



NATIONAL AGRICULTURE DEVELOPMENT PROGRAMME (NADP)



DISTRICT AGRICULTURE PLAN

KARUR



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



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EXECUTIVE SUMMARY

The Karur District is centrally located inland district lying between 10.45° to 11.45° Northern latitude and 77.45° to 78.07° Eastern longitude. The climate is normally semi-arid/dry sub-humid. The major soil series in Karur district are Irugur and Thulukkanur. The soils are generally sandy loam and clay type. The average annual rainfall of the District is 655 mm, against which there has been deficient rainfall of only 528 mm 489 mm and 482 mm during the last three years. The major rainfall occurs during North-East monsoon. The major source of surface water is the Cauvery River System, comprising of the various supply and leading channels and also that of Amaravathi canals. The district offers good scope for various types of economic activities, prominent among them are in the field of Home textiles, Garment making. Paddy, Sorghum, Groundnut, Sunflower are the major crops grown in the district, Banana and Sugarcane are the major commercial crops. Mango, drumstick and tapioca are other important horticulture crops. Karur has been the leader in production of drumstick for several purposes.

In view of continuous deficient rainfall, presumably on account of the least forest cover of only 3% in the district (as against the normal stipulation of 33.33%), the groundwater level has been declining year after year. As a result, the area under cultivation has come down to a level of 78,348 ha, against the normal area of nearly 97,000 ha.

The major rice area is in Kulithalai and Krishnarayapuram taluks. Pulses are grown in rice fallow areas. In uplands, millets like sorghum, pearl millet, pulses such as red gram and horse gram, oilseeds such as groundnut, gingelly and sunflower are grown both under irrigated and rain fed conditions.

The District's economy is mainly agrarian. There were about 1.55 lakhs small and marginal farmers. Utilization of land area in Karur district is about 45 per cent. Five per cent of the land area remained as other uncultivated land. Rice and sorghum occupied 16 and 22 per cent of net sown area respectively in the district during 2011-12. Rice productivity is higher in the district as compared to State average. There exist potentials to increase rice productivity further through supply of quality seeds and adopting recommended technological interventions. Awareness creation on various improved technologies has been programmed for the benefit of the farmers through trainings and exposure visits to potential areas. The

Department of Agriculture has proposed for setting up of Organic villages at the rate of one in each village of the eight blocks to create awareness in organic farming. The department has also proposed for the strengthening of Farmers' Training centre (FTC) for imparting trainings to farmers including woman farmers and youths. Soil enrichment activities are also proposed in the district plan

In most part of the district, livestock formed major source of income. Converting the vast tracts of land available in the district into fodder crop fields by introducing emerging technologies is a real challenge for the Veterinarians, dairy professionals and agricultural experts. Such interventions would ensure a hefty increase in milk production in Karur district. Current status of 90 per cent deficit of green fodder should be given priority and hence village fodder nurseries, cultivation of green fodder, tree fodder and usage of chaff cutter to enhance digestibility and to prevent wastage of feed is proposed.

Sericulture is one of the income generating enterprises and it needs technological and policy interventions for attaining growth momentum. The district is made fertile by the perennial flows of Cauvery on the northern side and also Amaravathy, Nanganjiyar and Noyyal rivers.

Potentials exist for production of high value crops like tropical vegetables, tapioca, garland flowers. A huge quantum of drumstick is being harvested in the Aravakurichi region of the district but due to lack of cold storage facilities, growers are forced to sell all their produce immediately.

Rice occupies major cultivable area and farmers are obtaining high productivity. So ensuring supply of quality seeds and other technological interventions like Integrated Nutrient and pest management with extension support would increase productivity of rice further. As 86 per cent of the farmers were small and marginal, provision of subsidies is crucial for high levels of adoption of recommended technologies. In most part of the district, livestock formed major source of income to the farmers. Development of allied agricultural activities like animal husbandry and sericulture would bring higher income to the farmers. Potential exists for production of high value crops such as tapioca, vegetables, fruits, garland flowers, medicinal herbals etc.

The District Plan at a Glance

Agriculture Department has proposed a budget for Rs. 6503.69 lakhs for increasing area under major crops like rice, cholam (sorghum) pulses, groundnut and sunflower during the plan period and increase of productivity through various interventions by adopting improved varieties and recommended technologies. A new component on Korai grass used for mat manufacturing utilizing the effluent discharge from dyeing and paper industries has been proposed for the welfare of the Korai farmers under Agriculture. The effluent so discharged from TNPL paper industry and dyeing units cannot be irrigated for other water loving crops like paddy or sugarcane. Korai farmers are highly in the indebted in nature owing to the financial harassment of merchants dealing Korai grass. Therefore, microfinance is to be arranged to the Korai farmers through cooperative and commercial banks. Similarly, through technological interventions, it is proposed to increase the area under pulses and oilseeds and their yield levels.

Pulses are cultivated normally to an extent of 6,500 ha and through proposed interventions, it is targeted to increase to 15,000 ha including rice fallow pulses during the end of the project period. Production of paddy and pulses in the district will be increased through provision of high quality seeds, promotion of hybrids, integrated nutrient management, pest management and adoption of SRI method. Horticulture Department has demanded Rs. 11763.00 lakhs for the plan period to bring more area under fruits, tropical vegetable crops like Chillies, tomato and tapioca and promotion of spices.

Department of Agri Business and Marketing has proposed a total of Rs. 1160.04 lakhs for the establishment of market intelligence and training centre for value addition and exposure visits of farmers. Animal Husbandry Department has sought for Rs. 2328.30 lakhs for the period 2017-22 to undertake several activities under livestock improvement programme to increase milk production and bring additional income to the farmers through rearing of goats and poultry.

Similarly, Agricultural Engineering Department has proposed to supply tools and machines under subsidized cost and custom hiring of tractors, combined harvesters etc. to overcome the labour scarcity and increase the productivity of crops with budget requirement

of Rs.2919.53 lakhs. The department of Fisheries requested Rs. 163.00 lakhs for inland fisheries improvement programme. PWD department placed a budget requirement of Rs. 8025.00 lakhs. The year wise fund requirements of different departments are given below.

Budget Abstract for Karur District

(₹. In lakhs)

Sl. No	Sectors	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Agriculture	5238.55	4800.22	4162.25	5246.59	5439.44	24887.05
2	Horticulture	1465.54	1910.36	2657.71	2684.20	3045.19	11763.00
3	Agricultural Engineering	698.45	545.22	588.22	624.57	463.07	2919.53
4	Agricultural Marketing	290.04	217.00	217.00	218.00	218.00	1160.04
5	Seed Certification and Organic Certification	5.00	14.96	1.60	1.60	251.60	274.76
6	Animal Husbandry	546.61	670.61	465.86	368.61	276.61	2328.30
7	Animal Sciences Research (TANUVAS)	0.00	0.00	0.00	0.00	0.00	0.00
8	Dairy Development	558.25	696.25	676.25	473.25	645.25	3049.25
9	Fisheries	14.00	44.00	54.00	46.00	5.00	163.00
10	Fisheries Research (TNFU)	77.66	13.16	50.26	0.26	0.26	141.60
11	Water Resource Organization (PWD)	2025.00	6000.00	0.00	0.00	0.00	8025.00
12	Civil Supplies & Co operation	727.64	337.41	38.65	42.25	25.09	1171.04
	Total	11646.74	15249.19	8911.80	9705.33	10369.51	55882.57

The total budget requirement for the implementation of various interventions by different departments in Karur district is Rs. 55882.57 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 plan 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 Karur 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

DISTRICT PROFILE

Karur district at a glance

Karur Taluk, which was a part of Coimbatore district, was merged with Tiruchirappalli district during 1910. A separate Karur district was formed on 30th September 1995 by trifurcating Tiruchirappalli district. Initially, Karur District was carved out of the composite Tiruchirappalli district, consisting of three taluks namely, Karur, Kulithalai and Manapparai. Subsequently Manapparai Taluk was decoupled and Musiri Taluk was included in Karur District. Later Musiri Taluk was decoupled from Karur district. Karur district, with headquarters at Karur, is the most centrally located district of Tamil Nadu. It's about 371 km south west of Chennai (Madras), the capital of Tamil Nadu.

2.1 Area, Location and Geographical features

The Karur district is centrally located inland district lying between 10.45" to 11.45" Northern latitude and 77.45" to 78.07" Eastern longitude. The boundaries of the district are Namakkal district in the North, Dindigul district. In the south, Erode district in the west and Tiruchirappalli district in the east. Area of the Karur district is 2895.57sq.kms.

This district is located in NH7 road connecting south and north terminals of Indian nation. It is situated in the centre in between Manchester city (Coimbatore) by west to paddy land at east (Tanjore), and steel city by north (Salem) to temple city at south (Madurai), Namakkal, Dindigul, Erode and Tiruchirappalli are the boundary Districts.

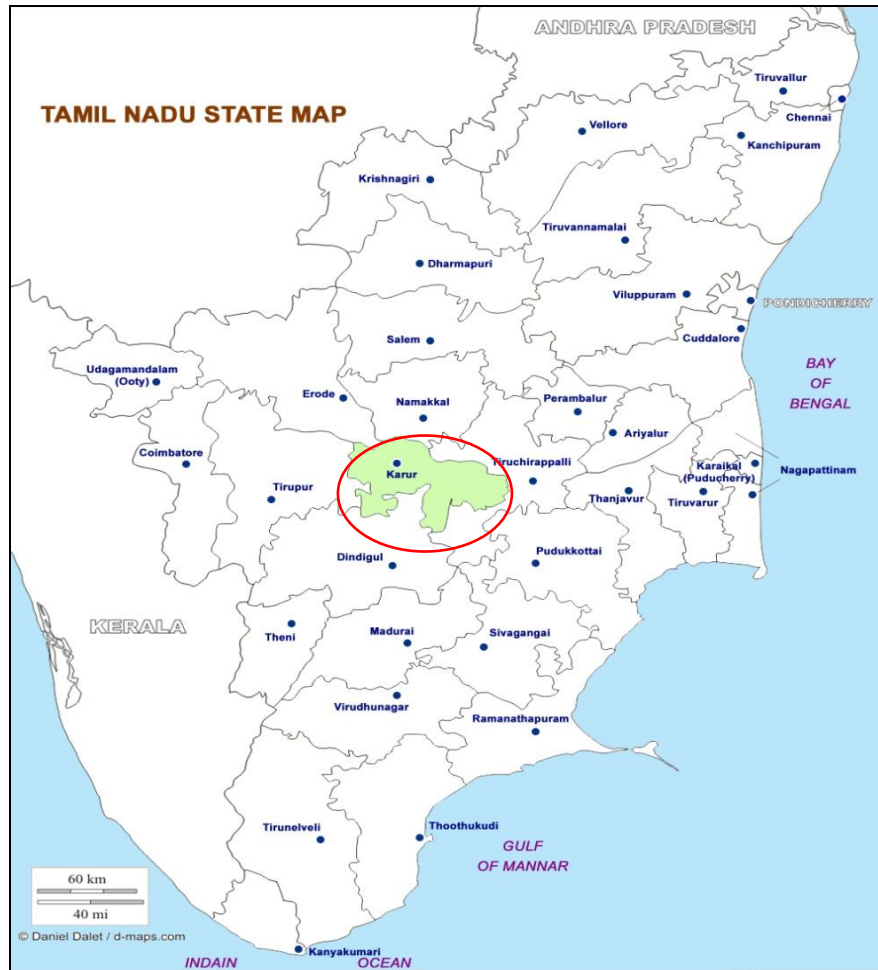


Fig.1 Map of boundary districts

2.2 Administrative Structure of Karur district

Karur was initially a part of Coimbatore district. In 1910, it became the part of Tiruchirappalli district. On 30th September 1995, Karur district was formed by trifurcation of Tiruchirappalli district. Initially, Karur district consisted of three taluks i.e., Karur, Kulithalai and Manapparai. Subsequently, *Manapparai taluk* was excluded and Musiri taluk was included in Karur district. Later, Musiri taluk was also taken out from Karur district. Presently, Karur district consists of 5 taluks viz., Karur, Kulithalai, Krishnarayapuram, Aravakurichi and Kadavur.

Karur district includes 2 Revenue Divisions, 5 Taluks, 8 Community Development Blocks, 4 Municipalities, 11 Town Panchayats and 4 Census Towns. There are 203 Revenue Villages in this district. The following table gives the number of taluks with number of towns and Community Development Blocks with number of villages.

