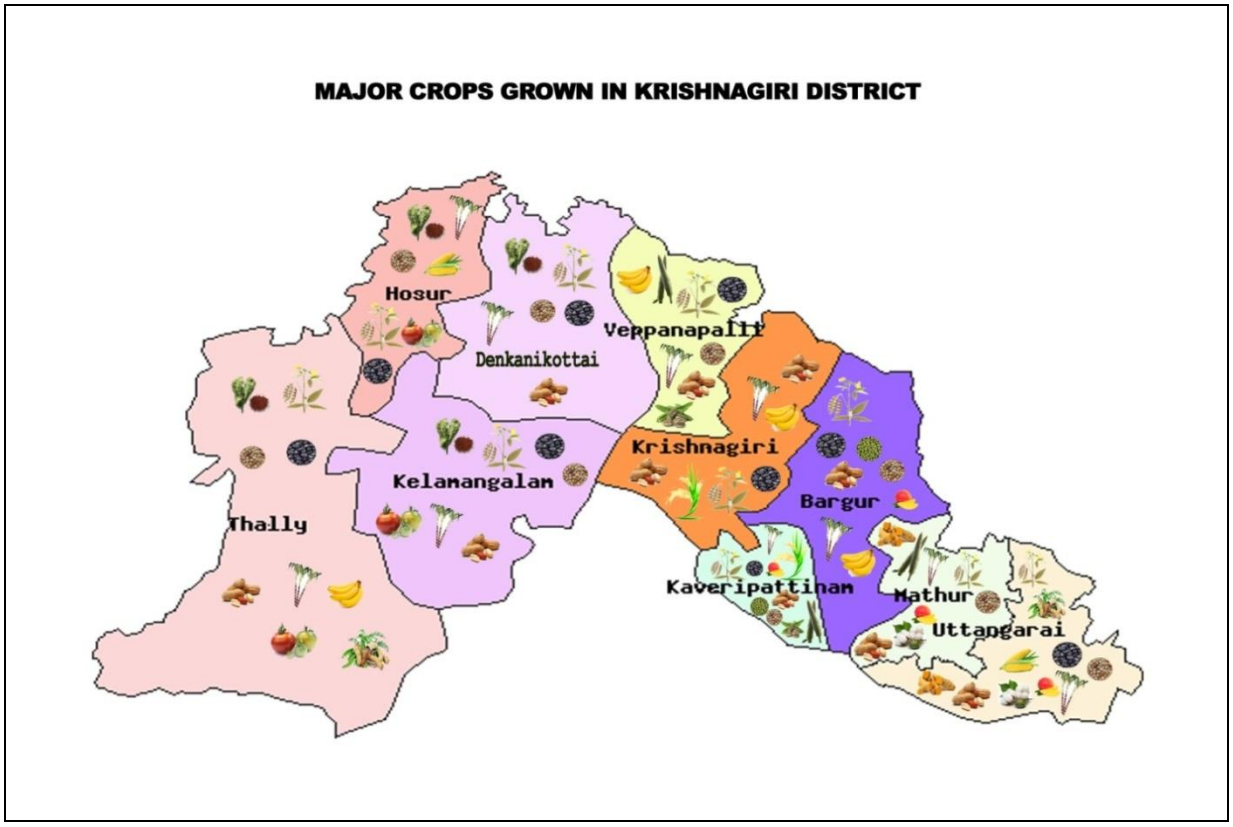

Fig. 7 Major crops grown in Krishnagiri District

Table 2.21 Percentage of area under major horticultural crops (across blocks)

Crops	Krishnagiri & Veppanapalli	Bargur & Kaveripattinam	Mathur & Uthangarai	Shoolagiri & Hosur	Thally& Kelamangalam	Total
Mango	8.131	44.369	40.594	3.791	3.115	100.0
Banana	47.705	12.397	3.877	17.987	18.033	100.0
Sapota	23.582	39.104	31.343	2.985	2.985	100.0
Tomato	5.397	6.746	4.836	41.685	41.336	100.0
Brinjal	9.833	8.200	8.200	38.794	34.972	100.0
Turmeric	8.289	9.538	82.173	0.000	0.000	100.0
Tamarind	13.074	7.807	12.210	2.998	63.911	100.0
Jasmine	14.484	68.849	12.103	4.563	0.000	100.0
Marigold	19.289	19.289	19.289	19.289	22.843	100.0

Table 2.22 Percentage of area under major horticultural crops (within blocks)

Crops	Krishnagiri & Veppanapalli	Bargur& Kaveripattinam	Mathur & Uthangarai	Shoolagiri & Hosur	Thally & Kelamangalam
Mango	56.661	90.229	86.434	26.399	20.002
Banana	24.082	1.826	0.598	9.074	8.389
Sapota	1.798	0.870	0.730	0.227	0.210
Tomato	7.011	2.558	1.920	54.114	49.485
Brinjal	2.048	0.498	0.522	8.073	6.712
Turmeric	2.709	0.910	8.205	0.000	0.000
Tamarind	3.165	0.552	0.903	0.725	14.258
Jasmine	1.661	2.305	0.424	0.523	0.000
Marigold	0.865	0.252	0.264	0.864	0.944
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

2.9.3 Productivity of major crops

The block wise productivity of the major horticultural crops is presented in the Table 2.23.

Table 2.23 Production and productivity of major horticultural crops of the district at blockwise (2014-15)

Sl. No	Category	Crop	Krishnagiri &Veppanapalli		Bargur & Kaveripattinam		Mathur & Uthangarai		Shoolagiri & Hosur		Thally & Kelamangalam	
			Prodt. (Mt.)	Pdty. (Mt.)	Prodt. (Mt.)	Pdty. (Mt.)	Prodt. (Mt.)	Pdty. (Mt.)	Prodt. (Mt.)	Pdty. (Mt.)	Prodt. (Mt.)	Pdty. (Mt.)
1	Fruits	Banana	10880	36.88	10142	36.88	3172	36.88	14715	36.88	14752	36.88
		Mango	39026	4.37	59367	4.37	54316	4.37	5073	4.37	4168	4.37
		Guava	424	8.16	286	8.16	90.00	8.16	188	8.16	65.00	8.16
		Sapota	2370	30.00	3930	30.00	3150.0	30.00	300.00	30.00	0.00	30.00
		Papaya	1800	225.0	2025	225.00	900.0	225.00	2250	225.0	2025	225.0
		Pomegranate	90	30.00	120	30.00	30.00	30.00	0.00	30.00	0.00	30.00
		Total	**54590**	**334.41**	**75870**	**334.41**	**61658**	**334.41**	**22526**	**334.41**	**21010**	**334.41**
2.	Vegetables	Tomato	4384	14.23	5480	14.23	3928	14.23	33861	14.23	33577	14.23
		Brinjal	1042	11.58	869	11.58	869	11.58	4111	11.58	3706	11.58
		Bhendi	398	7.96	318	7.96	318	7.96	80.00	7.96	56.00	7.96
		Cabbage	262	65.42	0.00	65.42	0.00	65.42	26430	65.42	27411	65.42
		Ribbed gourd	120	15.0	75.00	15.00	60.00	15.00	15.00	15.00	405.00	15.00
		Beans	140	20.00	0.00	0.00	0.00	0.00	15020	20.00	16920	20.00
		Avarai	300	12.00	240.0	12.00	252.00	12.00	10668	12.00	16920	20.00
		Radish	300	30.00	120.0	30.00	210.00	30.00	150.00	30.00	150.00	30.00
		Water melon	96	32.00	64.0	32.00	64.00	32.00	96.00	32.00	96.00	32.00
		Onion	58	8.24	66.00	8.24	0.00	8.24	338	8.24	725	8.24
		Total	**7100**	**216.43**	**7232**	**196.43**	**5701**	**196.43**	**90769**	**216.43**	**99966**	**224.43**
3	Spice	Chillies	27.00	0.38	26.00	0.38	27.00	0.38	60.00	0.38	64.00	0.38
		Curry leaves	225	225.0	0.00	0.00	450.00	225.00	0.00	0.00	0.00	0.00
		Coriander	1.00	0.09	7.00	0.09	1.00	0.09	32.00	0.09	30.00	0.09
		Turmeric	438	3.68	504.0	3.68	4342	3.68	0.00	3.68	0.00	0.00
		Tamarind	484	3.48	289.0	3.48	452.0	3.48	111.00	3.48	2366	3.48
		Total	**1175**	**232.63**	**826**	**7.63**	**5272**	**232.63**	**203**	**7.63**	**2460**	**3.95**
4	Plantation crops	Betel wine	1850	25.00	1875.0	25.00	0.00	0.00	0.00	0.00	0.00	0.00
		Cashew nut	1.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Total	**1851**	**25.14**	**1875**	**25.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
5	Medicinal plants	Neem	40.00	20.00	40.00	20.00	100.0	20.00	0.00	0.00	0.00	0.00
		Others	20.00	5.00	20.00	5.00	20.00	5.00	20.00	5.00	20.00	5.00
		Total	**60.00**	**25.00**	**60.00**	**25.00**	**120.00**	**25.00**	**20.00**	**5.00**	**20.00**	**5.00**
6	Aromatic plants	Mint	150.00	15.00	0.00	0.00	0.00	0.00	3090.0	15.00	1260.0	15.00
		Total	**150.00**	**15.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3090.0**	**15.00**	**1260.0**	**15.00**
7	Flowers	Jasmine	657.0	9.00	3123	9.00	549.0	9.00	207.0	90.00	0.00	0.00

Sl. No	Category	Crop	Krishnagiri &Veppanapalli		Bargur & Kaveripattinam		Mathur & Uthangarai		Shoolagiri & Hosur		Thally & Kelamangalam	
			Prodt. (Mt.)	Pdty. (Mt.)	Prodt. (Mt.)	Pdty. (Mt.)	Prodt. (Mt.)	Pdty. (Mt.)	Prodt. (Mt.)	Pdty. (Mt.)	Prodt. (Mt.)	Pdty. (Mt.)
		Chrysanthemum	150.00	10.00	150.00	10.00	150.0	10.00	3600	10.00	3900	10.00
		Marigold	684.00	18.00	684.00	18.00	684.0	18.00	684.0	18.00	810.0	18.00
		Tuberose	90.00	15.00	150.00	15.00	30.00	15.00	300.00	15.00	135.00	15.00
		Total	**1581**	**52.00**	**4107**	**52.00**	**1413**	**52.00**	**4791**	**133.00**	**4845**	**43.00**

Source: Joint Director of Horticulture, Krishnagiri

The productivity of the major horticultural crops varied with their varieties and nature of growing. In fruits, banana recorded 36.68 MT /ha, papaya (225 Mt/ha), mango (4.37 MT/ha), and pomegranate (30.00 MT/ha) .The major vegetable crop like tomato yields(14.23 MT/ha), brinjal 11.58 MT/ha), and bhendi (7.96 MT/ha). The spices and plantation crops like tamarind recorded yield of 3.48 MT/ha, turmeric (3.68 MT/ha), and Mint (15.0 MT/ha).

Table 2.24 Production and productivity of major agricultural crops (Triennium average ending 2014-15)

Sl.No	Particulars	Area (in ha)	Production (in tonnes)	Productivity (in t/ha)
1	Paddy	22240.33	103228.00	4.64
2	Maize	2878.00	20420.67	7.09
3	Cholam	4348.67	6190.33	1.42
4	Cumbu	413.00	1033.67	2.51
5	Ragi	47836.00	119226.33	2.49
6	Bengal Gram	3.00	1.33	0.44
7	Red Gram	10037.33	10418.33	1.03
8	Black Gram	3817.00	2763.33	0.72
9	Green Gram	1727.00	866.00	0.50
10	Horse Gram	26302.00	14497.67	0.55
11	Groundnut	13976.67	31886.67	2.28
12	Gingelly	746.67	379.33	0.50
13	Castor	842.00	269.00	0.31
14	Cotton	2740.33	7964.67	2.90
15	Sugarcane	819.33	77730.67	94.87
	Total	**138727.33**	**396876**	**2.86**

Table 2.24 indicates the total area, production and productivity of major agricultural crops in the district. Among the different crops, horse gram is cultivated in major area (26302.00 ha) with a production (14497.67 tonnes) and productivity of 552.00 kg / ha. The cereal like paddy is also grown under open well irrigation system. The pulse like red gram (10037.33 ha) occupies major position where as Bengal gram and Green gram are cultivated in lesser area. On the whole, agricultural crops are cultivated in about 138727.33 ha with an average productivity of 2.86 t/ha.

Table 2.25 Overall area, production and productivity of horticultural crops (Triennium average ending 2014-15)

Sl.No	Particulars	Area (in ha)	Production (in tonnes)	Productivity (in kg/ha)
1	Onion	107.33	967.00	9.01
2	Brinjal	1284.67	18062.67	14.06
3	Bhendi	247.67	1794.00	7.24
4	Cabbage	575.67	36020.00	62.57
5	Tomato	7538.33	129660.00	17.20
6	Banana	1084.33	42536.33	39.22
7	Mango	36508.33	151329.67	4.14
8	Jack Fruit	9.33	122.00	13.07

Sl.No	Particulars	Area (in ha)	Production (in tonnes)	Productivity (in kg/ha)
9	Guava	151.67	908.00	5.98
10	Grapes	37.33	563.33	15.09
11	Orange	0.67	1.67	2.49
12	Chillies	550.67	423.00	0.76
13	Ginger	0.33	1.33	4.03
14	Pepper	3.00	0.67	0.22
15	Coriander	1078.67	302.33	0.28
16	Turmeric	1168.00	3984.33	3.41
17	Tamarind	996.33	3471.67	3.48
18	Potato	1092.00	31344.33	28.7
19	Tapioca	512.67	20193.33	39.38
20	Coconut	15713.67	2720.00	0.17
	Total	**194055.00**	**841281.67**	**4.34**

The overall area, production and productivity of the major horticultural crops is furnished in the Table 2.25. The average productivity of horticultural crops during 2014-15is 4.34 t/ha from an area of 194055 ha. The important fruit crops that are grown in the district are mango in an area of 36508.33 ha followed by banana (1084.33 ha). Tomato is cultivated in 7538.33 ha and spice crops like turmeric is grown in 1168 ha.

2.10 Consumption of Chemical Fertilizers and Pesticides

The Consumption of chemical fertilizer and pesticides in Krishnagiri district during 2014-15 is given in Table.2.26. The input use level of major crops like paddy, ragi and maize are it indicated that optimum quantity of fertilizers, farmyard manure and micro nutrients were used by the farmers to get the current yield. The district consumes 22615 MT of N, P & K nutrients.

Table 2.26 Consumption of Chemical Fertilizers and Pesticides during 2014-15

Fertilizers (in MT)				Pesticides	
Nitrogenous (N)	Phosphatic (P_2O_5)	Potassic (K_2O)	Total (NPK)	Dust (MT.)	Liquid (000'Lit.)
15885	5037	1693	22615	32.25	32

Source: Joint Director of Agriculture, Krishnagiri

2.11 Agricultural Engineering - Machineries and Implements

There is ample scope for selective mechanization in the district by large scale use of power tiller, thrasher, cultivators and harvesters. The total number of pump sets was 46962 and the numbers of tractors / agricultural machineries owned by farmers were 627. The use of agricultural implements and machineries has been practiced by farmers for efficiency and also due to labour shortage during peak seasons. The tractors, water pumps for irrigation purpose and sugarcane crushers available were 627, 46962 and 237 respectively as shown in Table 2.27.

Table 2.27 Agricultural Implements and Machinery

(in Nos)

Item	
Ploughs	
Wooden	79628
Iron	47720
Total	127348
Water Pumps for Irrigation Purpose	
Worked by Oil Engine	24278
Worked by Electric Power	22684
Total	46962
Tractors	
a) Government	61
b) Private	566
c) Total	627
Sugarcane Crushers	
a) Worked by Power	111
b) Worked by Bullocks	86
c) Total	237

Source: District Statistical Hand Book

2.12 Agricultural Marketing and Regulated Markets

Regulated markets	: 9 (Krishnagiri, Hosur, Denkanikottai, Kelamangalam, Royakottai, Kaveripattinam, Bargur, Pochampalli, Uthangarai)
Co-op marketing societies	: 97
Uzhavar Sandhai	: 4
Wholesale markets	: 157 (Traders)
Local shandies	: 23

There are nine regulated markets in the district. Also the district possess 97 Co-operative marketing societies, 4 Uzhavar Sandhai, 157 whole markets for traders and 23 local shandies for selling their commodities. The commodities like paddy, cotton, ragi, bajra, groundnut, tamarind, red gram and horse gram with volume of 5800 MT. Market arrivals in Hosur farmers Shandi is presented in Table 2.28

Table 2.28 Market Arrivals in Farmers Shandi – Hosur

Year	Monthly Total				Average / day				Shops
	Quantity (Mt)	Value in Rs.Lakhs	Farmers	Consumers	Quantity (Mt)	Value in Rs.Lakhs	Farmers	Consumers	
2009-10	38258	4910	99579	5185406	105	13	273	14207	216
2010-11	40538	5910	100151	5078933	111	16	274	13915	216
2011-12	41411	5827	101977	5278722	113	16	279	14462	216
2012-13	40452	6120	101306	5056295	111	17	278	13853	216

Table 2.29 Quantity and Value of Commodities Transacted in Regulated Markets of Krishnagiri District during 2014-15

No. of Regulated market	Sub Centre	Name of the Crop	Godown Capacity in MT	Income (Rs. in Lakhs)	
				Name of the crop	Amount
9	0	Paddy, Cotton, Ragi, Bajra, Groundnut, Tamarind, Red gram, Horse gram	5800	Paddy. Groundnut	15.30

Source: District Agriculture Marketing Office

Value Addition of Farm Produce - Status and Prospects

Mango pulp industries : 40

Processing Unit : 2 Nos. (Krishnagiri)

(Capacity, 5 MT, 25 00MT, Grading facility)

Storage Go-downs available at Krishnagiri : 5 (cold storage -3)

Hosur : 7 (for floriculture -4)

Royakottai : 1

2.13 Storage Facilities

The district perishable produces the reasonable quantity of horticultural commodities. The produces are of perishable in nature, so that the farmers/producers have to sell their produce in the day which it may harvest. The commodities include fruits, vegetables and loose & cut flowers. Cold storages would help in minimizing the post-harvest losses being suffered by the farmers, particularly small and marginal farmers. The other products like dairy, meat, fish, chicken can also be stored in these cold storages and avoid them from deterioration under ambient conditions. The details of storage facilities in the district are presented in the Table 2.30. In total, there are 12 stored godowns / cold storages on the district. Of which Krishnagiri block possess 3 cold storages, Hosur block has 4 cold storages and Royakottai block contains one cold storage. Commodities like paddy, coconut, groundnut, pulses and oil seeds like Gingelly and castor are sold in the regulated markets.

Table 2.30 Agricultural storage godowns in the district (2014-15)

Sl. No	Name and Address of Agricultural Godowns	Capacity (MT)	Name of the product
1	Krishnagiri Regulated market	1000	Paddy, Cotton
2	Pochampalli Regulated market	1000	Paddy, Groundnut
3	Uthangarai Regulated Market	1000	Paddy, Cotton
4	Hosur Regulated market	1000	Red gram, Horse gram
5	Royakottai Regulated Market	1000	Gingelly, Castor
6	Bargur Regulated Market	1000	Samai, Field bean
7	Kelamangalam Regulated market	1000	Ragi, Varagu
8	Kaveripattinam Regulated Market	1000	Paddy
9	Denkanikottai Regulated Market	1000	Ragi

Source: Market Committee, Krishnagiri (2014-15)

The horticultural commodities like tamarind, Chillies, mango, banana and vegetables are stored in the cold storages with each of 2500-3500 MT per commodity. The details of cold storage holder are furnished in the Table 2.31.

Table 2.31 Cold Storage and Godowns in the district (2014-15)

Sl. No.	Address of the Godowns	Capacity (MT)	Commodities	Govt./ Co-op/Private
1	Brother Cold storage, Krishnagiri	3500	Tamarind & Chillies	Private
2	R.R. Cold Storage, Krishnagiri	3500	Tamarind & Chillies	Private
3	A.S.A Cold Storage, Krishnagiri	3500	Tamarind	Private
4	Sri Balaji Cold Storage, Royakottai	2500	Tamarind	Private
5	Regulated Marketing Committee, Krishnagiri	50	Mango, Banana, Vegetables	Govt.

Source: Market Committee, Krishnagiri (2014-15)

2.14 Sericulture

The area and production of mulberry of different blocks were given in the Table 2.32. The total area under mulberry in the district was 1771.90 hectares. Of which, Shoolagiri block holds the 28.50 per cent of area (506.70 ha) and next to this is the Veppanapalli block which possess 394 ha area of mulberry. The other blocks like Hosur (200.1 ha) and Kelamangalam (254.7 ha) holds the moderate area. The district produced 16067.50 quintals of Cocoon for a value of 4182.3 lakhs. On a whole, the blocks like Shoolagiri, Veppanapalli, Thally, Hosur, Bargur, Kaveripattinam and Uthangarai blocks generate additional income to the silk rearing farmers in the district.

Table 2.32 Mulberry and Cocoon production in the blocks (2014-15)

Name of the block	Area under Mulberry (ha)	Production of Cocoons (Quintal)	Value Rs. in Lakhs
Krishnagiri	51.40	687.80	17.30
Veppanapalli	394.00	3333.60	836.70
Bargur	80.00	706.60	177.40
Kaveripattinam	65.90	830.60	208.50
Uthangarai	27.00	493.00	123.70
Hosur	200.10	3182.80	798.90
Shoolagiri	506.70	6050.50	1518.70
Kelamangalam	254.70	201.40	50.70
Thally	171.70	134.20	338.10
Total	**1771.90**	**16067.50**	**4182.30**

Source: Assistant Director of Sericulture

2.15 Animal husbandry and Dairy development

2.15.1 Livestock and poultry population

The total livestock and poultry populations are furnished in the Table 2.33. There are 323602 numbers of cattle's are present in the district during 2014-15. The other livestock's such as buffaloes (10822 no's), sheep (230527 no's), goat (126517 no's) and poultry (4499997 no's) are also present.

Table 2.33 Total livestock and poultry in the district

Sl. No.	Particulars	Population (in numbers)	Per cent
1	Cattle	323602	46.57
2	Buffaloes	10822	1.56
3	Sheep	230527	33.17
4	Goats	126517	18.21
5	Horses and ponies	390	0.06
6	Donkeys	846	0.12
7	Pigs	2218	0.32
8	**Total Livestock**	**694922**	
9	Dogs	48788	
10	Rabbits	4301	
11	**Poultry**		
	Back yard Poultry	362281	
12	Farm Poultry	4137716	
13	**Total Poultry**	**4499997**	

Source: 12th Livestock Census (2012)

Table 2.34 Block wise livestock population of Krishnagiri district

Livestock population	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
Cattle	24295	40282	22605	31375	33883	10428	26771	31887	31900	59107
Buffalo	858	299	402	506	2297	25	562	593	653	2698
Sheep	21041	19221	19534	29534	17807	8536	23538	36154	18574	38471
Goat	16642	11195	12800	11304	10839	2948	10621	15090	14330	24759
Pigs	47	188	5	194	52	0	309	152	306	245
Poultry	110472	345307	311576	259085	40550	64515	386488	447407	416014	101655
Others	1017	4221	3227	4324	2946	2744	10687	5563	3848	4857
Total	**174372**	**420713**	**370149**	**336322**	**108374**	**89196**	**458976**	**536846**	**485625**	**231792**

B1- Krishnagiri, B2 -Kaveripattinam; B3 - Veppanapalli; B4 - Bargur; B5- Uthangarai; B6 - Mathur; B7 - Hosur; B8 - Shoolagiri; B9-Kelamangalam; B10-Thally

Source: TANUVAS, Chennai

The livestock populations in the different blocks are furnished in the Table 2.34. Shoolagiri block have the highest livestock populations (536846 No's) among others. Next to which is the Kelamangalam block which holds 485625 Numbers. Of the whole, poultry populations were highest among the livestock's followed by sheep. The least livestock population was observed in Mathur block of about 89196 numbers. Pig rearing was in moderate numbers.

2.15.2 Veterinary institutions and hospitals

The number of veterinary institutions, sub centres and veterinary dispensaries in the blocks of district were presented in the Table 2.35. There are about 2 veterinary hospitals, 54 veterinary dispensaries; one clinical center, 7 sub-centres and 10 rural veterinary dispensaries are present in the district for the welfare of the milch animals, pets and other livestock's. more over, the district has one college for poultry product and state animal form.

Table 2.35 Veterinary institutions and hospitals in the district (2014-15)

Sl. No.	Veterinary institutions	Number
1	Veterinary hospitals	2
2	Veterinary dispensaries	54
3	Clinician centers	1
4	Sub centres	7
5	Rural veterinary dispensary	10
6	State level Animal Farm	1
7	TANUVAS Poultry college	1

Source: Statistical handbook (2014-15)

2.15.3 Dairy development

The number of dairy centers, quantity of milk procured and cost of milk in different blocks of the district is furnished in the Table 2.36. Uthangarai block have accounted for the possession of highest number of dairy centres in the districts of about 35 no's with a capacity of 43.75 lakhs litres of milk for the worth of 787.55 lakhs. Next to this, the Kelamangalam block holds the second highest dairy centers (31 no's) with a procurement volume of 10.77 lakh litres. Though there are less collection centers in Bargur block, the procurement volume is high of about 34.59 lakh litres during 2014-15. Krishnagiri block also possess 31 dairy centers with a collection of 40.15 lakh litres for worth of 722.70 lakh rupees. The least number dairy centers are situated in the Mathur block which consisted of only 4.0 centers

with least procurement of 3.72 lakh litres. On the whole, the district holds 216 dairy centers with procurement capacity of 185.36 lakh litres and for worth of 3336.24 lakh rupees in a year respectively.

Table 2.36 Block wise milk production in the district (2014-15)

Sl. No	Name of the Block	No. of DCs	Milk procurement details (in lakhLts.)	Cost of milk (Rs. In lakhs)
1	Krishnagiri	31	40.15	722.7
2	Veppanapalli	9	6.23	112.21
3	Bargur	25	34.59	622.57
4	Kaveripattinam	25	26.14	470.48
5	Uthangarai	35	43.75	787.55
6	Mathur	4	3.72	66.68
7	Hosur	11	4.93	88.63
8	Shoolagiri	17	3.37	60.71
9	Kelamangalam	31	10.77	193.81
10	Thally	28	11.71	210.9
	Total	**216**	**185.36**	**3336.24**

Source: Statistical handbook of the district (2014-15)

The dairy development in the district is presented in the Table 2.37. The data infers that, the district holds 2 milk chilling plants, 856 milk co-operative societies and a dairy. During the flush season, the district produces 162871 litres while in lean season; it produces 103189 litres of milk per day. On an average, the district produces 146857 litres of milk daily during the year 2014-15.

Table 2.37 Dairy development in the district

Sl. No.	Dairy development	Total (in numbers)
1	Dairies	1
2	Milk chilling plants	2
3	No. of Milk Co-op. Societies	856
4	**Milk production per day (litres)**	
	Flush season	162871
	Lean season	103189
	Average milk production	146857

Source: Statistical handbook of the district (2014-15)

Table 2.38 Availability of Dairy infrastructure facilities in different blocks

Infrastructure facilities	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
Dairy Co-operative society	29	1	14	28	26	5	4	14	14	19
Veterinary clinics	8	5	7	7	8	3	7	6	1	9
Milk collection centre	19	22	22	21	22	21	19	20	8	19

B1- Krishnagiri, B2 -Kaveripattinam; B3 - Veppanapalli; B4 - Bargur; B5- Uthangarai; B6 - Mathur; B7 - Hosur; B8 - Shoolagiri; B9-Kelamangalam; B10-Thally
Source: TANUVAS, Chennai

The availability of infrastructure facilities for the development of animal husbandry and dairy industries are presented in the Table 2.38. The highest number of dairy cooperative societies are found in Krishnagiri block (29 No's) followed by Bargur (28 No's) and Uthangarai block (26 No's). The maximum number of 9 veterinary clinics was observed in Thally block and follower by Uthangarai which contains 8 veterinary clinics. Also maximum number of milk collection centres was located in Kaveripattinam and Uthangarai Block. This indicates that maximum quantity of milk was produced in these blocks. The lowest quantity of milk was produced in Kelamangalam block with only 8 milk collection centres.

2.15.4 Poultry development

The poultry birds produced in the district are presented in the Table 2.39. The total number of chicks produced in hatcheries are 10054 lakh number, the birds sold for breeding is about 10330 lakh numbers and birds sold for table is about 975 lakh numbers.

Table 2.39 Poultry development in the district

Sl. No.	Poultry	Total Population (in lakh No's)
i.	Chicks produced in Hatcheries	10054
ii.	Birds sold for breeding	10330
iii.	Birds sold for table	975

Source: Statistical handbook of the district (2014-15)

2.15.5 Egg production

The estimated egg production in the district is presented in the Table 2.40. The district produces 145.690 lakh eggs in the year, of which 96.710 lakhs eggs from desi breed and 48.950 lakh eggs are from improved poultry breed.

Table 2.40 Estimated egg production in the district (2014-15)

Desi (Lakh No's)	Improved (Lakh No's)	Total (lakh No's)
96.710	48.980	145.690

Source: Statistical Handbook of Tamil Nadu (2014-15)

2.16 Fisheries

The total quantity of fishing in the districts was presented in the Table 2.41. The total inland fish production is about 542.768 tonnes of which Krishnagiri center produced the highest quantity of inland fish (386 tonnes) with a value of 76.98 lakh rupees. The least inland fish catchment center is Hosur which accounted for 2.1 tonnes. To catch 542.768 tonnes of fish, 208 fishermen are engaged.

Table 2.41 Fisheries status in the district (2014-15)

Name and Address of Fishing centers	Inland Fish Catch (Tonnes)	Value (Rs. In Lakhs)	Number of Fisherman engaged
Krishnagiri	386	76.98	74
Pambar	9.98	3.13	26
Bargur	142.016	34.7	74
Shoolagiri	2.672	0.73	8
Hosur	2.1	0.3	26
Total	**542.768**	**115.84**	**208**

Source: Statistical handbook of the district (2014-15)

2.17 Banking and Insurance

Banking sector should cater to the short and long term credit needs of farmers, especially marginal and small farmers, so as to facilitate them in procuring the required farm inputs at appropriate time. The regulated markets and co-operative marketing societies are

required to create adequate infrastructural facilities like, grading, packing and storing the produces at different production centres of the district. It is also suggested that the farmers are to make use of the several benefits such as subsidized seeds, fertilizers, plant protection chemicals, machineries and tools, extended through various agricultural development programmes. They should also come forward to adopt the good agricultural practices and technologies developed by the agricultural research institutes.

2.18 Co-operation

A co-operative society is an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise. These societies are there for to ensure the financial aids as loans for the common people. There are 3 primary agricultural rural development banks, 93 commercial banks, 22 district cooperative banks, 120 primary agricultural cooperative bank, 37 employees' societies and 76 student stores. The details are furnished in the Table 2.42.

Table 2.42 Banks and Cooperative societies in the district

Sl. No.	Banks and Societies	Numbers
1	Primary Agri. Rural Development Banks	3
2	Commercial bank	93
3	Co-operative I.T.I Bargur	0
4	District Central Co-operative Banks (Branches)	22
5	Urban Co-operative Banks	2
6	Primary Agricultural Co-operative Bank	120
7	Regional Rural Bank	14
8	Employees Societies	37
9	Lift Irrigation Co-operative Societies	1
10	Employees Stores	3
11	Labour contract Co-operative Stores	3
12	Agri. Produces Co-operative MarketingSocieties	4
13	Student Stores	76

Source: Statistical handbook of the district (2014-15)

2.19 Industries

The industries present in the district are furnished in the Table 2.43. Mango Pulp extraction is the most popular segment in the belt which is growing over 10%.Granite slab mining, cutting and polishing is another important activity in the area. Hosur is a hub for auto-

component sector. Ashok Leyland, TVS Motors etc., is functioning at Hosur promoting the growth of auto component sector. Auto component sector grows 15%. Some of the important industries are Sri Devaraja Agro Industries,Premier Spinning Mill, TVS Motor Company, Exide Ltd., AV. Tech Ltd.,Titan Watches, Ashok Leyland,Carborandim Universal Ltd., etc. The industrial parks situated in Krishnagiri and Hosur provide scope for the employment opportunities in and around the district.