Table 2.1 Administrative Divisions of Karur District

S No	Name of the Taluk	No of Towns	S No	Name of Community Blocks	No of Villages
1	Aravakuruchi	2	1	Karur	26
2	Karur	12	2	Thanthoni	26
3	Krishnarayapuram	2	3	Aravakuruchi	22
4	Kulithalai	3	4	K.Paramathi	36
5	Kadavur	0	5	Kulithalai	24
			6	Krishnarayapuram	28
			7	Kadavur	21
			8	Thogamalai	20
	Total	19			203

Source: Karur District Gazette No.4 dated 22.4.2015

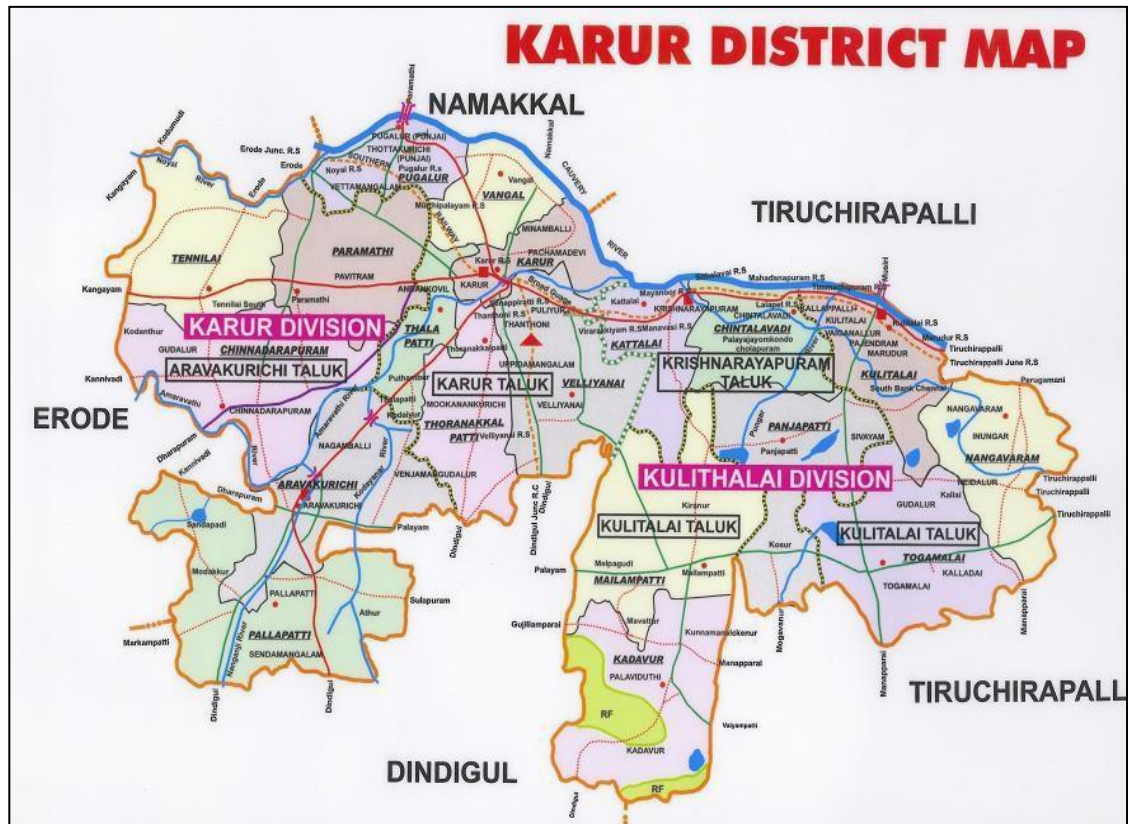


Fig. 2 District Map of Karur District

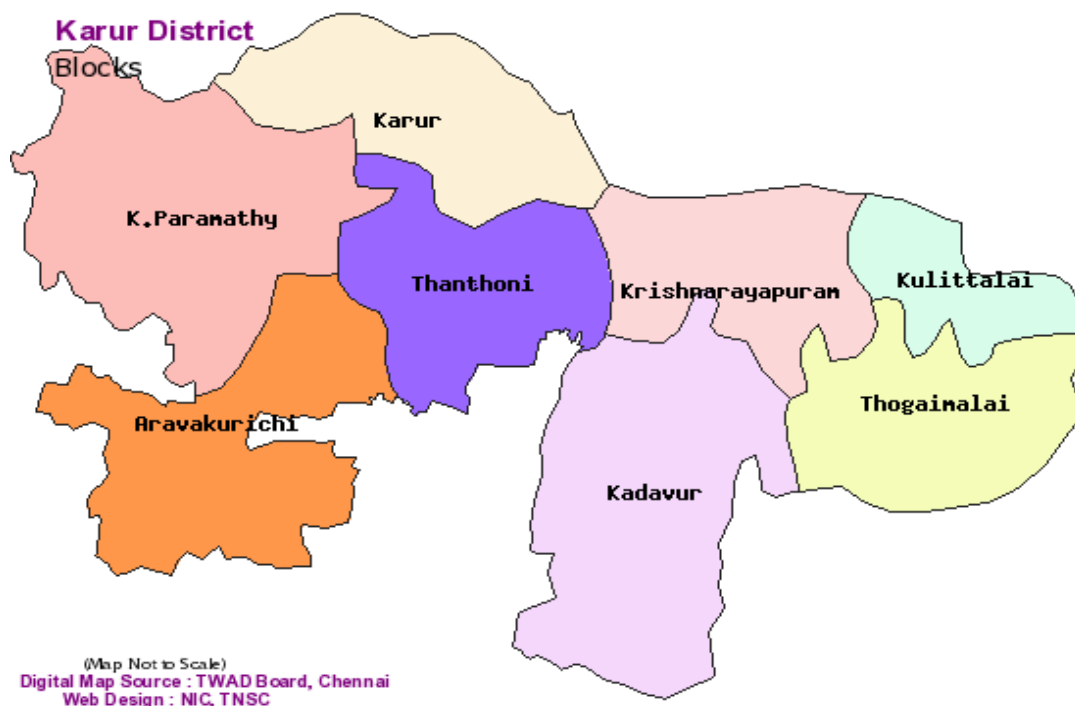


Fig.3 Blocks in Karur District

2.3 Demographic profile

2.3.1 Population

As per 2011 census, Karur district had a population of 10, 76,588 (Table 2.2). The female population constitutes higher percentage (50.4 per cent) than male (49.40 per cent). On an average 60 per cent of the total population are living in rural areas (Table 2.3).

Table 2.2 Population details in Karur district (2011)

District / Taluk		Population		
		Person	Male	Females
Aravakurichi	Total	183037	90503	92534
	Rural	140062	69365	70697
	Urban	42975	21138	21837
Karur	Total	444721	221107	223614
	Rural	128272	63512	64760
	Urban	316449	157595	158854

District / Taluk		Population		
		Person	Male	Females
Krishnarayapuram	Total	132440	65995	66445
	Rural	114142	56926	57216
	Urban	18298	9069	9229
Kulithalai	Total	206580	101935	104645
	Rural	150129	74162	75967
	Urban	56451	27773	28678
Kadavur	Total	109810	54852	54958
	Rural	109810	54852	54958
	Urban	-	-	-
Total	Total	1076588	534392	542196
	Rural	642415	318817	323598
	Urban	434173	215575	218598

Table 2.3 Demographic Details of the Karur District

Description	Number	Percentage
Male	534392	49.60
Female	542196	50.40
Rural Population	642415	59.68
Urban Population	434173	40.32
Total Population	1076588	100.00

Source: Directorate of Economics and Statistics, Chennai.

2.3.2 Literacy level

The average literacy rate of the district was 68.8 per cent which is higher than the national average of 59.5 per cent. The male literacy rate is 76.7 per cent and the female literacy rate is 61.10 per cent. In Karur district 10 per cent of the population is under 6 years of age.

Table 2.4 Literacy details in Karur district

District/Taluk	Literacy (2011 census)			
		Person	Male	Females
Aravakurichi	Total	125832	70292	55540
	Rural	91006	52208	38798
	Urban	34826	18084	16742
Karur	Total	331557	180163	151394
	Rural	84230	48070	36160
	Urban	247327	132093	115234
Krishnarayapuram	Total	84245	47857	36388
	Rural	71930	41018	30912
	Urban	12315	6839	5476
Kulithalai	Total	136455	75241	61214
	Rural	94613	52897	41716
	Urban	41842	22344	19498
Kadavur	Total	63521	36762	26759
	Rural	63521	36762	26759
	Urban	-	-	-
Total	Total	741610 (68.8 %)	410315 (76.7 %)	331295 (61.10 %)
	Rural	405300	230955	174345
	Urban	336310	179360	156950

2.4 Working Population of Karur District

The working population determines the magnitude of all economic activities. Hence the different categories of workers in the Karur district are furnished below in Table 2.5.

In respect of workers population, 59 per cent of total workers were male workers in Karur district indicating the dominance of working force. Further 72 per cent of total work force belongs to rural workers in Karur district indicating more dependence on rural employment in the study area. Cultivators and agricultural labourers constituted 51 per cent in total of total work force in Karur district which indicated that most of the population was directly depending on agriculture in the study area.

Table2.5 Occupational Status of Karur District in 2011

Description	Number	Percentage
Total Workers	496464	100.00
Male Workers	294150	59.00
Female Workers	202314	41.00
Rural workers	359637	72.00
Urban workers	136827	28.00
Cultivators	100875	20.00
Agricultural Labourers	155231	31.00
Household industry	18228	4.00
Other workers	173354	35.00
Marginal workers	51014	10.00
Non-workers	439222	40.00

Source: Directorate of Economics and Statistics, Chennai.

Table 2.6 Status of Farmers in Karur District

S. No	Block	General Category				SC / ST Category				Total			
		SF	MF	OF	Agri. Labourers	SF	MF	OF	Agri. Labourers	SF	MF	OF	Agri. Labourers
1	Karur	2369	11389	1640	5807	49	598	25	14933	2418	11987	1665	20740
2	Thanthoni	3468	7607	4245	4022	98	822	17	7149	3566	8429	4262	11171
3	Aravakurichi	1834	1652	4699	3774	126	182	284	9706	1960	1834	4983	13480
4	K.Paramathy	3480	6593	7056	5205	153	756	180	9253	3633	7349	7236	14458
5	Kulithalai	2010	12832	1243	7460	90	1233	24	19183	2100	14065	1267	26643
6	Thogamalai	3384	9529	2963	5991	258	1256	165	10652	3642	10785	3128	16643
7	Kadavur	3286	10514	2963	5926	224	1124	98	15237	3510	11638	3061	21163
8	K.R.Puram	4324	17158	4114	11136	306	2208	127	19797	4630	19366	4241	30933
	Total	24155	77274	28923	49321	1304	8179	920	105910	25459	85453	29843	155231

The above table shows the status of living of the farmers in Karur district. More than 60 per cent of the total farmers are belonging to the marginal farmer's category followed by other farmers' category in Karur district. Agricultural labourers constituted a major proportion among all the groups. Among the SC/ST category, the agricultural labourers constitute a major proportion than the land holders. The policies should be taken for the development of this category of farmers with the aim for wholesome development of agriculture in Karur district.

2.5 Topography

The highest temperature is obtained in early May to early June usually about 34°C, though it rarely exceeds 38 °C for a few days. Average daily temperature in Karur during January is around 23 °C, though the temperature rarely falls below 17 °C.

2.6 Soil type

The details of the different soil type along with the particulars of major and minor deficient nutrients in each block are discussed below. It is noted that nitrogen is the deficient major nutrient in all blocks and Zinc is the deficient minor nutrient prevailing in all blocks of Karur district.

Table 2.7 Block wise Soil resources and type in Karur District

S. No	Name of the Block	Soil color and soil type	Major Nutrient which are deficient		Minor Nutrient which are deficient	
			Block	Deficient Nutrient	Block	Deficient Nutrient
1.	Karur, Thanthoni, Aravakurichi, Paramathi, Kuliithalai, Krishnarapuram, Thogamalai, Kadavur	Yellowish Red, Fine Loamy Soils	Aravakurichi	Nitrogen in low Level	Aravakurichi	25 % of the samples deficient with Zinc
2.	Karur, Thanthoni, Aravakurichi,	Reddish Brown, Fine and Coarse	K.Paramathi	Nitrogen in low Level	K.Paramathi	Zinc is highly deficient nutrient
3.	Karur, Paramathi, Kuliithalai,	Dark Brown, Clay Loamy Soils	Karur	Nitrogen in low Level	Karur	63 % of the samples are deficient with Zinc
4.	Thanthoni, Aravakurichi, K. Paramathi	Dark Brown, Coarse Loamy Soils	Thanthoni	Nitrogen in low Level	Thanthoni	Zinc is the deficient Nutrient
5.	Kuliithalai	Dark Grayish Brown, Fine Texture Soils, Loamy soil	Krishna rayapuram	Nitrogen in low Level	Krishnaraya puram	24 % of the samples are deficient with Copper
6.	Kuliithalai, K.R.Puram, Thogamalai, Kadavur	Dark Red Coarse Loamy Soils	Kuliithalai	Nitrogen in low Level	Kuliithalai	24 % of the samples are deficient with Zinc
7.	Krishnarayapuram, Kadavur	Yellowish Red Fine Loamy Soils	Kadavur	Nitrogen in low Level	Kadavur	Zinc is the dominant deficient nutrient
8.	Krishnarayapuram, Thogamalai, Kadavur	Dark Clay, Sandy Clay Loam	Thogamalai	Nitrogen in low Level	Thogamalai	Dark Clay, Sandy Clay Loam
9.	Thogamalai, Kadavur	Dark Grayish, Brown Fine Clay Loam	-	-	-	-

Source: Directorate of Economics and Statistics, Chennai

2.7 Climate and Rainfall

The highest temperature is obtained in early June 2014 to early December 2014 usually about 35.64 °C, though it rarely exceeds 38 °C for a few days. Average daily temperature in Karur during January is around 28 °C, though the temperature rarely falls below 20°C (Table 2.8).

Table 2.8 Humidity Percentage of Karur District during June 2014-May 2015

Month	Maximum (°C)	Minimum (°C)	Humidity (%)
June -2014	35.3	25.2	61.4
July -2014	34.9	24.7	32.7
August-2014	35.6	24.4	63.6
September-2014	35.4	24.2	64.7
October -2014	35.0	23.7	68.2
November -2014	32.6	22.7	71.4
December -2014	31.4	20.1	66.0
January -2015	32.4	19.7	61.0
February -2015	34.5	24.6	74.8
March -2015	36.4	24.1	37.7
April-2015	39.6	27.8	36.1
May-2015	37.3	27.0	60.5

Rainfall is the major factor that determines the crop production activities. Normal rainfall of the district is 655 mm. The city gets most of its seasonal rainfall from the north-east monsoon winds, from late September to mid-November. During the year 2014-15, the actual rainfall of the district was 653.6 mm which was lower than that of the normal rainfall.

Normally, the district receives a major share of rain (39.59 per cent) from the North-east monsoon. The hot weather period contributes 33.75 per cent, of the total rainfall. South west monsoon showers contribute 24 per cent of the total rainfall in the Karur district, while

only 2.78 per cent of the total rainfall is received from the winter rains. In actual, variations in rainfall were found among the four seasons and furnished in the table below. Among the four seasons, rainfall variation was high in North east monsoon season and lower in other seasons.

**Table 2.9 Month wise / season wise rainfall distribution in Karur District
(Actual and Normal)**

Season / Month	2014-15	
	Actual(mm)	Normal(mm)
South West Monsoon		
June	20.7	19.8
July	3.7	35.7
August	67.1	51.8
September	64.5	106.3
Total	156.0 (23.86)	213.6
North East Monsoon		
October	196.2	144.6
November	43.8	119.1
December	18.8	51
Total	258.8 (39.59)	314.7
Winter Season		
January	18.2	9.7
February	0	7.8
Total	18.2 (2.78)	17.5
Hot Weather		
March	9.4	10.4
April	104.9	38
May	106.3	60.8
Total	220.6 (33.75)	109.2
Annual rainfall	653.6	655

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

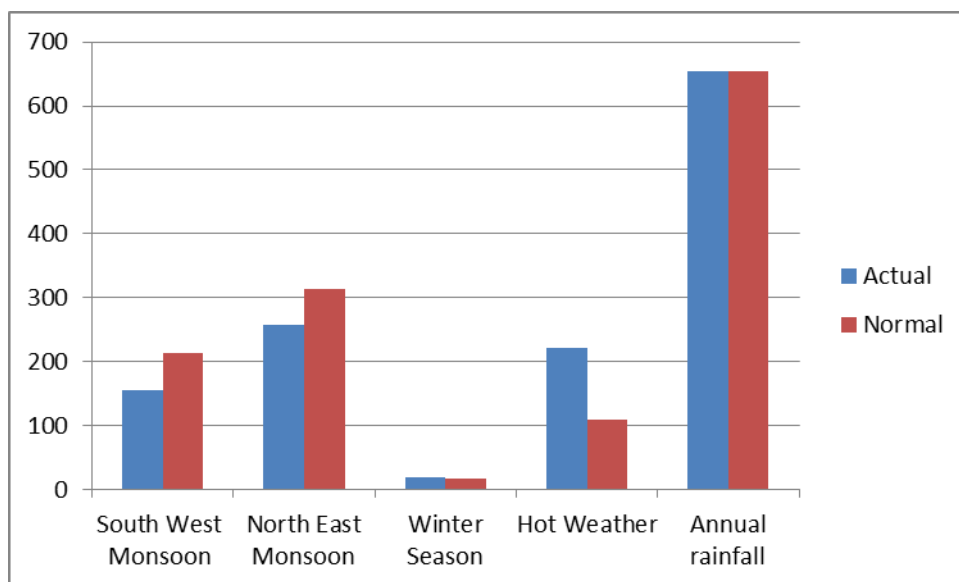


Fig. 4 Average rainfall of Karur District in mm (2014-15)

2.8 Land

2.8.1. Land and its type

A study on land use pattern would be more useful in planning for increasing the area under forest and for reclamation of fallow lands, so as to make them suitable for cultivation. Hence, land use pattern are given in table 2.10.

The share of area under barren and uncultivable land in total geographical area in Karur district was meager i.e. 0.96 per cent .The land put to non-agricultural use in the district accounted for 12.96 per cent of the total geographical area. The area under current and other fallows together accounted for 9.79 per cent of the total geographical area in the district. It is also noticed that the area under current and other fallows are increasing constantly for the past two years. The gross cropped area and net sown area accounted for 32.33 and 30.36 per cent of total geographical area of the district which indicates the predominance of agriculture in the district. It is also noticed that the proportion of area under NSA and GCA gets decreased for the past two years. The land utilization pattern of the Karur district during 2014-14 is furnished in table 2.11.

Table 2.10 Land Use Pattern of Karur District 2014-2015

Sl.No.	Particulars	2014-15	per cent
1	Geographical Area	289557	100.00
2	Forest	6187	2.14
3	Barren & Uncultivable Area	2785	0.96
4	Land Put to Non-agricultural Uses	37536	12.96
5	Cultivable Waste	66797	23.06
6	Permanent Pastures & Other grazing lands	10801	3.73
7	Misc .tree crops & groves not incl. in the net area sown	1865	0.64
8	Current Fallow	26482	9.15
9	Other Fallow	50459	17.43
10	Net area sown	87906	30.36
11	Area sown more than once	5704	1.97
12	Gross area sown	93610	32.33

Source: *Season and Crop Report 2014-15, Department of Economics and Statistics, Tamil Nadu*

Table 2.11 Land Utilization Karur District - Taluk wise (Area in Hectares)

Sl. No.	Classification of Land	Taluk wise					District Total
		Karur	Aravakurichi	Kulithali	K.R.Puram	Kadavur	
1.	Forest	18.00	293.67	39.44	152.00	5684.00	6187.15
2.	Barren and Uncultivable uses	535.32	520.74	571.31	542.36	645.64	2785.37
3.	Land put to Non-Agricultural uses	10785.92	8556.37	6775.07	5521.53	5860.13	37536.03
4.	Cultivable Waste	11817.41	34222.58	9671.05	3119.88	7966.37	66797.30
5.	Permanent Pastures and Other Grazing Land	1295.79	6975.11	427.10	1546.64	556.35	10801.00
6.	Land under Miscellaneous Tree Crops and Graces not included in Net Area Sown	283.59	176.91	497.17	402.94	413.06	1864.68
7.	Current Fallows	9728.73	11592.31	5048.29	5952.92	7835.85	26482.11
8.	Other Fallows Land	8523.72	16301.89	7891.68	6023.18	11530.90	50459.38
9.	Net Area Sown	17655.02	18975.97	18159.47	11768.80	6694.38	87906.64
10.	Geographical Area According to Village Papers	60643.51	97615.57	49080.59	35030.26	47186.69	289556.63
11	Total Cropped Area	17668.46	18975.97	18804.51	11768.80	6695.58	93610.33
12	Area Sown More than Once	113.44	-	4685.04	-	1.20	5704.69

Source: Season and Crop Report 2014-15, Department of Economics and Statistics, Tamil Nadu

2.9 Land Holdings Pattern

The number and area of operational holdings of Karur district is presented in the Table 2.12. The data provided in the below table indicate that the small holdings with a size of up to 2 ha constitute more than 35.67 per cent of the total number of holdings in the district. On the other hand, the relatively larger land holdings with a size of more than five ha accounted for about 34.28 per cent of the total number of holdings in the district.

Table 2.12 Number of Operational Land Holdings in the district in (2014-15)

Size Class of holdings (Hectares)	Number	Area	Per cent
Below 0.5	58707	14231.93	35.67
0.5 – 1.0	27398	19519.93	
1.0 – 2.0	21739	30789.56	
2.0-3.0	9266	22683.64	30.05
3.0-4.0	4926	17157.17	
4.0-5.0	3236	14494.53	
5.0-7.5	3600	22229.26	34.28
7.5-10.0	1714	14661.29	
10.0-20.0	1467	19808.57	
20.0 and above	181	5334.19	
Total	132234	180910.07	

Source: Season and Crop Report 2014-15, Department of Economics and Statistics, Tamil Nadu

2.10 Sources of Irrigation

Water is an important input for production of crops in agriculture. 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. The various sources of irrigation are canals, tanks, tube wells, Open wells and springs.

Table 2.13 Sources of Water Supply –Block wise

Year: 2014-15

Sl. No.	Name of the Block	Canals	Length (Km.)	Wells used for irrigation purpose only	Tube Wells	Wells used for Domestic Purpose only	Reservoirs	Tanks (Nos.)
		Numbers						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Karur	7	101	1939	512	971	-	-
2	Thanthoni	5	45	5119	342	1397	-	9
3	Aravakurichi	1	1	5382	186	901	-	2
4	K. Paramathi	2	28	8156	239	362	-	-
5	Kulithalai	4	20	5139	179	1668	-	52
6	Thogamalai	1	7	5191	277	484	-	79
7	Krishnarayapuram	3	24	5425	735	906	-	13
8	Kadavur	-	-	8331	527	989	-	111
Total		23	226	44682	2997	7678	-	266

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

2.10.1 Actual area irrigated by source

Source of Irrigation, gross area irrigated, net area irrigated and average area irrigated in Karur district are presented in Table 2.14. Open Wells formed the major source of irrigation (26693.33 ha) followed by canals (13145 ha) and Tube wells (9574.67).

Table 2.14 Different sources of irrigation (Area in Hectares)

Year: 2014-15

Sl.No.	Particulars		2012-13	2013-14	2014-15	Average
1	Canals	Gross	12320	13345	13770	13145.00
		Net	12264	11917	12592	12257.67
2	Tanks	Gross	39	10	10	19.67
		Net	39	10	10	19.67
3	Tube wells / Bore wells	Gross	7257	10683	10784	9574.67
		Net	7166	10107	9969	9080.67
4	Open wells	Gross	26272	23901	29907	26693.33
		Net	25915	23050	27015	25326.67
5	Supplementary wells	Gross	205	209	191	201.67
		Net	205	209	191	201.67

Source: Season and Crop Report 2014-15, Department of Economics and Statistics, Tamil Nadu

2.10.2 Area Irrigated crop wise.

Table 2.15 Details of irrigated crops

Sl.No. (1)	Crop (2)	Area (in Ha.)	
		2013-14	2014-15
1	Paddy	17090	10907
2.	Cholam	4773	5498
3.	Cumbu	128	145
4.	Ragi	-	102
5.	Maize	924	2291
6.	Green Gram	308	233
7.	Red Gram	291	167
8.	Black Gram	3073	2387
9.	Thattai	4	6
10	Chillies	295	366
11	Turmeric	267	291
12	Sugarcane - planted	1955	1474
13	Sugarcane – Ratoon	1417	1046
14	Onion	302	441
15	Gingelly	573	1395
16	Groundnut	1706	3660
17	Coconut	6641	6557
18	Sunflower	969	2614
19	Cotton	89	142
20	Others	15696	13296
	Total irrigated crops	56501	53018

Source: 'G' Return. (Fasli-1421 & 1422)

Table 2.16 Details of Dams, Tanks, Wells and Bore Wells –Block wise

Year: 2014-15

Sl. No.	Name of the Block	Dams					Tanks					No. of Wells in use	No. of Bore wells
		Catchment area	Water spread area	Height	Capacity	Length of canals	Water spread area	Capacity	Height	Length of canals (K.M)			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	
1.	Karur									101	1939	512	
2.	Thanthoni									45	5119	342	
3.	Aravakurichi									1	5382	186	
4.	Paramathi									28	8156	239	
5.	Kulithalai									20	5139	179	
6.	Thogomalai									7	5191	277	
7.	Kadavur									-	5425	735	
8.	K.R. Puram									24	8331	527	
	Total									226	44682	2997	

Source: PWD Office & G Return 2014-15.

2.11 Cropping Pattern

The list of the major crops grown in Karur district is furnished below.

From the Table 2.17 it was observed that, among the field crops cholam occupies major share followed by paddy. The bajra crop took minimum share in the district. Among other crops the oilseeds (both groundnut and gingelly) constituted major share followed by sugarcane. The area under pulses seems to be very minimum in the district. The crops like coconut and banana equally shares the cropped area. The horticultural crops like tapioca and moringa are recently emerging crops in the district. Being industrial crop the tapioca seems to be price sensitive crop in the district. Among the horticultural crops, banana, chilly, turmeric and mango took the major share in the study district.

**Table 2.17 Area, production and productivity under major crops in Karur district
(Triennium average ending 2014-15)**

Sl.No	Particulars	Area (in ha)	Production (in tonnes)	Productivity (in kg/ha)
1	Paddy	12305.67	60859.67	4902.33
2	Maize	1790.00	11498.33	5956.00
3	Cholam	18327.67	27254.67	1356.00
4	Cumbu	766.00	1404.67	1819.67
5	Ragi	54.00	177.00	2596.67
6	Bengal Gram	19.67	3.33	129.00
7	Red Gram	2766.67	2965.00	1068.33
8	Black Gram	3239.67	2681.33	759.67
9	Green Gram	399.67	244.67	535.67
10	Horse Gram	3637.00	2242.00	594.67
11	Groundnut	3595.67	9747.00	1891.33
12	Sunflower	2051.00	3184.67	1111.67
13	Gingelly	3473.00	2410.00	460.00
14	Castor	53.33	17.67	283.67
15	Cotton	101.00	281.33	340.00
16	Coconut	6503.33	328.00	3529.67
17	Sugarcane	4156.00	404716.33	67.33
18	Onion	301.33	2809.67	9346.67
19	Brinjal	213.67	1923.67	9034.00
20	Bhendi	190.00	2769.33	12578.00
21	Tomato	202.67	2802.33	13678.67
22	Banana	3203.67	152956.67	50951.00
23	Mango	719.00	4929.33	6823.00
24	Jack Fruit	11.67	151.67	12870.67
25	Guava	94.33	582.33	6151.67
26	Orange	0.33	1.00	1046.00
27	Chillies	342.00	167.00	495.33
28	Coriander	9.00	5.67	439.67
29	Turmeric	271.67	2360.00	8585.00
30	Tamarind	97.67	240.00	2458.00
31	Potato	1.67	36.33	13603.67
32	Tapioca	1105.33	39930.67	35790.67
33	Sweet Potato	52.33	1313.67	26485.33
	Total	70055.67	742995.00	237739.00

Source: Season and Crop Report 2014-15, Department of Economics and Statistics, Tamil Nadu

2.12 Animal Husbandry

The detail of livestock population in Karur district is presented in Table 2.18. Of the total livestock population (6.40 lakhs), sheep occupies major portion (2.47 lakhs) followed by goat (1.85 lakhs), cattle (1.58 lakhs) and buffaloes (43490).