Table 2.43 Industrial development in the district

Sl. No	Industries	Number
1	No. of working factories(registered)	682
2	No. of mandays worked	4386
3	No. of Trade unions	77
4	No. of Strikes	7
5	No. of lockout	0
6	Large scale industries	108
7	Medium scale industries	388
8	Small scale industries	186
9	Cottage industries	351
10	No. of few factories set up	39
11	No. of Handicrafts Industries	252
12	Name of the important industries in the district	Premier Spinning Mill, TVS Motor Company, Exide Ltd., AV. Tech Ltd.,Titan Watches, Ashok Leyland Carborandim Universal Ltd.,
13	Name of the industrial park	Krishnagiri and Hosur

Source: Statistical handbook of the district (2014-15)

The Khadi and village industries are also present in the district (Table 2.44)

Table 2.44 Khadi and Village Industries in the district

Sl. No	Particulars	Production (Lakhs)	Sales (₹ in Lakhs)
I	**Khadi**	**3.75**	**21.29**
	a. Cotton	-	-
	b. Woolen	-	-
	c. Silk	-	-
	d. Polyester	-	-
II	**Tillage Industries Rural Textiles**	**3.06**	**10.96**
	a. Soaps	30.91	-
	b. Leather Goods (Chapel)	-	-
	c. Others (specify)	-	0.53
	Total (I + II)	**37.72**	**32.78**

Source: Statistical handbook of the district (2014-15)

The Khadi industries like cotton, woolen, silk and polyester are involved in the production for about 3.75 lakhs and also for sales of worth 21.29 lakhs. The soap industry is also involved in production of about 30.91 lakhs.

CHAPTER III

DEVELOPMENT OF AGRICULTURE AND ALLIED SECTORS

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

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

ii. Yield gap analysis for the major crops.

3.1 Trends in area, production and productivity of major crops

The past trends in area, production and productivity of major crops need to be analyzed to plan for future agricultural development. Compound Growth Rate (CGR) tool is used to measure the annual rate of growth in area, production and productivity of major crops cultivated in the district and it is expressed in percentage. The compound growth rate has been estimated using 7 year time series data from 2004-05 to 2014-15 due to availability data for Krishnagiri district only from 2004-05 onwards since it is carved out from erstwhile Dharmapuri district during the year 2004.

The equation used to estimate the annual compound growth rate is: $Y_t = ab^te$

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

The Compound Growth Rate (CGR) in percentage is derived using the formula:

$$CGR(r) = [antilog\ b-1] \times 100$$

Where Y_t = Area or Production or Yield

a = Intercept

b = Regression coefficient

t = Time variable

r = Compound Growth Rate

The value of 'b' is computed by using Ordinary Least Square (OLS) method and the Compound Growth Rate of area under major crops grown in Krishnagiri district is given in Table 3.1.From the table, it is inferred that paddy, ragi, cholam, red gram, ground nut, coconut, mango and tomato are the major crops cultivated in the district. On an average (2004-15) the district showed a mango output of 201423 tonnes in an area of 33223 ha with average yield of 6090 kg/ha. Paddy is grown in an area of 17646 ha with an average productivity of 4260 kg/ha. Ragi is the other major agricultural crop grown in an area of 42271 ha with a production of 99178 tonnes. Coconut is the other major crops that grown in

an area of 15182 ha with average productivity of 196.6 lakh nuts/ha. The other crops like tomato, red gram and cholam are also grown in certain areas and made significant contributions to the farming community in terms of production, yield and income.

Table 3.1 Compound Growth Rate of Area, Production and Productivity under major crops in Krishnagiri District during 2014-2015 (% per year)

Sl. No.	Crops	Area(Ha)	%	Production	Yield (kg/ha)
1	Paddy	17646	12.77	75515	4260
2	Ragi	42271	30.58	99178	2340
3	Cholam	4995	3.61	13773	2743
4	Red gram	5173	3.74	3914	734
5	Ground nut	15294	11.06	36979	2417
6	Coconut*	15182	10.98	2979	19616
7	Mango	33223	24.03	201423	6090
8	Tomato	4448	3.22	67556	15222
	Total	**138233**	**100.00**		

**In lakh nuts and N.A. denotes Not Available*

Table 3.2 CGR of Area under Major Crops Grown in Krishnagiri District

Crop	CGR (%) 2004-05 to 2014-15	Triennium Average ending 2014- 15 (Ha.)	Percentage Share (%)
Paddy	-3.52	22240	6.44
Cholam	2.27	4348.6	1.26
Cumbu	8.15	413	0.11
Ragi	-4.50	47836	13.87
Maize	10.45	2878	0.83
Samai	-16.29	1420	0.41
Total Cereals	-4.18	66585	19.30
Red gram	10.49	10037.33	2.90
Black gram	3.88	3817	1.11
Green gram	1.99	1727	0.50
Horse gram	-2.62	26302	7.62
Total Pulses	-0.86	24214	7.01
Chillies	2.03	0.33	0.001
Coriander	1.11	1078.67	0.31
Turmeric	7.42	1168	0.33

Crop	CGR (%) 2004-05 to 2014-15	Triennium Average ending 2014- 15 (Ha.)	Percentage Share (%)
Tamarind	-0.68	1096	0.31
Total Spices	2.46	3039	10.58
Sugarcane	3.67	819.33	0.24
Banana	6.40	1084.33	0.31
Mango	-1.07	36508.3	10.59
Guava	0.73	151.67	0.04
Grapes	-11.89	37.33	0.01
Total Fresh Fruits	-0.76	35079	10.17
Potato	20.19	1092	0.32
Tapioca	1.01	512.67	0.14
Onion	-1.59	107.33	0.03
Brinjal	10.11	1284.67	0.37
Bhendi	14.54	247.67	0.07
Cabbage	12.37	575.67	0.17
Tomato	7.87	7538.33	2.19
Total Vegetables	7.27	8414	2.44
Cotton	-9.66	2740.33	0.79
Groundnut	-3.55	13976.67	4.05
Gingelly	9.56	512	0.14
Coconut	0.62	15713.7	4.55
Castor	-9.36	378	0.10
Gross Cropped Area	**-1.83**	**344972.9**	**100.00**

The gross cropped area had only a negative growth rate (-1.83 % per annum) during the period from 2004-05 to 2014-15 (Table 3.2). This would indicate that intensive developmental efforts are needed at least to sustain the existing cropped area. Ragi was the predominant crop grown in 47836 Ha (13.87 %) of the gross cropped area in Krishnagiri district followed by mango (10.58 %) and so on. As these nine crops accounted for nearly 83 per cent of the gross cropped area, they need to be given focused attention for further development in the years to come. However, the estimated compound growth rate of various crops grown in Krishnagiri district would reveal that most of the pulses and vegetable had a positive compound growth rate during the investigation period.

Table 3.3 CGR of Production of Major Crops Grown in Krishnagiri District

Crop	CGR (%) 2004-05 to 2014-15	Triennium Average ending 2014- 15 (t)
Paddy	6.12	103228
Cholam	29.03	6190.33
Cumbu	9.77	1033.67
Ragi	8.35	119226.33
Maize	34.15	20420.67
Samai	-3.51	1430
Total Cereals	8.17	164702
Red gram	16.05	10418.33
Black gram	8.1	2763.33
Green gram	3.05	866
Horse gram	8.7	14497.67
Total Pulses	9.41	11603
Chillies	-12.21	423
Coriander	2.66	302.33
Turmeric	10.19	3984.33
Tamarind	-0.72	3471.67
Total Spices	3.46	9709
Sugarcane	10.19	77730.67
Banana	5.34	42536.3
Mango	14.33	151330
Guava	3.86	908
Grapes	-17.43	563.33
Total Fresh Fruits	10.68	329002
Potato	30.71	9897
Tapioca	-4.5	20193.3
Onion	0.34	967
Brinjal	3.84	18062.7
Bhendi	14.32	1794
Cabbage	22.2	36020

Crop	CGR (%) 2004-05 to 2014-15	Triennium Average ending 2014- 15 (t)
Tomato	9.75	129660
Total Vegetables	9.56	168007
Cotton	2.46	7964.67
Groundnut	5.03	31886.67
Gingelly	33.21	379.33
Coconut	12.33	2720
Castor	-9.33	269

The compound growth rate of production of various crops of Krishnagiri district is presented in Table 3.3. The change in production could be mainly influenced by the changes either in the area or yield or by both. Maize, cholam, cumbu, red gram, gingelly, turmeric, sugarcane, mango, tomato, potato, cabbage, bhendi and tomato were the major crops which had positive CGR in their production.

Table 3.4 CGR of Productivity of Major Crops Grown in Krishnagiri District

Crop	CGR (%) 2004-05 to 2014-15	Triennium Average ending 2014- 15 (t/Ha.)
Paddy	9.64	4.64
Cholam	26.76	1.42
Cumbu	1.62	2.51
Ragi	12.85	2.49
Maize	23.70	7.09
Samai	12.78	1.02
Total Cereals	12.35	2.49
Red gram	5.56	1.03
Black gram	4.22	0.72
Green gram	1.06	0.50
Horse gram	11.32	0.49
Total Pulses	10.27	0.48
Chillies	-14.24	0.76
Coriander	1.55	0.28

Crop	CGR (%) 2004-05 to 2014-15	Triennium Average ending 2014- 15 (t/Ha.)
Turmeric	2.77	3.41
Tamarind	-0.04	3.48
Total Spices	1.00	3.20
Sugarcane	6.52	94.87
Banana	-1.06	39.22
Mango	15.40	4.14
Guava	3.13	5.98
Grapes	-5.54	15.09
Total Fresh Fruits	11.44	9.38
Potato	10.52	28.70
Tapioca	-5.51	39.38
Onion	1.93	9.01
Brinjal	-6.27	14.06
Bhendi	-0.22	7.24
Cabbage	9.83	62.57
Tomato	1.88	17.21
Total Vegetables	2.29	8.79
Cotton	12.12	2.9
Groundnut	8.58	2.28
Gingelly	23.65	0.50
Coconut	11.71	0.17
Castor	0.03	0.31

The compound growth rates of productivities of major crops of Krishnagiri district are given in Table 3.4. As far as the productivity of major crops grown in Krishnagiri district were concerned, cholam, maize, Ragi, Samai, cotton, mango, coconut, gingelly, groundnut, horse gram and cabbage had a positive growth rate. The average productivities of major food crops need to be increased; otherwise, it would be very difficult to ensure the food security.

Table 3.5 Top Nine Cropped area based on Cumulative percentage

Crops	Area	% Share	Cumulative %
Ragi	47836	13.87	13.87
Mango	36508.3	10.59	24.46
Horse gram	26302	7.62	32.08
Paddy	22240	6.44	38.52
Coconut	15713.7	4.55	43.07
Groundnut	13976.7	4.05	47.12
Red gram	10037.3	2.9	50.02
Tomato	7538.33	2.19	52.21
Cholam	4348.6	1.26	53.47

The same exercise was done to select potential horticultural crops for the district and mango, coconut and tomato accounted for more than 80 per cent of the total area under horticultural crops in Krishnagiri district as given in Table 3.6.

Table 3.6 Area under Major Horticultural Crops based on Cumulative percentage

Crops	Triennium Ave.	% Share	Cumulative %
Mango	36508.3	52.09	52.09
Coconut	14804.67	23.67	75.76
Tomato	4154.00	6.64	82.40
Banana	1974.33	3.15	85.55
Tapioca	1271.33	2.03	87.58
Brinjal	559.33	0.89	88.47
Cabbage	557.00	0.89	89.36

3.7 Projected crop output based on potential yield

Based on the potential yield and projected area, production is projected for the year 2022-23. The results are given in the following Table 3.7.

Table 3.7 Projected crop output based on potential yield (t/ha) 2022-23

Crops	Potential yield (t/ha)	Production (t)		Area (ha)	
		2017-18	2022-23	2017-18	2022-23
Ragi	3.50	109889	87273	31396	24935
Mango	8.00	241717	229070	30214	28633
Paddy	6.50	104611	87451	12307	10288
Coconut*	180	3555967	3667826	15460	15947
Groundnut	2.50	30592	25540	12236	10216
Horse gram	0.75	6238	5461	12476	10923
Red gram	1.50	20544	33836	8560	14098
Cholam	2.75	8176	9147	6289	7036
Tomato	40.00	353023	515647	7060	10312

*NB: * Unit in terms of nuts/tree/annum*

Using the secondary data on area, yield and production of the selected crops, viz., paddy, cholam, ragi, red gram, horse gram, groundnut, coconut, mango and tomato, the projected yield and production for these crops for the year 2022-23 were estimated and the results are discussed in the following section. The annual growth rates of areas for the period between 2004-05 and 2014-15 were negative for the selected major crops like paddy (-3.52 %), ragi (-4.50 %), horse gram (-2.62 %), mango (-1.07 %) and groundnut (-3.55 %). It was positive for cholam (2.27 %), red gram (10.49 %), coconut (0.62 %) and tomato (7.87 %).

Therefore, planned efforts are utmost necessary to sustain the areas under these crops so as to enhance the agricultural production by means of raising the productivities of these crops. Further, the yield gaps for these selected crops were much wider and therefore, the best option for raising the production is to take efforts in bridging the existing yield gaps in a situation where the scope for increasing the area under the crops is very limited. It is also a tough task even to sustain the existing net sown area of the district. However, efforts are required to sustain the present net sown area of the district, as this district has a very good locational advantage by way of production and supply of food grains, vegetables, fruits, flowers, and other value – added agricultural commodities required to meet the growing demands of the population of the district. In view of the above reasons, projection for the productions of the select crops for the period from 2011-12 to 2022-23 was done by resorting to raising the productivities of the selected crops alone and results of the estimated yield and

the consequent increase in the production are discussed below.

3.7.1 Paddy

Kar and Samba are the two major season for paddy in the district, which have 43.19 per cent and 47.95 per cent of the total area under paddy respectively as given in Table 3.8. The maximum yields recorded in the crop cutting experiment were considered to assess the potential yield for paddy varieties like ADT 39 and Paiyur 1 grown in these seasons. Policy intervention against the conversion of cultivable lands into nonagricultural purpose is required to arrest the negative trend in the gross cropped area. Extension machinery needs to be strengthened to bridge the yield gap such that the yield is raised annually at the rate of 3.33 per cent.

Table 3.8 Existing and Projected Yield and Production of Paddy in Krishnagiri District

Year Area (Ha)	Kar	Samba	Total
Triennium average ending 2010-11**	6832	7591	15816
Projected area for 2022-23	6832	7591	15816
Per cent to total	43.19	47.95	100
Varieties	Paiyur 1	ADT 39	-
Potential Yield (Kgs/Ha)	5800	5800	-
Average yield for Triennium average ending 2010-11 (Kgs/Ha)**	3875	3941	3905
Yield Gap (Kgs/Ha)	1925	1859	1894
Projected Production for 2022- 23 (tonnes)*	39626	44028	91732
Production for Triennium average ending 2010-11 (tonnes)**	26474	29916	62468
Percentage of increase in production over 2010-11	49.67	47.17	46.84

**Based on Crop Production Guide.*

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

Table 3.9 Projected Increase in Yield and Production of Paddy (2011-12 to 2022-23)

Year	Yield (kg/ ha)			Production (t)		
	Kar	Samba	Total	Kar	Samba	Total
Triennium average ending 2010-11	3875	3941	3905	26474	29916	56390
2011-12	4002	4068	4042	27398	30936	58334
2012-13	4133	4199	4183	28354	31991	60345
2013-14	4269	4334	4330	29344	33082	62426
2014-15	4409	4474	4481	30368	34210	64578
2015-16	4554	4618	4638	31428	35377	66804
2016-17	4703	4766	4800	32524	36583	69107
2017-18	4857	4920	4968	33660	37830	71490
2018-19	5017	5078	5142	34834	39120	73955
2019-20	5181	5242	5322	36050	40454	76504
2020-21	5351	5411	5508	37308	41834	79142
2021-22	5527	5585	5701	38610	43260	81871
2022-23	5708	5765	5901	39958	44736	84693
Required Growth Rate (%)	**3.51**	**3.22**	**3.33**	**3.49**	**3.41**	**3.19**

The annual growth rate required raising the yield and production of paddy in 2022-23 is approximately 3.33 and 3.19 per cent per annum respectively as indicated in Table 3.9.

3.7.2 Cholam

Cholam is a mainly cultivated as kharif crop in Krishnagiri district and the major variety grown is CO 19. Extension machinery needs to be strengthened to bridge the yield gap such that the yield is raised annually at the rate of 2.75 per cent.

The bridging up of the yield gap would result in the gradual increase in cholam production from 0.12 lakh tonnes in 2010-11 to 0.17 lakh tonnes in 2022-23 accounting for an increase of 38 per cent from the base year 2011-12 as indicated in Table 3.10 & 3.11.

Table 3.10 Existing and Projected Yield and Production of Cholam in Krishnagiri District

Year / Area (Ha)	Kharif	Rabi	Total
Triennium average ending 2010-11**	5285	90	5375
Projected area for 2022-23	5285	90	5375
per cent to total	9832	168	100
Varieties	CO 19	CO 19	-
Potential Yield (Kgs/Ha)	2750	3500	-
Average yield for Triennium average ending 2010-11 (Kgs/Ha)**	1925	2850	-
Yield Gap (Kgs/Ha)	825	650	-
Projected Production for 2022- 23 (tonnes)*	14533	3150	17683
Production for Triennium average ending 2010-11 (tonnes)**	10173	2565	12738
Percentage of increase in production over 2010-11	42.85	22.81	38.82

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

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

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

Year	Yield (kg/ ha)			Production (t)		
	Kharif	Rabi	Total	Kharif	Rabi	Total
Triennium average ending 2010-11	1925	2850	2370	10173	2565	12378
2011-12	1984	2898	2435	10481	2612	12757
2012-13	2044	2947	2502	10799	2661	13147
2013-14	2107	2996	2571	11126	2710	13549
2014-15	2171	3046	2642	11463	2760	13964
2015-16	2237	3098	2714	11810	2811	14391
2016-17	2305	3150	2789	12168	2863	14832
2017-18	2376	3203	2866	12537	2916	15286
2018-19	2448	3256	2944	12917	2970	15753
2019-20	2523	3311	3025	13308	3025	16235
2020-21	2600	3367	3109	13712	3081	16732
2021-22	2679	3423	3194	14127	3138	17244
2022-23	2750	3500	3290	14533	3150	17683
Required Growth Rate (%)	**3.05**	**1.68**	**2.75**	**3.03**	**1.85**	**3.06**

3.7.3 Ragi

In Krishnagiri district, ragi is grown in an area of 0.43 lakh ha and accounted for the production of 0.86 lakh tonnes as per the triennium average ending 2010-11. Major ragi varieties grown in the district are L 5, MR 1 and Paiyur 1. It is mainly grown as kharif crop and as per the potential yield the projected increase in ragi production should be at least 38 per cent and 22 per cent more under kharif and rabi season respectively over the base year of 2010-11. The existing and projected yield and production of ragi in this district is presented in Table 3.12. The annual growth rate required toraise the yield and production of ragi in 2022-23 is approximately 2.07 and 2.89 per cent per annum respectively as indicated in Table 3.13.

Table 3.12 Existing and Projected Yield and Production of Ragi in KrishnagiriDistrict

Year / Area (Ha)	Kharif	Rabi	Total
Triennium average ending 2010-11**	42042	1308	43350
Projected area for 2022-23	42042	1308	43350
per cent to total	96.98	3.02	100
Varieties	L5, MR 1	L5, MR 1	-
Potential Yield (Kgs/Ha)	2800	3500	-
Average yield for Triennium average ending 2010-11 (Kgs/Ha)**	2020	2850	-
Yield Gap (Kgs/Ha)	780	650	-
Projected Production for 2022- 23 (tonnes)*	117717	4578	122295
Production for Triennium average ending 2010-11 (tonnes)**	84924	3729	86843
Percentage of increase in production over 2010-11	38.61	22.76	40.82

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

Table 3.13 Projected Increase in Yield and Production of Ragi from 2011-12 to 2022-23

Year	Yield (kg/ ha)			Production (t)		
	Kharif	Rabi	Total	Kharif	Rabi	Total
Triennium average ending 2010-11	2020	2850	2435	84924	3729	86843
2011-12	2071	2900	2485	87268	3808	89353
2012-13	2122	2951	2537	89676	3889	91935
2013-14	2175	3002	2589	92152	3971	94592
2014-15	2230	3055	2643	94695	4055	97326
2015-16	2285	3108	2698	97309	4141	100138
2016-17	2343	3163	2754	99994	4229	103032

Year	Yield (kg/ ha)			Production (t)		
	Kharif	Rabi	Total	Kharif	Rabi	Total
2017-18	2401	3218	2811	102754	4319	106010
2018-19	2461	3274	2869	105590	4410	109074
2019-20	2523	3332	2928	108504	4504	112226
2020-21	2586	3390	2989	111499	4599	115469
2021-22	2650	3449	3051	114576	4697	118806
2022-23	2800	3500	3114	117717	4578	122295
Required Growth Rate (%)	**2.50**	**1.75**	**2.07**	**2.76**	**2.12**	**2.89**

3.7.4 Red gram

In Krishnagiri district, red gram is grown in an area of 4257 ha and accounted for the production of 2864 tonnes as per the triennium average ending 2010-11. Major red gram varieties grown in the district are BRG 1, TTB 7 and LRG 41. It is mainly grown as kharif crop and as per the potential yield, the projected increase in red gram production should be at least 58 per cent over the base year of 2010-11. The existing and projected yield and production of red gram in this district is presented in Table 3.14.

The annual growth rate required to raise the yield and production of red gram in 2022-23 is approximately 3.95 and 3.88 per cent per annum respectively as indicated in Table 3.15.

Table 3.14 Existing and Projected Yield and Production of Red gram in Krishnagiri district

Year	Kharif	Rabi	Total
Area (Ha)			
Triennium average ending 2010-11**	4157	100	4257
Projected area for 2022-23	4157	100	4257
per cent to total	97.65	2.35	100
Varieties	BRG 1, BRG 2, TTB 7,LRG 41 &CO8	BRG 1,,TTB 7,LRG 41	-
Potential Yield (Kgs/Ha)	800	1200	-
Average yield for Triennium average ending 2010-11 (kg/Ha)**	500	800	672
Yield Gap (Kg/Ha)	300	400	-
Projected Production for 2022- 23 (tonnes)*	3325	1200	4525
Production for Triennium average ending 2010-11 (tonnes)**	2064	800	2864
Percentage of increase in production over 2010-11	61.09	50.00	57.99

Table 3.15 Projected Increase in Yield and Production of Red gram from 2011-12 to 2022-23

Year	Yield (kg/ ha)			Production (t)		
	Kharif	Rabi	Total	Kharif	Rabi	Total
Triennium average ending 2010-11	500	800	672	2064	800	2864
2011-12	521	830	699	2148	830	2975
2012-13	542	861	726	2236	860	3091
2013-14	565	893	755	2328	892	3210
2014-15	588	926	785	2423	925	3335
2015-16	612	961	816	2522	959	3464
2016-17	638	997	848	2625	994	3599
2017-18	664	1034	881	2733	1031	3738
2018-19	692	1072	916	2844	1069	3884
2019-20	720	1112	952	2961	1108	4034
2020-21	750	1154	990	3082	1149	4191
2021-22	781	1197	1029	3208	1192	4353
2022-23	800	1200	1062	3325	1200	4525
Required Growth Rate (%)	**4.14**	**3.73**	**3.95**	**4.08**	**3.68**	**3.88**

3.7.5 Horse gram

In Krishnagiri district, horse gram is grown in an area of 15028 ha and accounted for the production of 7452 tonnes as per the triennium average ending 2010-11. Major horse gram variety grown in the district is Paiyur 1. It is widely grown as kharif and rabi crop and as per the potential yield, the projected increase in horse gram production should be at least 52 per cent and 100 per cent in both the seasons over the base year of 2010-11. The existing and projected yield and production of horse gram in this district is presented in Table 3.16.

The annual growth rate required to raise the yield and production of horse gram in 2022-23 is approximately4.88 and 4.99 per cent per annum respectively as indicated in Table 3.17.

Table 3.16 Existing and Projected Yield and Production of Horse gram in Krishnagiri District

Year	Kharif	Rabi	Total
Area (Ha)			
Triennium average ending 2010-11**	6623	8405	15028
Projected area for 2022-23	6623	8405	15028
per cent to total	44.07	55.92	100
Varieties	Paiyur 1	Paiyur 2	-
Potential Yield (Kg/Ha)	750	1150	-
Average yield for Triennium average ending 2010-11 (Kg/Ha)**	490	500	495
Yield Gap (Kg/Ha)	260	500	-
Projected Production for 2022- 23 (tonnes)*	4967	8405	13372
Production for Triennium average ending 2010-11 (tonnes)**	3250	4202	7452
Percentage of increase in production over 2010-11	52.83	100.02	79.44

Table 3.17 Projected Increase in Yield and Production of Horse gram from 2011-12 to 2022-23

Year	Yield (kg/ ha)			Production (t)		
	Kharif	Rabi	Total	Kharif	Rabi	Total
Triennium average ending 2010-11	490	500	495	3250	4202	7452
2011-12	508	530	519	3369	4453	7824
2012-13	526	561	544	3492	4719	8214
2013-14	545	594	571	3619	5000	8624
2014-15	564	629	599	3751	5299	9055
2015-16	584	666	628	3888	5615	9506
2016-17	605	705	659	4030	5951	9981
2017-18	627	747	691	4177	6306	10479
2018-19	649	791	725	4330	6682	11002
2019-20	672	838	760	4488	7081	11551
2020-21	697	887	797	4651	7504	12127
2021-22	721	939	836	4821	7952	12732
2022-23	750	1000	889	4967	8405	13372
Required Growth Rate (%)	**3.58**	**5.91**	**4.88**	**3.65**	**5.96**	**4.99**

3.7.6 Groundnut

In Krishnagiri district, groundnut is grown in an area of 15754 ha and accounted for the production of 29764 tonnes as per the triennium average ending 2010-11. Major groundnut varieties grown in the district are TMV 2, TMV 7, VRI 2, VRI 3 and JL 24. It is grown as Kharif crop and as per the potential yield, the projected increase in groundnut production should be at least 33 per cent over the base year of 2010-11. The existing and projected yield and production of groundnut in this district is presented in Table 3.18.

The annual growth rate required, raising the yield and production of groundnut in 2022-23 is approximately 2.43 per cent per annum as indicated in Table 3.19.

Table 3.18 Existing and Projected Yield and Production of Groundnut in Krishnagiri District

Year	Kharif	Rabi	Total
Area (Ha)			
Triennium average ending 2010-11**	15108	646	15754
Projected area for 2022-23	15108	646	15754
per cent to total	95.89	4.11	-
Varieties	TMV 2,TMV 7,K6 VRI 2,VRI3,JL 24	TMV 2,TMV 7, VRI 2,VRI3,JL 24, VRI 406	-
Potential Yield (Kg/Ha)	2500	3000	-
Average yield for Triennium average ending 2010-11 (Kg/Ha)**	1880	2150	1890
Yield Gap (Kg/Ha)	620	850	-
Projected Production for 2022- 23 (tonnes)*	37777	1938	39715
Production for Triennium average ending 2010-11 (tonnes)**	28376	1388	29764
Percentage of increase in production over 2010-11	33.13	39.62	33.43

Table 3.19 Projected Increase in Yield and Production of Groundnut from 2011-12 to 2022-23

Year	Yield (kg/ ha)			Production (t)		
	Kharif	Rabi	Total	Kharif	Rabi	Total
Triennium average ending 2010-11	1880	2150	1890	28376	1388	29764
2011-12	1924	2209	1936	29057	1428	30487
2012-13	1969	2270	1983	29754	1469	31228
2013-14	2016	2332	2032	30468	1511	31987
2014-15	2063	2396	2081	31200	1555	32764
2015-16	2112	2462	2132	31949	1600	33560
2016-17	2161	2530	2184	32715	1646	34376
2017-18	2212	2600	2237	33500	1693	35211
2018-19	2264	2671	2292	34304	1742	36067
2019-20	2317	2745	2348	35128	1792	36943
2020-21	2372	2820	2405	35971	1844	37841
2021-22	2427	2898	2464	36834	1897	38761
2022-23	2500	3000	2520	37777	1938	39715
Required Growth Rate (%)	**2.36**	**2.75**	**2.44**	**2.41**	**2.87**	**2.43**

3.7.7 Coconut

In Krishnagiri district, coconut is grown in an area of 14804 ha and accounted for the production of 431 million nuts as per the triennium average ending 2010-11. Major coconut varieties grown in the district are West Coast tall and East Coast Tall. It is grown under rainfed condition as per the potential yield; the projected increase in coconut production should be at least 20 per cent over the base year of 2010-11. The existing and projected yield and production of coconut in this district is presented in Table 3.20.

The annual growth rate required to raise the yield and production of coconut in 2022-23 is approximately 1.53 per cent per annum as indicated in Table 3.21.

Table 3.20 Existing and Projected Yield and Production of Coconut in Krishnagiri District

Year	Irrigated	Unirrigated	Total
Area (Ha)			
Triennium average ending 2010-11**	14331	473	14804
Projected area for 2022-23	14331	473	14804
per cent to total	96.81	3.19	-
Varieties	Arasampatty K11	T x D hybrid	-
Potential Yield (nuts/tree)	180	150	-
Average yield for Triennium average ending 2010-11 (nuts/tree)**	150	120	-
Yield Gap (Kgs/Ha)	30	30	-
Projected Production for 2022- 23 (nuts)*	515916000	1419000	517335000
Production for Triennium average ending 2010-11 (nuts)**	429930000	1135200	431065200
Percentage of increase in production over 2010-11	20.00	25.00	20.03

Table 3.21 Projected increase in yield and production of coconut from 2011-12 to 2022-23

Year	Yield			Production		
	Irrigated	Unirrigated	Total	Irrigated	Unirrigated	Total
Triennium average ending 2010-11	150	120	146	429930000	1135200	431065200
2011-12	152	122	148	436507929	1157223	437682051
2012-13	155	125	150	443186500	1179673	444400470
2013-14	157	127	153	449967254	1202559	451222018
2014-15	159	129	155	456851753	1225888	458148275
2015-16	162	132	157	463841585	1249671	465180852
2016-17	164	134	160	470938361	1273914	472321378
2017-18	166	137	162	478143718	1298628	479571511
2018-19	169	140	164	485459317	1323821	486932933
2019-20	172	142	167	492886844	1349504	494407354
2020-21	174	145	169	500428013	1375684	501996507
2021-22	177	148	172	508084561	1402372	509702153
2022-23	180	150	175	515916000	1419000	517335000
Required Growth Rate (%)	**1.50**	**1.90**	**1.50**	**1.53**	**1.94**	**1.53**

3.7.8 Mango

In Krishnagiri district, Mango is the major horticultural crop grown in an area of 32575 ha and accounted for the production of 2.38 lakh tonnes as per the triennium average ending 2010-11. Major varieties grown in the district are Bangalora and largely grown under rainfed condition and as per the potential yield, the projected increase in mango production should be at least 43 per cent over the base year of 2010-11. The existing and projected yield and production of mango in this district is presented in Table 3.22.

The annual growth rate required raising the yield and production of mango in 2022-23 is approximately 3.01 per cent and 3.04 per cent per annum as indicated in Table 3.23.