Table 2.18 Livestock population in Karur district (2012)

(Numbers)

Sl. No.	Particulars	Population
1	Cattle	158286
2	Buffaloes	43490
3	Sheep	247415
4	Goats	185875
5	Horses and ponies	35
6	Donkeys	145
7	Pigs	5329
	Total Livestock	640575
8	Dogs	40666
9	Rabbits	246
	Poultry	
10	Bank yard Poultry	432855
11	Farm Poultry	2672289
	Total Poultry	3105144

Source: 19th Livestock Census, 2012.

2.12 Consumption of Chemical Fertilizers and Pesticides

The Consumption of chemical fertilizer and pesticides in Karur district during 2014-15 is given in Table 2.19. The input use level of major crops like paddy, sugarcane banana and groundnut indicated that optimum quantity of fertilizers, farmyard manure and micro nutrients were used by the farmers to get the current yield.

Table 2.19 Consumption of chemical fertilizer and pesticides in Karur district during 2014-15

Fertilizers (in '000' Tonne)				Pesticides	
Nitrogenous (N)	Phosphatic (P2 O5)	Potassic (K2 O)	Total (NPK)	Dust (M.T.)	Liquid (Lit.)
6.990	0.91	2.54	10.44	42.00	7663

2.13 Agricultural Machineries and Implements

From the Table 2.20, we came to know that in Karur district most of the wells are energized with electric motor than oil engines. The machineries and implements are minimum in numbers which revealed that the farmers are depending on human labourers for most of the agricultural operations. The inputs distribution outlets are prevailing in Karur district which are insufficient in numbers to supply the inputs in time to the farmers.

Table 2.20 Farm Machineries, Implements and Other Infrastructure facilities in Karur District – Block wise (no's)

Sl. No	Particulars	KRR	TTI	ARK	KPY	KLT	TMA	KDR	KRM	Total
1	Electric Motor	3698	6279	4851	5557	1580	4185	6781	5361	38292
2	Oil Engines	519	397	1447	1778	346	739	387	1296	6909
3	Farm Machineries& Implements									
	1.Tractors	86	170	69	107	287	135	107	100	1061
	2.Powertillers	0	0	0	5	0	0	0	0	5
	3.Threshers	1	0	0	1	2	1	0	0	0
	4.Sugarcane Crushers	0	2	12	0	0	0	0	5	20
	5.Oil Ghanis	0	2	13	0	0	0	0	20	51
4	Storage Godowns	0	0	0	0	1	0	0	0	0
5	Processing Units	0	0	0	0	1	0	0	0	0
6	Sprinkler	15	25	17	33	7	5	9	17	128
7	Drip Irrigation	40	120	60	40	170	100	80	130	740
8	Fertilizer Outlet	55	23	18	23	54	14	17	44	248
9	Pesticide Outlet	10	9	7	7	27	8	19	7	94
10	Agriclinic	1	1	0	0	1	1	1	1	6

Source: Season and Crop Report 2014-15, Department of Economics and Statistics, Tamil Nadu

2.14 Regulated Markets

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 have to make use of the several benefits such as subsidized seeds, fertilizers, plant protection chemicals, machineries and tools, extended through various agricultural development programs. They should also come forward to adopt the good agricultural practices and technologies developed by the agricultural research institutes.

There are totally four regulated markets in Karur district and two Co-operative Marketing Societies have been established in Karur district to facilitate for marketing of agricultural commodities. There is only one storage godown and 33 small scale agro based processing industries. There are also two large scale agro based processing industries are available in Karur district.

Table 2.21 Agricultural Marketing and Processing

S.No	Particulars	Number/Values
1	Number of Regulated Markets	4
2	Number of Co-operative Marketing Society	2
3	Number of Permanent Markets / Central Markets	NA
4	Number of weekly markets / shandies	NA
5	Number of drying yards	864
6	Number of storage godowns	1
7	Number of cold storage units for agricultural produce	NA
8	Number of agro based / agri-based processing industries	NA
i)	Small scale	33
ii)	Medium scale	NA
iii)	Large scale	2

Source: Season and Crop Report 2014-15, Department of Economics and Statistics, Tamil Nadu

Table 2.22 Regulated Market in Karur District

Year: 2012-13

Name of Regulated Market	No. of Sub Regulated Markets	Quantity arrivals ('in M.T.') (Product wise)		Receipts (Rs.in Lakhs) (Product wise)
(1)	(2)	(3)		(4)
Chinnadharapuram	Nil	Paddy	-	0.11
		Turmeric	-	-
		Cotton	-	0.32
		Coconut	786.890	1.12
		Manila	-	0.06
Karur	Nil	Paddy	81.000	0.26
		Gingelly	-	-
		Cashew nut	-	0.09
		Chillies (Dry)	-	0.05
		Coriander	-	0.92
		Jaggery	-	0.05
		Jowar	-	0.25
		Bajra	-	0.01
		Turmeric	25.468	0.10
		Cotton	-	0.40
		Coconut	2272.414	1.92
		Manila	57.600	0.35
		Tapioca	-	0.05
Kulithalai	Nil	Paddy	3742.020	10.55
		Cotton	-	0.70
		Coconut	352.000	0.70
Irumpothipatti	Nil	Paddy	98.400	0.69
		Coconut	1838.000	1.44

Source: District Agriculture Marketing Office

2.15 Storage Facilities

It is proposed to construct four storage godowns and 12 no's of drying yards in Karur district under IAMWARM scheme. Under NADP scheme, in Karur district 11 no's of drying yards planned and 8 no's of drying yards construction were completed. In Rayanoor Regulated market committee, one cold storage godown with a capacity of 25 MT under construction to increase the storage capacity of farmers at Karur district. Storage loss to the extent of 2.6 per cent could be minimized through newly constructed cold storage.

2.16. Sericulture

The area and production of mulberry of different blocks were given in the Table 2.23. The total area under mulberry in the district was 107.55 hectares. Of which, Aravakurichi block holds the area of 26.50 ha. Next to this is the Kadavur block which posses 16.20 ha area of mulberry. The district produced 31862 kilograms of Cocoon for a value of 52.57 lakhs.

**Table 2.23 Block wise area under Mulberry and production of Cocoons
in Karur district**

Year: 2014-15

Name of the Block (1)	Area under Mulberry (In Hectare) (2)	Production of Cocoons (In Kg.) (3)	Value in Rupees (4)
Karur	9.50	3845.00	634425.00
Thanthoni	22.35	5689.00	938685.00
Aravakurichi	26.50	11650.00	1922250.00
K. Paramathi	14.80	2100.00	346500.00
Kulithalai	8.70	1210.00	199650.00
Thogamalai	-	-	-
Krishnarayapuram	9.50	3350.000	552750.00
Kadavur	16.20	4018.000	662970.00
TOTAL	107.55	31862.000	5257230.00

Source: A.D. Sericulture, Namakkal

2.17 Banking and Insurance

There are about 93 Cooperative banks and 132 Commercial banks are financing agriculture in Karur district. Majority of banks are located in K. Paramathy and Karur.

Table 2.24 Block wise Credit Institutions in Karur District (in Nos)

S. No	Name of the Block	Commercial Banks	Co-operative Banks	Regional Rural Banks	Total
1	Karur	39	13	2	48
2	Thanthoni	9	10	1	20
3	Aravakurichi	15	12	1	22
4	K.Paramathy	19	16	1	22
5	Kulithalai	15	10	-	19
6	Thogamalai	12	11	-	13
7	Kadavur	11	9	-	12
8	K.R.Puram	12	12	-	17
Total		132	93	5	230

Table 2.25 Number of Commercial Banks

Year: 2014-15

(₹ in lakhs)

Items	Deposits	Advances	Credit Deposit Ratio	P.S Adv.	Agri Adv.	Weaker Sec. Adv	DRI Adv.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Public Sector	194484	276403	142	235149	122692	26652	283
Private Sector	113882	152053	134	91938	44997	9058	3
Co-op Sector	20222	35330	175	16893	14774	19371	-
Regional Rural	2510	6527	260	6360	5809	4934	-
TIIC	-	-	-	-	-	-	-
Total	331098	470313	711	350340	188272	60015	286

Source: Key Banking Statistics, Karur. (IOB-Karur)

2.18 Co-operation

Table 2.26 Co-operative Societies (₹ in lakhs) Year: 2014-15

S. No	Type of Societies	No. of Societies	Member ship	Share Capital	Working capital	Loans Advanced (Outstanding and overdue)	No. of Employees
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Co-op.Urban Banks	2	44048	87.98	4118.79	4528.47	17
2.	PrimaryAgriCreditSociety	84	151038	1882.57	24519.77	24231.06	342
3.	PrimaryAgri.R.D.Bank	3	24072	187.93	5606.58	993.27	5
4.	Agri.coop marketing Society	2	15706	9.5	202.22	208.51	54
5.	Employees Coop.Thrift& Credit.Society	18	9051	694.49	4938.23	4447.98	23
6.	Employees Coop Stores	1	2021	7.15	19.63	19.63	5
7.	Students Coop. Stores	32	110	1.10	-	-	-
8.	Karur Dt.Coop Printing Press	1	148	11.35	9.41	28.62	11
9.	Karur Dt.Coop Wholesale Stores	1	198	13.70	63.36	63.48	60
10	Karur Dt.Coop Union	1	157	4.17	5.91	-	2
11	Lift irrigation.Coop. society	2	286	4.20	190.41	2.99	-
12	Labour contract Co-opSociety	2	-	-	-	-	-
	Total	149	246835	2904.14	39674.31	34524.01	519

Source: Joint Registrar Co-operation

CHAPTER III

DEVELOPMENT OF AGRICULTURAL AND ALLIED SECTOR

Before suggesting an action plan for development of agriculture and allied sectors to a particular district, it is necessary to have a brief analysis on 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 20 year time series data from 1996-97 to 2014-15 for Karur district. This was owing to the fact that the district was bifurcated from the erstwhile Coimbatore district on 1st January 1997. The equation used to estimate the annual compound growth rate is: $Y_t = ab^t e$

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

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

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

Where, Y_t = Area or Production or Yield

a = Intercept

b = Regression coefficient of t

t = Time variable

r = Compound Growth Rate

Major Potential Crop Identified for Karur District

The details of the area under crops, production and productivity of all crops for the period of 20 years (from 1996 to 2015) was collected and the triennium average (from 2012 -13 to 2014 -15) was worked out for all the crops and the major potential crops were identified based on its percentage share. Then the percentage share of each crop has been arranged in the descending order and the cumulative percentage of the same has been calculated. From the calculated cumulative percentage 13 major crops (which constituted eighty percent share in crops grown) of Karur district have been identified. The list of the major crops grown in Karur district is furnished below.

Table 3.1 Major Potential Crops Identified for Karur District

Sl. No.	Crop	% Share	Cumulative%
1	Paddy	15.85	38.12
2	Groundnut	7.33	45.44
3	Gingelly	6.55	52.00
4	Sugarcane	6.15	58.15
5	Coconut	5.92	64.07
6	Banana	5.39	69.45
7	Tapioca	3.20	72.65
8	Red gram	2.74	75.39
9	Cumbu (Bajra)	2.41	77.81
10	Spices and condiments	1.44	79.24
11	Moringa (Drumstick)	1.04	80.28
12	Mango	0.65	80.94

From the Table, 3.1 it was observed that, among the field crops paddy occupies major share (15.85 per cent). The Cumbu (bajra) crop took minimum share in the district. Among other crops, the oilseeds (both groundnut and gingelly) constituted major share followed by sugarcane. The area under pulses seems to be very low in the district. The crops like coconut and banana equally occupy the cropped area. Based on the discussion with the district officials, it was noted that the horticultural crops like tapioca and moringa are recently emerging crops and getting popular in the district. Being the industrial crop, the tapioca seems to be price sensitive crop in the district. Among the horticultural crops banana, chilly, turmeric and mango occupies the major share in Karur district.

Growth Trend in Major Crops

i) Area, Production and Productivity

Average of area, production and productivity of major crops in the district is presented in Table 3.2.

Table 3.2 Area under major crops in Karur District

(Triennium average ending 2014-15)

S No	Crops	Area (ha)	Production (kg)	Yield (kg)/ha
1	Paddy	12305.67	60859.67	4902.33
2	Cholam (Jowar)	18327.67	27254.67	1356.00
3	Cumbu (Bajra)	766	1404.67	1819.67
4	Red gram	2766.67	2965.00	1068.33
5	Black gram	3239.67	2681.33	759.67
6	Ground nut	3595.67	9747.00	1891.33
7	Gingelly	3473	2410.00	460.00
8	Coconut*	6503.33	328.00	3529.67
9	Sugar cane	4156	404716.33	67.33
10	Tapioca	1105.33	39930.67	35790.67
11	Banana	3203.67	152956.67	50951.00
	TOTAL	59442.68		

Source: Season and Crop Report 2014-15, Department of Economics and Statistics, Tamil Nadu

*In lakh nuts

The CGR of area, production and yield of major crops grown in Karur district are given in Tables 3.3.

Table 3.3 Compound Growth Rate of Area, Production and Productivity under major crops in Karur District (% per year)

Sl. No	Crops	CGR %		
		Area	Production	Productivity
1	Paddy	0.443	1.857	1.410
2	Cholam (Jowar)	-4.489	1.833	6.628
3	Cumbu (Bajra)	-15.222	-5.443	11.540
4	Red gram	-1.329	5.525	6.961
5	Black gram	19.306	21.717	2.012
6	Ground nut	1.660	4.887	3.175
7	Gingelly	-1.963	2.205	4.255
8	Coconut	4.942	5.995	1.486
9	Sugar cane	-0.124	1.678	1.827
10	Tapioca	18.709	19.357	0.546
11	Banana	0.242	8.580	8.037

3.2. Projection on area, production and yield by 2023

The major crops grown in the district are cholam, rice, cumbu, red gram, sunflower, groundnut, gingelly, coconut and sugarcane. Apart from this, certain horticultural crops like banana, tapioca and moringa crops also being cultivated successfully. Cholam (22.26 per cent) and paddy (15.85 per cent) were the predominant crops grown in this district covered more than one third i.e 38.12 per cent of the gross cropped area in Karur district followed by groundnut (7.3 per cent), gingelly(6.55 per cent), sugarcane (6.15 per cent), coconut (5.92 percent), banana (5.39 per cent), tapioca (3.20 per cent), redgram (2.74 per cent), cumbu (2.41 per cent). Therefore, these eleven crops were focused as potential crops of the district and the scope for further expansion of their potentiality in terms of production has been explored in the present study.

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

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

Description	Paddy			Cholam			Cumbu			Redgram		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
Compound Growth Rate (%)	0.443	1.857	1.410	-4.489	1.833	6.628	-15.222	-5.443	11.540	-1.329	5.525	6.961
Triennium Average ending 2011-12	15637	62272	3988	19362	11630	625	1837	1736	977	2660	1858	677
2012-13	15267	57362	3758	18535	11907	643	1340	1106	826	2550	1556	611
2013-14	15335	58427	3811	17703	12125	685	1136	1046	921	2516	1642	653
2014-15	15403	59512	3864	16908	12347	731	963	989	1028	2482	1733	699
2015-16	15471	60618	3919	16149	12574	779	816	935	1146	2449	1829	748

(Contd. Table 3.4)

Description	Blackgram			Groundnut			Gingelly			Coconut		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
Compound Growth Rate (%)	19.306	21.717	2.012	1.660	4.887	3.175	-1.963	2.205	4.255	4.942	5.995*	1.486*
Triennium Average ending 2011-12	1709	1031	514	6910	16073	2308	5205	2208	458	5941	694`	11761
2012-13	2019.369	984	487	6773	17035	2515	5411	2282	422	6586	715	11102
2013-14	2409.237	1197	497	6885	17867	2595	5305	2333	440	6912	758	11267
2014-15	2874.375	1457	507	6999	18741	2678	5201	2384	458	7253	804	11435
2015-16	3429.314	1774	517	7116	19657	2763	5099	2437	478	7612	852	11605

(Condt.Table 3.4)

Description	Sugarcane			Tapioca			Banana		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
Compound Growth Rate (%)	-0.124	1.678	1.827	18.709	19.357	0.546	0.242	8.580	8.037
Triennium Average ending 2011-12	6650	763399	112	3006	114775	38524	4983	221354	44423
2012-13	5981	646767	108	5105	201413	39451	4805	270761	56565
2013-14	5974	657619	110	6061	240400	39666	4816	293993	61111
2014-15	5966	668653	112	7195	286934	39883	4828	319218	66023
2015-16	5959	679872	114	8541	342476	40101	4840	346608	71330

Area in Hectares; Production in Tonnes; Yield in Kg/ha (*Denotes growth rates from 2004 to 2015)

As could be seen from Table 3.4, the area and production of the selected crops like paddy, cholam, cumbu, redgram, blackgram, groundnut, gingelly, coconut, sugarcane, tapioca, banana have been projected to the year 2022-23 of which productivity of banana, groundnut and cholam crops have shown positive productivity trend. The CGR of productivities of all crops except cumbu have positive trend. Nevertheless, the crops like paddy and redgram are important staple food crops; tapioca is an industrial crop which is more price sensitive and high remunerative crop to the farmers; sugarcane provides raw material to sugar mill and it is an important and high revenue yielding commercial crop to the farmers; banana is an important fruit crop besides having high export value; and groundnut is an important edible oilseed crop. In view of all these reasons, planned efforts are essential to sustain their current area. Also, their productions need to be increased by way of enhancing their productivities.

Using the secondary data on area, yield and production of the selected crops, viz., paddy, cholam, cumbu, redgram, groundnut, gingelly, coconut, sugarcane, tapioca, banana, mango and spices and condiments the projected area, yield and production for these crops for the year 2022-23 were estimated and the results are discussed in the following section. The annual growth rates of areas for the period between 1996-97 and 2014-15 were negative for the selected major crops like paddy (-2.6 per cent), green gram (-3.4 per cent), sugarcane (-0.9 per cent) and ground nut (-7.6 per cent) and it was positive only in case of mango (4.2 per cent). Therefore, planned efforts are utmost necessary to sustain the areas under these crops so as to enhance the agricultural production by means of raising the productivities of these crops.

In view of the above reasons, projection for rising the productivities of the selected crops alone was resorted to assess the estimated yield and production for the period from 2011-12 to 2022-23 and the results are discussed below.

3.2.1. Cumbu

The cumbu crop occupies 2.41 per cent of the net sown area of the district. It was identified through the growth rate analysis that, the cumbu crop has negative growth in its area and in its productivity. The production gap was found at very higher rate i.e 1.8 tonnes. The productivity was comparatively very lower than that of improved varieties since the farmers are growing only traditional varieties which has enriched with nutrients. For self-consumption purpose only this variety was grown in this district. The farmers are willing to take up the varieties with high nutrient content on par with local variety. To increase the productivity, the farmers have to be trained up with good management and plant protection (IPM) technologies. The old variety KM2 performed well and this has to be promoted in the district to increase the production level even though the variety is more than ten years old.

Table 3.5 Existing and Projected Yield and Production of Cumbu in Karur District

Year	Total
Area (Ha)	
2008-09	2966
2009-10	2403
2010-11	1550
Triennium average ending 2010-11	2306.33
Projected area for 2022-23	350.92
per cent to total	2.41
Varieties	KM 2, Local
Maximum Potential yield (tonnes /Ha)*	2.36
Average yield for Triennium average ending 2010-11 (tonnes/Ha)	0.56
Yield Gap (tonnes/Ha)	1.8
Projected Production for 2022-23 (tonnes)	5442.94
Production for Triennium average ending 2010-11 (tonnes)	1300.33
Percentage of increase in production over 2010-11	318.58

The trend analysis would reveal that the area and productivity has negative growth rate at a higher rate. It needs the annual growth of 6.3 per cent in its productivity growth to achieve the production level from 1300 tonnes during the year end of 2010-11 to 5443 tonnes in 2022-23 as furnished below.

**Table 3.6 Projected Increase in Yield and Production of Cumbu from
2011-12 to 2022-23**

Year	Area (in ha)	Production (in t)	Productivity (in t/ha)
Triennium Average	2306.33	1300.33	0.56
2011-12	1548.64	1645.55	1.06
2012-13	1353.13	1990.76	1.47
2013-14	1182.29	2335.98	1.97
2014-15	1033.03	2681.20	2.60
2015-16	902.61	3026.42	3.35
2016-17	788.66	3371.63	4.27
2017-18	689.09	3716.85	5.40
2018-19	602.09	4062.07	6.74
2019-20	526.08	4407.29	8.38
2020-21	459.66	4752.50	10.34
2021-22	401.63	5097.72	12.69
2022-23	350.92	5442.94	15.51
Required Growth Rate			6.3

3.2.2 Redgram

Red gram is a major pulse crop grown in *Kharif* season accounting for 2.74 per cent of the total net sown area. Major varieties grown are SA1, LRG 41, ICPL5203 and ICPL85063. The variety SA 1 is very old and having long duration of 180 days and season bound (Photosynthetic variety). The variety is also highly susceptible to pod borer. Further the variety is also not under seed chain. Therefore, the farmers have to choose short duration varieties from Vamban.

Table 3.7 Existing and Projected Yield and Production of Redgram in Karur District

Year Area (Ha)	Total
2008-09	2827
2009-10	2486
2010-11	2544
Triennium average ending 2010-11**	2619
Projected area for 2022-23	2027.74

(Condt. Table 3.7)

Year Area (Ha)	Total
Per cent to total	2.74
Varieties	SA1, LRG 41, ICPL5203 and ICPL85063
Maximum potential yield (tonnes /Ha)*	1.49
Average yield for Triennium average ending 2010-11 (kgs/Ha)**	470
Yield Gap (tonnes/Ha)	1.02
Projected production for 2022-23 (tonnes)	3902
Production for Triennium average ending 2010-11 (tonnes)**	1237
Percentage of increase in production over 2010-11	215

As per the farmer's opinion during the stakeholder's meeting APK 1 redgram performs well which needs to be popularized. But this variety is older more than ten years. It has more yield potential and the same is suggested for bridging the yield gap in the next 12 years period. Table.3.8 indicates that the required annual growth rate in the productivity of red gram during 2011-12 to 2022-23 is 5.7 per cent. For bridging the yield gap in redgram, the production could be raised from 1237 tonnes (2010-11) to 3,902 tonnes (2022-23) accounting for an increase of 215 per cent. It has good market potential due to its good taste. In all varieties, pod borer infestation seems to be a major problem. The efforts on reducing this problem increase the production level towards achieving the food security.

Table 3.8 Projected Increase in Yield and Production of Redgram from 2011-12 to 2022-23

Year	Area (in ha)	Production (in t)	Productivity (in t/ha)
Triennium Average	2619	1237.00	0.47
2011-12	2043.97	1459.11	0.71
2012-13	2042.49	1681.22	0.83
2013-14	2041.01	1903.33	0.93
2014-15	2039.53	2125.44	1.04
2015-16	2038.05	2347.55	1.15
2016-17	2036.58	2569.66	1.26

(Condt. Table 3.8)

Year	Area (in ha)	Production (in t)	Productivity (in t/ha)
2017-18	2035.1	2791.76	1.37
2018-19	2033.63	3013.87	1.49
2019-2020	2032.15	3235.98	1.59
2020-21	2030.68	3458.09	1.70
2021-22	2029.21	3680.20	1.81
2022-23	2027.74	3902.31	1.92
Required Growth Rate			5.70

3.2.3 Groundnut

Groundnut is the major oilseed crop grown (7000 ha.) in Karur district and it is grown both under irrigated as well as rainfed conditions. It is cultivated mostly in Kharif season accounting for 87 per cent of the total area under groundnut. Major varieties grown in the district is TMV 7. The analysis showed that the area under groundnut crop have been decreased over a period of time with production stagnation. Selection of the suitable variety and timely application of inputs would improve the productivity. The farmers in the Karur district are cultivating TMV 7 variety for long ago with less seed multiplication ratio. The farmers in Karur district are expecting the new variety with an equivalent grain quality suited for table and oil extraction purposes on par with TMV7. To achieve the production target it was decided to take up the demonstrations on the high yielding and drought tolerant varieties like ICGV00350 and ALR 3 varieties. The seed multiplication process will be taken up and the same will be distributed to the farmers. Extent of improvement of the average yield during the next 12 year period, i.e., from 2011-12 to 2022-23 and the resultant increase in the production are given in Table 3.9. After bridging the yield gap, the production could be increased from 15804 tonnes (2010-11) to 31988 tonnes (2022-23) accounting for an increase of 4.22 per cent productivity.

Table 3.9 Existing and Projected Yield and Production of Groundnut in Karur District

Year Area (Ha)	Total
2008-09	7497.00
2009-10	7143.00
2010-11	6359.00
Triennium average ending 2010-11**	6999.67

(Condt.Table 3.9)

Year Area (Ha)	Total
Projected area for 2022-23	5086.76
Per cent to total	7.32
Varieties	TMV 7
Maximum potential yield (Kg/Ha)*	4570
Average yield for Triennium average ending 2010-11 (Kg/Ha)	2240
Yield Gap (Kg/Ha)	2330
Projected production for 2022-23 (tonnes)	31988.49
Production for Triennium average ending 2010-11 (tonnes)	15804
Percentage of increase in production over 2010-11	102

**Table 3.10 Projected increase in Yield and Production of Groundnut
(2011-12 to 22-23)**

Year	Area (in ha)	Production (in tonnes)	Productivity (in t/ha)
Triennium Average	6999.67	15804	2.24
2011-12	6094.52	17152.71	2.81
2012-13	5995.19	18501.42	3.08
2013-14	5897.49	19850.12	3.36
2014-15	5801.37	21198.83	3.65
2015-16	5706.83	22547.54	3.96
2016-17	5613.82	23896.25	4.26
2017-18	5522.33	25244.95	4.58
2018-19	5432.33	26593.66	4.89
2019-2020	5343.8	27942.37	5.22
2020-21	5256.71	29291.08	5.58
2021-22	5171.04	30639.78	5.93
2022-23	5086.76	31988.49	6.29
Required Growth rate			4.22

3.2.4. Gingelly

The gingelly crop occupies an area i.e 6.55 per cent of the net sown area in Karur district. On an average 96 per cent of the gingelly crop is grown in rainfed situation with local cultivars without taking much care. The average yield of the variety grown in Karur district was only 350kg/ha, seems to be this crop has very low yield potential. Also the estimated yield gap as 31 per cent in gingelly crop also gives signal to look into the necessary interventions in improving the yield gap. The demonstrations on this crop showed that the varieties like RT 127 and TMV4 are the high yielding varieties which are suitable for Karur district. Hence the necessary steps will be taken to popularize these varieties in Karur district.