Table 3.22 Existing and Projected Yield and Production of Mango in Krishnagiri District

Year	Irrigated	Unirrigated	Total
Area (Ha)			
Triennium average ending 2010-11**	4193	28382	32575
Projected area for 2022-23	4193	28382	32575
Per cent to total	12.88	87.12	-
Varieties	Bangalora	Bangalora	-
Potential Yield (t/ha)	14	10	-
Average yield for Triennium average ending 2010-11 (t/ha)**	10	6.9	7.33
Yield Gap (t/Ha)	4	2.5	-
Projected Production for 2022- 23 (t/ha)*	58702	283820	342522
Production for Triennium average ending 2010-11 (t/ha)**	41930	197041	238971
Percentage of increase in production over 2010-11	40.00	44.04	43.33

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

Table 3.23 Projected increase in yield and production of mango from 2011-12 to 2022-23

Year	Yield (t/ha)			Production (t)		
	Irrigated	Unirrigated	Total	Irrigated	Unirrigated	Total
Triennium average ending 2010-11	10.00	6.90	7.30	41930	197041	238971
2011-12	10.29	7.11	7.52	43100	203110	246236
2012-13	10.59	7.33	7.75	44302	209366	253721
2013-14	10.89	7.55	7.98	45538	215814	261434
2014-15	11.21	7.78	8.22	46809	222461	269382
2015-16	11.53	8.02	8.47	48115	229313	277571
2016-17	11.86	8.27	8.73	49457	236376	286009
2017-18	12.21	8.52	8.99	50837	243656	294704
2018-19	12.56	8.78	9.26	52255	251161	303663
2019-20	12.92	9.05	9.54	53713	258897	312894
2020-21	13.30	9.33	9.83	55212	266871	322406
2021-22	13.68	9.61	10.13	56752	275090	332208
2022-23	14.00	10.00	10.51	58702	283820	342522
Required Growth Rate (%)	**2.89**	**3.06**	**3.01**	**2.80**	**3.08**	**3.04**

3.7.9 Tomato

In Krishnagiri district, tomato is the major vegetable crop grown in an area of 4154 ha and accounted for the production of 0.68 lakh tonnes as per the triennium average ending 2010-11. Major varieties grown in the district are US 618 and MAHYCO. It is mainly grown under rainfed situation and as per the potential yield, the projected increase in tomato production should be at least 38.97 per cent over the base year of 2010-11. The existing and projected yield and production of tomato in this district is presented in Table 3.24.

Table 3.24 Existing and Projected Yield and Production of Tomato in Krishnagiri district

Year/Area (Ha)	Irrigated	Unirrigated	Total
Triennium average ending 2010-11**	1152	3002	4154
Projected area for 2022-23	1152	3002	4154
Per cent to total	27.72	72.28	-
Varieties	MAHYCO	MAHYCO	-
Potential Yield (t/ha)	30	20	-
Average yield for Triennium average ending 2010-11 (t/ha)**	20	15	16.4
Yield Gap (t/Ha)	10	5	-
Projected Production for 2022- 23 (t/ha)*	34560	60040	94600
Production for Triennium average ending 2010-11 (t/ha)**	23040	45030	68070
Percentage of increase in production over 2010-11	50.00	33.33	38.97

The annual growth rate required raising the yield and production of tomato in 2022-23 is approximately 1.5 per cent per annum as indicated in Table 3.25.

Table 3.25 Projected Increase in Yield and Production of Tomato from 2011-12 to 2022-23

Year	Yield (t/ha)			Production (t)		
	Irrigated	Unirrigated	Total	Irrigated	Unirrigated	Total
Triennium average ending 2010-11	20.00	15.00	16.40	23040	45030	68070
2011-12	20.67	15.37	16.84	23826	46102	69976
2012-13	21.36	15.75	17.30	24638	47199	71935
2013-14	22.08	16.13	17.76	25478	48322	73949
2014-15	22.82	16.53	18.24	26347	49472	76020
2015-16	23.58	16.94	18.74	27246	50650	78149
2016-17	24.37	17.35	19.24	28175	51855	80337
2017-18	25.19	17.78	19.76	29135	53089	82586
2018-19	26.03	18.22	20.30	30129	54353	84899
2019-20	26.90	18.67	20.84	31156	55647	87276
2020-21	27.81	19.13	21.41	32219	56971	89720
2021-22	28.74	19.60	21.98	33317	58327	92232
2022-23	30.00	20.00	22.77	34560	60040	94600
Required Growth Rate (%)	**3.36**	**2.46**	**2.70**	**3.42**	**2.39**	**2.79**

3.3 Yield Gap Analysis

The yield gap analysis, i.e. the difference between potential yield and current average farm yield has been carried out for a selected number of crop-region combinations. From the cumulative percentage the major crops of the district are identified. Among these crops the ruling varieties and their related information were collected from the Joint Director of Agriculture office. Through the collected information the difference between the potential and average yield had been calculated for both irrigated and rain fed areas. In order to raise the productivities of the selected crops, information regarding ruling varieties, their average yield, potential yield, progressive farmer's yield etc. were collected from the office of the Joint Director of Agriculture, Krishnagiri and Regional Research Station, Paiyur. From this information, yield gaps were analyzed and it is given in Table 3.26.

Table 3.26 Yield Gap Analysis for Major Crops

Crops	Varieties	% Share	Irrigated (t/ha)			Rainfed (t/ha)		
			Potential Yield	Average Yield	Yield Gap	Potential Yield	Average Yield	Yield Gap
Ragi	L5	40	2.20	1.75	0.45	1.25	1.00	0.25
	MR1	40	1.20	1.05	0.15	1.00	0.95	0.05
Mango	Bangalora	65	8.00	6.50	1.50	7.50	5.00	2.50
	Alphonso	10	6.00	5.50	0.50	4.50	3.00	1.50
Paddy	ADT 39	20	6.50	5.00	1.50	-	-	-
	Paiyur 1	30	6.50	5.00	0.25	-	-	-
Coconut	WCT	65	120	87	33	110	85	25
	ECT	15	80	63	17	80	72	8
Groundnut	TMV 7	80	1.70	1.40	0.30	1.00	0.90	0.10
	TMV 2	10	0.80	0.70	0.10	0.65	0.55	0.10
Horse gram	Paiyur 1	80	-	-	-	0.50	0.40	0.10
Red gram	BRG 1	40	1.60	1.40	0.20	0.80	0.60	0.20
	TTB 7, LRG 41	30	0.90	0.70	0.20	0.30	0.20	0.10
Cholam	CO 19	80	-	-	-	1.30	1.10	0.20
Tomato	MAHYCO, US 918	70	45.00	40.00	5.00	40.00	35.00	5.00

*NB: * Unit in terms of nuts/tree/annum*

3.4 Technological interventions and strategies to reduce the yield gaps

The adoption of suitable high yielding varieties and crop production technologies are the pre-requisites to boost the production. The strategy for increasing the production of potential crops in Krishnagiri district through the increase in productivities of those identified crops has already been illustrated in the previous section. The productivities could be raised by growing the suitable high yielding varieties and as a consequence, the prevailing yield gap could be bridged. The specific features and the technologies for cultivating the selected high yielding varieties of the select crops are discussed below.

3.4.1 Paddy

The modern technologies for the cultivation of paddy including high yielding varieties suitable for the district are discussed below.

1. High Yielding Varieties (HYV)

The location specific high yielding varieties of paddy released by TNAU are found suitable for this district and their features are presented below

High Yielding Varieties of Paddy suitable for the district

Season	High Yielding Varieties	Duration (Days)	Yield (Kgs/ha)	Special Features
Kar (May-June)	ADT 36	110	4000	Medium
	ASD 16	110-115	5600	Short bold
	ASD18	105-110	5900	Medium slender
	MDU 5	95-100	4500	Medium slender
	ADT 43	110	5900	Medium slender
	CO 47	110-115	5832	Medium slender
	CORH 3	110-115	7500	Medium slender
	ADT(R) 45	110	5400	Medium slender
	ADT(R) 47	118	6200	Medium slender
Samba / Late Samba (Aug - Oct)	White Ponni	135-140	4500	Medium slender
	Bhavani	130-135	5000	Long slender
	CO 43	135 - 140	5200	Medium slender
	CO(R) 49	130-135	6286	Medium slender
	ADT(R) 46	135	6656	Long slender
Navarai (Dec –Jan)	ADT 36	110	4000	Medium
	MDU 5	95-100	4500	Medium slender
	CORH 3	110-115	7500	Medium slender
	ADT 37	105	6200	Short bold
	ASD 20	110	6000	Long slender

2. Nursery stage

- Seed up gradation using egg floatation technique to remove ill filled and immature seed (with salt water of 1.13 specific gravity
- Seed hardening with 1% KCl (seed and KCl solution 1:1) for 16 hours to withstand early moisture stress
- Seedling dip with *Pseudomonas fluorescens* (Pf-1) @ 2.5 kg/ha or seed treatment (10g/kg)

3. Planting and Crop establishment

- Adoption of SRI technique with low seed rate (5-7 kg/ha), wider spacing (25 cm × 15 cm) and improved package of practices.

- Foliar Nutrition in flowering stage: - 2% DAP + 1% KCL + 1% Urea at 50% flowering stage or TNAU Rainfed rice MN mixture @ 12.5 kg/ha as EFYM at 1:10 ratio at tillering and panicle initiation stages.

4. Plant Protection (Need based)

- **Rice blast & Sheath blight** – Seed treatment with TNAU Pf 1 10 ml/kg of seeds or spray Carbendazim 50WP @ 500g/ha or Tricyclozole 75 WP @ 500g/ha or Azoxystrobin 25 SC @ 500 ml/ha or Neem oil at 3%
- **Rice root and White tip nematodes -** Seed treatment with *Pseudomonas fluorescens*(10 g/kg seed) and as foliar spraying @ 1 kg/ha thrice at 45, 55 and 65 DAT.
- **Sucking pests (Brown leafhopper, Green leaf hopper, Thrips& Gall midge), Stem borer and leaf folder** – Spray Fipronil 5% SC 1000-1500 ml/ha or Triazophos 40% EC 625-1250 ml/ha or Seed treatment @ 5g/Kg of seed and foliar application of *Beauveria bassiana*@ 5g/ltwice at 15 days interval.

5. Farm mechanization

- Seed drill – Sow of seeds with 20 cm inter row spacing
- Single row or double row rotary weeder for weeding
- Combine harvester for harvesting

3.4.2 Ragi

1. High Yielding Varieties

Planting of suitable varieties which are high yielder is the most important for increasing the production and productivity of per unit area. The high yielding varieties for this district are

Season	Varieties / hybrids	Duration	Yield (kg/ha)	Special features
Marghazipattam (Dec – Jan)	CO 9	100 - 105	Irrigated - 4500 Rainfed - 3100	Incurved finger ears
	CO 13	95 - 100	Irrigated - 3600 Rainfed - 2300	Open ears
	CO (Ra) 14	105 - 110	Irrigated - 2892 Rainfed - 2794	Top curved ears
	TRY 1	102	Irrigated - 4011 Rainfed - 0	Incurved ears
Chithiraipattam (April – May)	CO 9	100 - 105	Irrigated - 4500 Rainfed - 3100	Incurved finger ears
	CO 13	95 - 100	Irrigated - 3600 Rainfed - 2300	Open ears
	CO (Ra) 14	105 - 110	Irrigated - 2892	Top curved ears

Season	Varieties / hybrids	Duration	Yield (kg/ha)	Special features
			Rainfed - 2794	
Adipattam (June – July)	Paiyur 1	115-120	Irrigated - 0 Rainfed - 3125	Open ears
	CO 13	95 - 100	Irrigated - 3600 Rainfed - 2300	Open ears
	CO (Ra) 14	105 - 110	Irrigated - 2892 Rainfed - 2794	Top curved ears
	Paiyur 2	115	Irrigated - 0 Rainfed - 2527	Incurved ears
Puratasipattam (Sept. – Oct.)	Paiyur 1	115-120	Irrigated - 0 Rainfed - 3125	Open ears
	CO 13	95 - 100	Irrigated - 3600 Rainfed - 2300	Open ears
	CO (Ra) 14	105 - 110	Irrigated - 2892 Rainfed - 2794	Top curved ears

IRRIGATED CROP

2. Crop management

- **Seed treatment:** Seed treatment with Azospirillum may be done @ 3 packets/ha (600 g/ha) and 3 packets (600 g/ha) of Phosphobacteria or 6 packets of Azophos (1200 g/ha).
- **Water management for nursery unit:** Adjust the frequency of irrigation according to the soil type.

No. of irrigations	Red Soils	Heavy Soils
1st	Immediately after sowing	Immediately after sowing
2nd	3rd day after sowing	4th day after sowing
3rd	7th day after sowing	9th day after sowing
4th	12th day after sowing	16th day after sowing
5th	17th day after sowing	..

- **Application of Fertilizers:** Soil test crop response based integrated plant nutrition system (STCR- IPNS) recommendation may be adopted for prescribing fertilizer doses for specified yield targets.
- **Transplanting the seedlings: Root dipping with Azospirillum:** Prepare slurry with 5 packets (1000 g/ha) of Azospirillum and 5 packets (1000g/ha) of Phosphobacteria or 10 packets of Azophos (2000 g/ha) in 40 litres of water and dip the root portion of the seedlings in the solution for 15-30 minutes and transplant.

- **Water Management:** Regulate irrigation according to the following growth phases of the crop. The general guideline of irrigation scheduling for light and heavy soils is given in the TNAU Agriculture Crop Production Guide.

RAINFED CROP

- **Seed rate and Planting:** Adopt the recommended seed rate of 10 kg/ha. Sowing by seed-cum-fertilizer drill is advantageous for line sowing besides efficient utilization of applied nutrients.
- **Seed hardening:** Adoption of a simple technique like seed hardening will not only improve germination and subsequent plant stand but also impart early seedling vigor and tolerance to drought. Follow the steps seed hardening procedure
    a. Sole seeds in water for 6 hours. Use one litre water for every kg seed for soaking.
    b. Drain the water and keep the seeds in wet cloth bag tightly tied for two days.
    c. At this stage, the seeds will show initial signs of germination.
    d. Remove seeds from the wet cloth bag and dry them in shade on a dry cloth for 2 days.
    e. Use the above hardened seeds for sowing.
- **Crop rotation:** Rotation with legumes like Green gram / black gram / field bean / soybean / horse gram or ground nut in southern state will minimize inorganic fertilizer application and also sustain higher yields.

3. Crop protection

- **Stem borer:** Spraying of Carbaryl 50 WP 1 kg/ha (500 l spray fluid/ha)
- **Ear head caterpillar:** Spraying of Carbaryl 50 WP 1.0 kg/ha at milky stage can control the infestation.
- **Blast:** Spraying of the fungicides, Edifenphos 500 ml or Carbendazim 500 g or Iprobenphos (IBP) @ 500 ml/ha. First spray immediately after noticing the symptoms. Second and third sprays at flowering stage at 15 days interval to control neck and finger infection or Foliar spray with Aureofungin sol 100 ppm at 50% ear head emergence followed by a second spray with Mancozeb 1000g/ha or *Pseudomonas fluorescens*@ 0.2% 10 days later.

3.4.3 Groundnut

1. High Yielding Varieties

The high yielding varieties for this district are given here under

Season	Varieties / hybrids	Duration	Pod Yield (kg/ha)	Special features
Karthigaipattam (Nov – Dec)	TMV 7	100-105	R – 1700 I - 1900	Oil content – 49.60% Seed dormancy for 10 days
	CO 3	115-120	R – 1750 I - 2150	Oil content – 49.20% Bold 1-2 seeded, HPS kernels, low bud necrosis incidence
	COGn 4	115-120	R – 1500 I - 1950	Oil content – 52.70% Bold pod, kernel and high oil content
	VRI 2	100-105	R – 1790 I - 2060	Oil content – 48.0% Suitable for irrigation
	VRI 3	90	R – 1670 I - 1830	Oil content – 48.0% Early and suitable for intercropping
	ALR 3	110-115	R – 2095 I - 2720	Oil content – 50.0% Rust resistant, tolerant to late spot
	VRIGn5	105-110	R – 2133 I - 2384	Oil content – 51.0% High reproductive efficiency Dormancy 45 days
	VRIGn 6	120-125	R – 1916 I - 2403	Oil content – 50.0% Small pods, moderately resistant to late leaf spot, rust and PBND diseases. Resistant to early season drought, high harvest index (34.6%)
	TMVGn 13	100-105	R – 1613 I - 2580	Oil content – 50.0% Red kernel, high yield and tolerant to terminal drought
Ani pattam	TMV 7	100-105	R – 1700 I - 1900	Oil content – 49.60% Seed dormancy for 10 days
	VRI 2	100-105	R – 1790 I - 2060	Oil content – 48.0% Suitable for irrigation
	VRIGn 5	105-110	R – 2133 I - 2384	Oil content – 51.0% High reproductive efficiency Dormancy 45 days
	VRI Gn 6	120-125	R – 1916 I - 2403	Oil content – 50.0% Small pods, moderately resistant to late leaf spot, rust and PBND diseases. Resistant to early season drought, high harvest index (34.6%)
	TMVGn 13	100-105	R – 1613 I - 2580	Oil content – 50.0% Red kernel, high yield and tolerant to terminal drought

RAINFED

2. Crop management

- **Seed Treatment:** Treat the seeds with talc formulation of *Trichoderma viride*@ 4 g/kg seed or *Pseudomonas fluorescens*@ 10 g/kg seed (or) Treat the seeds with Thiram or Mancozeb @ 4 g/kg of seed or Carboxin or Carbendazim at 2 g/kg of seed (or) Treat the seeds with 3 packets (600 g)/ha of Rhizobial culture TNAU14 + 3 packets of Azospirillum (600 g/ha) and 3 packets (600 g/ha) of Phosphobacteria or 6 packets of Azophos (1200 g/ha) developed at TNAU using rice kanji as binder.
- **Field Preparation: Chiseling for soils with hard pan:** Chisel the soils having hard pan formation at shallow depth with chisel plough first at 0.5 m interval in one direction and then in the direction perpendicular to the previous one, once in three years. Apply 12.5 t/ha of FYM or composted coir pith besides chiseling.
- **Application of Micronutrients:** Apply TNAU MN mixture @ 7.5 kg /ha as Enriched FYM (Prepare enriched FYM at 1:10 ratio of MN mixture & FYM; mix at friable moisture &incubate for one month in shade). Broadcast evenly on the soil surface immediately after sowing. Do not incorporate micronutrient mixture in to the soil.
- **Application of Calcium Sulphate (Gypsum):** Apply gypsum @ 400 kg/ha by the side of the plants on 40th to 70th day depending upon soil moisture.Avoid gypsum in calciferous soils. Gypsum is effective in soils deficient in calcium and sulphur. Application of gypsum encourages pod formation and better filling up of the pods. Application of gypsum at the rate of 50 % basal both in rainfed and irrigated condition reduces Khadhasty malady and pod scab nematode.
- **Combined nutrient spray:** Pod filling is a major problem especially in the bold seed varieties. To improve pod filling spraying of nutrient solution is to be given. This can be prepared by soaking DAP 2.5 kg, Ammonium sulphate 1 kg and borax 0.5 kg in 37 lit of water overnight. The next day morning it can be filtered and about 32 litre of mixture can be obtained and it may be diluted with 468 lit of water so as to made up to 500 litre to spray for one ha. Plano fix at the rate of 350 ml can also be mixed while spraying. This can be sprayed on 25th and 35th day after sowing.
- **Nutritional Disorder:**
  - **Zinc deficiency**: Apply 25 kg $ZnSO_4$/ha as basal. If soil analysis shows less than 1.3 ppm of zinc, soil application of 25 kg $ZnSO_4$ is recommended.

- Reduce $ZnSO_4$ application from 25.0 kg ha^{-1} to 12.5 kg ha^{-1} if FYM is applied @ 12.5 t ha^{-1}. For the standing crop, less than 39.4 ppm of zinc in leaves, foliar spray of 0.5% ZnSO4 is recommended.
- **Iron deficiency**: Foliar of spray 1% $FeSO_4$ on 30, 40 and 50 days after sowing.
- **Boron deficiency**: Apply Borax 10 kg + Gypsum 400 kg/ha as soil application at 45th day after sowing.

IRRIGATED

- **Polythene Film Mulching:** Broad beds and furrows method of groundnut cultivation is a proven technology from ICRISAT. Make the beds at a width of 60 cm, leaving 15 cm on the either side for the furrows. In a plot size of 4.5 m x 6.0 m, five beds can be made. After the formation of the bed and fertilizer application, spread black polythene sheet (90 cm width) over the soil surface.
- **Irrigation:** Regulate irrigation based on physiological growth phases. Pegging, flowering and pod development phases are critical for irrigation during which period adequate soil moisture is essential.
    - **Life irrigation –** 4 to 5 days after sowing
    - **Pegging stage -** 1 or 2 irrigations should be given
    - **Flowering stage –** 2 irrigations should be given
    - **Pod development stage -** 2 to 3 irrigations should be given
- Sprinkler irrigation will save water to the tune of about 30%.
- Border strip irrigation is recommended in command areas in light textured soils.
- Composted coir pith increases moisture availability and better drainage in heavy textured soil.
- **Physiological intervention:** Foliar spray of TNAU Groundnut Rich @ 2 kg/acre in 200 litres of water at peak flowering and at pod development stages increases flower retention, pod filling and improves moisture stress tolerance and pod yield.
- Spraying 0.5% Potassium chloride during flowering and pod development stages will aid to mitigate the ill effects of water stress.

3. **Farm mechanization**: Groundnut stripper developed by TNAU can be used for stripping the pods from the plants.
4. **Crop protection**
    - **Red hairy caterpillar:** Spray Phosalone 35 EC 750 ml/ha in 375 l of water or Dichlorvos 76 EC 627 ml/ha. Set up 3 to 4 light traps and bonfires immediately

after receipt of rains, after sowing in the rainfed season to attract and kill the moths and also to know brood emergence.

- **Pod borer:** Soil application ofCarbofuran 3% CG 50 kg/ha can control the infestation.
- **Rust:** Spray any one of the following:Mancozeb 1000g /ha or Chlorothalonil 1000g /ha or Wettablesulphur 2500g /ha or Tridemorph 500 ml/ha and If necessary, repeat the spray 15 days later.
- **Root rot:** Soil application of *P. fluorescens*@ 2.5g /ha or mixed with 50 kg of well decomposed FYM /sand at 30 DAS. Spot drench with Carbendazim 1 g / l can control the disease.

4.4 Mango

1. Varieties: Neelum, Bangalora, Alphonso, Rumani, Banganapalli, Kalepad, Peter, PKM 1, PKM 2, Sendura, Jahangir, Mulgoa, Himayuddin, Paiyur 1, Mallika, Amrapali and Salem Bangalora, ArkaAnmol, ArkaAruna, ArkaNeelkiran, ArkaPuneeth.

Processing varieties: Alphonso, Banganapalli, Totapuri

Export varieties : Alphonso, Banganapalli, Sendura

2. Crop management

- **Spacing:** Adopt any one of the following spacing depending on requirements.
  1. **Under conventional system of planting:** 7-10 m either way
  2. **High Density Planting:** 5 m x 5 m (400 plants / ha). Dwarf statured varieties with narrow canopy are much suitable for HDP system.
  3. **Double hedge row system:** Adopt a spacing of 5 m x 5 m within double rows and 10 m between successive double rows (266 plants / ha)
- **Fertigation technology under HDP:** Adoption of fertigation system to get more yield and income. Apply 1.0:0.5:1.0 kg of NPK / bearing tree / year under HDP through drip fertigation adopting the following schedule:

Nutrient	Stage of application *				
	Immediately after harvest (2 months)	Pre flowering (2months)	Flowering to fruit set (2 months)	Fruit development (4 months)	Total
N	25%	40%	20%	15%	100%
P	50%	30%	20%	-	100%
K	25%	20%	25%	30%	100%

*At each stage, the above schedule has to be split into six or more doses and applied at weekly intervals

*Avoid irrigation and fertigation for 30 days for induction of stress before flowering season; resume as soon as flowering commences.

- **Canopy management:** Remove root stock sprouts and low lying branches nearer to ground to facilitate easy cultural operations. Remove overlapping, intercrossing, diseased, dried and weak branches in old trees to get good sunlight and aeration. Carry out judicious pruning of the internal branches during August – September, once in three years. Do not allow flowering upto three years by removing the inflorescences as and when they appear. Retain two healthy shoots by trimming away the weak shoots among the crowded terminal shoots during August-September annually. Prune back 20 cm of annual growth of the terminals immediately after harvest.
- **Top working of senile orchards for rejuvenation:** Use scions of choice varieties like Alphonso and Banganapalli for top working. Behead the trees to be top worked portion during July- August leaving the main trunk at a convenient height and allow for new shoots to develop. Adopt cleft method of grafting or softwood grafting on the emerging shoots on the main stem from the cut end during September- October.
- **Growth regulators**: Spray NAA @ 20 ppm at flowering to increase the fruit retention. During February 0.5% Urea (5 g / lit.) or 1% Potassium nitrate (10 g / lit.) may be sprayed to induce flowering, if trees do not flower by that time. Spray 2% KNO3 at mustard size to increase fruit set and retention of fruits. Spray 2 % Sulphate of potash at pea stage and 15 days after to improve yield and quality. Apply Paclobutrazol @ 0.75 g a.i. per meter of canopy radius in full bearing tree during first fortnight of September to get maximum number of fruits and yield during off years.
- **Off-season crop induction:** This technology is recommended only for irrigated conditions to shift production from on- season to off- season. To induce off-season flowering**,** heading back of 10 cm terminal growth after the emergence of new growth (vegetative and floral growth) during December to January along with soil application of Paclobutrazol @ 0.75g a.i. per tree during March and April is recommended for mango cv. Neelum. Keeping good soil moisture conditions and nutrient health status of the plant are very important when Paclobutrazol application is resorted.

Crop protection

- **Plant hopper:** Remove the criss-cross branches, infested shoots, dense branches and proper training and pruning reduces the hopper infestation. Spray Imidacloprid 17.8 % SL @ 3.0 ml/10 litre (or) Dimethoate 30 % EC @ 1.60 ml/litre first at the time of panicle emergence and the second two weeks after first spray. Neem oil @ 5 ml/lit of water can be mixed with any insecticides for the control of hopper.
- **Flower Webber:** Spray phosalone 35 EC @ 2ml/litre to control the infestation.
- **Stem borer:** Padding with Monocrotophos 36 WSC @10 ml in 25 cm^2 per tree soaked in absorbent cotton when the trees are not in bearing stage. Application of Carbofuran 3 G @ 5g per bore hole and plugging with mud after mechanically removing or killing the grub by introducing a needle or wire.
- **Sooty mould:** Spray Maida 5% (1 kg Maida or starch) boiled with 1 lit of water and diluted to 20 litres. Avoid spraying during cloudy weather.
- **Anthracnose and Stalk end-rot:** Spray Mancozeb 2 g / lit or Carbendazim 1 g / lit or Thiophanate methyl 1 g / lit or Chlorothalonil 2 g / lit as pre-harvest spray, 3 times at 15 days interval (or) Spray chitin based *Pseudomonas fluorescens* (Pf 7) immediately after flowering @ 5 g / lit five times at 21 days interval.
- **Post-harvest treatment:** Dip the fruits in 52o ± 1oC hot water immediately after harvest for 5 minutes followed by 8% plant wax (Fruitox or Waxol) to reduce anthracnose disease in mango during storage. Two pre-harvest sprays of 0.2% Mancozeb (2.0 g / lit) will also reduce the incidence.

3.4.5 Coconut

1. **High Yielding Varieties**

   Varieties suitable for the district are Tall and T X D hybrids.

   - **Tall -** VPM3, ALR 1, ALR 2 and West Coast Tall
   - **Dwarf (tender coconut) -**COD, CYD, CGD and MYD+
   - **Hybrids** - VHC1, VHC2 and VHC3

High Yielding Varieties of Coconut suitable for the District

Sl. No	Variety	Nut yield (No's / tree / year)	Earliness (year)
1	Hybrid	100	3 – 5
2	Tall	60– 80	6 – 7
3	Dwarf (tender coconut)	70 - 90	4 – 5

2. Crop management

- **Spacing:** Adoptingsquare system of planting (7.5 x 7.5 m) by accommodating 175 plants/ha (For garden: 25' x 25')
- **Drip irrigation** -Irrigating coconut trees at the rate of 30 l/h for 2.5 h with a irrigation frequency of 8 days.
- **Fertigation** - To be done at monthly intervals with 75% RDF
- **Micronutrient** – TNAU micronutrient mixture is recommended @ 1.0kg / tree /year.
- **TNAU Coconut Tonic Nutrition**- Root feeding of TNAU coconut tonic @ 200 ml/palm once in six months decreases button shedding and increases the number and size of nuts.
- **Multitier cropping system** –Banana + pepper + cocoa + nutmeg + vanilla

3. **Plant protection**

- **Rhinoceros beetle -** Place phorate 10 G 5 g in perforated sachets in two inner most leaf axils for 2 times at 6 months intervals.
- **Red palm weevil -** Setting up of traps (mud pots) containing sugarcane molasses 2½ kg or toddy 2½ litres + acetic acid 5 ml + yeast 5 g + longitudinally split tender coconut stem/logs of green petiole of leaves of 30 numbers or Root feeding of monocrotophos 36 WSC 10 ml + water 10 ml in a 7 x 10 cm polythene bag.
- **Basal stem rot / Bud rot / stem bleeding / Lethal leaf blight -** Spray 1.0 per cent Bordeaux mixture or 0.25 per cent Copper oxychloride or 0.2 per cent Mancozeb (4 times at monthly interval during February, March, April and May) and Soil application of *Pseudomonas fluorescens*(Pf1) @ 100 g/palm + *Trichoderma viride*@ 100 g/palm/year (or) *Bacillus subtilis*(TNAU-Bs 1 mixture) @300g/ palm at 3 months interval.

3.4.6 Tomato

1. High yielding varieties

Varieties: PKM 1, CO 3 (Marutham) and Paiyur 1

Hybrids: COTH 2 and TNAU Tomato Hybrid CO 3

2. Crop management

- **Seed treatment:** Treat the seeds with *Trichoderma viride* 4 g or *Pseudomonas fluorescens* 10 g or Carbendazim 2 g per kg of seeds 24 hours

before sowing. Just before sowing, treat the seeds with Azospirillum @ 40 g / 400 g of seeds. Sow in lines at 10 cm apart in raised nursery beds and cover with sand.

- **Protray nursery:** Mix sterilized cocopeat @ 300 kg with 5 kg neem cake along with Azospirillum and Phosphobacteria each @ 1 kg. Mulching
- **Mulching:** Mulch with black LDPE sheets of 25 micron thickness and bury both the ends into the soil to a depth of 10 cm
- **Drip irrigation and fertigation:** Drip system with main and sub main pipes and lateral tubes at an interval of 1.5 m were laid. The lateral tubes are placed at an interval of 60 cm and 50 cm spacing with 4 LPH and 3.5 LPH capacities.
- **Growth regulators:** Spray 1.25 ppm (625 ml in 500 litres of water) Triacontanol at 15 days after transplanting and at full bloom stage to increase the yield.
- **Training of hybrids:** Stake the plants 30 days after planting with 1 - 1.5 m tall stakes. Remove the side branches up to 20 cm from ground level.
- **Micronutrient spray:** Foliar spray of ZnSO4 @ 0.5 per cent thrice at 10 days interval from 40 days after planting. Spray 19:19:19 + Mn @ 1 % at 60 days after planting.