Table 3.11 Existing and Projected Yield and Production of Gingelly in Karur District

Year Area (Ha)	Total
2008-09	7251
2009-10	7269
2010-11	4271
Triennium average ending 2010-11	6263.66
Projected area for 2022-23	7612.27
per cent to total	6.55
Varieties	RT127, TMV4, Local
Maximum potential yield (Kg/Ha)	1210
Average yield for Triennium average ending 2010-11 (Kg/Ha)	350
Yield Gap (Kg/Ha)	860
Projected production for 2022-23 (tonnes)	7579.04
Production for Triennium average ending 2010-11 (tonnes)	2208
Percentage of increase in production over 2010-11	243

The production gap was very higher in gingelly crop. Extent of improvement of the average yield during the next 12 year period, i.e., from 2011-12 to 2022-23 and the resultant increase in the production are given in Table 3.12. After bridging the yield gap, the production could be increased from 2208 tonnes (2010-11) to 7579 tonnes (2022-23) accounting for an increase of 243 per cent.

Table 3.12 Projected increase in Yield and Production of Gingelly From 2011-12 to 2022-23

Year	Area	Production	Productivity (in t/ha)
	(in ha)	(in tonnes)	
Triennium Average	6263.67	2208.00	0.35
2011-12	6147.1	2655.59	0.43
2012-13	6267.74	3103.17	0.49
2013-14	6390.74	3550.76	0.55
2014-15	6516.16	3998.35	0.61
2015-16	6644.03	4445.93	0.66
2016-17	6774.42	4893.52	0.72
2017-18	6907.37	5341.11	0.77

Year	Area	Production	Productivity (in t/ha)
	(in ha)	(in tonnes)	
2018-19	7042.92	5788.69	0.82
2019-2020	7181.14	6236.28	0.88
2020-21	7322.07	6683.87	0.91
2021-22	7465.76	7131.45	0.95
2022-23	7612.27	7579.04	0.99
Required growth rate			5.91

3.2.5 Coconut

In Karur district, coconut covers the major area of 5653.33 ha and the major varieties grown in the district are Tall and TxD varieties. The yield gap estimated as 16 per cent could be bridged with replacement of suitable varieties. The CGR estimation was revealed that the area increase under this particular variety was higher *i.e* from 5253 ha in 2010-11 to 12153 ha in 2022 -23. Since the efforts will be taken to protect the coconut growers in Karur district. The annual growth rate required to raise the production from 674.67 lakh nuts in 2010-11 to 1017.60 lakh nuts in 2022-23 is estimated at 2.80 per cent.

Table 3.13 Existing and Projected Yield and Production of Coconut in Karur District

YearArea (Ha)	Total
2008-09	5253
2009-10	5730
2010-11	5937
Triennium average ending 2010-11	5653.33
Projected area for 2022-23	12153
per cent to total	5.91
Varieties	Tall, TallxDwarf
Maximum potential yield (lakh nuts /Ha)	0.18
Average yield for Triennium average ending 2010-11 (lakh nuts/Ha)	0.12
Yield Gap (lakh nuts/Ha)	0.06
Projected Production for 2022-23 (tonnes)	1017.60
Production for Triennium average ending 2010-11 (tonnes)	674.67
Percentage of increase in production over 2010-11	51

**Table 3.14 Projected increase in Yield and Production of Coconut
from 2011-12 to 2022- 23**

Year	Area (in ha)	Production (in lakhs nuts)	Productivity (in lakh nuts/ha)
Triennium Average	5653.33	674.67	0.12
2011-12	6499.96	703.2475	0.11
2012-13	6880.47	731.8249	0.10
2013-14	7283.26	760.4024	0.10
2014-15	7709.63	788.9798	0.10
2015-16	8160.95	817.5573	0.10
2016-17	8638.7	846.1347	0.09
2017-18	9144.42	874.7122	0.09
2018-19	9679.74	903.2896	0.09
2019-2020	10246.4	931.8671	0.09
2020-21	10846.23	960.4445	0.08
2021-22	11481.18	989.022	0.08
2022-23	12153.3	1017.599	0.08
Required Growth Rate			2.80

The points discussed with respect to coconut development in Karur district during stakeholders meeting revealed that the coconut growers expected the trainings with latest technologies towards increasing their production level. The varieties suitable for tender coconut will be popularized in Karur district as per the expectations of the local farmers. Micro nutrient mixture will be supplied at subsidized rate to protect the trees since this is an important input for coconut. The shredder will be promoted in Karur district. Insurance at individual farm level is expected at higher level. Coconut growers association will be promoted and that may be linked with Coconut board for necessary supports to take up the activities in commercial mode.

3.2.6 Sugarcane

In Karur district, sugarcane is grown in an area of 5880 ha and the major varieties grown in the district are PI 00-1110, Com 0265 and PI 96-1946. The yield gap estimated was very low ranges between 0.32 to 16.90 per cent per ha and this gap could be bridged as indicated in Table 3.15. The annual growth rate required to raise the yield from 99.65 tonnes per ha in 2010-11 to 191 tonnes per ha in 2022-23 is estimated at 2.97 per cent. The increase in production by way of bridging the yield gap, from 5.8 lakh tonnes (2010-11) to 9.1 lakh tonnes (2022-23) accounts for 57 per cent. The projected increase in yield and production of sugarcane from 2011-12 to 2022-23 is presented in Table 3.15.

**Table 3.15 Existing and Projected Yield and Production of Sugarcane
in Karur District**

Year Area (Ha)	Total
2008-09	5821
2009-10	5982
2010-11	5837
Triennium average ending 2010-11	5880
Projected area for 2022-23	4771
per cent to total	6.15
Varieties	PI11110,COM0265, PI1946
Maximum potential yield (tonnes/Ha)	155
Average yield for Triennium average ending 2010-11 (tonnes/Ha)	99.65
Yield Gap (tonnes/Ha)	55.27
Projected production for 2022-23 (tonnes)	911400
Production for Triennium average ending 2010-11 (tonnes)	585939
Percentage of increase in production over 2010-11	55.58

**Table 3.16 Projected increase in Yield and Production of Sugarcane
from 2011-12 to 2022-23**

Year	Area (in ha)	Production (in tonnes)	Productivity (in t/ha)
Triennium Average	5880	585939.00	99.65
2011-12	5740	613060.75	106.80
2012-13	5644	640182.50	113.43
2013-14	5550	667304.25	120.23
2014-15	5458	694426	127.23
2015-16	5367	721547.75	134.44
2016-17	5277	748669.50	141.87
2017-18	5189	775791.25	149.50
2018-19	5103	802913	157.34
2019-2020	5018	830034.75	165.41
2020-21	4934	857156.50	173.72
2021-22	4852	884278.25	182.25
2022-23	4771	911400.00	191.02
Required Growth Rate			2.97

3.2.7 Tapioca

Tapioca occupies more area in Karur district in recent years. It was noticed that the area and production has positive growth through which it gives signals to give priority on technology transfer to farmers in this crop. Mulluvadi is the prominent variety grown in Karur district. The area under tapioca was higher in Karur district i.e. 3057 ha which constitutes 3.19 per cent in net sown area. The trend analysis on area and production of tapioca revealed that the positive growth i.e area growth at higher rate from 3057 ha from 2010-11 to 70770.72 ha in 2022-23 with higher productivity. But the productivity growth was not much impressive since most of the varieties grown in this district are susceptible to diseases. Mealy bug infestation was noticed at higher level in this crop. The annual growth rate required to raise the production from 111716 tonnes per ha in 2010-11 to 152850 tonnes in 2022-23 is estimated as 2.24 per cent per annum. The necessary steps to be taken to popularize the pest and disease resistant varieties like Yethapur 1 will be promising in Karur district to minimize the pest and disease incidences.

Table 3.17 Existing and Projected Yield and Production of Tapioca in Karur District

Year Area (Ha)	Total
2008-09	2516
2009-10	3022
2010-11	3633
Triennium average ending 2010-11	3057
Projected area for 2022-23	70770.72
per cent to total	3.19
Varieties	Mulluvadi
Maximum potential yield (tonnes /Ha)	50
Average yield for Triennium average ending 2010-11 (tonnes/Ha)	36.44
Yield Gap (tonnes/Ha)	13.56
Projected production for 2022-23 (tonnes)	152850
Production for Triennium average ending 2010-11 (tonnes)	111716
Percentage of increase in production over 2010-11	36.8

**Table 3.18 Projected increase in Yield and Production of Tapioca
from 2011-12 to 2022-23**

Year	Area (Ha)	Production (t)	Productivity (t/ha)
Triennium Average	3057	111716	36.44
2011-12	6035.89	115143.8	37.57
2012-13	7549.77	118571.7	38.70
2013-14	9443.34	121999.5	39.83
2014-15	11811.84	125427.3	40.96
2015-16	14774.39	128855.2	42.09
2016-17	18479.98	132283	43.22
2017-18	23114.98	135710.8	44.35
2018-19	28912.49	139138.7	45.48
2019-2020	36164.09	142566.5	46.61
2020-21	45234.48	145994.3	47.74
2021-22	56579.82	149422.2	48.87
2022-23	70770.72	152850	50.00
Required growth rate			2.24

3.2.8 Banana

Poovan, Karpooravalli and Rasthali are the major varieties cultivated in Karur district. All the varieties are having high yielding potential with good market demand. The area under banana was higher in Karur district i.e 5147 ha which constitutes 5.38 per cent in net sown area. The trend analysis on area under banana revealed that the negative growth of its area. During the year 2022 -23 it will be 4247 ha due to shift in its area to other crops like tapioca. The analysis on yield potential also implied that this crop has higher yield gap *i.e.*, upto 40 per cent. This might be due to lack of proper plant protection measures and wrong selection of planting time. Hence, the necessary technologies will be popularized in this district to minimize the yield gap. There is a vast scope for value addition on banana crop in this district since major research was taken up in NRCH at Trichy. The gap in production would be achieved easily in Karur district if the technology transfer is achieved in correct time to the required person in needy places. The annual growth rate required to raise the production from 229030 tonnes per ha in 2010-11 to 247040 tonnes in 2022-23 is estimated at very low *i.e* 0.60 per cent.

Table 3.19 Existing and Projected Yield and Production of Banana in Karur District

Year Area (Ha)	Total
2008-09	5304
2009-10	5277
2010-11	4859
Triennium average ending 2010-11	5146.66
Projected area for 2022-23	4247.45
per cent to total	5.38
Varieties	Karpooravalli, Poovan, Rasthali
Maximum potential yield (tonnes /Ha)	48
Average yield for Triennium average ending 2010-11 (tonnes/Ha)	44.5
Yield Gap (tonnes/Ha)	3.5
Projected production for 2022-23 (tonnes)	247040
Production for Triennium average ending 2010-11 (tonnes)	229030.3
Percentage of increase in production over 2010-11	7.9

Table 3.20 Projected increase in Yield and Production of Banana from 2011-12 to 2022-23

Year	Area (in ha)	Production (in t/ha)	Productivity (in tonnes/ha)
Triennium Average	5146.67	229030.3	44.50
2011-12	4585.32	230531.1	50.27
2012-13	4553.52	232031.9	50.95
2013-14	4521.95	233532.8	51.64
2014-15	4490.59	235033.6	52.34
2015-16	4459.45	236534.4	53.04
2016-17	4428.53	238035.2	53.75
2017-18	4397.83	239536	54.47
2018-19	4367.33	241036.9	55.19
2019-2020	4337.05	242537.7	55.92
2020-21	4306.98	244038.5	56.66
2021-22	4277.11	245539.3	57.40
2022-23	4247.45	247040.1	58.16
Required growth rate			0.61

3.2.9 Sorghum

The Sorghum crop occupies 22.3 per cent of the net sown area of the district. It was identified through the growth rate analysis that, the sorghum crop has positive growth in its area but negative growth in its productivity. The production gap was found at very higher rate *i.e* 62331 tonnes. The present productivity of sorghum was comparatively very lower than that of improved varieties since the farmers are growing only traditional varieties like sambiranicholam, karuncholam and irungucholam. As per the farmers opinion these varieties are highly suitable for fodder and grain purposes. The biscuit companies also demanded these varieties. The farmers are willing to take up the varieties having high grain (with the equivalent quality of the existing varieties) and fodder values. To increase the productivity of sorghum, the farmers have to be trained up with good management and plant protection (IPM) technologies besides adopting improved varieties. It was revealed from the demonstration that, the hybridCSH 14 and Co 30 sorghum varieties were high yielding potential in the district. Hence these varieties may be popularized in the district towards increase in production.

Table 3.21 Existing and Projected Yield and Production of Sorghum in Karur District

Year Area (Ha)	Total
2008-09	21794.00
2009-10	21446.00
2010-11	20581.00
Triennium average ending 2010-11	21273.66
Projected area for 2022-23	22563.65
per cent to total	22.26
Varieties	Local traditional varieties (Sambiranicholam, Karun cholam and Irungucholam)
Maximum potential yield (Kg/Ha)	3400.00
Average yield for Triennium average ending 2010-11 (Kg/Ha)	480.00
Yield Gap (Kg/Ha)	2920 .00
Projected production for 2022-23 (tonnes)	72330.48
Production for Triennium average ending 2010-11 (tonnes)	10199.67
Percentage of increase in production over 2010-11	609.00

The required growth rate to achieve the production target from the prevailing area under sorghum was 7.15 per cent. It was implied that it requires 7.15 per cent of growth rate in its productivity annually to meet out the coarse cereals requirement in order to achieve the food security and industrial demand in future period.