3. Plant protection

- **Fruit borer:** Set up pheromone traps @ 12/ha. Spray *Bacillus thuringiensis* 2g/l or any one of the following insecticide. Azadirachtin 1.0 % EC (10000 ppm) 2.0 ml/l or Indoxacarb 14.5 % SC 0.8 ml/l.
- **Whitefly:** Install yellow sticky traps @ 12 /ha to attract the adult. Apply carbofuran 3 G @ 40 kg /ha or spray insecticides like Dimethoate 30 % EC ml/l.
- **Nematode:** Soil application of *Bacillus subtilis* (BbV 57) or *Pseudomonas fluorescens* as seed treatment @ 10 g/kg of seeds and soil application (SA) @ 2.5 kg / ha for the management root knot and reniform nematode infestation in soil and root. Application of liquid formulation of *Bacillus subtilis* (BbV 57) or *Pseudomonas fluorescens* @ 1000 ml/ha through drip irrigation for the management of root knot nematode in tomato.
- **Damping off (nursery):** Treat the seeds with *Trichoderma viride* @ 4 g / kg or *Pseudomonas fluorescens* @ 10 g /kg of seed 24 hours before sowing. Apply *Pseudomonas fluorescens* through soil @ 2.5 kg/ha mixed with 50 kg of FYM.

- **Fusarial wilt and Root knot nematode:** Soil solarization before preparation of nursery bed. Seed treatment with *Pseudomonas fluorescens* (PF) @ 10 g /kg of seed, followed by nursery application of Pf1@ 20 g/m^2 and seedling dip with Pf1 @ 5g/l along with soil application of Pf1 @ 2.5 kg mixed with 50 kg FYM /ha at 30 days of transplanting.

CHAPTER IV

DISTRICT PLAN

4.1 AGRICULTURE

4.1.1 Enhancing Rice Production

Paddy is the major crop cultivated in the district in three seasons ie. kar, samba and navarai. At present, the productivity of rice is 4.64 M.Ts. SRI technology is a proven technology which gives substantial increase in yield when compare to conventional methods of paddy cultivation. Soil is the most important component deciding the crop growth and the yield of each crop most of rice growing villagel of the district are poor in inherent number status. Any deficiency of nutrients or soil problems affect the crop growth and result in reduction of yield even if other inputs are applied in optimum levels. Integrated Nutrient Management is the important approach for promoting efficient and balanced use of plant nutrients. Usage of appropriate inorganic fertilizers including MN Mixture, Organic Manure and Bio-fertiliser should be considered for better plant growth and improving soil fertility. There is a scope for better management practices in paddy cultivation for increasing the yield in the District.

Project Components

- Promotion of SRI - supply of seed, seed treatment & MN mixture, bio fertilizer , cono weeder, LCC, nursery tray , machine planting) in all the blocks except Krishnagiri and Uthangarai block
- Distribution of Certified and Foundation seeds in all the blocks
- Seed production of Foundation and Certified class seeds in all the blocks
- Incentives for paddy machine planting will be covered in all the blocks except Uthangarai and Veppanapalli blocks
- Distribution of Protray, MN mixture, biofertilizer, Zinc sulphate in all the blocks
- Distribution of biocontrol agents/biopesticides
- Gypsum application in all the blocks
- Distribution of herbicides in all the blocks
- Polyvinyl coated Tarpaulin (6m x 5m) in all the blocks

Budget

To enhance the production of paddy in this district, the projects are proposed with a budget outlay of ₹ **4019.80** lakhs for five years.

Expected Outcome

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

Implementing Agency

The projects will be implemented by the Department of Agriculture.

Table 4.1 Budget requirement for increasing productivity of paddy

(Rs. 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	Promotion of SRI	Ha	15000	All Blocks Except B4,B8	2300	345.00	2990	448.50	2990	448.50	2990	448.50	3887	583.05	15157	2273.55
2	Distribution of High Yielding Varieties	MT	35000	All Blocks	115	40.25	150	52.33	150	52.33	150	52.33	194	68.02	758	265.25
3	Distribution of Foundation	MT	40000	All Blocks	10	4.00	13	5.20	13	5.20	13	5.20	17	6.76	66	26.36
4	seed production - Foundation	MT	32000	All Blocks	11	3.52	14	4.58	14	4.58	14	4.58	19	5.95	72	23.20
5	seed production - Certified class	MT	26000	All Blocks	115	29.90	150	38.87	150	38.87	150	38.87	194	50.53	758	197.04
6	Incentives for paddy machine planting	Ha	10000	All Blocks Except B8,B10	1150	115.00	1495	149.50	1495	149.50	1495	149.50	1944	194.35	7579	757.85
7	Distribution of Protray	No	80	B1	50	0.04	65	0.05	65	0.05	65	0.05	85	0.07	330	0.26
8	Distribution of MN mixture/ Copper Sulphate	Ha	1000	All Blocks	700	7.00	910	9.10	910	9.10	910	9.10	1183	11.83	4613	46.13
9	Distribution of biofertilizer / PPFM / bioinputs / plant nutrient mobilizing bacteria	Ha	300	All Blocks	700	2.10	910	2.73	910	2.73	910	2.73	1183	3.55	4613	13.84
10	Distribution of Zinc sulphate (Soil application & foliar)	Ha.	1000	All Blocks	2000	20.00	2600	26.00	2600	26.00	2600	26.00	3380	33.80	13180	131.80
11	Distribution of biocontrol agents/biopesticides	Ha..	1000	B10,B9,B6,B5,B1,B3	300	3.00	390	3.90	390	3.90	390	3.90	507	5.07	1977	19.77
12	Gypsum application	Ha.	1500	All Blocks	900	13.50	1170	17.55	1170	17.55	1170	17.55	1521	22.82	5931	88.97
13	Distribution of herbicides	Ha.	1000	All Blocks	900	9.00	1170	11.70	1170	11.70	1170	11.70	1521	15.21	5931	59.31
14	Polyvinyl coated Tarpaulin (6m x 5m)	No.	2000	All Blocks	125	2.50	163	3.25	163	3.25	163	3.25	211	4.23	824	16.48
	Demonstration of drip irrigation	ha	100000	All Blocks	20	20.00	20	20	20	20	20	20	20	20	100	100
	Total					**614.81**		**793.25**		**793.25**		**793.25**		**1025.23**		**4019.80**

Bargur-B1,Hosur-B2, -B3- Kelamangalam, B4- Kaveripattinam, Krishnagiri-B5, Mathur-B6, Shoolagiri-B7, Thally-B8, Uthagarai-B9, Veppanapalli-B10

4.1.2 Increasing the productivity of millets

The millets are considered to have been cultivated in India from pre-historic times. The grains eaten by breaking it and cooking it, in the same way as rice or by grinding in into flour and preparing unleavened bread from it. The stem and leaves are used as cattle fodder. The Normal Area under Millets in this district 55475 Ha. Among Millets, finger millet is major millet crop generally sown under rainfed condition in a normal area of 1220 Ha. The normal productivity under millet is 2490 Kgs / Hectare. The promotion of millet cultivation in the district gains importance. Hence, the proposed intervention like demonstration, seed production and distribution, nutrient management and value addition will increase the millet production and income generation of the farm community.

Project Components

- Demonstration (supply of seed, seed treatment & MN mixture) in maize, cumbu and ragi in all blocks except Bargur.
- Distribution of herbicides
- Seed Distribution in maize in all blocks except Bargur
- Hybrid seed distribution in maize and cumbu
- Distribution of MN mixture in all the blocks
- Seed Production all blocks except Bargur
- Distribution of LPG operated Bird Scarrer in all blocks except Bargur
- Distribution on biofertilizer - Liquid / Carrier in all blocks
- Expansion of area under Minor Millets (Demo - supply of seed, seed treatment & MN mixture) in all blocks except Bargur
- Formation of small millet groups in all blocks except Bargur
- Millet Processing unit-Minor millet in Krishnagiri,Mathur,Veppanapalli and Uthangarai block.

Budget:

To increase millet production in the district, the interventions are proposed with a budget outlay of **₹. 4417.56** lakhs is proposed.

Expected Outcome

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

Implementing Agency

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

Table 4.2 Budget requirement for increasing productivity of millets

(Rs. in lakh)

Sl. No.	Components	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total Amount	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Millets															
1	Distribution of LPG operated Bird Scarrer	Nos.	0.1	All Blocks Except B1	58	5.80	75.4	7.54	75.4	7.54	75.4	7.54	98.02	9.80	382.22	38.22
2	Distribution on biofertilizer - Liquid / Carrier	Ha	0.003	All Blocks Except B1	1350	4.05	1755	5.27	1755	5.27	1755	5.27	2281.5	6.84	8896.5	26.69
3	Expansion of area under Minor Millets (Demo - supply of seed, seed treatment, MN mixture & Organic package)	Ha	0.05	All Blocks Except B1	2800	140.00	3640	182.00	3640	182.00	3640	182.00	4732	236.60	18452	922.60
4	Formation of small millet groups	Nos.	0.2	All Blocks Except B1	53	10.60	68.9	13.78	68.9	13.78	68.9	13.78	89.57	17.91	349.27	69.85
5	Millet Processing unit - Minor millet	Nos.	2.5	B5,B6,B9 ,B10	4	10.00	5.2	13.00	5.2	13.00	5.2	13.00	6.76	16.90	26.36	65.90
6	Seed Production / Incentives for quality seed	MT	0.63	All Blocks Except B1	110	69.30	143	90.09	143	90.09	143	90.09	185.9	117.12	724.9	456.69
7	Soil moisture conservation practices	Ha	0.05	All Blocks	125	6.25	125	6.25	100	5.00	300	15.00	300	15.00	950	47.50
8	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
	Maize															
9	Demonstration (Supply of seed, seed treatment & MN mixture, organic package)	Ha	0.05	All Blocks Except B1,B3,B10	1300	65.00	1690	84.50	1690	84.50	1690	84.50	2197	109.85	8567	428.35
10	Distribution of biofertilizers - Liquid / Carrier	Ha	0.003	B6,B9	200	0.60	260	0.78	260	0.78	260	0.78	338	1.01	1318	3.95

Sl. No.	Components	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total Amount	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
11	Distribution of herbicides	Ha	0.008	B6,B9	200	1.60	260	2.08	260	2.08	260	2.08	338	2.70	1318	10.54
12	Seed Distribution Hybrid seeds for maize	MT	1.8	B6,B9	2	3.60	3	4.68	3	4.68	3	4.68	3	6.08	13.18	23.72
	Ragi															
13	Demonstration (supply of seed, seed treatment, MN mixture & organic package)	Ha	0.05	All Blocks	4550	227.50	5915	295.75	5915	295.75	5915	295.75	7690	384.48	29984.5	1499.23
14	Distribution of biofertilizers - Liquid / Carrier	Ha	0.003	All Blocks	4600	13.80	5980	17.94	5980	17.94	5980	17.94	7774	23.32	30314	90.94
15	Distribution of MN mixture	Ha	0.007	All Blocks	4650	32.55	6045	42.32	6045	42.32	6045	42.32	7859	55.01	30643.5	214.50
16	Seed Distribution	MT	0.66	All Blocks	106	69.63	137	90.52	137	90.52	137	90.52	178	117.67	695.245	458.86
	Total					**672.28**		**868.49**		**867.24**		**877.24**		**1132.31**		**4417.56**

Bargur-B1,Hosur-B2, -B3- Kelamangalam, B4- Kaveripattinam, Krishnagiri-B5, Mathur-B6, Shoolagiri-B7, Thally-B8, Uthagarai-B9, Veppanapalli-B10

4.1.3 Enhancing the productivity of pulses

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

Project components

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

Budget

It is proposed to incur ₹ **5260.40** lakhs over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing Agency

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

Table 4.3 Budget requirement for increasing productivity of pulses

(Rs. in lakhs)

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 B1	3	7.00	4	9.10	4	9.10	4	9.10	5	11.83	18	46.13
2	Production of Foundation/ Certified pulses seeds	MT	86000	All Blocks	119	102.34	155	133.04	155	133.04	155	133.04	201	172.95	784	674.42
3	Distribution of Certified Seeds	MT	100000	All Blocks	119	119.00	155	154.70	155	154.70	155	154.70	201	201.11	784	784.21
4	Distribution of Gypsum	ha	400	All Blocks	2800	11.20	3640	14.56	3640	14.56	3640	14.56	4732	18.93	18452	73.81
5	Distribution of Biofertilizer/ Organic packages (Rhizobium + Phosphobacteria) - Liquid / Carrier	Ha	600	All Blocks	1900	11.40	2470	14.82	2470	14.82	2470	14.82	3211	19.27	12521	75.13
6	Distribution of Micro Nutrients(5 kgs/ Ha)	Ha	350	All Blocks	1800	6.30	2340	8.19	2340	8.19	2340	8.19	3042	10.65	11862	41.52
7	DAP Spray	Ha	700	All Blocks	3000	21.00	3900	27.30	3900	27.30	3900	27.30	5070	35.49	19770	138.39
8	Pulse wonder - 5 kg/ha	Ha	1000	B1,B3,B5,B6,B9,B10	500	5.00	650	6.50	650	6.50	650	6.50	845	8.45	3295	32.95
9	Bund Cropping	Ha	300	B1,B3,B5,B6,B9,B10	1500	4.50	1950	5.85	1950	5.85	1950	5.85	2535	7.61	9885	29.66
10	Line sowing	Ha	2250	B3,B4,B5,B7,B8,B2	2200	49.50	2860	64.35	2860	64.35	2860	64.35	3718	83.66	14498	326.21
11	Distribution of Yellow sticky trap /pheromone trap	ha	1000	B1,B6,B9,B10	400	4.00	520	5.20	520	5.20	520	5.20	676	6.76	2636	26.36
12	Cropping system based demonstration	Ha	12500	B1,B5,B6,B9,B10	500	62.50	650	81.25	650	81.25	650	81.25	845	105.63	3295	411.88
13	Distribution of weedicide	Ha	1000	All Blocks	1800	18.00	2340	23.40	2340	23.40	2340	23.40	3042	30.42	11862	118.62
14	Plant Protection Chemicals	Ha	1000	All Blocks	2400	24.00	3120	31.20	3120	31.20	3120	31.20	4056	40.56	15816	158.16

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
15	Seed treatment and soil application with Trichoderma viridi	Ha	700	All Blocks	2000	14.00	2600	18.20	2600	18.20	2600	18.20	3380	23.66	13180	92.26
16	Pure crop demonstration - Black gram and green gram	Ha	6300	B1,B3,B5,B6,B7,B9,B10	1000	63.00	1300	81.90	1300	81.90	1300	81.90	1690	106.47	6590	415.17
17	Demonstration on intercropping of pulses with other crops	Ha	8300	All Blocks	1000	83.00	1300	107.90	1300	107.90	1300	107.90	1690	140.27	6590	546.97
18	Promotion of Redgram Transplantation for nursery preparation	Ha	5000	All Blocks	3850	192.50	5005	250.25	5005	250.25	5005	250.25	6507	325.33	25372	1268.58
	Total					**798.24**		**1037.71**		**1037.71**		**1037.71**		**1349.03**		**5260.40**

Bargur-B1, Hosur-B2, -B3- Kelamangalam, B4- Kaveripattinam, Krishnagiri-B5, Mathur-B6, Shoolagiri-B7, Thally-B8, Uthagarai-B9, Veppanapalli-B10

4.1.4 Enhancing the productivity of oilseeds

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

Project components

- Seed Production of Foundation seeds and certified seeds in groundnut, castor, gingelly and sunflower in all the blocks
- Distribution of Certified seeds in groundnut, castor, gingelly and sunflower
- Distribution of Seed Treatment Chemicals and Bioagents
- Application of Gypsum to Groundnut Crop in all the blocks
- Distribution of Micro Nutrient Mixture, Biofertilizer, Liquid Biofertilizer and Rhizobium/ PSB Culture in groundnut, castor, gingelly and sunflower in all the blocks
- Distribution of Pheromone Traps and Light Traps in all the blocks
- Castor as Bund crop in Hosur,Kelamangalm,Shoolagiri and Veppanapalli block
- Combined Nutrient Spray in Hosur,Kelamangalm,Shoolagiri and Veppanapalli block
- Seed Drill Sowing / Line sowing of Groundnut with Pulses as intercrop(hiring charges only) in all the blocks
- Seed drill Sowing of Groundnut with Redgram as Intercrop in all the blocks
- Distribution of Tractor operated thresher, Groundnut Stripper and Groundnut Decorticator in all the blocks

Budget

It is proposed to incur ₹ **5618.27** lakhs over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing Agency

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

Table 4.4 Budget requirement for increasing productivity of oilseeds

(Rs. in lakhs)

Sl. No	Components	Unit	Unit Cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Purchase of Breeder seed	Mt	1.50	All Blocks Except B1	10	15.00	13	19.50	13	19.50	13	19.50	17	25.35	66	98.85
2	Polythene mulch Inclusive of erection	Ha	0.50	All Blocks	280	140.00	364	182.00	364	182.00	364	182.00	473	236.60	1845	922.60
3	Herbicide	Ha	0.01	All Blocks	950	9.50	1235	12.35	1235	12.35	1235	12.35	1606	16.06	6261	62.61
4	Light trap (NCIPM)	Nos.	0.01	All Blocks	950	9.50	1235	12.35	1235	12.35	1235	12.35	1606	16.06	6261	62.61
5	Bio pesticide/fungicide	Ha	0.01	B1,B5,B6,B9,B 10	750	7.50	975	9.75	975	9.75	975	9.75	1268	12.68	4943	49.43
6	Compact Block Demonstration - Groundnut	Ha	0.20	All Blocks Except B3	950	190.00	1235	247.00	1235	247.00	1235	247.00	1606	321.10	6261	1252.10
	Groundnut															
7	Strengthening seed chain by foundation seed production	Mt	0.76	All Blocks	32	24.32	42	31.62	42	31.62	42	31.62	54	41.10	211	160.27
8	Strengthening seed chain by certified seed production	Mt	0.73	All Blocks	115	83.95	150	109.14	150	109.14	150	109.14	194	141.88	758	553.23
9	Distribution of Certified seeds	Mt	0.84	All Blocks	115	96.60	150	125.58	150	125.58	150	125.58	194	163.25	758	636.59
10	Distribution of Seed Treatment Chemicals and Bioagents (T.Viridi)	Kg	0.00	All Blocks	1650	2.48	2145	3.22	2145	3.22	2145	3.22	2789	4.18	10874	16.31
11	Application of Gypsum to Groundnut Crop	Ha	0.02	All Blocks	1700	27.20	2210	35.36	2210	35.36	2210	35.36	2873	45.97	11203	179.25
12	Distribution of Micro Nutrient Mixture	Ha	0.02	All Blocks	1700	25.50	2210	33.15	2210	33.15	2210	33.15	2873	43.10	11203	168.05
13	Distribution of Biofertilizer	Ha	0.01	All Blocks	1700	10.20	2210	13.26	2210	13.26	2210	13.26	2873	17.24	11203	67.22
14	Distribution of Liquid Biofertilizer	Ha	0.01	All Blocks	1250	7.50	1625	9.75	1625	9.75	1625	9.75	2113	12.68	8238	49.43

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
15	Distribution of Rhizobium/ PSB Culture	Ha	0.01	All Blocks	1900	11.40	2470	14.82	2470	14.82	2470	14.82	3211	19.27	12521	75.13
16	Distribution of Pheromone Traps	Nos.	0.02	All Blocks Except B4,B7,B8	90	1.80	117	2.34	117	2.34	117	2.34	152	3.04	593	11.86
17	Distribution of Light Traps	Nos.	0.02	All Blocks	260	5.20	338	6.76	338	6.76	338	6.76	439	8.79	1713	34.27
18	Castor as Bund crop	Ha	0.01	B2,B4,B7,B8	400	2.40	520	3.12	520	3.12	520	3.12	676	4.06	2636	15.82
19	Combined Nutrient Spray	Ha	0.02	B2,B4,B7,B8	2000	30.00	2600	39.00	2600	39.00	2600	39.00	3380	50.70	13180	197.70
20	Seed Drill Sowing / Line sowing of Groundnut with Pulses as intercrop	Ha	0.03	All Blocks	1750	52.50	2275	68.25	2275	68.25	2275	68.25	2958	88.73	11533	345.98
21	Seeddrill Sowing of Groundnut with Redgram as Intercrop	Ha	0.04	All Blocks	800	32.00	1040	41.60	1040	41.60	1040	41.60	1352	54.08	5272	210.88
22	Distribution of Tractor operated thresher	Nos.	1.50	B1,B2,B4.B7, B8	8	12.00	10	15.60	10	15.60	10	15.60	14	20.28	53	79.08
23	Distribution of Power Operated Groundnut Stripper	Nos.	1.30	All Blocks	20	26.00	26	33.80	26	33.80	26	33.80	34	43.94	132	171.34
24	Distribution of Power operated Groundnut Decorticator	Nos.	1.00	All Blocks	30	30.00	39	39.00	39	39.00	39	39.00	51	50.70	198	197.70
	Total					**852.55**		**1108.31**		**1108.31**		**1108.31**		**1440.80**		**5618.27**

Bargur-B1, Hosur-B2, Kaveripattinam-B3, Kelamangalam-B4, Krishnagiri-B5, Mathur-B6, Shoolagiri-B7, Thally-B8, Uthagarai-B9, Veppanapalli-B10

4.1.5 Enhancing the productivity of Oil palm

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

Project components

- Oilpalm Area Expansion Programme in bargur, Krishnagiri, Mathur and Uthangarai block.
- Incentives for Cultivation maintenance of oilpalm
- Inputs for Intercropping in oil palm in Krishnagiri,Uthangarai and Mathur block
- Supply of Diesel pumps in oil palm
- Construction of borewells for oil palm cultivation
- Motorised Chisel for oilpalm cultivation in bargur, Krishnagiri, Mathur and Uthangarai block.
- Aluminum portable ladder, Wire mesh and Oilpalm Cutter for cultivation and processing in Krishnagiri,Uthangarai and Mathur block

- Neem/ Pungam Area Expansion Programme for promotion of tree borne oilseeds in all the blocks
- Cultivation maintenance of tree borne oilseeds in all the blocks
- Inputs for Intercropping in tree borne oilseeds in all the blocks

Budget

It is proposed to incur ₹ **175.62** lakhs over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing Agency

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

Table 4.5 Budget requirement for increasing productivity of oilpalm

(Rs. 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
I	**OILPALM**															
1	NMOOP -Mini Mission -II (Oilpalm)															
2	Oilpalm Area Expansion Programme	Ha	0.14	B1,B5,B6,B9	17	2.38	22	3.09	22	3.09	22	3.09	29	4.02	112	15.68
3	Cultivation maintenance	Ha	0.1	B5,B6,B9	14	1.40	18	1.82	18	1.82	18	1.82	24	2.37	92	9.23
4	Inputs for Intercropping	Ha	0.1	B1,B5,B6,B9	17	1.70	22	2.21	22	2.21	22	2.21	29	2.87	112	11.20
5	Supply of Diesel pumps	No	0.3	B1,B5,B6,B9	8	2.40	10	3.12	10	3.12	10	3.12	14	4.06	53	15.82
6	Construction of Borewells	No	1	B1,B5,B6,B9	6	6.00	8	7.80	8	7.80	8	7.80	10	10.14	40	39.54
7	Motorised Chisel	No	0.2	B1,B5,B6,B9	6	1.20	8	1.56	8	1.56	8	1.56	10	2.03	40	7.91
8	Alumium portable ladder	No	0.06	B5,B6,B9	5	0.30	7	0.39	7	0.39	7	0.39	8	0.51	33	1.98
9	Wire mesh	No	0.1	B5,B6,B9	14	1.40	18	1.82	18	1.82	18	1.82	24	2.37	92	9.23
10	Oilpalm Cutter	No	0.03	B5,B6,B9	9	0.27	12	0.35	12	0.35	12	0.35	15	0.46	59	1.78
11	Neem/ Pungam Area Expansion Programme	Ha	0.2	All Blocks	32	6.40	42	8.32	42	8.32	42	8.32	54	10.82	211	42.18
12	Cultivation maintenance	Ha	0.05	All Blocks	32	1.60	42	2.08	42	2.08	42	2.08	54	2.70	211	10.54
13	Inputs for Intercropping	Ha	0.05	All Blocks	32	1.60	42	2.08	42	2.08	42	2.08	54	2.70	211	10.54
	Total					**26.65**		**34.65**		**34.65**		**34.65**		**45.04**		**175.62**

Bargur-B1, Hosur-B2, Kaveripattinam-B3, Kelamangalam-B4, Krishnagiri-B5, Mathur-B6, Shoolagiri-B7, Thally-B8, Uthagarai-B9, Veppanapalli-B10

4.1.6 Enhancing productivity of cotton

In Krishnagiri cotton is yet another important crop cultivated under rainfed conditions. Cotton is cultivated in an area of 2740 ha. Mostly farmers grow as rainfedas an alternative to the horticultural crops wherever possible. Cotton is susceptible to many insects and pests. Though HYV seeds and hybrid seeds are available in market the complete eradication of disease is not achievable. Alternatively, production of cotton can be increased through varying cultivation practices that could achieve sustainable development.

Project components

- Distribution of biofertilizer and bio fertilizer/bio pesticides in Mathur and Uthangarai block
- Distribution of cotton picking machine,pheromone trap,PP chemicals and MN mixture in Mathur and Uthangarai block
- Conducting field days,training and exposure visits in Mathur and Uthangarai block
- Summer ploughing and inter cropping with pulses in Mathur and Uthangarai block

Budget

The budget requirement for fulfilling the various interventions is ₹ **843.52** lakhs.

Implementing agency

The projects will be implemented by the Department of Agriculture.

Expected outcome

Increase in the production of cotton in the most sustainable way.

Table 4.6 Budget requirement for increasing productivity of cotton

(Rs. in lakhs)

Sl. No	Components	Unit	Unit Cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Distribution of biofertilizer	Ha	300	B6,B9	200	0.60	260	0.78	260	0.78	260	0.78	338	1.01	1318	3.95
2	Distribution of biopesticides / Bio agents	Ha	1000	B6,B9	200	2.00	260	2.60	260	2.60	260	2.60	338	3.38	1318	13.18
3	Distribution of cotton picking machine	No	5000	B6,B9	200	10.00	260	13.00	260	13.00	260	13.00	338	16.90	1318	65.90
4	Distribution of MN Mixture	Ha	1000	B6,B9	200	2.00	260	2.60	260	2.60	260	2.60	338	3.38	1318	13.18
5	Distribution of Pheromone trap	No	6000	B6,B9	200	12.00	260	15.60	260	15.60	260	15.60	338	20.28	1318	79.08
6	Distribution of PP chemicals	Ha	1000	B6,B9	200	2.00	260	2.60	260	2.60	260	2.60	338	3.38	1318	13.18
7	Exposure visits	No	40000	B6,B9	4	1.60	5.2	2.08	5.2	2.08	5.2	2.08	6.76	2.70	26.36	10.54
8	Farmers training	No	20000	B6,B9	4	0.80	5.2	1.04	5.2	1.04	5.2	1.04	6.76	1.35	26.36	5.27
9	Field days	No	10000	B6,B9	20	2.00	26	2.60	26	2.60	26	2.60	33.8	3.38	131.8	13.18
10	Intercropping with pulses	Ha	10000	B6,B9	200	20.00	260	26.00	260	26.00	260	26.00	338	33.80	1318	131.80
11	Summer ploughing	Ha	7500	B6,B9	1000	75.00	1300	97.50	1300	97.50	1300	97.50	1690	126.75	6590	494.25
	Grand total					**128.00**		**166.40**		**166.40**		**166.40**		**216.32**		**843.52**

Bargur-B1, Hosur-B2, Kaveripattinam-B3, Kelamangalam-B4, Krishnagiri-B5, Mathur-B6, Shoolagiri-B7, Thally-B8, Uthagarai-B9, Veppanapalli-B10

4.1.7 Enhancing the productivity of sugarcane

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

Project components

- Promotion of Sustainable Sugarcane Initiative in all the blocks except Bargur and Hosur block
- Establishment of Shade net and Single Bud Seedling in all the blocks except Bargur and Hosur block
- Trash Mulching in Mathur and Uthangarai block
- Demonstration on intercropping in Sugarcane
- State level training in all the blocks except Bargur and Hosur block

Budget

It is proposed to incur ₹ **750.24** lakhs over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing Agency

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

Table 4.7 Budget requirement for increasing productivity of sugarcane

(Rs. in lakhs)

Sl. No	Components	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Sustainable Sugarcane Initiative (SSI)															
1	A. Establishment of Shadenet	Nos	1.5	All Blocks Except B1,B2	29	43.50	37.7	56.55	37.7	56.55	37.7	56.55	49.01	73.52	191.11	286.67
2	B.Distribution of Single Bud Seedling	Ha	0.225	All Blocks Except B1,B2	265	59.63	344.5	77.51	344.5	77.51	344.5	77.51	447.85	100.77	1746.35	392.93
3	Trash Mulching	Ha	0.04	B6,B9	150	6.00	195	7.80	195	7.80	195	7.80	253.5	10.14	988.5	39.54
4	Demonstration on intercropping in Sugarcane	Ha	0.08	B8,B7,B5,B4,B3	14	1.12	18.2	1.46	18.2	1.46	18.2	1.46	23.66	1.89	92.26	7.38
5	State Level training in Sugarcane cultivation	No	0.4	All Blocks Except B1,B2	9	3.60	11.7	4.68	11.7	4.68	11.7	4.68	15.21	6.08	59.31	23.72
	Grand Total					**113.85**		**148.00**		**148.00**		**148.00**		**192.40**		**750.24**

Bargur-B1, Hosur-B2, Kaveripattinam-B3, Kelamangalam-B4, Krishnagiri-B5, Mathur-B6, Shoolagiri-B7, Thally-B8, Uthagarai-B9, Veppanapalli-B10

4.1.8 Increasing the productivity of coconut

Coconut is a long term crop. The life span of a tall coconut is about 100 years. Coconut is not like other crops. All the parts of the coconut trees are beneficial. Coconut cultivation is mainly cultivated in tropical condition with good amount of rainfall, drainage facilities with medium to fertile soil and it is opt for sugarcane cultivation. Coconut is the primary and main crop of the farmers here. For increasing the coconut cultivation, the adoption of following interventions will ensure the production.