Table 3.22 Projected Increase in Yield and Production of Sorghum from 11-12 to 22-23

Year	Area	Production	Productivity (in tonnes/ha)
	(in ha)	(in tonnes)	
Triennium Average	21273.67	10199.67	0.48
2011-12	21854.64	15377.24	0.70
2012-13	21918.16	20554.80	0.93
2013-14	21981.87	25732.37	1.17
2014-15	22045.77	30909.94	1.40
2015-16	22109.85	36087.51	1.63
2016-17	22174.11	41265.07	1.86
2017-18	22238.56	46442.64	2.08
2018-19	22303.21	51620.21	2.31
2019-2020	22368.03	56797.78	2.53
2020-21	22433.05	61975.34	2.76
2021-22	22498.26	67152.91	2.98
2022-23	22563.65	72330.48	3.20
Required Growth Rate			7.15

Table 3.23 Existing and Projected Yield and Production of Rice in Karur District

Year Area (Ha)	Total
2008-09	15628
2009-10	15013
2010-11	14808
Triennium average ending 2010-11	15149.67
Projected area for 2022-23	13041.88 (-2108 ha)
per cent to total	15.85
Varieties	IR 20 and BPT5204
Maximum potential yield (Kg/Ha)	5894
Average yield for Triennium average ending 2010-11 (Kg/Ha)	3995
Yield Gap (Kg/Ha)	1810
Projected production for 2022-23 (tonnes)	89232.00
Production for Triennium average ending 2010-11 (tonnes)	60412.00
Percentage of increase in production over 2010-11	47.7

3.2.10 Rice

Samba and Navarai are the major season in Karur district with respect to paddy cultivation. Since Karur district is endowed with rivers like Amaravathy, Kaveri and Noyyal, in almost all the blocks paddy crop is being cultivated in these two major seasons. It was understood from the results of the projected area under paddy during the year of 2023 that in Karur district, the area under paddy will be declined to the extent of 2108 ha due to shift in land use for urbanization and other various developmental purposes. Hence the necessary steps have to be taken to sustain the area under paddy in the district. Also certain Policy

intervention against the conversion of cultivable lands into real estate is required to arrest the negative trend in the gross cropped area. The maximum yields recorded in the crop cutting experiment was considered to assess the potential yield for paddy varieties like IR 20 (5.89 tonnes / ha) and BPT 5204 (4.73 tonnes / ha) grown in Karur district. The maximum yield potential for IR 20 seems to be very high. Hence the farmers in Karur district badly need to have breeder seeds of IR 20 for seed multiplication. This variety has good market potential due to its grain quality to meet all the consumption purposes. Due to non-availability of breeder seeds of IR 20, the substitutable varieties like Co-50 (for IR 20 variety) and Co 49 and ADT 49 (for BPT 5204) are recommended in Karur district. The variety TRY 3 is also highly suitable with very high yield potential of more than 6000 kg/ha. But, farmers have reported that the variety is amenable for lodging. For popularization of new varieties, it is suggested that the demonstration will be taken at each block level during the ensuing season. The extension machinery needs to be strengthened to bridge the yield gap with an aim to increase the paddy production from 60.4 lakh tonnes in 2010-11 to 89.2 lakh tonnes in 2022-23. The required growth rate to achieve the production target for Rice during 2022 - 23 will be 2.69 per cent. The area under this crop also needs to be maintained at the prevailing rate. The necessary policy measures will be taken to achieve the area and production target of rice in Karur district.

Table 3.24 Projected increase in Yield and Production of Rice from 2011-12 to 2022-23

Rice			
Year	Area (in ha)	Production (in tonnes)	Productivity (in t/ha)
Triennium Average	15149.67	60412	3.99
2011-12	13969.62	62814	4.49
2012-13	13822.65	65215	4.71
2013-14	13677.23	67617	4.94
2014-15	13533.34	70019	5.17
2015-16	13390.97	72420	5.40
2016-17	13250.09	74822	5.64
2017-18	13110.69	77223	5.89
2018-19	12972.76	79625	6.13
2019-2020	12836.28	82027	6.39
2020-21	12701.24	84428	6.64
2021-22	12567.62	86830	6.90
2022-23	12435.4	89232	7.17
Required Growth Rate			2.69

3.2.11 Spices and Condiments

In chillies, K1 variety is performing well in Karur district. Bird infestation is heavy. The suitable control measures to be popularized. The steps may be taken up to popularize the hybrid chillies CO H 1 which has high yield potential (6 tonnes/ha of dry pod). In turmeric, price fluctuation is the major problem. Necessary policy measures will help the farmers to avoid the major loss in this crop.

3.2.12 Moringa

PKM – 1 is the prominent variety grown in Karur district. From the year 2009 onwards the moringa cultivation is widely taken up in Karur district. The growth in area, production and productivity of moringa crop is in positive trend. The seeds along with admixture are received from HC &RI, Periyakulam. Care should be taken to maintain the purity. Pest (Fruit fly) infestation is more in moringa. The control through systemic insecticide is not efficient one. Need for suitable technology to control the pest infestation.

3.2.13 Mango

Neelum, Bangalora, Banganapalli and Senthuram are the prominent varieties grown in Karur district. It has positive growth in its area, production and productivity level. Dense planting technology may be promoted to achieve the higher productivity.

3.3 Yield gap analysis

The yield gap was estimated for the crops identified in Karur district from the details collected (maximum and minimum yield) from the office of the Joint Directorate of Agriculture. Among these crops the ruling varieties and their related information were collected from the JDA office. 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 and the yield gap was estimated. Yield gap is the difference between the progressive farmer's yield and average farm yield which explains the gap due to soil and climatic factors, technologies adopted, availability of farm inputs like seeds of suitable varieties, fertilizers, plant protection chemicals, irrigation water, labour and due to differences in cultivation practices followed, etc.

Through the collected information the Yield gap II (i.e. the difference between the progressive farm yield and actual farm yield) was estimated and discussed below.

Table 3.25 Yield Gap Analysis

S.No	Crop	Variety	Crop cutting experiment yield (t/ha)	Actual yield (t/ha)	Yield difference (YG -II) (t/ha)	Yield gap (In %)
1	Rice	IR20	8.93	7.73	1.20	13.44
		BPT5204	7.16	6.07	1.09	15.17
2	Sorghum	Local	0.91	0.47	0.44	48.24
3	Cumbu	KM2	2.36	1.28	1.09	45.97
		Local	1.75	1.03	0.72	41.36
4	Redgram	LRG41	1.02	0.78	0.24	23.86
		Local	1.07	0.86	0.21	19.31
		SA1	1.49	1.01	0.49	32.55
		ICPL5203	0.96	0.88	0.09	8.85
		ICPL85063	0.89	0.84	0.05	5.62
5	Groundnut	TMV7	4.57	2.20	2.37	51.79
6	Gingelly	TMV4	0.66	0.54	0.12	17.64
		RT127	1.21	0.84	0.37	30.97
		Local	0.53	0.52	0.01	2.24
7	Sunflower	SH204	1.86	1.84	0.02	1.21
		Sunbred	2.62	2.44	0.18	6.77
		Sun champ	2.39	2.38	0.01	0.42
		EC 68415	1.69	1.54	0.16	9.17
		SPIC SF204	1.81	1.67	0.14	7.73
		SF104	2.42	2.06	0.37	15.08
		SPIC foliage	1.84	1.80	0.05	2.45
		Sunmax (hyb)	1.78	1.73	0.05	2.81
		Sungold369	1.61	1.60	0.01	0.93
8	Sugarcane	PI1946	1.44	1.20	0.24	16.90
		COM0265	1.45	1.47	-0.01	-1.03
		PI1110	1.55	1.55	0.01	0.32
9	Banana	Poovan	25.00	15.00	10.00	40.00
		Karpuravalli	30.00	20.00	10.00	33.33
		Rasthali	25.00	15.00	10.00	40.00
10	Drumstick	PKM-1	40.00	30.00	10.00	25.00
11	Tapioca	Mulluvadi	50.00	40.00	10.00	20.00
12	Mango	Neelam	10.00	8.00	2.00	20.00
		Bangalora	12.00	10.00	2.00	16.67
		Banganapalli	7.00	6.00	1.00	14.29
		Senthura	8.00	6.00	2.00	25.00
13	Coconut	Tall	140.00	120.00	20.00	14.29
		T x D	180.00	150.00	30.00	16.67

Among the crops identified in Karur district the yield gap was noticed at highest level in groundnut, cholam, cumbu, gingelly, redgram and banana. In other crops the yield gap was lesser than that of previous crops. The reasons for the yield gap may be due to resource, technological and socio - economic constraints. The major reasons for this yield gap were identified through the stakeholders meeting at district level and the decisions made to bridge the gap were discussed below.

3.2 Technological Interventions and strategies to reduce the yield gaps

The adoption of suitable high yielding varieties and crop production technologies as per the recommendations given by TNAU are the pre-requisites to boost the production (Annexure). The constraints in crop production and strategy for increasing the production of potential crops in Karur district were discussed in the stake holder's meeting.

Production Constraints in Agriculture

Two Stakeholders' meetings were convened involving the farmers and extension officials of Karur district and scientists of KrishiVigyan Kendra at Karur to discuss the production constraints that hinder agricultural development, and to elicit the suggestions to achieve the higher agricultural production by 2023. In the discussion, more focus was given for the development of selected crops, viz., cholam, paddy, groundnut, gingelly, coconut, sugarcane, banana, tapioca, redgram and cumbu. The constraints and suggestions that emanated from the discussion are listed in Table 3.26.

Table 3.26 Production, Constraints and interventions

S. No.	Crop/ Enterprise	Identified Problem	Interventions				
			Title of OFT if any	Title of FLD if any	Title of Training if any	Title of Training for extension personnel if any	Others
1.	Paddy	Labour and water scarcity	-	Paddy direct sowing by using seed drum	Direct sowing of paddy by using drum seeder	-	Supply of seeds and seed drum, CD on direct sowing methods and their benefits, method demonstration on seed treatment and sowing.
		Problem soil and poor soil fertility	Assessment of suitable variety /hybrid under saline situations to improve the productivity	-	Problem soil management, Low cost production technologies in paddy	Problem soil management through organic farming	Method demonstration on salinity management .Adoption of "TRY" Paddy varieties overcome salinity problem
		Poor germination and establishment of seedling under mat nursery	-	-	Mat nursery management practices	-	Demonstration on different nursery preparation.
		Micronutrient deficiency	-	-	Management of micronutrient	IPM in rice	Farmers convention for deficiency identification and their management

S. No.	Crop/ Enterprise	Identified Problem	Interventions				
			Title of OFT if any	Title of FLD if any	Title of Training if any	Title of Training for extension personnel if any	Others
		Yellow stem borer incidence in paddy blast incidence	-	IPM for yellow stem borer in paddy.	Management of yellow stem borer in paddy. Management of blast in paddy	Role of Bio-control Agents on Pest and Disease Management	Folder - Disease Management in paddy may be supplied to the farmers
		Incidence of insects in storage of grains	-	-	Scientific storage Technology.	Eco friendly pest Management tools	Booklet: Post-harvest Management techniques
		High yielding varieties equivalent to IR 20 & BPT5204 to be introduced. Since these varieties are having high market potential	-	-	-	-	Trails / Demonstrations to be conducted at block level for the varieties CO 50 (replaceable variety for IR 20) and CO 51 (replaceable variety for BPT 5204) immediately by taking necessary arrangements.
		Huge wastage during harvest	-	-	-	-	Machineries used for various agricultural operations including weeder needs to be modified according to local situation. Mini paddy harvester is needed one to avoid the wastages.