Project components

- Distribution of T x D hybrid seedlings, Tall Seedlings and D xT hybrid Seedlings for all the blocks
- Distribution of Boom sprayer, tree climbers and power operated rocker sprayer in Kelamangalam,Kaverippattinam,Shoolagiri and Thally block
- Distribution of MN mixture in all the blocks
- Distribution of Pheromone traps for Red palm weevil/ Rhinoceros beetle in all the blocks
- Promotion of Drip irrigation in all the blocks
- Intercropping with green manures in all the blocks
- Bio control management of Black headed caterpillar in all the blocks
- Thanjavur wilt management (root feeding /soil application)
- Demonstration on Integrated fertilizer management in all the blocks
- Distribution of coconut seedlings to school children in all the blocks
- Control of Eriophid mite, white fly in all the blocks
- Controlling of Slug caterpillar,training on Neera production and distribution of wheel barrow in Hosur,Kelamangalam,Kaverippattinam,Shoolagiri,Thally and Krishnagiri block

Budget

It is proposed to incur ₹ **6179.08** lakhs over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing Agency

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

Table 4.8 Budget requirement for increasing productivity of coconut

(Rs. 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
1	Distribution of T x D hybrid seedlings	No	0.0006	All Blocks	3800	2.28	4940	2.96	4940	2.96	4940	2.96	6422	3.85	25042	15.03
2	Distribution of Tall Seedlings	No	0.0004	All Blocks	8800	3.52	11440	4.58	11440	4.58	11440	4.58	14872	5.95	57992	23.20
3	Boom sprayer	No	0.2000	B4,B3,B7,B8	40	8.00	52	10.40	52	10.40	52	10.40	67.6	13.52	264	52.72
4	Distribution of D xT hybrid Seedlings	No	0.0015	B1	25	0.04	32.5	0.05	32.5	0.05	32.5	0.05	42.25	0.06	165	0.25
5	Distribution of power operated coconut leaf shredder	No	0.6000	All Blocks Except B2	40	24.00	52	31.20	52	31.20	52	31.20	67.6	40.56	264	158.16
6	Distribution of MN mixture	Ha	0.1000	All Blocks	950	95.00	1235	123.50	1235	123.50	1235	123.50	1605.5	160.55	6261	626.05
7	Distribution of Pheromone traps for Red palm weevil/ Rhinocerous beetle	Ha	0.0160	All Blocks	825	13.20	1072.5	17.16	1072.5	17.16	1072.5	17.16	1394.25	22.31	5437	86.99
8	Distribution of power operated rocker sprayer	No	0.1000	All Blocks	140	14.00	182	18.20	182	18.20	182	18.20	236.6	23.66	923	92.26
9	Distribution of Solar copra drier	No	0.2000	B2,B4,B3,B7 ,B8,B5	10	2.00	13	2.60	13	2.60	13	2.60	16.9	3.38	66	13.18
10	Distribution of tree climbers	No	0.1500	All Blocks	27	4.05	35.1	5.27	35.1	5.27	35.1	5.27	45.63	6.84	178	26.69
11	Drip irrigation	Ha	0.3500	All Blocks	140	49.00	182	63.70	182	63.70	182	63.70	236.6	82.81	923	322.91
12	Intercropping with green manures	Ha	0.0300	All Blocks	1255	37.65	1631.5	48.95	1631.5	48.95	1631.5	48.95	2120.95	63.63	8270	248.11
13	Management of Black headed caterpillar	Ha	0.0500	All Blocks	1100	55.00	1430	71.50	1430	71.50	1430	71.50	1859	92.95	7249	362.45

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
14	Replanting and Rejunation of coconut gardens	Ha	0.4500	All Blocks	1295	582.75	1683.5	757.58	1683.5	757.58	1683.5	757.58	2188.55	984.85	8534	3840.32
15	Thanjavur wilt management (root feeding /soil application)	Ha	0.0300	B1,B10,B9,B6,B3,B5	60	1.80	78	2.34	78	2.34	78	2.34	101.4	3.04	395	11.86
16	Demonstration on Integrated fertiliser management	Ha	0.7500	All Blocks	42	31.50	54.6	40.95	54.6	40.95	54.6	40.95	70.98	53.24	277	207.59
17	Distribution of coconut seedlings to school children	No	0.0004	All Blocks	3500	1.40	4550	1.82	4550	1.82	4550	1.82	5915	2.37	23065	9.23
18	Control of Eriophid mite	No. of tree	0.0002	All Blocks	340	0.07	442	0.09	442	0.09	442	0.09	574.6	0.11	2241	0.45
19	Control of slug caterpillar	No. of tree	0.0003	B2,B4,B7,B8,B3,B5	800	0.24	1040	0.31	1040	0.31	1040	0.31	1352	0.41	5272	1.58
20	Training on neera production	Batches	0.2500	B2,B4,B7,B8,B3,B5	15	3.75	19.5	4.88	19.5	4.88	19.5	4.88	25.35	6.34	99	24.71
21	Distribution of wheel barrow	No	0.0400	B2,B4,B7,B8,B3,B5	210	8.40	273	10.92	273	10.92	273	10.92	354.9	14.20	1384	55.36
	Grand Total					**937.65**		**1218.94**		**1218.94**		**1218.94**		**1584.62**		**6179.08**

Bargur-B1, Hosur-B2, Kaveripattinam-B3, Kelamangalam-B4, Krishnagiri-B5, Mathur-B6, Shoolagiri-B7, Thally-B8, Uthagarai-B9, Veppanapalli-B10

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

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

Project components

- Inter State Training of Farmers in all the blocks
- Within the State training of Farmers in all the blocks
- Within the district training of Farmers in all the blocks
- Training of Farmers under Mission Soil Health Card in all the blocks
- Training of 536 Groups of Seed Village Farmers in quality Seed Production technology. in all the blocks except Shoolagiri
- Training of paddy, major & minor millets, pulses, sugarcane, cotton, groundnut, oil Palm, IFS, moisture conservation practices in all the blocks except Shoolagiri
- Value addition training in all the blocks except Shoolagiri
- Organic cultivation practices in all the blocks except Shoolagiri
- Awareness campaigns in all the blocks except Shoolagiri
- Organization of Kissan gothics on Soil test based nutrient application in all the blocks except Shoolagiri
- Rodent pest management demonstration in all the blocks except Shoolagiri

Budget

It is proposed to incur ₹ **467.70** lakh over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

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

Table 4.9 Budget requirement for Capacity building programmes

(Rs. in lakhs)

Sl. No	Components	Unit	Unit Cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Training of Farmers															
1	Inter State Training of Farmers	Nos.	1.25	All Blocks	10	12.50	19	23.75	13	16.25	14	17.50	20	25.00	76	95.00
2	Inter State Training of Farmers	Nos.	1.75	All Blocks	10	17.50	19	33.25	13	22.75	14	24.50	20	35.00	76	133.00
3	Training of Farmers under Mission Soil Health Card	Nos.	0.15	All Blocks	10	1.50	19	2.85	13	1.95	14	2.10	20	3.00	76	11.40
4	With in the district training of Farmers	Nos.	0.1	Allm Blocks	10	1.00	19	1.90	13	1.30	14	1.40	20	2.00	76	7.60
5	With in the State training of Farmers	Nos.	1.2	All Blocks	10	12.00	19	22.80	13	15.60	14	16.80	20	24.00	76	91.20
	Training of Farmers With in the district															
6	Awareness campaigns	Nos.	0.1	All Blocks Except B7	9	0.90	17	1.70	15	1.50	10	1.00	18	1.80	69	6.90
7	Groundnut	Nos.	0.1	All Blocks Except B7	9	0.90	17	1.70	14	1.40	10	1.00	18	1.80	68	6.80
8	IFS	Nos.	0.1	All Blocks Except B7	9	0.90	17	1.70	15	1.50	10	1.00	18	1.80	69	6.90
9	Major & Minor Millets	Nos.	0.1	All Blocks Except B7	9	0.90	17	1.70	13	1.30	12	1.20	18	1.80	69	6.90
10	Moisture conservation practices	Nos.	0.1	All Blocks Except B7	9	0.90	17	1.70	14	1.40	10	1.00	18	1.80	68	6.80
11	oil Palm	Nos.	0.1	All Blocks Except B7	9	0.90	17	1.70	14	1.40	10	1.00	18	1.80	68	6.80
12	Organic cultivation practices	Nos.	0.1	All Blocks Except B7	9	0.90	17	1.70	15	1.50	10	1.00	18	1.80	69	6.90
13	Paddy	Nos.	0.1	All Blocks Except B7	9	0.90	17	1.70	12	1.20	12	1.20	18	1.80	68	6.80
14	Pulses	Nos.	0.1	All Blocks Except B7	9	0.90	17	1.70	13	1.30	12	1.20	18	1.80	69	6.90
15	Value addition training	Nos.	0.1	All Blocks Except B7	9	0.90	17	1.70	15	1.50	10	1.00	18	1.80	69	6.90

Sl. No	Components	Unit	Unit Cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Exposure visit of Farmers		0.4													
16	Rodent Pest Management Demonstration	Nos.	0.04	All Blocks Except B7	45	1.80	45	1.80	45	1.80	45	1.80	45	1.80	225	9.00
17	With in State Exposure visit	Nos.	0.4	All Blocks Except B7	**9**	3.60	**17**	6.80	**13**	5.20	**12**	4.80	**18**	7.20	69	27.60
18	Organisation of Kisan gosthies on Soil test based nutrient application (Campaign)	Nos.	0.15	All Blocks Except B7	18	2.70	18	2.70	18	2.70	21	3.15	18	2.70	93	13.95
19	With in the district exposure visit	Nos.	0.15	All Blocks Except B7	9	1.35	17	2.55	13	1.95	12	1.80	18	2.70	69	10.35
	TOTAL					**62.95**		**115.40**		**83.50**		**84.45**		**121.40**		**467.70**

Bargur-B1, Hosur-B2, Kaveripattinam-B3, Kelamangalam-B4, Krishnagiri-B5, Mathur-B6, Shoolagiri-B7, Thally-B8, Uthagarai-B9, Veppanapalli-B10

4.1.10 Infrastructure development

Facilities for Seed production

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

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

Establishment of Laboratories

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

The major interventions

- Establishment of additional Seed Godown at Krishnagiri block
- Construction of IAEC with vehicle shed and compound wall in all the blocks
- Construction of Organic Fertilizer Testing Lab and Construction of Sub-AEC
- Dunnage, Electronic platform balance and Moisture meter,Taurpalin in all the blocks

Budget

It is proposed to incur **₹5156.78** lakhs over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing Agency

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

Table 4.10 Budget requirement for infrastructure development

(Rs. in lakhs)

Sl. No	Components	Unit	Unit Cost (in Rs.)	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Seed Processing Unit Machineries	Nos.	2650000	B5	0	0.00	0	0.00	0	0.00	0	0.00	1	26.50	1	26.50
2	Additional Seed Godown	Nos.	1250000	B5	0	0.00	0	0.00	0	0.00	0	0.00	1	12.50	1	12.50
3	Construction of Integrated Agricultural Extension Centre with vehicle shed and compound wall	Nos.	25000000	All Blocks	0	0.00	9	2250.00	0	0.00	0	0.00	2	500.00	11	2750.00
4	Construction of Sub-Agricultural Extension Centre (498 Nos.)	Nos.	3000000	B1,B9,B7, B4,B3,B2	0	0.00	0	0.00	6	180.00	0	0.00	0	0.00	6	180.00
5	Strengthening of Soil Testing Laboratory	Nos.	6000000	B5	0	0.00	0	0.00	1	60.00	0	0.00	0	0.00	1	60.00
6	Strengthening of Mobile Soil Testing Laboratory	Nos.	3000000	B5	0	0.00	0	0.00	1	30.00	0	0.00	0	0.00	1	30.00
7	Construction of Uzhavar Maiyam (Farmers Hub)	Nos.	15000000	B8,B7,B5, B4,B3,B2	0	0.00	0	0.00	6	900.00	1.1	165.00	1.21	181.50	8.31	1246.50
8	Dunnage	Nos.	7500	ALL Blocks	0	0.00	5	0.38	304	22.80	304	22.80	395.2	29.64	1008.2	75.62
9	Electronic platform balance	Nos.	150000	ALL Blocks	0	0.00	10	15.00	16	24.00	6	9.00	7.8	11.70	39.8	59.70

Sl. No	Components	Unit	Unit Cost (in Rs.)	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
10	Seed rack	Nos.	30000	ALL Blocks	15	4.50	10	3.00	24	7.20	24	7.20	31.2	9.36	104.2	31.26
11	Tarpaulin	Nos.	25000	ALL Blocks	0	0.00	10	2.50	24	6.00	24	6.00	31.2	7.80	89.2	22.30
12	Office Furnishings and other amenities	Nos.	200000	ALL Blocks	0	0.00	10	20.00	14	28.00	14	28.00	18.2	36.40	56.2	112.40
13	Strengthening of training institute / nursery / FTC / KVK	Nos.	50000000	All Blocks	0	0.00	1	500.00	0	0.00	0	0.00	0	0.00	1	500.00
14	Infrastructure for empowerment of coconut nurseries	Nos.	5000000	All Blocks	0	0.00	0	0.00	0	0.00	1	50.00	0	0.00	1	50.00
	Grand total					**4.50**		**2790.88**		**1258.00**		**288.00**		**815.40**		**5156.78**

Bargur-B1, Hosur-B2, Kaveripattinam-B3, Kelamangalam-B4, Krishnagiri-B5, Mathur-B6, Shoolagiri-B7, Thally-B8, Uthagarai-B9, Veppanapalli-B10

4.1.11 Soil health management for increasing crop productivity

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

Project Components

- Production of enriched FYM and composting of farm waste through *Pluerotus* in all the blocks
- Distribution of enriched press mud and blue green algae in all the blocks
- Establishment of permanent and HDPE vermicompost units in all the blocks
- Adoption of PGS certification through cluster approach in all the blocks
- Distribution of soil health card in all the blocks

Budget

The overall budget to undertake the various interventions in Tiruvallur district is

₹ **1462.39** lakhs.

Expected Outcome

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

Implementing Agency

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

Table 4.11 Budget requirement for soil health management

(Rs. in lakhs)

Sl. No	Components	Unit	Unit Cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Soil Health Management															
1	Permanent Vermi compost units	Cluster Nos.	50000	All Blocks	81	40.50	81	40.50	81	40.50	83	41.50	83	41.50	409	204.50
2	HDPE Vermi compost units	Kit Nos	12000	All Blocks	81	9.72	81	9.72	81	9.72	83	9.96	85	10.20	411	49.32
3	Green Manuring	Nos	4000	All Blocks	340	13.60	340	13.60	340	13.60	348	13.92	348	13.92	1716	68.64
4	Adoption of PGS certification through cluster approach	Nos	1495000	All Blocks	14	209.30	20	299.00	14	209.30	14	209.30	14	209.30	76	1136.20
5	Procurement and Distribution of Blue Green Algae	Nos	2500	All Blocks	10	0.25	10	0.25	10	0.25	10	0.25	10	0.25	50	1.25
6	Production of Enriched FYM	MT	2500	All Blocks	10	0.25	10	0.25	10	0.25	10	0.25	10	0.25	50	1.25
7	Composting of Farm Waste Through Pluerotus (Production and Distribution of Kits)	MT	200	All Blocks	100	0.20	100	0.20	100	0.20	150	0.30	150	0.30	600	1.20
8	Distribution of Soil Health Card	Ha	300	All Blocks	1.74	0.01	1.74	0.01	1.74	0.01	1.74	0.01	1.74	0.01	8.71	0.03
	Total					**273.83**		**363.53**		**273.83**		**275.49**		**275.73**		**1462.39**

Bargur-B1, Hosur-B2, Kaveripattinam-B3, Kelamangalam-B4, Krishnagiri-B5, Mathur-B6, Shoolagiri-B7, Thally-B8, Uthagarai-B9, Veppanapalli-B10

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

- Milch Animal (1 no) + 1 ha cropping system with inter crop & border plantation like castor/sesbania etc. in all the blocks
- Small ruminant (9+1) + 1 ha cropping system with inter crop & border plantation like castor/sesbania etc. Organic Mulching in all the blocks
- Creation of Farm pond in all the blocks
- Soil Moisture conservation strategies (contour bunding/Dust mulching/Polythene mulch etc.,) in all the blocks
- Promotion of Farmers club for Sustainable Dryland Agriculture in all the blocks

Budget

It is proposed to incur ₹ **10429.91** lakhs over a period of five years

Expected outcome

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

Implementing Agency

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

Table 4.12 Budget requirement for rainfed area development

(Rs. 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
1	Milch Animal (1 no) + 1 ha cropping farming system (Cropping system with inter crop & border plantation like castor/sesbania etc.) @ Rs.27500/ as subsidy per Unit	Ha	0.55	All Blocks	1000	550.00	1000	550.00	1500	825.00	1000	550.00	1000	550.00	5500	3025.00
2	Small ruminant (9+1)+ 1 ha Tree based farming system (Cropping system with inter crop & border plantation like castor/sesbania etc.) @ Rs.23500/ as subsidy per Unit	Ha	0.47	All Blocks	600	282.00	600	282.00	600	282.00	600	282.00	600	282.00	3000	1410.00
3	Organic Mulching	Ha	0.06	All Blocks	30	1.80	30	1.80	30	1.80	30	1.80	30	1.80	150	9.00
4	Creation of Farm pond	Nos.	0.75	All Blocks		0.00	10	7.50	10	7.50	10	7.50	10	7.50	40	30.00
5	Soil Moisture conservation strategies(contour bunding/Dust mulching/Polythene mulch etc.)	Ha.	0.1	All Blocks	20	2.00	20	2.00	20	2.00	20	2.00	20	2.00	100	10.00
6	Promotion of Farmers club for Sustainable Dryland Agriculture	Cluster	84.9415	All Blocks	14	1189.18	14	1189.18	14	1189.18	14	1189.18	14	1189.18	70	5945.91
	Grand Total					**2024.98**		**2032.48**		**2307.48**		**2032.48**		**2032.48**		**10429.91**

Bargur-B1, Hosur-B2, Kaveripattinam-B3, Kelamangalam-B4, Krishnagiri-B5, Mathur-B6, Shoolagiri-B7, Thally-B8, Uthagarai-B9, Veppanapalli-B10

4.1.13 Integrated Pest Management

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

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. Conducting Farmers Field Schools (FFS),Field days and IPM schools in all the blocks
2. Establishment of Bio-pesticide production unit in all the blocks
3. IPM School

Budget

It is proposed to incur ₹ **1430.40** lakhs over a period of five years by seeking funds under different funding agencies.

Expected outcome

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

Implementing Agency

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

Table 4.13 Budget requirement for Integrated Pest Management

(Rs. in lakhs)

Sl. No	Components	Unit	Unit Cost	Block covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Farmers Field Schools (FFS)	Nos.	20000	All Blocks	93	18.60	99	19.80	97	19.40	99	19.80	99	19.80	487	97.40
2	Field days	No.	20000	All Blocks	73	14.60	73	14.60	73	14.60	73	14.60	73	14.60	365	73.00
3	Establishment of Bio-pesticide production unit	Nos.	12000000	All Blocks	0	0.00	0	0.00	10	1200.00	0	0.00	0	0.00	10	1200.00
4	IPM School	Nos.	40000	All Blocks	30	12.00	30	12.00	30	12.00	30	12.00	30	12.00	150	60.00
	Total					**45.20**		**46.40**		**1246.00**		**46.40**		**46.40**		**1430.40**

Bargur-B1, Hosur-B2, Kaveripattinam-B3, Kelamangalam-B4, Krishnagiri-B5, Mathur-B6, Shoolagiri-B7, Thally-B8, Uthagarai-B9, Veppanapalli-B10

4.1.14 Farm Mechanization

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

Project Components

- Distribution of tractor, mini tractor and power tiller in all the blocks
- Distribution of paddy transplanter in Hosur,Shoolagiri, Krishnagiri,Kelamangalam and Kaverippattinam block
- Distribution of tractor drawn seed cum fertilizer drill in Hosur, Kelamangalam, Shoolagiri and Thally blocks
- Distribution of pump set, mobile sprinklers, rain guns and PVC Pipes to carry irrigation water from source to field in all the blocks
- Solar power pump system and Solar light trap in all the blocks
- Distribution of sprayers (power, hand and battery operated sprayer) in all the blocks
- Distribution of chaff cutter, combine harvester, multi crop thrasher and Tarpaulins
- Distribution of weeder (manual, cono weeder and rotary power weeder) in all the 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 ₹ **7043.00** lakhs.

Expected Outcome

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

Implementing Agency

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

Table 4.14 Budget requirement for farm mechanization

(Rs. in lakhs)

Sl. No	Components	Unit	Unit Cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Solar light trap	No.	4000	All Blocks	135	5.40	120	4.80	136	5.44	150	6.00	150	6.00	691	27.64
2	Battery operated sprayer	Nos.	4000	All Blocks	120	4.80	124	4.96	124	4.96	132	5.28	132	5.28	632	25.28
3	Power operated sprayer	Nos.	8000	All Blocks	150	12.00	160	12.80	160	12.80	175	14.00	175	14.00	820	65.60
4	Hand operated sprayer	Nos.	1500	All Blocks	145	2.18	170	2.55	170	2.55	170	2.55	170	2.55	825	12.38
5	Distribution of chaff cutter	Nos	25000	All Blocks	10	2.50	10	2.50	20	5.00	20	5.00	30	7.50	90	22.50
6	Distribution of Mini Tractor	Nos	300000	All Blocks	30	90.00	30	90.00	30	90.00	30	90.00	30	90.00	150	450.00
7	Distribution of Mobile Sprinklers	Ha	30000	All Blocks	50	15.00	50	15.00	50	15.00	50	15.00	50	15.00	250	75.00
8	Distribution of Paddy transplanter	Nos	1200000	B2,B7,B5,B4,B3	9	108.00	6	72.00	6	72.00	6	72.00	6	72.00	33	396.00
9	Distribution of Power Weeder	Nos	65000	All Blocks	75	48.75	75	48.75	90	58.50	90	58.50	90	58.50	420	273.00
10	Distribution of Powertiller	Nos	150000	All Blocks	24	36.00	24	36.00	24	36.00	24	36.00	24	36.00	120	180.00
11	Distribution of Rain	Ha	40000	All Blocks	20	8.00	20	8.00	20	8.00	30	12.00	30	12.00	120	48.00
12	Distribution of Rotary Power weeder	Nos	70000	All Blocks	20	14.00	20	14.00	20	14.00	20	14.00	20	14.00	100	70.00
13	Distribution of Rotavator	Nos	80000	All Blocks	125	100.00	125	100.00	125	100.00	125	100.00	125	100.00	625	500.00
14	Distribution of Tarpaulins	Nos	8000	All Blocks	150	12.00	150	12.00	150	12.00	160	12.80	160	12.80	770	61.60
15	Distribution of Tractor	Nos	600000	All Blocks	59	354.00	59	354.00	59	354.00	59	354.00	59	354.00	295	1770.00
16	Distribution of Tractor Drawn Seed cum	Nos	70000	B2,B8,B7,B4	4	2.80	4	2.80	4	2.80	4	2.80	4	2.80	20	14.00
17	PVC Pipes to carry Irrigation water from	Unit	40000	All Blocks	230	92.00	200	80.00	200	80.00	200	80.00	200	80.00	1030	412.00
18	Solar power pump system	Nos	600000	All Blocks	50	300.00	70	420.00	70	420.00	100	600.00	150	900.00	440	2640.00
	Total					**1207.43**		**1280.16**		**1293.05**		**1479.93**		**1782.43**		**7043.00**

Bargur-B1, Hosur-B2, Kaveripattinam-B3, Kelamangalam-B4, Krishnagiri-B5, Mathur-B6, Shoolagiri-B7, Thally-B8, Uthagarai-B9, Veppanapalli-B10

4.1.15 Strengthening of State Seed Farm

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

Project components

- Soil Fertility Improvement and Land development works in Krishnagiri block
- Provision of Irrigation facilities viz., Solar pump sets, Deepening of bore well Laying of pipelines, Rain gun, Mobile sprinkler, Laying of drip, New bore well with EB connection, Deepening of open well and Farm Pond in Krishnagiri block
- Supply of machineries in Krishnagiri block
- Infrastructure development for seed production in Krishnagiri block

Budget

It is proposed to incur ₹. **544.38** lakhs over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

The expected outcome of the project will result it will Enhance production of quality seeds of Crop varieties and Ensure timely delivery of seeds to farmersand it will increase supply of good quality seed which increase the production of the crops and the income of the farmers of Tamil Nadu.

Implementing Agency

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

Table 4.15 Budget requirement for Strengthening of State Seed Farm

(Rs. in lakhs)

Sl. No	Components	unit	unit cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
I	**Soil Fertility Improvement and Land development works in SSF**	ac	2	B5	16	32.00	16	32.00	16	32.00	16	32.00	16	32.00	80	160.00
II	**Irrigation Component**															
1	Solar pumpsets	nos	6	B5	2	12.00	2	12.00	2	12.00	2	12.00	2	12.00	10	60.00
2	Deepening of bore well	nos	4	B5	2	8.00	2	8.00	2	8.00	2	8.00	2	8.00	10	40.00
3	Laying of pipelines	mt	0.05	B5	300	15.00	300	15.00	0	0.00	0	0.00	0	0.00	600	30.00
4	Rain gun	nos	0.4	B5	5	2.00	5	2.00	0	0.00	0	0.00	0	0.00	10	4.00
5	Mobile sprinkler	nos	0.3	B5	0	0.00	0	0.00	5	1.50	5	1.50	5	1.50	15	4.50
6	Laying of drip	nos	2	B5	0	0.00	10	20.00	0	0.00	0	0.00	0	0.00	10	20.00
7	New bore well with EB connection	nos	8	B5	0	0.00	1	8.00	1	8.00	1	8.00	1	8.00	4	32.00
8	New open well+ Pumpset	nos	10	B5	0	0.00	1	10.00	1	10.00	1	10.00	1	10.00	4	40.00
9	Deepening of open well	nos	8	B5	0	0.00	1	8.00	1	8.00	0	0.00	0	0.00	2	16.00
10	Farm Pond	nos	1	B5	0	0.00	2	2.00	2	2.00	2	2.00	2	2.00	8	8.00
III	**Machineries**															
11	Dunnage (Poly Pallets)	nos	0.075	B5	5	0.38	5	0.38	5	0.38	5	0.38	5	0.38	25	1.88
12	Seed grading machine	nos	20	B5	0	0.00	1	20.00	0	0.00	1	20.00	1	20.00	3	60.00
13	Rotavator	nos	1	B5	0	0.00	1	1.00	1	1.00	1	1.00	1	1.00	4	4.00
14	Tarpaulin	nos	0.1	B5	0	0.00	1	0.10	1	0.10	1	0.10	1	0.10	4	0.40
15	Generator	nos	7	B5	0	0.00	1	7.00	1	7.00	0	0.00	1	7.00	3	21.00
IV	**Civil Works**															
16	Farm protection structure	mt	0.15	B5	0	0.00	1	0.15	1	0.15	1	0.15	1	0.15	4	0.60
17	New Threshing floor	nos	5	B5	0	0.00	2	10.00	2	10.00	0	0.00	0	0.00	4	20.00
18	Farm office	nos	8	B5	0	0.00	1	8.00	0	0.00	0	0.00	1	8.00	2	16.00
19	Farm office renovation	nos	3	B5	0	0.00	1	3.00	0	0.00	0	0.00	1	3.00	2	6.00
	Total					**69.38**		**166.63**		**100.13**		**95.13**		**113.13**		**544.38**

Bargur-B1, Hosur-B2, Kaveripattinam-B3, Kelamangalam-B4, Krishnagiri-B5, Mathur-B6, Shoolagiri-B7, Thally-B8, Uthagarai-B9, Veppanapalli-B10

4.1.16 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 for all the blocks.

Budget

It is proposed to incur ₹ **113.63** lakhs over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing Agency

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

Table 4.16 Budget requirement for information technology

(Rs. in lakhs)

Sl. No	Components	Unit	Unit Cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Procurement of Hardware for replacement of old hardware	Nos	50000	All Blocks	0	0.00	24	12.00	0	0.00	0	0.00	24	12.00	48	24.00
2	Connectivity Charges	Nos	11000	All Blocks	10	1.10	12	1.32	22	2.42	22	2.42	12	1.32	78	8.58
3	Printer cum Scanner	Nos	20000	All Blocks	0	0.00	12	2.40	0	0.00	0	0.00	12	2.40	24	4.80
4	UPS and Electrical Accessories	Nos	35000	All Blocks	0	0.00	12	4.20	0	0.00	0	0.00	12	4.20	24	8.40
5	Xerox machine	Nos	75000	All Blocks	0	0.00	12	9.00	0	0.00	0	0.00	12	9.00	24	18.00
6	Laptop/Desktop	Nos	50000	All Blocks	0	0.00	12	6.00	0	0.00	0	0.00	12	6.00	24	12.00
7	Anti -virus software	Nos	2500	All Blocks	10	0.25	12	0.30	10	0.25	10	0.25	12	0.30	54	1.35
8	Television	Nos	100000	All Blocks	0	0.00	12	12.00	0	0.00	0	0.00	12	12.00	24	24.00
9	Colour printer	Nos	15000	All Blocks	0	0.00	12	1.80	0	0.00	0	0.00	12	1.80	24	3.60
10	4G Internet - Dongle	Nos	2500	B10	0	0.00	12	0.30	0	0.00	0	0.00	12	0.30	24	0.60
11	**Equipments for Documentation**															
a	Handycam	Nos	30000	B1	0	0.00	5	1.50	0	0.00	0	0.00	5	1.50	10	3.00
b	Camera	Nos	25000	B2	0	0.00	5	1.25	0	0.00	0	0.00	5	1.25	10	2.50
c	GPS instrument	Nos	20000	B3	0	0.00	5	1.00	0	0.00	0	0.00	5	1.00	10	2.00
d	Android mobile	Nos	15000	B3	0	0.00	1	0.15	0	0.00	0	0.00	1	0.15	2	0.30
e	External Hard disk	Nos	5000	B4	0	0.00	5	0.25	0	0.00	0	0.00	5	0.25	10	0.50
	Total					**1.35**		**53.47**		**2.67**		**2.67**		**53.47**		**113.63**

Bargur-B1, Hosur-B2, Kaveripattinam-B3, Kelamangalam-B4, Krishnagiri-B5, Mathur-B6, Shoolagiri-B7, Thally-B8, Uthagarai-B9, Veppanapalli-B10

4.1.17 AGRICULTURAL RESEARCH

Strengthening of research infrastructure for agriculture sector in Krishnagiri District

1. Establishment of advanced grain quality analysis laboratory at Kaverippattinam block

Grain quality laboratory provides instrumental analyses of chemical and physical properties of grain and other agricultural products. The services are intended to support high-throughput genetic evaluations, surveys of grain quality and other large-scale monitoring operations. The facility also calibrates various types of instruments for manufacturers and users. Chemical composition is measured with a non-destructive, near-infrared (NIRS) analyzer. For best accuracy, this test requires 400 grams or more of product. Sample sizes down to 150 grams will work with corresponding reductions in accuracy. General test like Seed weight and size, Test weight, Thins (corn), Specific gravity (measure of hardness) by nitrogen displacement, other contracted services and crop specific tests also analyzed. The lab has an in-house quality management system to verify accuracy and reproducibility of data. Advice and set-up of quality control programs for analytical data can be provided. The proposed budget of above intervention is Rs. **50.00** lakhs

2. Establishment of model mechanized research farm at Kaverippattinam block

Agricultural machinery used to mechanize the work of agriculture, greatly increasing farm worker productivity. In modern times, powered machinery has replaced many farm jobs formerly carried out by manual labour or by working animals such as oxen, horses and mules. The entire history of agriculture contains many examples of the use of tools, such as the hoe and the plough. But the ongoing integration of machines since the Industrial Revolution has allowed farming to become much less labour-intensive. Current mechanized agriculture includes the use of tractors, trucks, combine harvesters, countless types of farm implements, aero planes and helicopters (for aerial application), and other vehicles. Precision agriculture even uses computers in conjunction with satellite imagery and satellite navigation (GPS guidance) to increase yields. Mechanization was one of the large factors responsible for urbanization and industrial economies. Besides improving production efficiency, mechanization encourages large scale production and sometimes can improve the quality of farm produce. On the other hand, it can displace unskilled farm labour and can cause environmental degradation (such as pollution, deforestation, and soil erosion), especially if it is applied shortsightedly rather than holistically. The proposed budget of above intervention is Rs. **20.00** lakhs.

3. Strengthening of Mango Research Centre at Kaverippattinam block

Mango is originated from Indo Burma region and it is reported that it has been grown in this continent for nearly 4000 years. Among the three prime fruits reported in Tamil literature (Mango, Banana and Jackfruit), the first and foremost important fruit crop is mango. Mango is what apple is to Western countries and Indian mangoes deserve to be focused at global level. It is cultivated in an area of 1,61,580 hectare in Tamil Nadu and in Krishnagiri and Dharmapuri districts which are the hot spot of mango production, it is cultivated in an area of 40,000 & 14,000 hectares respectively (NHB, 2013 - 14). Comparing the national productivity (7.3 t /ha), the state productivity is very low (4.9 t/ha). In Tamil Nadu, there are about 75 processing units functioning in total whereas in Krishnagiri and Dharmapuri districts alone, around 45 units are functioning. In this context, mango research centre may be strengthened at Kaveripattinam to provide good quality planting materials, to offer scientific training in production and post-harvest technologies and export management to the needy people with the budget of Rs. **100.00** lakhs.

4. Establishment of Pesticide Residue Laboratory at Kaverippattinam block

The term ‘pesticide’ is used for all toxic chemicals used as pest control agents. They have become very popular with progressive farmers interesting in obtaining high yields of crop. Large number of pesticides has been developed in recent years for the chemical control of diseases and pests which destroy crops and stored grain food grains worth millions of rupees every year. Some pesticides leave little or no residues, and others leave residues for weeks, months or even years. Depending upon on manner and place pesticides are used, each pesticide will vary in duration it remains on the crop or on the surface. It is important to establish what residues, if any, remain on the crop after a given period of time. As different types of pesticides have to handle by a pesticide testing laboratory the organization and working of the laboratory have to be very carefully planned such that each one of the analysis is carried out in the minimum possible time at maximum efficiency, and also without any clash with other analyses. To achieve this, the various units within a laboratory have to be so arranged with the budget of Rs. **50.00** lakhs.

5. Establishment of bio control laboratory at Kaverippattinam block

Pesticide constitutes the key control tactics for management of pests and diseases and the productivity of crops on their effective control. The area under plant production has been continuously increasing in Tamil Nadu. Excessive and indiscriminate use of pesticides not only increases the cost of production but also results in many human health problems and

environmental pollution. The most damaging ecological disturbance of injudicious use of pesticides in the existence of high concentration of pesticide residues in food chain including vegetables and other crops. India is the second largest producer in the world and shares about 13 percent of the world output of vegetables from about 2 percent of the cropped area in the country. To produce pesticide free vegetables it is highly necessary to introduce bio control as one of the major tool for pest management in vegetable crops. The proposed budget of above intervention is Rs. **160.00** lakhs.

6. Construction of soil science lab, post-harvest laboratory and biofertilizer laboratory at Kaverippattinam block

The causes for low productivity in agriculture are decline in soil organic matter, soil fertility status, land degradation and use of poor quality water apart from lack of awareness on balanced fertilization among farmers and insufficient soil analytical timely advisory services. Soil and water sampling and analysis will help to monitor the changes in soil fertility, water quality and support in planning for crop and location specific balanced fertilization based on soil test value to enhance crop productivity by construction of soil science lab, post-harvest laboratory and biofertilizer laboratory with the budget of Rs. **30.00** lakhs.

7. Construction of vermicompost unit at Kaverippattinam block

It is also imperative to establish vermin compost production laboratories. Organic input like vermi compost is now a days in high demand by most of the farmers and house owners especially by the city dwellers. To promote the organic input like vermi compost by providing HDPE vermi beds with an estimated budget of Rs. **5.00** lakhs.

8. Construction of poly house, glass house, garden & farms and shade net house at Kaverippattinam block

Infrastructure like protected cultivation (poly green house and shade net) and protected nursery raising, proper spacing, Fertigation and timely plant protection give higher yield than the conventional system of crop husbandry. So also with the production of flowers and hybrid vegetables especially tomato under net house structures are useful for the control of humidity, temperature pest and disease management. Based on the new introduction and high cost involved and more of small and marginal farmers we suggest to make the protected structure into small units. The total cost for the protected cultivation is estimated as Rs. **24.00** lakhs.

Budget

It is proposed to incur Rs. **359.00** lakhs over a period of five years

Expected outcome

It will improve the productivity and income of the farmers.

Implementing agency

Tamil Nadu Agricultural University will be implementing the project. The progress of the scheme will be monitored by the Vice-Chancellor and Nodal Officer from the University.

Table 4.17 Budget for Agricultural Research infrastructure in Krishnagiri district

(Rs in lakhs)

Sl. No	Interventions	Blocks Covered	Unit Cost	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
				Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
I	**Research Infrastructure**														
2	Establishment of advanced grain quality analysis laboratory	Kaveripattinam	50	1	50.00	0	0.00	0	0.00	0	0.00	0	0.00	1	50.00
3	Establishment of model mechanized research farm	Kaveripattinam	20	0	0.00	1	20.00	0	0.00	0	0.00	0	0.00	1	20.00
4	Strengthening of Mango Research Centre	Kaveripattinam	100	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	1	100.00
5	Establishment of Pesticide Residue Laboratory	Kaveripattinam	50	0	0.00	0	0.00	1	50.00	0	0.00	0	0.00	1	50.00
6	Establishment of biocontrol laboratory	Kaveripattinam	80	0	0.00	0	0.00	0	0.00	1	80.00	0	0.00	1	80.00
7	Construction of soil science lab, post harvest laboratory and biofertilizer laboratory	Kaveripattinam	10	1	10.00	1	10.00	0	0.00	0	0.00	1	10.00	3	30.00
8	Construction of vermicompost unit	Kaveripattinam	5	1	5.00	0	0.00	0	0.00	0	0.00	0	0.00	1	5.00
9	Construction of poly house, glass house, garden & farms and shade net house	Kaveripattinam	6	1	6.00	1	6.00	1	6.00	1	6.00	0	0.00	4	24.00
9	Organic vegetable production	Kaveripattinam	26	1	26.00	0	0.00	0	0.00	0	0.00	0	0.00	**1**	26.00
10	Nematode management in nursery	Kaveripattinam	25	1	25.00	0	0.00	0	0.00	0	0.00	0	0.00	**1**	25.00
11	Fruit processing and Training institute	Kaveripattinam	225	1	225.00	0	0.00	0	0.00	0	0.00	0	0.00	**1**	225.00
	Total				**347.00**		**136.00**		**56.00**		**86.00**		**10.00**		**635.00**

Table 4.18 Budget requirement for Agriculture sector

(Rs. in lakhs)

Sl. No	Components	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Paddy	614.81	793.25	793.25	793.25	1025.23	4019.80
2	Millets	672.28	868.49	867.24	877.24	1132.31	4417.56
3	Pulses	798.24	1037.71	1037.71	1037.71	1349.02	5260.40
4	Oilseeds	852.55	1108.31	1108.31	1108.31	1440.80	5618.27
5	Oilpalm	26.65	34.65	34.65	34.65	45.04	175.62
6	Cotton	128.00	166.40	166.40	166.40	216.32	843.52
7	Sugarcane	113.85	148.00	148.00	148.00	192.40	750.24
8	Coconut	937.65	1218.94	1218.94	1218.94	1584.62	6179.08
9	Training	62.95	115.40	83.50	84.45	121.40	467.70
10	Infrastructure	4.50	2790.88	1258.00	288.00	815.40	5156.78
11	Soil Health Management	273.83	363.53	273.83	275.49	275.73	1462.39
12	Rainfed Area Development	2024.98	2032.48	2307.48	2032.48	2032.48	10429.91
13	Integrated Pest Management	45.20	46.40	1246.00	46.40	46.40	1430.40
14	Farm Mechanization	1207.43	1280.16	1293.05	1479.93	1782.43	7043.00
15	Strengthening of State Seed Farm	69.38	166.63	100.13	95.13	113.13	544.38
16	Agriculture Information Technology	1.35	53.47	2.67	2.67	53.47	113.63
	Total	**7833.65**	**12224.70**	**11939.16**	**9689.05**	**12226.18**	**53912.68**

4.2 HORTICULTURE

4.2.1 Enhancing the productivity of horticultural crops

I. Area Expansion of fruit crops

Cultivation of fruit crops plays an important role in the prosperity of India. It is generally stated that the standard of living of the people can be judged by per capita production and consumption of fruits. The potential of fruit crops in the growth of national economy is noteworthy. Today's changing food pattern enhances the area expansion under fruits. Area proposed for normal planting of lime/ lemon, mango, guava and papaya is 895 ha.

To enhance the production of fruit crops in Krishnagiri district following interventions have been suggested

- Planting of tissue culture banana and pine apple in proposed area of 130 ha and normal planting of banana (hill banana) and pine apple using suckers for proposed area of 70 ha.
- HDP in papaya, mango, guava, pomegranate, litchi with proposed area of 442 ha.
- Area expansion of fruits with traditional varieties is 30 ha.
- Around 895 ha planned for normal planting of mango, guava, amla, papaya, jack, pomegranate and 70 ha for only banana leaf production.
- Around 36 ha planned for commercial production of choice fruits (Kiwi, Mangoosteen, Rambutan, Fig, Date palm, Durian, Carambola, Dragon fruit,Passion Fruit, Kiwi, Grapes, Strawberry, etc.,) and 100 ha for commercial production of traditional fruits (Woodapple, Manila Tamarind, Jamun, Ber, Karonda, Annona, Egg fruit, etc.,)

II. Area Expansion of vegetable crops

Vegetables are so common in human diet that a meal without a vegetable is supposed to be incomplete. The limited cultivable area can be best utilized for growing vegetables which are known to give higher yields per unit area. Vegetable growing being labour intensive can substantially increase employment avenues too. Our country is gifted with a wide range of agro climatic conditions which enables the production of vegetables throughout the year. These off season vegetables are in great demand in home market. Area under vegetable crops is gaining momentum in blocks of Kancheepuram district. To enhance the production of vegetable crops such as Brinjal, Bhendi, green chillies, tomato, bellary onion, cauliflower, cabbage, cucumber, radish and

melons suggested for normal planting in an area of 1374 ha. Commercial production of choice vegetables (Bread fruit, Brussels sprout, Broccoli, Spring Onion, KnolKhol, Turnip, Winged Bean, Butter Bean, Chinese Cabbage, Lettuce, Leek, Porum, etc., proposed for planting in an area of 100 ha and 200 ha for cultivation of hybrid Vegetables under protected structures.

III. Area expansion of Medicinal and Aromatic plants

In the present context of back to nature in health care, the medicinal and aromatic plant species are gaining importance and are promoted for commercial cultivation in order to meet the increasing demand within the domestic and export markets. The medicinal plants find application in pharmaceuticals, cosmetic, agricultural and food industry. Medicinal plants cultivation has proved to be profitable for farmers. Tamil Nadu has great potential for development of medicinal plants as a commercially viable venture.Therefore there is need for expansion of area under medicinal plant cultivation. The area proposed for cultivation of mint is around 400 ha.

IV. Area Expansion of spice crops

India contributes 75% of global spice production. Spices have substantial antioxidant activity, owing primarily to phenolic compounds. On the production side low yield, damage to standards, crop loss due to pests and diseases, post-harvest losses and fluctuating prices are causing declining area and production of spice in the Kancheepuram district. Moreover the spice crops have more export value and employment generation. So the area under expansion is necessary. The seed and rhizomatic spices such as coriander, turmeric, ginger, dry chilli, cumin, fennel, fenugreek, dil and cardamom are majorly growing spices in the district and suggested to grow in an area of 150 ha. The area of 60 ha is proposed for cultivation of perennial spices such as pepper, curry leaf, cinnamon, clove, tamarind and nutmeg and 40 ha for bulbous spices like garlic.

V. Area expansion of flower crops

The demand of flowers and live plants is increasing day by day with the increasing standard of living aesthetic sense and awareness in the people. Therefore there is immense scope for its area expansion. The cultivation of loose flowers such as jasmine, crossandra, marigold, chrysanthemum, neriumand rose are suggested to grow with an area of 740 ha and 160 ha for bulbous flowers (Tube rose, Gladioli, Dahlia, Bird of paradise, Heliconia, Tulip) production.

VI. Area expansion/ gap filling of plantation

As population and plantation crops have restricted geographical distribution the possibility expansion in the traditional area is limited. However there is ample scope for expansion of area in non-traditional region where there is irrigation potential. Due to the development of drip irrigation technology new area/ non-traditional area under plantation crop is increasing. Since plantation crops had export potential, employment generation and crop diversification the area under expansion is necessary.

VII. Rejuvenation

` India is a vast country and is gifted with a variety of soils and climates. Thus, almost all kinds of fruits can be grown successfully in this country. It is a matter of great surprise that inspite of provision of adequate resources, the per capita consumption of fruits here is perhaps one of the lowest in the world. The existing orchards are not able to meet the present requirements of the country. Poor selection of planting material and poor management has made many orchards uneconomic. The term rejuvenation means renewal or making new or young again. These depend largely on the practices of cultivation, irrigation, drainage, manuring etc. Rejuvenation for mango/ cashew in 150 ha and adopting the techniques such as Integrated Nutrient Management (INM)/ Integrated Pest Management (IPM), mulching 700 ha will certainly increase the production and productivity of horticulture crops.

VIII. Pollination support

Pollination of fruits, vegetables, spices and plantation crops would be enhanced through the establishment of bee hives and colonies 5000 ha of all blocks in Krishnagiri district.

IX. Organic farming

Organic farming is rapidly expanding economic sector and makes an important contribution to human health and promotes the use of crop rotations and cover crops. Organic agriculture continues to be developed by various organic organizations today. 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 and companion planting. Biological pest control, mixed cropping and the fostering of insect predators are encouraged. Hence through organic farming, PGS certification and high density polyethylene vermibed would enhance the production of horticultural crops.

X. Rainfed area development

Rainfed area development aims at improving quality of life of farmers especially small and marginal farmers by offering the complete package of activities to maximize farm returns. It focuses on integrated farming system – horticulture based farming for enhancing productivity of horticultural crops.

4.2.2 Infra structures and assets creation

I. Protected cultivation

Production of horticultural crops under protected conditions not only provides high water and nutrient use efficiency but it can easily increase the productivity by 3-5 folds over open field cultivation of these crops under varied agro climatic conditions of the district. The protected cultivation technologies are not only creating avenues at higher level but also to the growers with the smaller landholdings as the higher productivity levels retain economic relevance to horticulture. Protected cultivation is in a way precise, progressive and parallel agriculture encompassing virtually all facets of horticulture and rather under additional scrutiny of technical relevance to situations and growers..

II. Vermicompost unit

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

IV. Supporting structure for vegetable production

The budget requirement for support structures for vegetable production like staking, trellis, propping and permanent pandal structure is given in the Table.

C. Special interventions

There are other special interventions such as farm deficiency correction, promotion of roof top garden or potager garden kit, promotion of roof top garden or potager garden kit with shade net, banana bunch sleeve, AESA based IPM in fruits and vegetables.

D. Post-harvest management

Temperature management is most effective tool for maintaining quality and safety and for extending the post-harvest life of fresh horticultural commodities. It begins with

the rapid removal of field heat by initial cooling and continuous throughout the cold chain (cold storage), refrigerated transportation, refrigerated retail display and cold storage at wholesale distribution. To reduce the post-harvest losses suggest establishing pack house (9mX6m), low cost onion structure (25 mt) and drying yard.

E. Development of Farms, Nurseries and Parks

The budget proposed for developmental activities of new or existing state horticultural farms and community nursery is given in the table.

F. Mechanization

Farm mechanization has been helpful to bring about significant improvement in horticulture productivity by bridging the demand- supply gap of farm workers. Thus the main objective is to supply the horticulture machinery/implements such as power tiller, tractor, mini tractor, seed bed preparation equipment, manual sprayer, tractor mounted sprayer, potato planter, harvester, mulch laying machine, hand operated sprayer, nets for safe harvesting of fruits, headlights for flower picking, plastic crates for vegetables and fruits handling, turmeric boiler and polishing machine, pepper spike thresher stripper, aluminum ladder for harvesting and equipment for manure management.

G. Water/ Irrigation management

Irrigation plays an important role in raising and stabilizing yield and maintaining quality. Water relations are very important to the function of horticultural crops, as water is the greatest component of fruit trees. The effective scheduling of irrigation is very important in decisions related to maximizing yields and improving fruit size..

H. Capacity building

Promotion of innovation in application of information communication technology in horticulture and dissemination of knowledge is a critical role in knowledge based growth of horticulture. Therefore it is important to provide the training to farmers with in the state, outside the state, exposure visit to farmers for 5 days, exposure visit of farmers outside India, training to staff outside the state, training to staff outside India, computerization and governance, publicity and documentation.

I. Crop insurance and mitigation scheme

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

more predictable level of revenue. Some of the risk management strategies recommended crop insurance for 7225 ha in all the blocks.

Budget

The budget requirement for fulfilling the various interventions is ₹ **59884.26** lakhs. The details of budget requirement for each intervention across the blocks are shown in Table.

Implementingagency

The projects will be implemented by the Department of Horticulture. The progress of the projects will be monitored by the State Nodal Agency and Heads of Department in the state.

Table 4.19 Budget requirement for development of Horticulture

(₹in lakhs)

Sl. No.	Interventions	Unit	Unit cost	Block 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	All Blocks	26	32.50	26	32.50	26	32.50	26	32.50	26	32.50	130	162.50
2	Banana / Hill Banana sucker & Pine apple sucker	Ha	0.875	All Blocks	14	12.25	14	12.25	14	12.25	14	12.25	14	12.25	70	61.25
3	HDP in Mango, Guava, Litchi, Pomegranate	Ha	1	All Blocks	52	52.00	73	73.00	89	89.00	109	109.00	119	119.00	442	442.00
4	Area expansion fruits with traditional varieties	Ha	0.6	B1,B6,B9,B10 ,B4,B5	6	3.60	6	3.60	6	3.60	6	3.60	6	3.60	30	18.00
5	Normal Planting in Mango	Ha	0.6	B1,B6,B9,B10 ,B4,B5	45	27.00	75	45.00	85	51.00	100	60.00	110	66.00	415	249.00
6	Normal planting in Guava	Ha	0.6	All Blocks	50	30.00	50	30.00	50	30.00	50	30.00	50	30.00	250	150.00
7	Normal planting in Papaya	Ha	0.6	B1,B6,B9,B4, B5,B10	6	3.60	6	3.60	6	3.60	6	3.60	6	3.60	30	18.00
8	Normal planting in Pomegranate	Ha	0.6	All Blocks	26	15.60	26	15.60	26	15.60	26	15.60	26	15.60	130	78.00
9	Banana for leaf production	Ha	0.6	All Blocks	14	8.40	14	8.40	14	8.40	14	8.40	14	8.40	70	42.00
10	Commercial production of choice fruits (Kiwi, Mangoosteen, Rambutan, Fig, Date palm, Durian, Carambola, Dragon fruit,Passion Fruit, Kiwi, Grapes, Strawberry, etc.,)	Ha	1.25	B3,B8,B2,B7	4	5.00	8	10.00	8	10.00	8	10.00	8	10.00	36	45.00

Sl. No.	Interventions	Unit	Unit cost	Block Covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
11	Commercial production of Traditional fruits (Woodapple, Manila Tamarind, Jamun, Ber, Karonda, Annona, Egg fruit, etc.,)	Ha	0.6	All Blocks	20	12.00	20	12.00	20	12.00	20	12.00	20	12.00	100	60.00
II	**Area expansion of vegetable crops**															
12	Brinjal	Ha	0.5	B1,B6,B9,B10 ,B4,B5	30	15.00	30	15.00	30	15.00	30	15.00	30	15.00	150	75.00
13	Bhendi	Ha	0.5	B1,B6,B9,B10 ,B4,B5	12	6.00	12	6.00	12	6.00	12	6.00	12	6.00	60	30.00
14	Green Chillies	Ha	0.5	All Blocks	32	16.00	32	16.00	32	16.00	32	16.00	32	16.00	160	80.00
15	Tomato	Ha	0.5	All Blocks	70	35.00	70	35.00	70	35.00	70	35.00	70	35.00	350	175.00
16	Bellary Onion	Ha	0.5	B3,B8,B2,B7	20	10.00	20	10.00	20	10.00	20	10.00	20	10.00	100	50.00
17	Cauliflower	Ha	0.5	B3,B8,B2,B7	20	10.00	20	10.00	20	10.00	20	10.00	20	10.00	100	50.00
18	Cabbage	Ha	0.5	B3,B8,B2,B7	20	10.00	20	10.00	20	10.00	20	10.00	20	10.00	100	50.00
19	Cucumber/gherkin	Ha	0.5	B1,B6,B9,B10 ,B4,B5	12	6.00	12	6.00	12	6.00	24	12.00	24	12.00	84	42.00
20	Radish	Ha	0.5	B1,B6,B9,B4, B5,B10	24	12.00	24	12.00	24	12.00	24	12.00	24	12.00	120	60.00
21	Melons	Ha	0.5	B1,B6,B9,B4, B5,B10	30	15.00	30	15.00	30	15.00	30	15.00	30	15.00	150	75.00
22	Commercial production of choice vegetables (Bread fruit, Brussels sprout, Brocolli, Spring Onion, Knol Khol, Turnip, Winged Bean, Butter Bean, Chinese Cabbage, Lettuce, Leek, Porum, etc.,	Ha	0.5	B3,B8,B2,B7	20	10.00	20	10.00	20	10.00	20	10.00	20	10.00	100	50.00

Sl. No.	Interventions	Unit	Unit cost	Block Covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
23	Cultivation of hybrid Vegetables under protected structures	1000 Sq.m	1.4	B3,B8,B7,B2	40	56.00	40	56.00	40	56.00	40	56.00	40	56.00	200	280.00
III	**Area expansion of Medicinal and Aromatic**															
24	Mint	Ha	0.15	B3,B8,B2,B7	80	12.00	80	12.00	80	12.00	80	12.00	80	12.00	400	60.00
IV	**Area expansion of Spices crops**															
25	Seed and Rhizomatic spices (Coriander, Turmeric, Ginger, Dry Chilly, Cumin, Fennel, Fenu greek, Dil, Cardamom etc.,)	Ha	0.3	B1,B6,B9,B10 ,B4,B5	30	9.00	30	9.00	30	9.00	30	9.00	30	9.00	150	45.00
26	Perennial spices (Pepper, Curry leaf, All spice, Cinnamon, Clove, Tamarind, Nut meg etc.,)	Ha	0.5	B1,B6,B9,B10 ,B4,B5	12	6.00	12	6.00	12	6.00	12	6.00	12	6.00	60	30.00
27	Bulbous spices Garlic	Ha	0.5	B3,B8,B2,B7	8	4.00	8	4.00	8	4.00	8	4.00	8	4.00	40	20.00
V	**Area expansion of Flower crops**															
28	Loose flowers - Jasminum sp, Crossandra, Marigold, Rose, Chrysanthemum, Nerium, Torenia	Ha	0.4	All Blocks	100	40.00	160	64.00	160	64.00	160	64.00	160	64.00	740	296.00
29	Bulbous flowers - Tube rose, Gladioli, Dahlia, Bird of paradise, Heliconia, Tulip	Ha	1.5	All Blocks	32	48.00	32	48.00	32	48.00	32	48.00	32	48.00	160	240.00
30	Cut flowers under open condition - Alstromaria, Golden Rod	Ha	1	B3,B8,B2,B7	40	40.00	40	40.00	40	40.00	40	40.00	40	40.00	200	200.00

Sl. No.	Interventions	Unit	Unit cost	Block Covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
31	Cost of planting material & cultivation of Orchid, Eustoma & Anthurium under poly house / Shade net house	1000 Sq.m	7	B3,B8,B2,B7	4	28.00	4	28.00	4	28.00	4	28.00	4	28.00	20	140.00
32	Cost of planting material & cultivation of carnation & Gerbera under poly house / Shade net house	1000 Sq.m	6.1	B3,B8,B2,B7	100	610.00	100	610.00	100	610.00	100	610.00	100	610.00	500	3050.00
33	Cost of planting material & cultivation of Rose, Lilium, under poly house / Shade net house	1000 Sq.m	4.26	B3,B8,B2,B7	80	340.80	80	340.80	80	340.80	80	340.80	80	340.80	400	1704.00
VI	**Rejuvenation/INM-IPM/Mulching/Anti bird net**															
34	Mango/Cashew - Rejuvenation	Ha	0.4	B1,B6,B9,B10 ,B4,B5	30	12.00	30	12.00	30	12.00	30	12.00	30	12.00	150	60.00
35	INM/IPM for Horticultural crops	Ha	0.04	All Blocks	140	5.60	140	5.60	140	5.60	140	5.60	140	5.60	700	28.00
36	Mulching	Ha	0.32	All Blocks	140	44.80	140	44.80	140	44.80	140	44.80	140	44.80	700	224.00
VII	**Pollination Support through Bee Keeping**															
37	Bee hive & Colony	No	0.04	All Blocks	1000	40.00	1000	40.00	1000	40.00	1000	40.00	1000	40.00	5000	200.00
38	Honey Extractor	No	0.2	All Blocks	20	4.00	20	4.00	20	4.00	20	4.00	20	4.00	100	20.00
VIII	**Organic Farming**															
39	Organic farming and PGS certification in 50 acre cluster	1 cluste r	14.95	All Blocks	6	89.70	0	0.00	4	59.80	0	0.00	0	0.00	10	149.50
40	HDPE Vermibed	No	0.16	All Blocks	70	11.20	70	11.20	70	11.20	70	11.20	70	11.20	350	56.00
IX	**Rainfed Area development**															
41	Integrated farming system - Horticulture Based farming	Ha	0.5	B1,B6,B9,B10 ,B4,B5	60	30.00	60	30.00	60	30.00	60	30.00	60	30.00	300	150.00

Sl. No.	Interventions	Unit	Unit cost	Block Covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
42	Green manuring	Ha	0.04	B1,B6,B9,B10 ,B4,B5	60	2.40	60	2.40	60	2.40	60	2.40	60	2.40	300	12.00
43	Moisture stress management - Minimum irrigation gurantee by PUSA hydrogel	Ha	0.1	B1,B6,B9,B10 ,B4,B5	60	6.00	60	6.00	60	6.00	60	6.00	60	6.00	300	30.00
X	**Infra structures and Assets creation**															
44	Poly Green House	1000 Sq.m	9.35	All Blocks	530	4955.50	655	6124.25	740	6919.00	825	7713.75	930	8695.50	3680	34408.00
45	Shadenet	1000 Sq.m	7.1	All Blocks	29	205.90	32	227.20	39	276.90	42	298.20	45	319.50	187	1327.70
XI	**Mushroom production**															
46	Cottage mushroom unit	1 No.	1	B5	0	0.00	0	0.00	1	1.00	1	1.00	1	1.00	3	3.00
XII	**Vermicompost unit**															
47	Permanent Vermicompost Unit	600 cu.ft	1	All Blocks	14	14.00	14	14.00	14	14.00	14	14.00	14	14.00	70	70.00
XIII	**Supporting structures for Horticulture crop production**															
48	Staking/ Trellies/ Propping	Ha	1	All Blocks	110	110.00	110	110.00	110	110.00	110	110.00	110	110.00	550	550.00
49	Permanent Pandhal structure	Ha	4	All Blocks	26	104.00	26	104.00	26	104.00	26	104.00	26	104.00	130	520.00
XIV	**Special interventions**															
50	Farm deficiency correction	Ha	0.04	All Blocks	1800	72.00	1950	78.00	2050	82.00	2200	88.00	2300	92.00	10300	412.00
51	Promotion of Roof top Garden/ Potager garden Kit	No	0.005	All Blocks	60	0.30	70	0.35	80	0.40	90	0.45	100	0.50	400	2.00
52	Banana Bunch Sleeve	Ha	0.25	B7,B9	150	37.50	150	37.50	150	37.50	0	0.00	0	0.00	450	112.50
53	AESA based IPM in fruits and vegetables Pheramone trap	Ha	0.04	All Blocks	1000	40.00	1000	40.00	1000	40.00	1000	40.00	1000	40.00	5000	200.00

Sl. No.	Interventions	Unit	Unit cost	Block Covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
54	AESA Based IPM in fruits and vegetables Yellow sticky trap	Ha	0.04	All Blocks	1000	40.00	1000	40.00	1000	40.00	1000	40.00	1000	40.00	5000	200.00
XV	**Post Harvest Management**															
55	Pack house (9m X 6m)	1 No	4	All Blocks	26	104.00	29	116.00	32	128.00	36	144.00	39	156.00	162	648.00
56	Pre cooling unit 6 mt	1 No	25	B3,B8,B2,B7	4	100.00	4	100.00	4	100.00	4	100.00	4	100.00	20	500.00
XVI	**Development of Farms, Nurseries and Parks**															
57	Developmental activities in new/ exsisting state Horticultural farm, Keelapalur	No	25	B4,B10	0	0.00	0	0.00	1	25.00	1	25.00	0	0.00	2	50.00
XVII	**Mechanization - Machineries, Equipments & Tools**															
58	Power tiller/Tractor/Minitractor	Nos	1	All Blocks	10	10.00	10	10.00	10	10.00	10	10.00	10	10.00	50	50.00
59	Manual Sprayer-Knapsack/Foot operated Sprayer	Nos	0.12	B1,B6,B9,B4, B5,B10	6	0.72	6	0.72	6	0.72	6	0.72	6	0.72	30	3.60
60	Fruit Plucker, Tree pruners, Fruit Harvester, Fruit Graders, Track Trolley, Nursery Media Filling Machine, Power operated horticulture tools for pruning, budding, grating, shearing etc.	No	2.5	B1,B6,B9,B10 ,B4,B5	6	15.00	0	0.00	0	0.00	0	0.00	6	15.00	12	30.00
61	Mulch laying machine	No	0.7	All Blocks	10	7.00	4	2.80	4	2.80	4	2.80	4	2.80	26	18.20
62	Hand operated sprayer with face mask	Nos	0.025	B1,B6,B9,B4, B5,B10	60	1.50	60	1.50	60	1.50	60	1.50	60	1.50	300	7.50
63	Power operated sprayer	Nos	0.05	B1,B6,B9,B4, B5,B10	60	3.00	60	3.00	60	3.00	60	3.00	60	3.00	300	15.00

Sl. No.	Interventions	Unit	Unit cost	Block Covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
64	Plastic crates for vegetable & fruits handling	No of sets containing 10crates	0.075	B1,B6,B9,B4, B5,B10	30	2.25	30	2.25	30	2.25	30	2.25	30	2.25	150	11.25
65	Turmeric Boiler		2.5	B1,B6,B9,B4, B5,B10	6	15.00	0	0.00	0	0.00	0	0.00	6	15.00	12	30.00
66	Turmeric Polishing Machine		0.88	B1,B6,B9,B4, B5,B10	6	5.28	0	0.00	0	0.00	0	0.00	6	5.28	12	10.56
67	Oil engine	No	0.15	B1,B6,B9,B4, B5,B10	30	4.50	30	4.50	30	4.50	30	4.50	30	4.50	150	22.50
68	5 layered Polythene spread sheets for drying horticulture produce	No	0.16	B1,B6,B9,B4 ,B5,B10	60	9.60	60	9.60	60	9.60	60	9.60	60	9.60	300	48.00
XVIII	**Water / Irrigation Management**															
69	Micro Irrigation - Drip	Ha	1.12	All Blocks	1450	1624.00	1700	1904.00	1800	2016.00	1900	2128.00	2000	2240.00	8850	9912.00
70	Sprinkler	No	0.195	All Blocks	70	13.65	90	17.55	110	21.45	110	21.45	110	21.45	490	95.55
71	Water harvesting system for individuals	No	1.5	All Blocks	106	159.00	106	159.00	106	159.00	106	159.00	106	159.00	530	795.00
XIX	**Capacity Building**															
72	Training to farmers within the State. 2 days Rs.1000/farmer/day	No	0.02	All Blocks	64	1.28	64	1.28	64	1.28	64	1.28	64	1.28	320	6.40
73	Training to farmers outside the state. 30 farmers/Batch	No	0.105	All Blocks	10	1.05	10	1.05	10	1.05	10	1.05	10	1.05	50	5.25
74	Exposure visit to farmers for 5 days. Rs.1000/farmer/day	No	0.05	All Blocks	110	5.50	110	5.50	110	5.50	110	5.50	110	5.50	550	27.50
75	Training to farmers at HTC	No	0.0025	All Blocks	70	0.18	70	0.18	70	0.18	70	0.18	70	0.18	350	0.88

Sl. No.	Interventions	Unit	Unit cost	Block Covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
76	Exposure visit of farmers outside India	No	4	All Blocks	16	64.00	16	64.00	16	64.00	16	64.00	16	64.00	80	320.00
77	Training to staff outside the state / Batch of 5 members	No	0.04	All Blocks	10	0.40	10	0.40	10	0.40	10	0.40	10	0.40	50	2.00
78	Training to staff outside India	No	6	All Blocks	6	36.00	10	60.00	6	36.00	6	36.00	0	0.00	28	168.00
79	District level seminar	No	2	All Blocks	10	20.00	0	0.00	0	0.00	0	0.00	4	8.00	14	28.00
80	Computerization & governance	No	1	B5	0	0.00	0	0.00	1	1.00	0	0.00	0	0.00	1	1.00
81	Publicity and Documentation	No	0.5	All Blocks	14	7.00	14	7.00	14	7.00	14	7.00	14	7.00	70	35.00
XX	**Crop Insurance and Risk Mitigating schemes**															
82	Crop Insurance	Ha	0.025	All Blocks	950	23.75	1180	29.50	1435	35.88	1690	42.25	1970	49.25	7225	180.63
	Grand Total					**9599.31**		**11039.88**		**12107.45**		**13000.63**		**14137.01**		**59884.26**

B1- Bargur,B2- Hosur, B3-Karimangalam, B4-Kaveripattinam, B5-Krishnagiri, B6-Mathur,B7- Shoolagiri,B8- Thally, B9-Uthangarai, B10-Veppanapally

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 utilization of inputs such as seeds, fertilizers and irrigation water. The agricultural mechanization is the only way out to face the challenge of farm worker's shortage. Thus the ultimate objective of Agricultural Mechanization Strategies in developing countries is to help increase the welfare of farm households and create positive dynamics and opportunities for economic growth in rural areas.

Strategies

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

- Promotion of appropriate technologies and to set up farm machinery banks in identified villages
- Provision of financial assistance on per hectare basis to the beneficiaries hiring machinery/equipments from custom hiring centres
- Increases the tractor hire services in the farms of small and marginal farmers
- Strengthening of Minor irrigation for the rainfed and hard rock areas. It would establish through construction of open well, tube wells and Bore wells. Revitalisation of wells by side boring and blasting in hard rock areas.
- Introduction of renewable energy in the villages which would replace other fuels. Also attractive for water pumping applications in remote areas. Hence solar operated photovoltaic water pumping system provides better sustainable alternative option to fulfill irrigation requirement of agriculture.
- Strengthening of communication and information facilities in order to disseminate the information in rural areas
- 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 training to AED engineers on post-harvest techniques and bio energy

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

The details of budget requirement for each intervention across the blocks is ₹. **6005.49** lakhs for five years

Implementing agency

The projects will be implemented by the Department of Agricultural Engineering.

Table 4.20 Budget requirement for Agricultural Engineering

(₹ In lakhs)

Sl. No	Interventions	Unit	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Demonstration of Agricultural Machinery	No's/Ha	0.04	All Blocks	10.00	0.40	10.00	0.40	10.00	0.40	10.00	0.40	10.00	0.40	50.00	2.00
2	Training of farmers	No's/Ha	0.04	All Blocks	20.00	0.80	20.00	0.80	20.00	0.80	20.00	0.80	20.00	0.80	100.00	4.00
3	Training of Rural Youth in workshops	No's/Ha	0.04	All Blocks	20.00	0.80	20.00	0.80	20.00	0.80	20.00	0.80	20.00	0.80	100.00	4.00
4	Demonstration of Post Harvest Technologies	No's/Ha	0.04	All Blocks	5.00	0.20	5.00	0.20	5.00	0.20	5.00	0.20	5.00	0.20	25.00	1.00
5	Financial assistance for Post Harvest Equipment	No's/Ha	4.00	All Blocks	2.00	8.00	2.00	8.00	2.00	8.00	2.00	8.00	2.00	8.00	10.00	40.00
6	Tractor (8-15 PTO HP)	No's/Ha	3.00	All Blocks	10.00	30.00	12.00	36.00	12.00	36.00	10.00	30.00	12.00	36.00	56.00	168.00
7	Tractor (15-20 PTO HP)	No's/Ha	4.00	All Blocks	20.00	80.00	20.00	80.00	20.00	80.00	20.00	80.00	20.00	80.00	100.00	400.00
8	Tractor (Above 20-40 PTO HP)	No's/Ha	6.00	All Blocks	5.00	30.00	5.00	30.00	5.00	30.00	5.00	30.00	5.00	30.00	25.00	150.00
9	Tractor (40-70 PTO HP)	No's/Ha	8.50	All Blocks	5.00	42.50	5.00	42.50	5.00	42.50	5.00	42.50	5.00	42.50	25.00	212.50
10	Power Tiller (8 BHP & above)	No's/Ha	1.75	All Blocks	40.00	70.00	40.00	70.00	40.00	70.00	40.00	70.00	40.00	70.00	200.00	350.00
11	Self Propelled Rice Transplanter (4 rows)	No's/Ha	2.50	All Blocks	2.00	5.00	2.00	5.00	2.00	5.00	2.00	5.00	2.00	5.00	10.00	25.00
12	Self Propelled Rice Transplanter (Above 4-8 rows)	No's/Ha	16.00	All Blocks	2.00	32.00	1.00	16.00	1.00	16.00	1.00	16.00	1.00	16.00	6.00	96.00
13	Reaper cum Binder	No's/Ha	3.00	All Blocks	5.00	15.00	5.00	15.00	5.00	15.00	5.00	15.00	5.00	15.00	25.00	75.00
14	Post Hole Digger / Augur	No's/Ha	0.63	All Blocks	1.00	0.63	1.00	0.63	1.00	0.63	1.00	0.63	1.00	0.63	5.00	3.15
15	MB Plow	No's/Ha	0.30	All Blocks	2.00	0.60	2.00	0.60	2.00	0.60	2.00	0.60	2.00	0.60	10.00	3.00
16	Disc Plow	No's/Ha	0.30	All Blocks	3.00	0.90	3.00	0.90	3.00	0.90	3.00	0.90	3.00	0.90	15.00	4.50
17	Cultivator	No's/Ha	0.20	All Blocks	5.00	1.00	5.00	1.00	5.00	1.00	5.00	1.00	5.00	1.00	25.00	5.00
18	Rotopuddler	No's/Ha	1.00	All Blocks	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	50.00	50.00
19	Post Hole Digger	No's/Ha	0.80	All Blocks	2.00	1.60	2.00	1.60	2.00	1.60	2.00	1.60	2.00	1.60	10.00	8.00

Sl. No	Interventions	Unit	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
20	Tractor drawn reaper	No's/Ha	0.95	All Blocks	2.00	1.90	2.00	1.90	2.00	1.90	2.00	1.90	2.00	1.90	10.00	9.50
21	Power Weeder (engine operated below 2 BHP)	No's/Ha	0.25	All Blocks Except B1	20.00	5.00	20.00	5.00	20.00	5.00	20.00	5.00	20.00	5.00	100.00	25.00
22	f. Chaff Cutter (Operated by engine / electric motor below 3 hp and by power tiller and tractor of below 20 BHP tractor)	No's/Ha	0.25	All Blocks	20.00	5.00	20.00	5.00	20.00	5.00	20.00	5.00	20.00	5.00	100.00	25.00
23	Disc Plow	No's/Ha	0.40	All Blocks	2.00	0.80	2.00	0.80	2.00	0.80	2.00	0.80	2.00	0.80	10.00	4.00
24	Cultivator	No's/Ha	0.25	All Blocks	5.00	1.25	5.00	1.25	5.00	1.25	5.00	1.25	5.00	1.25	25.00	6.25
25	Rotavator	No's/Ha	0.80	All Blocks	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	10.00	8.00	50.00	40.00
26	Post Hole digger	No's/Ha	0.90	All Blocks	2.00	1.80	2.00	1.80	2.00	1.80	2.00	1.80	2.00	1.80	10.00	9.00
27	Power Weeder (engine operated above 2 BHP)	No's/Ha	0.70	All Blocks	20.00	14.00	20.00	14.00	20.00	14.00	20.00	14.00	20.00	14.00	100.00	70.00
28	Multi crop Threshers	No's/Ha	3.00	All Blocks	5.00	15.00	5.00	15.00	5.00	15.00	5.00	15.00	5.00	15.00	25.00	75.00
29	Paddy Thresher	No's/Ha	1.90	All Blocks	5.00	9.50	5.00	9.50	5.00	9.50	5.00	9.50	5.00	9.50	25.00	47.50
30	f.Chaff Cutter (Operated by engine / electric motor above 3-5 hp and by power tiller and tractor of below 35 BHP tractor)	No's/Ha	0.40	All Blocks	20.00	8.00	20.00	8.00	20.00	8.00	20.00	8.00	20.00	8.00	100.00	40.00
31	MB Plow	No's/Ha	1.00	All Blocks	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	10.00	10.00
32	Disc Plow	No's/Ha	0.60	All Blocks	2.00	1.20	2.00	1.20	2.00	1.20	2.00	1.20	2.00	1.20	10.00	6.00
33	Cultivator	No's/Ha	0.30	All Blocks	5.00	1.50	5.00	1.50	5.00	1.50	5.00	1.50	5.00	1.50	25.00	7.50
34	Rotavator	No's/Ha	0.95	All Blocks	30.00	28.50	30.00	28.50	30.00	28.50	30.00	28.50	30.00	28.50	150.00	142.50
35	Zero till seed cum fertilizer drill	No's/Ha	0.70	All Blocks	2.00	1.40	2.00	1.40	2.00	1.40	2.00	1.40	2.00	1.40	10.00	7.00
36	Post Hole digger	No's/Ha	1.05	All Blocks	2.00	2.10	2.00	2.10	2.00	2.10	2.00	2.10	2.00	2.10	10.00	10.50
37	Thresher/Multi Crop threshers	No's/Ha	4.00	All Blocks	15.00	60.00	15.00	60.00	15.00	60.00	15.00	60.00	15.00	60.00	75.00	300.00

Sl. No	Interventions	Unit	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
38	Coconut Frond chopper	No's/Ha	1.05	All Blocks	2.00	2.10	2.00	2.10	2.00	2.10	2.00	2.10	2.00	2.10	10.00	10.50
39	Drum Seeder (Above 4 Row)	No's/Ha	0.150	All Blocks	10.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	1.50
40	Tree climber	No's/Ha	0.07	All Blocks	10.00	0.70	10.00	0.70	10.00	0.70	10.00	0.70	10.00	0.70	50.00	3.50
41	Manual sprayer: Knapsack/foot operated sprayer	No's/Ha	0.015	All Blocks	20.00	0.30	20.00	0.30	20.00	0.30	20.00	0.30	20.00	0.30	100.00	1.50
42	Powered Knapsack Sprayer/Power operated Taiwan sprayer (capacity 8-12 lts)	No's/Ha	0.060	All Blocks	10.00	0.60	10.00	0.60	10.00	0.60	10.00	0.60	10.00	0.60	50.00	3.00
43	Powered Knapsack Sprayer/Power operated Taiwan sprayer (capacity above 12-16 lts)	No's/Ha	0.080	All Blocks	10.00	0.80	10.00	0.80	10.00	0.80	10.00	0.80	10.00	0.80	50.00	4.00
44	Powered Knapsack Sprayer/Power operated Taiwan sprayer (capacity above 16 lts)	No's/Ha	0.10	All Blocks	10.00	1.00	10.00	1.00	10.00	1.00	10.00	1.00	10.00	1.00	50.00	5.00
45	Establishment of Farm Machinery Banks for Custom Hiring	No's/Ha	28.00	B2,B3, B4,B7	5.00	140.00	5.00	140.00	5.00	140.00	5.00	140.00	5.00	140.00	25.00	700.00
46	Promotion of Farm Mechanization in Selected Villages	No's/Ha	11.50	All Blocks	2.00	23.00	2.00	23.00	2.00	23.00	2.00	23.00	2.00	23.00	10.00	115.00
47	Financial assistance for promotion of Mechanized Farming operations	No's/Ha	0.04	All Blocks	1000.00	40.00	1000.00	40.00	1000.00	40.00	1000.00	40.00	1000.00	40.00	5000.00	200.00
48	Purchase of Tractors for AED	No's/Ha	8.00	All Blocks	2.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	16.00
49	Purchase of Bull Dozers for AED	No's/Ha	80.00	B2,B3	2.00	160.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	160.00
50	Purchase of Multi Crop Thresher for	No's/Ha	3.50	B2,B3	2.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	7.00

Sl. No	Interventions	Unit	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	AED															
51	Purchase of Resitivity Metres for AED	No's/Ha	3.00	B3	1.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	3.00
52	Purchase of Electrical Loggers for AED	No's/Ha	7.50	B3	1.00	7.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	7.50
53	5 hp	No's/Ha	3.75	All Blocks	40.00	150.00	40.00	150.00	40.00	150.00	40.00	150.00	40.00	150.00	200.00	750.00
54	7.5 hp	No's/Ha	5.30	All Blocks	20.00	106.00	20.00	106.00	20.00	106.00	20.00	106.00	20.00	106.00	100.00	530.00
55	10 hp	No's/Ha	6.75	All Blocks	20.00	135.00	20.00	135.00	20.00	135.00	20.00	135.00	20.00	135.00	100.00	675.00
56	upto 400sq.ft	No's/Ha	4.25	All Blocks	5.00	21.25	5.00	21.25	5.00	21.25	5.00	21.25	5.00	21.25	25.00	106.25
57	400-600sq.ft	No's/Ha	6.50	All Blocks	5.00	32.50	5.00	32.50	5.00	32.50	5.00	32.50	5.00	32.50	25.00	162.50
58	Computer & its accessories	No's/Ha	0.80	B2,B3	0.00	0.00	0.00	0.00	3.00	2.40	0.00	0.00	0.00	0.00	3.00	2.40
59	Tablet (Tab)	No's/Ha	0.25	All Blocks	0.00	0.00	7.00	1.75	3.00	0.75	0.00	0.00	0.00	0.00	10.00	2.50
60	Xerox machine	No's/Ha	1.50	B2,B3	0.00	0.00	0.00	0.00	0.00	0.00	3.00	4.50	0.00	0.00	3.00	4.50
61	Mecanized row crop cultivation- Pilot mechanization Demonstration	No's/Ha	0.04	B2,B3	0.00	0.00	2.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.08
62	Chain saw/ Wheel barrow/ Mango grader/ planter and other suitable self propelled machineries and equipments for horticulture Crops	No's/Ha	1.00	All Blocks	0.00	0.00	4.00	4.00	4.00	4.00	6.00	6.00	4.00	4.00	18.00	18.00
63	Aluminium Ladder/ Ladder	No's/Ha	0.20	B2,B4, B7,B8	0.00	0.00	2.00	0.40	2.00	0.40	2.00	0.40	1.00	0.20	7.00	1.40
64	Plucker	No's/Ha	0.02	B2,B4, B7,B8	0.00	0.00	4.00	0.08	2.00	0.04	2.00	0.04	1.00	0.02	9.00	0.18
65	Dehydration unit/ Pricking Machine/ Humidifier (for all type of Horticulture / Food grain / Oil seeds crop)	No's/Ha	1.00	B2,B4, B7,B8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	4.00	4.00	4.00
66	Packing Machines (for all types of Horticulture / Food	No's/Ha	3.00	B2,B4, B7,B8	0.00	0.00	4.00	12.00	6.00	18.00	4.00	12.00	4.00	12.00	18.00	54.00

Sl. No	Interventions	Unit	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	grain / Oil seeds crop)															
67	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)	No's/Ha	1.20	B2,B4, B7,B8	0.00	0.00	6.00	7.20	6.00	7.20	4.00	4.80	0.00	0.00	16.00	19.20
68	All types of Boiler/ Steamer/ Dryer solar (for all type of Horticulture / Food grain / Oil seeds crop)	No's/Ha	2.00	B2	0.00	0.00	0.00	0.00	1.00	2.00	0.00	0.00	0.00	0.00	1.00	2.00
69	Training of AED Engineers on " Agricultural Processing" and " Bio-Energy"	No's/Ha	0.04	B2	0.00	0.00	2.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.08
	Total					**1344.63**		**1165.22**		**1174.42**		**1161.37**		**1159.85**		**6005.49**

B1- Bargur, B2- Hosur, B3- Kaveripattinam, B4- Kelamangalam, B5- Krishnagiri, B6- Mathur, B7- Shoolagiri, B8- Thally, B9- Uthangarai, B10- Veppanapalli

4.4 AGRICULTURAL MARKETING & AGRIBUSINESS

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

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

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

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

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

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

Strategies

In Krishnagiri district, various agricultural crops *viz*., paddy, maize, sorghum, cumbu, finger millet, red gram, green gram, cowpea, horse gram, groundnut, sunflower are grown by farmers. Drying is the major problem during rainy seasons since the harvesting of major agricultural crops coincides with rainy seasons (November and December). Many of the farmers are not having tarpaulin sheet to cover the harvested produce during rainy season. So, the harvested produces are spoiled due to wetting and it affects the quality of the produce.In view of expanding retail trade, organizing the farmers and equipping the commodity groups can facilitate aggregation of produce and also enhance the bargaining power of the farmers. The FPO's can move directly to the markets without any intermediary. Adoption of technology both in the production and post-harvest management which is expected to flow from the organized retailers and other research institutions can be efficient through farmers' commodity groups.

Components

- Strengthening of Uzhavar sandhais and Regulated market through construction of construction of drying yard in all the blocks
- Promotion of Commodity Groups and Market Information
- Formation of FPO / Strengthening of Existing Commodity Groups in Kaverippattinam, Uthangarai and Hosur blocks
- Provision of Market Access and Market Activities in Krishnagiri, Kaverippattinam and Bargur blocks
- Supply of plastic crates and Tarpaulin in all the blocks
- Establishment of pulp industry in Krishnagiri, Kaverippattinam and Bargur blocks
- Capacity building building through exposure isits within the state and inter state in all the blocks.
- Supply of sloar drier in Kaverippattinam block

Budget

It is proposed to incur ₹.**12088.72** lakhs 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 4.21 Budget for strengthening of Agricultural Marketing and Agri-Business in Krishnagiri 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
	Strengthening of Uzhavar Sandhai and Regulated Market															
1	Drying Yard	Nos	4.5	All Blocks	2	9	10	45	10	45	10	45	10	45	42	189
	Formation of FPO / Strengthening of Existing Commodity Groups															
2	FPO	Nos	55	B2, B6, B7	11	605	4	220	0	0	0	0	0	0	15	825
	Provision of Market Access and Market Activities	Nos	0.5													
3	Secatures for1000farmersper year	Nos	0.0035	B1, B2, B3	3000	11	3000	11	3000	11	3000	11	3000	11	15000	53
4	Bush cutter fo500 farmers per year	Nos	0.135	B1, B2, B3	1500	203	1500	203	1500	203	1500	203	1500	203	7500	1013
5	Petrol operated Intercultivator /Rotary weeder for FIG groups	Nos	0.4	B1, B2, B3	150	60	150	60	150	60	150	60	150	60	750	300
6	Plastic crates	Nos	0.0035	All Blocks	20000	70	20000	70	20000	70	20000	70	20000	70	100000	350
7	Power sprayer for 100 FIG groups(2 per FIG)	Nos	0.26	B1, B2, B3	150	39	150	39	150	39	150	39	150	39	750	195
8	Prunning saw for 500 farmers(1 per farmer)peryear	1 No	0.0075	B1, B2, B3	3	0	1500	11	1500	11	1500	11	1500	11	6003	45
9	Reefer vehicle	0	35	B6, B8, B9	0	0	1	35	0	0	0	0	2	70	3	105
10	Tarpaulin	Nos	0.13	All Blocks	1000	130	1000	130	1000	130	1000	130	1000	130	5000	650

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
11	Vending Cart	Nos	5	B5, B6, B9	3	15	1	5	0	0	1	5	1	5	6	30
	Post-Harvest Infrastructure and Machinaries															
12	Establishment of pulp industry	1 No.	400	B1, B2, B3	3	1200	3	1200	3	1200	3	1200	3	1200	15	6000
13	Mango Harvest Net	1 No.	0.008	B1, B2, B3, B6	800	6	800	6	800	6	800	6	800	6	4000	32
14	Processing and Value Addition centre for Tamarind	1 No.	50	B10		0		0	1	50		0		0	1	50
15	Solar Dryer	5	15	B2		0	1	15		0		0	15	225	16	240
16	Supply chain Management-Upgradation of existing regulated market(Ripening chamber,Controlled atmosphere with conventional bin storage,Pack house,Cold Storage IQF,Collection van,E Auction Hall,Refeer . .	1 No.	261.1	All blocks except B5, B6, B9	0	0	7	1828	0	0	0	0	0	0	7	1828
17	Tomato processing vending machine	1 No.	40	B8, B10	0	0	2	80	0	0	0	0	0	0	2	80
	Capacity building Programme															
18	Exposure Visits - within state	1 No.	1.5	All Blocks	10	15	10	15	10	15	10	15	10	15	50	75

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
19	Exposure Visits - outside state - 3 days	1 No.	0.5	All Blocks	10	5	10	5	10	5	10	5	10	5	50	25
20	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	1 No.	0.1	All Blocks	10	1	10	1	10	1	10	1	10	1	50	5
	Total					**2368.42**		**3978.35**		**1845.65**		**1800.65**		**2095.65**		**12088.72**

B1-Krishnagiri, B2-Kaveripattinam, B3-Bargur, B4-Veppanapalli, B5-Mathur, B6-Uthangarai, B7-Hosur, B8-Shoolagiri, B9- Thally, B10-Kelamangalam

4.5 SEED CERTIFICATION 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 of laboratory facilities in all the blocks
2. Strengthening of communication and networking facilities in all the blocks
3. Capacity building for training to seed grower for quality seed production in all the blocks
4. Infrastructure and assets by establishment of office premises in all the blocks

Expected outcome

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

Budget

The budget requirement for fulfilling those interventions is ₹**170.02** lakhs. The details of budget requirement for each intervention are shown in Table.

Implementingagency

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

Table 4.22 Budget requirement for Seed certification and Organic Certification

(₹in lakhs)

Sl. No	Interventions	Unit	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
I	**Strengthening of Seed Certification lab**															
	Blower, Conductivity meter, Dehuller/Scarifier, Dehumidifier Air Conditioner, Digital moisture meter, Dunnage, Fabricated display Racks ,Geaser, Generator, Heater,Hot air oven,Humidifier,Incubator,Induction stove,Microscope,Moisture meter,Packing machine,R. O system,Sample racks,Seed Grinder,Sieve,Thermohydro meter,Dunnage,Trolley for carriages,Working chair,Working table, Miscellaneous,	nos	13.36	All Blocks	1.00	13.36	0.00	0.00	0.00	0.00	1.00	13.36	0.00	0.00	2.00	26.72
II	**Strengthening of communication and networking facilities**															
	Computer accessories	No's	0.75	All Blocks	10.0	7.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	7.50
III	**Capacity Building**															
	Training to seed grower for quality seed production	500/participant	0.20	All Blocks	0.00	0.00	10.00	2.00	12.00	2.40	15.00	3.00	17.00	3.40	54.00	10.80
IV	**Infrastructure and assets**															
	Strengthening of office premises by constructing new buildings	m2	0.08	All Blocks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1500	125.00	1500	125.00
	Total					**20.86**		**2.00**		**2.40**		**16.36**		**128.40**		**170.02**

Bargur-B1,Hosur-B2, Kaveripattinam-B3, Kelamangalam- B4, Krishnagiri-B5, Mathur-B6, Shoolagiri-B7, Thally-B8, Uthagarai-B9, Veppanapalli-B10

4.6 ANIMAL HUSBANDRY

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

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

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

1. Increasing the availability of fodder through field level interventions
2. 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. To overcome these issues the following field level interventions are proposed to improve the fodder availability.

- Establishment of vermicomposting unit in all the blocks
- Distribution of Azolla trays in all the blocks
- Fodder plot development in all the blocks

Increasing the availability of fodder by strengthening farm infrastructure

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

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

- Establishment of Vermicomposting unit at Kaverippattinam block
- Establishment of farm protection cover at Kaverippattinam block
- Construction of silo pit and overhead tanks at Kaverippattinam block
- Establishment of feed mixing units at Kaverippattinam block
- Installation of rain gun and sprinklers at Kaverippattinam block
- Procurement of agri inputs at Kaverippattinam block

Livestock breeding management

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

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

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

semen are some of the modern scientific tools which have been proposed to be employed for effective breeding management to enhance the livestock fertility and productivity. The following interventions will help to improve livestock breeding management, such as

- CIDR for all the blocks
- Establishment and distribution of sex-sorted semen facility
- Establishment of IVF lab at Kaverippattinam block
- Establishment of LN2 and embryo transfer lab at Kaverippattinam block
- Oestrous synchronization at Kaverippattinam block

Livestock health

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

- Animal quarantine facility in govt. farm to prevent disease outbreak at Kaverippattinam block

Improving the livestock productivity

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

- Distribution of sheep, goat, buffalo, piggery, poultry units in all the blocks

- Establishment of modern poultry, rabbit , piggery, sheep, goat and bull shed in all the blocks
- Popularizing quail rearing in all the blocks
- Integrated farming in all the blocks
- Development of native chick farm in all the blocks
- Establishment of disposal pits for poultry unit in all the blocks

Improving the service delivery at veterinary institutions

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

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

- Animal identification and traceabilityin all the blocks
- Conservation of indigenous breeds in all the 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.

- Establishment of farmers training Centre at Krishnagiri block
- Conducting demonstrations camps and campaigns in all the blocks
- Creating awareness of livestock management to the farmers through training programmes in all the blocks

Overall budget

To implement the identified major themes, an estimated budget of Rs. **12841.85** lakhs is required.

Expected outcome

The implementation of the project will increase the milk production in the district. This will indirectly improve the profitof the farmer.

Table 4.23 Budget outlay for animal husbandry

(Rs. in lakhs)

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Increasing the Availability of Fodder through Field level Interventions															
1	Establishment of Vermicomposting unit (single bed)	Nos	0.05	All Blocks	335	16.75	335	16.75	335	16.75	335	16.75	335	16.75	1675	83.75
2	Fodder production to the farmers by Hydrophonic methods	Nos	0.1	All Blocks	335	33.50	335	33.50	335	33.50	335	33.50	335	33.50	1675	167.50
3	Distrbution of Azolla trays	Nos	0.03	All Blocks	336	10.08	336	10.08	336	10.08	336	10.08	336	10.08	1680	50.40
4	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
5	Meikal land development (incl infrastructure development)	acre	5.7	All Blocks	20	114.00	20	114.00	20	114.00	20	114.00	20	114.00	100	570.00
6	Distribution of Chaff Cutter to farmers	Nos	0.2	All Blocks	325	65.00	325	65.00	325	65.00	325	65.00	325	65.00	1625	325.00
7	Distribution of Grass Cutter to farmers	Nos	0.15	All Blocks	325	48.75	325	48.75	325	48.75	325	48.75	325	48.75	1625	243.75
8	Developemnt of Seed Production plots	Nos	500	B3	1	500.00	0	0.00	0	0.00	0	0.00	0	0.00	1	500.00
9	Distribution of Raingun to Livestock farmers	Nos	0.25	All Blocks	76	19.00	76	19.00	76	19.00	76	19.00	76	19.00	380	95.00
10	Distribution of sprinkler for fodder production	Nos	0.15	All Blocks	201	30.15	201	30.15	201	30.15	201	30.15	201	30.15	1005	150.75
	Increasing the Availability of Fodder by Strengthening Farm Infrastructure															
11	Establishment of Vermicompost unit (10 beds) at Farms	Nos	4	B2	10	40.00	10	40.00	10	40.00	10	40.00	10	40.00	50	200.00

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
12	Erection of Transformers to improve irrigation facility in Govt.farm	Nos	30	B2	0	0.00	1	30.00	0	0.00	0	0.00	0	0.00	1	30.00
13	Establishment of Farm Protection Cover (Bio-security wall)	km	5	B2	0	0.00	20	100.00	0	0.00	0	0.00	0	0.00	20	100.00
14	Establishment of Feed mixing/ feed block units	Nos	25	B2	0	0.00	1	25.00	0	0.00	0	0.00	0	0.00	1	25.00
15	Construction of silo Pit for livestock farm	Nos	1	B2	5	5.00	4	4.00	4	4.00	4	4.00	4	4.00	21	21.00
16	Construction of Over Head Tanks/ GLR / Pre-fabricated tanks in farm	Nos	20	B2	0	0.00	2	40.00	0	0.00	0	0.00	0	0.00	2	40.00
17	Drip irrigation for livestock farms	acre	0.6	B2	50	30.00	50	30.00	50	30.00	50	30.00	50	30.00	250	150.00
18	Borewell for livestock farms	Nos	8	B2	2	16.00	2	16.00	2	16.00	2	16.00	2	16.00	10	80.00
19	Installation of Raingun in Govt.farm in cultivated areas	acre	0.4	B2	20	8.00	20	8.00	20	8.00	20	8.00	20	8.00	100	40.00
20	Installation of Sprinkler system in fodder cultivated areas in Govt.farm	acre	0.4	B2	10	4.00	10	4.00	10	4.00	10	4.00	10	4.00	50	20.00
21	Procurement of Agri inputs for Farms	acre	0.15	B2	80	12.00	80	12.00	80	12.00	80	12.00	80	12.00	400	60.00
22	Procurement of Agricultural implements (tractor, trailers, harvesters, ploughs, chaff cutter, grass cutter etc)	Pack	50	B2	1	50.00	1	50.00	1	50.00	1	50.00	1	50.00	5	250.00

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Livestock Breeding Management															
23	CIDR (Controlled Internal Drug Release) for increasing Fertility in Cattle	Nos	0.02	All Blocks	625	12.50	625	12.50	625	12.50	625	12.50	625	12.50	3125	62.50
24	Establishment of Infrastructure facilities for sex-sorting facility	Nos	300	B2	1	300.00	0	0.00	0	0.00	0	0.00	0	0.00	1	300.00
25	Induction of new Genetic Pool	Nos	0.5	B2	50	25.00	50	25.00	50	25.00	50	25.00	50	25.00	250	125.00
26	Establishment of IVF Lab	Nos	300	B2	1	300.00	0	0.00	0	0.00	0	0.00	0	0.00	1	300.00
27	Establishment of Liquid Nitrogen Plant	Nos	500	B2	1	500.00	0	0.00	0	0.00	0	0.00	0	0.00	1	500.00
28	Establishment of Embryo Transfer Lab	Nos	100	B2	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
29	Establishment/ Strengthening of Semen Processing Lab	Nos	25	B2	1	25.00	1	25.00	1	25.00	0	0.00	0	0.00	3	75.00
	Livestock Health															
30	Animal Quarantine Facility in Govt.farm to prevent disease outbreak	Nos	50	B2	1	50.00	0	0.00	0	0.00	0	0.00	0	0.00	1	50.00
	Improving the Livestock Productivity															
31	Distibution of Sheep/Goat units - semi intensive system	Nos	0.6	All Blocks	325	195.00	325	195.00	325	195.00	325	195.00	325	195.00	1625	975.00
32	Distribution of Buffalo units(5 Buffaloes)	Nos	4.5	All Blocks	130	585.00	130	585.00	130	585.00	130	585.00	130	585.00	650	2925.00
33	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
34	Development of	Farm	1	All	25	25.00	25	25.00	25	25.00	25	25.00	25	25.00	125	125.00

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Native chicken farms			Blocks												
35	Establishment of disposal pits for poultry unit	Nos	1	All Blocks	25	25.00	25	25.00	25	25.00	25	25.00	25	25.00	125	125.00
36	Milking Mechine	Nos	0.56	B2	10	5.60	0	0.00	15	8.40	0	0.00	20	11.20	45	25.20
37	Distribution of Piggery units (fattening-5 Nos)	Nos	1.25	All Blocks	20	25.00	20	25.00	20	25.00	20	25.00	20	25.00	100	125.00
38	Establishment of Modern Poultry Shed	Nos	50	B2	1	50.00	2	100.00	2	100.00	2	100.00	2	100.00	9	450.00
39	Establishment of Modern Hatchery Complex	Nos	300	B2	1	300.00	0	0.00	1	300.00	0	0.00	0	0.00	2	600.00
40	Establishment of Modern Dairy/ Bull Shed	Nos	150	B2	1	150.00	0	0.00	0	0.00	1	150.00	0	0.00	2	300.00
41	Establishment of Modern Piggery Shed	Nos	150	B2	1	150.00	0	0.00	1	150.00	0	0.00	1	150.00	3	450.00
42	Establishment of Modern Sheep/Goat Shed	Nos	50	B2	1	50.00	1	50.00	0	0.00	0	0.00	0	0.00	2	100.00
	Improving the Service Delivery at Veterinary Institutions															
43	Deep freezer facility for Storage of vaccines and Medicines	Nos	10	All Blocks	0	0.00	0	0.00	10	100.00	0	0.00	0	0.00	10	100.00
44	Establishment of Mobile Disease Diagnostic Labs	Nos	20	B3	1	20.00	0	0.00	0	0.00	0	0.00	0	0.00	1	20.00
45	Establishment of Mobile Veterinary Units	Nos	20	All Blocks	2	40.00	2	40.00	2	40.00	2	40.00	0	0.00	8	160.00
46	Establishment of surgical theatres at veterinary institution	Nos	30	All Blocks	2	60.00	2	60.00	2	60.00	2	60.00	2	60.00	10	300.00
47	Providing solar lighting panels at veterinary institution	Nos	1	All Blocks	67	67.00	0	0.00	0	0.00	0	0.00	0	0.00	67	67.00

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
48	Package of Modern Veterinary Diagnostic Aids to Veterinary Institutions such as Computerised X rays, Ultrasound, Diathermy etc.	Nos	30	All Blocks	2	60.00	2	60.00	2	60.00	2	60.00	2	60.00	10	300.00
49	Establishment of Ambulance facility for animals	Nos	80	B5	1	80.00	1	80.00	0	0.00	0	0.00	0	0.00	2	160.00
	Livestock Management															
50	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
51	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															
52	Establishment of Farmers training Centre	Nos	200	B5	0	0.00	1	200.00	0	0.00	0	0.00	0	0.00	1	200.00
53	Conducting Demonstrations, Camps and Campaigns	Nos	0.1	All Blocks	398	39.80	398	39.80	398	39.80	398	39.80	398	39.80	1990	199.00
54	Creating awarness of livestock management to the farmers through Training Programmes	Nos	0.1	All Blocks	398	39.80	398	39.80	398	39.80	398	39.80	398	39.80	1990	199.00
	Grand Total					**4351.93**		**2326.33**		**2359.73**		**1916.33**		**1887.53**		**12841.85**

Bargur-B1,Hosur-B2, Kaveripattinam-B3, Kelamangalam- B4, Krishnagiri-B5, Mathur-B6, Shoolagiri-B7, Thally-B8, Uthagarai-B9, Veppanapalli-B10

4.7 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,

- Milk storage tanks of various capacities in all the blocks
- Milk tankers in all the blocks
- Milk pumps in all the blocks
- Processing equipment’s in all the blocks
- Pasteurizers in all the blocks
- Heaters and chillers in all the blocks

- Washer and conveyors in all the blocks
- Pipes and fittings in all the blocks
- Cleaning equipment's in all the blocks
- Electrical installations (UPS, generators, stabilizers, control panel) in all the 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.

- Provision of veterinary medicine in all the blocks
- Fodder development equipment and seed material in all the blocks
- Milk testing equipment's in all the blocks
- Equipment's for artificial insemination in all the blocks
- Milk society buildings and cow shed in all the blocks
- Cryogenic containers in all the blocks
- Weighing machines in all the blocks
- Computer accessories in all the 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.

- Training of personnel of MPCS, Union and federation in all the blocks
- Infertility camps in all the 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

- Parlour structure in all the blocks
- Milk product storage cabinets in all the blocks
- Product billing system in all the 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

- Adulteration detection equipment’s in all the blocks
- Milk testing equipment and laboratory in all the 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

- Dairy processing plants in all the blocks
- Water and effluent treatment plants in all the blocks
- Steam raisning plant in all the blocks
- Fat handling and other dairy equipment's in all the 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

- Construction of dairy farm and skim milk powder plant in all the blocks
- BMC building in all the blocks
- Ware house for dairy products in all the blocks
- Ice cream manufacturing buildings in all the blocks

Budget

The budget requirement for fulfilling the various above interventions is ₹ **17309.25** lakh. The details of budget requirement for each intervention across the blocks are shown in Table.

Implementing agency

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

Table 4.24 Budget requirement for dairy development

(₹in lakhs)

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Enhancing milk storage and milk processing units															
1	Electrical installation like Tranformemr, UPS, Stabilisers, Control Panel MCC etc.,	1	25	All blocks	2	50.00	1	25.00	0	0.00	1	25.00	0	0.00	4	100.00
2	Milk Storage Tanks of various capacities	1	15	All blocks	4	60.00	4	60.00	0	0.00	4	60.00	0	0.00	12	180.00
3	Tub washer, Canwashers, Crate conveyor systems.	1	10	All blocks	0	0.00	4	40.00	0	0.00	2	20.00	0	0.00	6	60.00
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	3	15.00	3	15.00	3	15.00	3	15.00	3	15.00	15	75.00
6	Solar system for water heating	1	2	All blocks	5	10.00	5	10.00	5	10.00	5	10.00	5	10.00	25	50.00
7	Packing Machineries for milk, Butter, Ghee, SMP and Other Milk products	1	18	All blocks	2	36.00	0	0.00	2	36.00	0	0.00	2	36.00	6	108.00
8	Plate Heat type Chillers and pasteurizers	1	10	All blocks	1	10.00	0	0.00	1	10.00	1	10.00	1	10.00	4	40.00
9	Milk Tankers of various capacities	1	25	All blocks	0	0.00	4	100.00	4	100.00	4	100.00	0	0.00	12	300.00
10	Milk Pumps of Vaious capacities	1	0.5	All blocks	10	5.00	10	5.00	10	5.00	10	5.00	10	5.00	50	25.00
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	2	100.00	0	0.00	0	0.00	0	0.00	2	100.00
13	Cleaning In Place equipments with accessories	1	75	All blocks	0	0.00	0	0.00	2	150.00	0	0.00	1	75.00	3	225.00
	Enhancing milk production and milk processing units															
14	Veterinary Medicine	1	2	All blocks	5	10.00	7	14.00	8	16.00	8	16.00	10	20.00	38	76.00

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
15	Two wheeler for AI technician	1	0.5	All blocks	25	12.50	25	12.50	25	12.50	15	7.50	25	12.50	115	57.50
16	Computer system with accessories	1	0.5	All blocks	10	5.00	10	5.00	10	5.00	10	5.00	10	5.00	50	25.00
17	Fodder seed materials	1	0.25	All blocks	20	5.00	20	5.00	30	7.50	20	5.00	20	5.00	110	27.50
18	Fodder development equipments like chaff cutter, Mower etc.,	1	0.2	All blocks	20	4.00	30	6.00	30	6.00	30	6.00	30	6.00	140	28.00
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	1000	35.00	1000	35.00	1000	35.00	1000	35.00	1000	35.00	5000	175.00
21	Electronic weighing scales of various capacities.	1	0.3	All blocks	10	3.00	0	0.00	10	3.00	0	0.00	10	3.00	30	9.00
22	Electronic milk testing equipments	1	1.25	All blocks	50	62.50	50	62.50	50	62.50	50	62.50	50	62.50	250	312.50
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	25	125.00	25	125.00	25	125.00	25	125.00	25	125.00	125	625.00
25	Society Buildings	1	20	All blocks	20	400.00	20	400.00	20	400.00	20	400.00	20	400.00	100	2000.00
26	Cryogenic containers	1	0.35	All blocks	20	7.00	20	7.00	25	8.75	30	10.50	25	8.75	120	42.00
27	Equipments for Artificial Insemination	1	0.5	All blocks	5	2.50	5	2.50	5	2.50	5	2.50	5	2.50	25	12.50
	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	100	20.00	100	20.00	100	20.00	100	20.00	100	20.00	500	100.00
	Marketing structure															
30	Parlour structures	1	5	All blocks	30	150.00	30	150.00	30	150.00	30	150.00	30	150.00	150	750.00

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
31	Milk product storage cabinets	1	0.3	All blocks	50	15.00	100	30.00	100	30.00	100	30.00	100	30.00	450	135.00
32	Product Billing systems	1	0.3	All blocks	100	30.00	100	30.00	100	30.00	100	30.00	100	30.00	500	150.00
	Quality control															
33	Adulteration detection equipments	1	4	All blocks	1	4.00	1	4.00	1	4.00	1	4.00	1	4.00	5	20.00
34	Milk testing equipment and Laboratory.	1	5	All blocks	0	0.00	2	10.00	0	0.00	0	0.00	2	10.00	4	20.00
	Processing															
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	1	500.00	0	0.00	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	Effluement treatment plant	1	100	All blocks	0	0.00	0	0.00	0	0.00	2	200.00	0	0.00	2	200.00
39	Steam raisning plant with accessories	1	100	All blocks	0	0.00	0	0.00	2	200.00	0	0.00	0	0.00	2	200.00
40	Fat handling equipments	1	200	All blocks	0	0.00	1	200.00	0	0.00	2	400.00	0	0.00	3	600.00
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
	Development for Dairy sector															
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	1	200.00	0	0.00	1	200.00	1	200.00	0	0.00	3	600.00
45	Ware house for Dairy consumables	1	200	All blocks	0	0.00	1	200.00	0	0.00	0	0.00	1	200.00	2	400.00
	Grand Total					**1552.75**		**2449.75**		**9520.00**		**2230.25**		**1556.50**		**17309.25**

Bargur-B1, Hosur-B2, Kaveripattinam-B3, Kelamangalam- B4, Krishnagiri-B5, Mathur-B6, Shoolagiri-B7, Thally-B8, Uthagarai-B9, Veppanapalli-B10

4.8 FISHERIES

Fisheries' as a sector is one of the thrust areasin the overall Economic development of the State playing a predominant role in its economic activity byits contribution to direct and indirect employment formore than 11 lakh fishers, contributing food securityto 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 activitiesto modern livelihood activities with the application of science and modern technologies in the field of capturefishing and culture fisheries. It is developing as amajor 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. Enhancement of fisheries production

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**.**

Aquatic plants growing in ponds and lakes are beneficial for fish and wildlife. They provide food, dissolved oxygen, and spawning and nesting habitat for fish and waterfowl. Aquatic plants can trap excessive nutrients and detoxify chemicals. However, dense growths (over 25% of the surface area) of algae and other water plants can seriously interfere with pond recreation and threaten aquatic life. Water plants can restrict swimming, boating, fishing, and other water sports. Biological controls for aquatic vegetation have received

considerable publicity. Several species of fish are herbivorous in that their principal diet is aquatic vegetation. One such species, the grass carp (also known as the white amur or Chinese carp), is being tested in various parts of the country. Hence in this district it is suggested to implement the biological control of aquatic weeds by stocking of Grass Carps in Aquatic Weed Infested water bodies.

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

The interventions are

- Biological Control of Aquatic Weeds by Stocking of Grass Carps in Aquatic Weed Infested water bodies in all blocks except Bargur,Hosur and Mathur block
- Increasing Fishing Efficiency of Inland Fishermen and Fish Farmers
- Enhancement of Fish production in irrigation tanks and Panchayat tanks by stocking fish seeds
- Promotion of quality fish marketing by traditional fishers by providing moped with ice box in Krishnagiri, Kaverippattinam, Veppanapalli, thally and Uthangarai block
- Increasing fish production in existing fish/shrimp farms by providing aerators and infrastructure
- Resource enhancement by ranching of seeds in rivers and sea
- Cage Culture of Cobia and Lobster
- Introduction of short seasonal fish species in existing farm ponds in all blocks except Bargur and Mathur block
- Improvement of hygienic fish marketing by establishing modern fish kiosk TNFDC

- Establishment of GIFT farms and provision of inputs in Krishnagiri, Kaverippattinam, Veppanapalli, and Uthangarai block

II. Infrastructure and assets

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. Hence the construction of fish ponds in this district is recommended for its commercial production.

Also, the fishery wealth in the inshore waters is being overexploited due to excessive fishing pressure on the resources. Artificial reefs help in augmenting the productivity of the marine ecosystem. Artificial reefs act as habitats to marine aquatic organisms enhance the fish production through increased breeding activity and survival of young ones and act as a barrier for bottom trawling operations. Hence it is necessary for the improvement of hygienic fish marketing by establishing modern fish kiosk TNFDC, Establishment of GIFT farms and provision of inputsand establishment of mini lab facilities in government fish farm of this district.

The interventions are

1. Establishment of mini lab facilities in Government fish farms in Uthangarai and Krishnagiri blocks
2. Establishment of Aqua Eco Tourism center at Krishnagiri block
3. Establishment of fish culture ponds and provision of inputs in Krishnagiri and Kaverippattinam block
4. Establishment of District Extension and Training centres at Krishnagiri block

III. Capacity Building

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

IV. Additional schemes

- Improvement of Hygienic fish marketing by Establishing Modern Fish Market
- Improvement of GIFT Tilapia Government Fish Farm in Krishnagiri block
- Promotion Hygienic Fish handling in Inland by Establishing Flake ice plant
- Establishment of Ornamental Fish Aquarium
- Training of farmers to production in Kaverippattinam, Uthangarai, Hosur, Kelamangalm, Thally and Mathur block.

Budget

The budget requirement for fulfilling the above interventions is ₹ **1163.60** lakhs.

Implementing agency

Department of Fisheries will be implementing the project

Table 4.25 Budget requirement for fisheries development

(₹in lakhs)

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Enhancement of fisheries															
1	Up gradation of Fishing Efficiency of Inland Fishermen of Tamil Nadu.	Nos	0.15	Krishnagiri, Kaveripattinam, Uthangarai, Hosur, Thally	75	11.25	70	10.50	65	9.75	70	10.50	45	6.75	325	48.75
2	Propagation of Fish Culture in Multi-purpose farm ponds in Tamil Nadu	0	7.5	Krishnagiri, Kaveripattinam, Veppanapalli, Barugur, Uthangarai, Shoolagiri, Thally	1.6	12.00	1.6	12.00	1.6	12.00	1.6	12.00	1.6	12.00	8	60.00
3	Promotion of quality fish marketing by traditional fishers by providing mobbed with icebox	Nos	0.5	Krishnagiri, Kaveripattinam, Uthangarai, Hosur, Thally	18	9.00	18	9.00	18	9.00	18	9.00	18	9.00	90	45.00
4	Promotion of Ornamental fish culture	0	1	Krishnagiri, Kaveripattinam	1	1.00	1	1.00	0	0.00	0	0.00	0	0.00	2	2.00
5	Promotion of hygienic fish handling in fishing Harbours and fish landing centers	0	20	Krishnagiri, Kaveripattinam	1	20.00	1	20.00	0	0.00	0	0.00	0	0.00	2	40.00
6	Promotion Hygenic Fish handling in Inland by Establishing Flake ice plant	0	50	Krishnagiri	0	0.00	0	0.00	1	50.00	0	0.00	0	0.00	1	50.00
7	Introduction of short seasonal fish species in existing farm ponds	ha	0.4	Krishnagiri,Kaveripattinam, Veppanapalli,Barugur, Uthangarai, Hosur, Shoolagiri,Thally	1.8	0.72	1.8	0.72	1.8	0.72	1.8	0.72	1.8	0.72	9	3.60
8	Increasing fishing efficiency of inland fishermen and fish	Nos	0.15	Krishnagiri, Kaveripattinam, Uthangarai,	68	10.20	68	10.20	68	10.20	68	10.20	68	10.20	340	51.00

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	farmers			Hosur, Shoolagiri, Thally												
9	Improvement of hygenic fish handling by providing ice boxes	0	0.15	Krishnagiri, Kaveripattinam, Uthangarai, Hosur, Shoolagiri, Thally	86	12.90	86	12.90	51	7.65	51	7.65	41	6.15	315	47.25
10	Improvement of Hygenic fish marketing by Establishing Mordern Fish Market	0	120	Krishnagiri	1	120.00	0	0.00	0	0.00	0	0.00	0	0.00	1	120.00
11	Improvement of hygienic fish marketing by establishing modern fish kiosk TNFDC	0	10	Krishnagiri, Kaveripattinam	0	0.00	1	10.00	0	0.00	1	10.00	2	20.00	4	40.00
12	Establishment of GIFT farms and provision of inputs	0	14	Krishnagiri, Kaveripattinam, Veppanapalli, Uthangarai	1.3	18.20	1.3	18.20	0.8	11.20	0.8	11.20	0.8	11.20	5	70.00
13	Enhancement of Fish production in irrigation tanks and Panchayat tanks by stocking fish seeds	0	0.02	Krishnagiri, Kaveripattinam, Veppanapalli, Uthangarai, Hosur, Shoolagiri	65	1.30	65	1.30	60	1.20	60	1.20	55	1.10	305	6.10
14	Biological Control of Aquatic Weeds by Stocking of Grass Carps in Aquatic Weed Infested water bodies		0.02	Krishnagiri,Kaveripattinam, Veppanapalli, Uthangarai, Hosur, Shoolagiri, Thally	560	11.20	410	8.20	410	8.20	410	8.20	410	8.20	2200	44.00
	Section Total					**227.77**		**114.02**		**119.92**		**80.67**		**85.32**		**627.70**
	Creation of infrastructure facilities															
15	Establishment of fish culture ponds and provision of inputs	0	7	Krishnagiri, Kaveripattinam, Uthangarai	3.5	24.50	1	7.00	1.5	10.50	1.5	10.50	1.5	10.50	9	63.00

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
16	Establishment of District Extension and Training centres	0	50	Krishnagiri	0	0.00	0	0.00	0	0.00	1	50.00	0	0.00	1	50.00
17	Establishment of Aqua Eco Tourism center	0	100	Krishnagiri	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
	Section Total					**124.50**		**7.00**		**10.50**		**60.50**		**10.50**		**213.00**
	Infrastructure and Assets															
18	Establishment of Ornamental Fish Aquriam	0	50	Krishnagiri	0	0.00	0	0.00	0	0.00	1	50.00	0	0.00	1	50.00
19	Establishment of mini lab facilities in Government fish farms	0	5	Uthangarai, Krishnagiri	0	0.00	0	0.00	1	5.00	1	5.00	0	0.00	2	10.00
	Section Total					**0.00**		**0.00**		**5.00**		**55.00**		**0.00**		**60.00**
	Capacity building programme															
20	Exposure visit to farmers to other states	0	0.1	Krishnagiri,Kaveripattinam, Uthangarai, Hosur	0	0.00	20	2.00	10	1.00	0	0.00	10	1.00	40	4.00
21	Improvement of GIFT Tilapia Government Fish Farm	0	250	Krishnagiri	1	250.00	0	0.00	0	0.00	0	0.00	0	0.00	1	250.00
22	Organisation of Fish festivel	0	1	Krishnagiri, Kaveripattinam, Hosur	0	0.00	2	2.00	1	1.00	0	0.00	0	0.00	3	3.00
23	Providing trainers training and exposure visit to Departmental staff	0	0.1	Krishnagiri, Kaveripattinam, Uthangarai, Hosur	5	0.50	9	0.90	10	1.00	0	0.00	5	0.50	29	2.90
24	Training to fish farmers	0	0.01	Kaveripattinam, Uthangarai, Hosur, Kelamangalam Thally, Mathur	125	1.25	50	0.50	100	1.00	0	0.00	25	0.25	300	3.00
	Section Total					**251.75**		**5.40**		**4.00**		**0.00**		**1.75**		**262.90**
	Grand Total					**604.02**		**126.42**		**139.42**		**196.17**		**97.57**		**1163.60**

1.9 FISHERIES RESEARCH

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.

Project components

- Yield enhancement through innovative farming techniques for commercially important inland fisheries in Krishnagiri block
- Evolving new candidate species for diversified aquaculture in Krishnagiri block
- Development of low cost feed using local agro waste in Krishnagiri block
- Mobile aquaclinics for water quality analysis and disease diagnosis in Krishnagiri block
- Production of short films on nutritive value of fish and screening in theatres and television channels in Krishnagiri block
- supply of preserved ready to eat and ready to cook fish products through public distribution sytems in Krishnagiri block
- Supply of fish and fish products in mid day meal programme in Krishnagiri block
- Supply chain management to promote consumption of farmed freshwater fishes in Krishnagiri block
- Establishment of Farmers Training Facilities at regional outstations of CeSA in TNFU at Krishnagiri block

Budget

The budget requirement for fulfilling the above interventions is ₹ **1161.60** lakhs.

Implementing agency

Department of Fisheries will be implementing the project

Table 4.26 Budget for fisheries research

(Rs. in lakhs)

Sl. No	Interventions	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	**Aquaculture**														
i	**Inland Aquaculture**														
1	Yield enhancement through innovative farming techniques for commercially important inland fishes	200	Krishnagiri	1	200.00	0	0.00	0	0.00	1	200.00	0	0.00	2	400.00
2	Evolving new candidate species for diversified aquaculture	250	Krishnagiri	0	0.00	0	0.00	1	250.00	0	0.00	0	0.00	1	250.00
3	Development of low cost feed using local agro waste	200	Krishnagiri	0	0.00	1	200.00	0	0.00	0	0.00	0	0.00	1	200.00
ii	**Aquatic animal health and management**														
4	Mobile aquaclinics for water quality analysis and disease diagnosis	100	Krishnagiri	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	1	100.00
	Enhancement of per capita consumption of fish														
5	Awareness campaign on health beneficial attributes of fish	0.005	Krishnagiri	52	0.26	52	0.26	52	0.26	52	0.26	52	0.26	260	1.30
6	Production of short films on nutritive value of fish and screening in theatres and television channels	50	Krishnagiri	0	0.00	0	0.00	1	50.00	0	0.00	0	0.00	1	50.00
iii	**Ensuring nutritional security through fish and fishery products**														
7	supply of preserved ready to eat and ready to cook fish products through	12.9	Krishnagiri	0	0.00	1	12.90	0	0.00	0	0.00	0	0.00	1	12.90

Sl. No	Interventions	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	public distribution sytems														
8	Supply of fish and fish products in mid day meal programme	12.9	Krishnagiri	0	0.00	1	12.90	0	0.00	0	0.00	0	0.00	1	12.90
9	Supply chain management to promote consumption of farmed freshwater fishes	64.5	Krishnagiri	0	0.00	1	64.50	0	0.00	0	0.00	0	0.00	1	64.50
10	Establishment of Farmers Training Facilities at regional outstations of CeSA in TNFU	70	Krishnagiri	1	70.00	0	0.00	0	0.00	0	0.00	0	0.00	1	70.00
	Grand total				**270.26**		**290.56**		**400.26**		**200.26**		**0.26**		**1161.60**

4.10 Public Works Department- Water Resource Organization

Increasing the ground water level

Water is an important determinant factor of production of crops in agriculture sector. Intensive and extensive cultivation of land depend mainly on the availability of water. The various sources of irrigation are canals, tanks, tube wells, open wells and springs. The Public Works Department and Panchayat union tanks, ponds and supply channels play an important role in the irrigation of Krishnagiri district. As development of ground water has already a high stage in four blocks out of ten blocks of the district, further development of ground water for creation of additional irrigation potential has to be carried out with extreme caution. Necessary measures for regulating the exploitation of ground water may be implemented.Most of the canals and tanks are silted and bushes like *Prosopis*, *Acassia*spp and water hyacinth occupied major part of the tanks and canals, there by storage capacity of the tank is very much reduced. Hence, to raise the water table level, construction of check dams need to be taken up in canals to increase the storage capacity of the tanks and increasing the ground water table in and around area of check dams and there by crop cultivation area in tank ayacut area can be increased.

Project components

- Construction of check dams across the rivers (furnished in table)
- Excavation of supply channels in different canals
- Rehabilitation of Breached Anaicut sites
- Formation of a tank across jungle stream in Kalingavaram village
- Construction of an anaicut across kadaparai river

Budget

It is proposed to incur Rs. **296605.68** crores 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 increasing the ground water table in and around area of check dams 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 4.27 Budget requirement for Water Resource Organization

(Rs. 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	Construction of Checkdam across Chinnar river in S.F.No: 71 of Nallur village In Hosur taluk of Krishnagiri District	Ha	3.53	Hosur	43.00	1849.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	43.00	1849.00
2	Excavation of supply channel from Barur East Main Canal @ Ls 15.95 Km. to feed 33tanks in Pochampalli taluk of krishnagiri district	Ha	6.93	Bargur	542.91	294756.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	542.91	294756.68
3	Preliminary report for Excavation of supply canal from the Left side of Existing Ennekol Anicut to feed 12 Tanks in Krishnagiri taluk of Krishnagiri District	Ha	9.66	Krishnagiri	0.00	0.00	727.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	727.94	0.00
4	Construction of Check dam across local odai in Gedalanthotti village in Hosur taluk of krishnagiri District.	Ha	348.00	Veppanapalli	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00

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
5	Excavation of supply canal from Devirahalli Tank to Feed Pannandhur small Tank in Pochampalli taluk of krishnagiri district	Ha	5.23	Bargur	0.00	0.00	0.00	0.00	10.32	0.00	0.00	0.00	0.00	0.00	10.32	0.00
6	Rehabilitation of Breached Anicut site in S.F.No:516 0f Bitaredi village in Denkanikotta taluk of krishnagiri district	Ha	18.68	Thali	0.00	0.00	0.00	0.00	5.03	0.00	0.00	0.00	0.00	0.00	5.03	0.00
7	Detailed estimate for Diversion of surplus water of pennaiyar river by excavating a new canal from the right side of existing ennekol anicut to the drought prone sub basins areas in Krishnagiri and Dharmapuri district	Ha	22.91	Krishnagiri	0.00	0.00	0.00	0.00	651.82	0.00	0.00	0.00	0.00	0.00	651.82	0.00
8	Construction of Check Dam across Doddahalla river in Anchetty Village in Denkanikotta taluk of Krishnagiri Dt.	Ha	7.41	Thali	0.00	0.00	0.00	0.00	41.00	0.00	0.00	0.00	0.00	0.00	41.00	0.00
9	Forming a tank across Gavipallam near Arulam in Salivaram village in Denkanikotta taluk of Krishnagiri District.	Ha	10.29	Thali	0.00	0.00	0.00	0.00	0.00	0.00	32.46	0.00	0.00	0.00	32.46	0.00

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
10	Construction of Checkdam across Pennaiyar River in S.F.No: 137 of Bendrahalli village in Pochampalli taluk of Krishnagiri District	Ha	9.56	Bargur	0.00	0.00	0.00	0.00	0.00	0.00	34.00	0.00	0.00	0.00	34.00	0.00
11	Construction of Check dam across Pennaiyar river in Arasampatti Village of Pochampalli taluk in krishnagiri Dt.	Ha	5.86	Bargur	0.00	0.00	0.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00	84.00	0.00
12	Preliminary report for Excavation of supply canal from Ls 8.8 Km of Existing Aliyalam RMC to feed 12 Tanks in Hosur & Denkanikotta taluk of Krishnagiri District	Ha	29.46	Hosur	0.00	0.00	0.00	0.00	0.00	0.00	134.41	0.00	0.00	0.00	134.41	0.00
13	Construction of Check dam across local odai in Chinaralan thotti village in Hosur taluk of krishnagiri District.	Ha	384.00	Veppanapalli	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.25	0.00
14	Formation of a tank across jungle stream in Kalingavaram village in Hosur taluk of krishnagiri District.	Ha	15.19	Veppanapalli	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.22	0.00	35.22	0.00

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
15	Construction of an anicut across kadaparai river near Puliyanur village in Uthangarai Taluk of Krishnagiri District	Ha	1.29	Uthangarai	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	196.36	0.00	196.36	0.00
16	Construction of Check Dam across Pennaiyar river in Karukkampatti Village in Uthangarai taluk of Krishnagiri Dt.	Ha	8.91	Bargur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	43.00	0.00	43.00	0.00
	Total				**585.91**	**296605.68**	**728.19**	**0.00**	**708.18**	**0.00**	**285.12**	**0.00**	**274.58**	**0.00**	**2581.98**	**296605.68**

4.11 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 Office Building and Construction of compound wall in all blocks
- Office Building Renovation in all blocks
- Construction of Shed for Farm Fresh Cosumer Outlet Shop at Thally block
- Construction of Godown Keepers Office at Bargur
- Toilet Construction in Krishnagiri and Mathur block
- Modern counter in all blocks except Krishnagiri block

Budget

It is proposed to incur Rs. **3026.28** lakh over a period of five years.

Implementing agency

Department of Cooperation will be implementing the project.

Table 4.28 Budget requirement for Cooperation

(Rs. in lakhs)

Sl. No	Co-operation	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total Amount	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Agro Service Centre Shed	B1, 3, B5	0	0.00	2	6.50	13	20.00	1	1.50	0	0.00	16	28.00
2	Construction of Compound wall	All blocks	40	518.04	34	378.84	12	178.60	0	0.00	0	0.00	86	1075.48
3	Construction of Godown	B7, B9	0	0.00	2	114.00	0	0.00	0	0.00	1	2.00	3	116.00
4	Construction of Godown Keepers Office	B1	0	0.00	0	0.00	0	0.00	1	8.00	0	0.00	1	8.00
5	Construction of Office Building	All blocks	17	464.00	7	156.00	11	273.00	1	35.00	0	0.00	36	928.00
6	Construction of Shed for Farm Fresh Consumer Outlet Shop	B8	0	0.00	0	0.00	1	1.31	0	0.00	0	0.00	1	1.31
7	Constuctuion of Drying Yard	B1, B4	2	50.00	0	0.00	1	15.00	0	0.00	0	0.00	3	65.00
8	Establishment of Processing unit	B1, B8, B9	4	15.60	3	40.04	1	250.00	0	0.00	0	0.00	8	305.64
9	Renovation of Godown	B2, B4, B5	2	15.00	2	17.00	1	5.00	0	0.00	0	0.00	5	37.00
10	Renovation of Office Building	All blocks except B8	16	133.25	21	67.93	7	17.60	11	33.50	0	0.00	55	252.28
11	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	19	37.30	24	63.91	35	57.15	7	12.71	3	9.25	88	180.32

Sl. No	Co-operation	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total Amount	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
12	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	1	2.00	7	15.00	4	8.25	2	4.00	0	0.00	14	29.25
	Total			**1235.19**		**859.22**		**825.91**		**94.71**		**11.25**		**3026.28**

Bargur-B1,Hosur-B2, Kaveripattinam-B3, Kelamangalam- B4, Krishnagiri-B5, Mathur-B6, Shoolagiri-B7, Thally-B8, Uthagarai-B9, Veppanapalli-B10

Table 4.29 Budget Abstract for Krishnagiri district

(₹ in Lakhs)

Sl. No	Sectors	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Agriculture	7833.65	12224.70	11939.16	9689.05	12226.18	53912.68
2	Agricultural Research (TNAU)	347.00	136.00	56.00	86.00	10.00	635.00
3	Horticulture	9599.31	11039.88	12107.45	13000.63	14137.01	59884.26
4	Agricultural Engineering	1344.63	1165.22	1174.42	1161.37	1159.85	6005.49
5	Agricultural Marketing	2368.42	3978.35	1845.65	1800.65	2095.65	12088.72
6	Seed Certification & Organic Certification	20.86	2.00	2.40	16.36	128.40	170.02
7	Animal Husbandry	4351.93	2326.33	2359.73	1916.33	1887.53	12841.85
8	Animal Science Research (TANVAS)	0.00	0.00	0.00	0.00	0.00	0.00
9	Dairy Development	1552.75	2449.75	9520.00	2230.25	1556.50	17309.25
10	Fisheries	604.02	126.42	139.42	196.17	97.57	1163.60
11	Fisheries Research (TNFU)	270.26	290.56	400.26	200.26	0.26	1161.60
12	Public Works Department (WRO)	296605.68	0.00	0.00	0.00	0.00	296605.68
13	Civil Supplies & Co-Operation	1235.19	859.22	825.91	94.71	11.25	3026.28
	Total	**326133.70**	**34598.43**	**40370.40**	**30391.78**	**33310.20**	**464804.43**

The total budget requirement for implementation of various interventions by different departments in Krishnagiri district is **₹. 464804.43 lakhs**


KARNATAKA
KERALA
SRI LANKA