S. No.	Crop/ Enterprise	Identified Problem	Interventions				
			Title of OFT if any	Title of FLD if any	Title of Training if any	Title of Training for extension personnel if any	Others
2.	Maize	Poor filling of grains, occurrence of stem borer and downy mildew and low yield	-	Introduction of resistant hybrids and micro nutrient management for higher productivity in maize	Micro nutrient Management in maize. Production technologies for hybrid maize	Micro nutrient management in agricultural crops	Supply of hybrid seeds and micro nutrient, Demonstration on sowing methods for population maintenance, Demonstration on micro nutrient application, Leaf let on maize production Technology
3.	Maize	Poor health, less income and profit in millets	-	-	Nutritional importance and value addition on minor millets	-	Booklet: Nutritional importance and value addition on minor millets
4.	Sorghum	Recommended cultivation practices improved varieties, inter-cultural operations, plant protection measures, weeding, etc. could not followed properly.					Suitable varieties need to be developed on par with local varieties nutrient content along with high yielding potential in equal proportions of grain and fodder

S. No.	Crop/ Enterprise	Identified Problem	Interventions				
			Title of OFT if any	Title of FLD if any	Title of Training if any	Title of Training for extension personnel if any	Others
		Traditional varieties like sambiranicholam, irungucholam were only grown. Farmer's opined that the Co 5 and Co 6 varieties have less nutrient content.					CSH 4 demonstrations resulted that it has high yielding potential i.e.3.4 tonnes/ha. Hence necessary steps will be taken to popularize this hybrid in Karur district. Co 30 has high fodder potential. The demonstrations will be taken up
		Poor soil health status and occurrence of more pest and disease incidence.					Farmers need to be trained on latest technologies. Demonstrations will be conducted to transfer the technologies
		Non availability of suitable machineries to harvest the fodder, etc					Suitable machineries (fodder cutter, chaff cutter, etc) need to be developed and demonstrated at field level.
5.	Sugarcane	Labour scarcity, high cost of setts and more waste of cane	-	Introduction of sugarcane sett cutter	Importance of mechanization for higher profitability	-	Demonstration on usage of single set cutter, method demonstration on preparation of nursery and planting method, field day

S. No.	Crop/ Enterprise	Identified Problem	Interventions				
			Title of OFT if any	Title of FLD if any	Title of Training if any	Title of Training for extension personnel if any	Others
		Early shoot borer incidence	-	-	Management of early shoot borer in sugarcane	Recent methods for pest management in sugarcane	Method demonstration on sowing of daincha as intercrop, placement of eggcards. Book let on pest management in Sugarcane
		Drudgeries in trashing labor scarcity	-	Introduction of Sugarcane stripper to reduce drudgery in detrashing.	Importance of stripper to reduce the drudgery	-	Demonstration on usage of stripper, field day, leaflet on use of sugarcane stripper
		Poor adoption SSI techniques due to labour shortage Poor after-sales service by the dealers of drip irrigation pipes Poor adoption of Precision Farming Techniques					The farmers are trained up with the latest technologies Trainings and exposure visits to neighbouring places.
6.	Groundnut	Decreasing are a under groundnut and shifting of	-	Introduction of HYV(Kadiri-	Selection and adoption of high yielding variety.	-	Group discussion, Demonstration on seed treatment and population

S. No.	Crop/ Enterprise	Identified Problem	Interventions				
			Title of OFT if any	Title of FLD if any	Title of Training if any	Title of Training for extension personnel if any	Others
		oilseeds to sunflower due to labour scarcity and low yield with the existing variety and management, weed infestation and pest and disease incidence		6& TMV(Gn)-13 With component technology	Low cost technology for higher productivity		maintenance. Micronutrient application. Field day, Kisanghosthi
			-	Introduction of polythene film mulch for water and weed Management	Use of polythene film mulch for higher productivity	Tools and machinery for agriculture	Demonstration on use of polythene film mulch field day, Exposure visit
			-			Integrated Weed management in agricultural crops	Booklet on Integrated Weed management in agricultural crops
			-	Introduction of Impact type Groundnut stripper	Methods of groundnut stripping	-	Demonstration on use groundnut stripper, field day. CD on advanced groundnut production technologies for higher profitability
			-	Introduction	Methods of	-	Demonstration on use

S. No.	Crop/ Enterprise	Identified Problem	Interventions				
			Title of OFT if any	Title of FLD if any	Title of Training if any	Title of Training for extension personnel if any	Others
				of setting type groundnut decorticator	groundnut decortications		groundnut decorticator, field day, CD on advanced groundnut production technologies for higher profitability
			-			Management of pest and disease incidence in oil seeds	CD on advanced groundnut production technologies for higher profitability
			-	Introduction of power tiller operated groundnut harvester	Harvesting methods of groundnut	-	Demonstration on use groundnut harvester, field day, CD on advanced groundnut production technologies for higher profitability
7.	Sunflower	Low yield, micro nutrient deficiency and salinity	-	Introduction of DRSF-108 with component technology Introduction of DRSH-1 with component technology	Technology for population maintenance, Management practices for higher filling and oil content	Integrated Pest Management in sunflower	Group meeting, farmers scientist interaction for identification of deficiency and management approaches, field day. Demonstration on micro nutrient management
		Low yield,	-	-	Management	-	Compendium on oil seed

S. No.	Crop/ Enterprise	Identified Problem	Interventions				
			Title of OFT if any	Title of FLD if any	Title of Training if any	Title of Training for extension personnel if any	Others
		micro nutrient deficiency and salinity			practices for drought and saline situation, IPM		production technologies, Demonstration on seed hardening/ treatment against stress and disease
		Mealy bug incidence	Management of mealy bug in Sunflower	-	Management practices for mealy bug in sunflower	IPM in oil seeds	Method demonstration, field day
8.	Gingelly	Improper population maintenance and lower yield, weed infestation	-	Introduction of VRI (SV)-1 with component technology Introduction of VRI (SV)-2 with component technology	Importance and methods of population Maintenance. Importance of micro nutrient management. Methods of weed management in gingelly	Low cost and no cost technologies for oil seed production	Demonstration on sowing, thinning and population maintenance, Field day, Demonstration on seed treatment and micro nutrient management
9.	Coconut	Incidence of Red Palm Weevil and Rhinoceros beetle	-	-	Management of red palm weevil and rhinoceros beetle in Coconut	-	Folder - Management of red palm weevil and Rhinoceros beetle in Coconut
		Labour scarcity	-	Introduction of coconut tree climber	Coconut tree climber and its usage	-	Demonstration on Method of using coconut tree climber, field day, leaf let on coconut tree climber and its features
		Tall, tall x dwarf					Trainings with latest

S. No.	Crop/ Enterprise	Identified Problem	Interventions				
			Title of OFT if any	Title of FLD if any	Title of Training if any	Title of Training for extension personnel if any	Others
		varieties are grown for longer period. It should be replaced.					technologies towards increasing the production level are needed. The varieties suitable for tender coconut will be popularized in Karur district as per the expectations of the local farmers
		Micro nutrient deficiency was noticed at higher level					Micro nutrient mixture will be supplied at subsidized rate to protect the trees since this is an important input in coconut. The shredder will be promoted in Karur district
		Crop loss due to abiotic stress					Insurance at individual farm level is expected at higher level.
		Lack of marketing					Coconut growers association will be promoted and that may be linked with Coconut board for necessary supports to take up the activities in commercial mode
10.	Black gram	Low yield And susceptibility to Mosaic incidence of pod borer	-	Introduction of high yielding mosaic resistant	Importance and selection of resistant variety and their production	-	Demonstration on Method of sowing under rice fallow situation. Demonstration on Management of fertilizer requirement through foliar,

S. No.	Crop/ Enterprise	Identified Problem	Interventions				
			Title of OFT if any	Title of FLD if any	Title of Training if any	Title of Training for extension personnel if any	Others
				variety in Black gram VBN (Bg) -4 under garden land situation with component technology	technologies Low cost and no cost technology for higher productivity, IPM for Pod borer in black gram		field day, Booklet on advance pulse production technologies
				Introduction of new high yielding variety (ADT-5) under rice fallow situation with component technology	Low cost and no cost technology for higher profitability	-	Demonstration on Method of sowing under rice fallow situation. Demonstration on Management of fertilizer requirement through foliar, Field day, Kisanghosthi.
11.	Green gram	Low yield And susceptibility to Mosaic	-	Introduction of high yielding mosaic resistant variety Co (Gg) - 7 under garden land situation	Low cost and no cost technology for higher profitability	IPM in pulses	Group meeting, method demonstration on foliar nutrient management. Demonstration on micro Nutrient management, Field day.

S. No.	Crop/ Enterprise	Identified Problem	Interventions				
			Title of OFT if any	Title of FLD if any	Title of Training if any	Title of Training for extension personnel if any	Others
				with component technology			
				Introduction of new high yielding variety (ADT-3) under rice fallow situation with component technology	Low cost and no cost technology for higher profitability	-	Demonstration on Method of sowing under rice fallow situation. Demonstration on Management of fertilizer requirement through foliar
12.	Redgram	Poor yield and longer duration	-	Introduction of high yielding variety for both rain fed and irrigated situation in Red gram VBN-3with component Technology	Role and importance of selection of varieties and their approaches for better population maintenance	Low cost and no cost technologies for pulses production	Demonstration on seed hardening and population Maintenance. Field day
13.	Banana	Low profitability	Assessment of suitable method of planting in banana for	-	Different methods of planting and fertility management	Mechanization in horticulture	Supply of suckers, Demonstration on planting methods, Leaf let on different planting methods and their benefits, Demonstration on

S. No.	Crop/ Enterprise	Identified Problem	Interventions				
			Title of OFT if any	Title of FLD if any	Title of Training if any	Title of Training for extension personnel if any	Others
			higher profitability				sucker treatment, Demonstration on bunch cover result demonstration on yield performance, Exposure visits
		Pseudo stem Weevil incidence	Management of pseudo stem weevil in banana	-	Management of pseudo stem weevil in banana	Advanced techniques for the management of pest and diseases in banana	Group meeting, Scientist farmer interaction, Field day
		Low price and less profit	Assessment of marketing approach for higher profit	-	Importance of information Collection on market status.	-	Group discussion with scientists
		Incidence of Panama wilt	Management of Panama wilt in banana	-	Approaches for management Panama wilt in banana	-	Farmers- scientist interaction, field day, Folder management Panama wilt in Banana
		Wastage of pseudo stem and less remunerative price for raw banana	-	-	Banana fiber extraction and Value addition of banana	-	Method demonstration, exposure visit, book let on value addition in banana

S. No.	Crop/ Enterprise	Identified Problem	Interventions				
			Title of OFT if any	Title of FLD if any	Title of Training if any	Title of Training for extension personnel if any	Others
		Less quality fibre and less marketability	Approaches for drudgery reduction and quality improvement of banana fibre	-	Methods of banana fibre extraction		Method demonstration, booklet on banana fibre extraction
14.	Fodder sorghum	Lack of green and dry fodder availability	Assessment of suitable fodder for higher productivity	-	Importance of selection of suitable variety under saline and moisture stress situation	-	Demonstration on seed hardening and sowing methods, Supply of fodder seeds and seed hardening chemicals, Leaf let on technologies for fodder production, Demonstration on assessment of quality
15.	Brinjal	Incidence of Fruit and shoot borer	-	Management of Fruit and shoot borer in brinjal	Importance of selection of resistant variety and production technologies	-	Demonstration on selection of trap crop, formulation of pesticide, use of bio pesticides Group meeting, Field day
	Chili	Low yield and fruit rot and mosaic incidence	-	Introduction of high yield and	Cultivation techniques of chili	IPM on agricultural and horticultural	Group meeting, farmers convention, method demonstration on nursery preparation and usage of

S. No.	Crop/ Enterprise	Identified Problem	Interventions				
			Title of OFT if any	Title of FLD if any	Title of Training if any	Title of Training for extension personnel if any	Others
				disease free variety (KKM (ch)-1)		crops	growth promoters, field day, publication on advanced method of cultivation , Booklet on IPM in agricultural and horticultural crops
	Jasmine	Incidence of Budworm	-	Budworm management in Jasmine	Budworm management in jasmine	-	Method demonstration on preparation of formulations
	Rose	American boll worm incidence	-	-	Management of American boll worm in rose	-	Leaflet on American boll worm in rose

Other Constraints:**A. Marketing**

1. Subsidy is needed for quality storage of products
2. Need for safe warehouse.
3. Subsidy is needed for value addition.

B. Engineering

1. Subsidy for sowing is needed.

C. General

1. Lack of awareness about new technology to farmers. The technology reaches at very slow rate to the farmers.
2. Most of the farmers in this district do not know completely about fertigation technology, hence there is the need of full information on this.
3. It is expected that the farmers who cultivate plantation crop are in need of subsidy/ incentive in between for their encouragement to continue their cultivation.
4. Government should frame the budget for agriculture only after complete discussion with farmers.
5. There is a need for change in crop insurance policy, i.e., if a farmer registers on insurance legally and personally received the policy amount only loss in crop on village mode. This has to be changed.
6. Need for required quantity of Bio-pesticides at subsidized rate in required time.

To sum up, the sustained raise in the productivities of major crops could be achieved mainly with synergistic efforts of crop scientists, extension officials and farmers. The varieties and package of cultivation practices suitable to different agro-climatic conditions and production environment need to be identified by the agricultural scientists. The dissemination of technologies and supply of quality seeds, and other inputs like fertilizers and plant protection chemicals, machineries and tools are to be ensured by the agricultural extension officials at appropriate time and place. 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 Programs. They should also come forward to adopt the good agricultural practices and technologies developed by the agricultural research institutes.

CHAPTER IV

DISTRICT PLAN

The various development issues, constraints and activities (interventions) planned for the development of agriculture and allied sectors have been discussed in earlier chapters. Based on the discussions the district plan in full has been briefly outlined below in this chapter. The activities planned and the associated targets and costs are presented for the development of both agricultural and allied sectors.

4.1 Agriculture Sector

The interventions proposed, the associated outlays, the physical targets, budgetary requirements, time frame for achievements in the agricultural (field crops) sector, horticultural sector, agricultural engineering sector, agricultural marketing and animal husbandry sector and fisheries sector have been discussed in this chapter. This would comprehend the activities and the achievements to be made in the five years period of twelfth plan, under NADP.

4.1.1 Enhancing rice productivity

In Karur district, rice is an important cereal crop grown in an area of 12305.67 ha and the yield is around 6.0 tonnes/ha. Rice is mostly raised under wet land condition. Hence, the requirement for feeding the people is to be met only by increasing the productivity of rice in Karur district. System of rice intensification is one of the new technologies which need awareness creation and adoption for improving the productivity of the crop. Increasing the productivity of rice is highly dependent on the adoption of modern technology. This needs the timely supply of seeds, availability of machineries and adoption of the improved package of practices. This will result in the reduction of labour cost and post-harvest losses. Thus the goal is to promote the adoption of SRI technology and the supply of inputs like bio-fertilizers, green manure seeds, zinc sulphate and micro nutrient mixture to increase the productivity of rice up to 5- 10 percent.

Project components

1. Production and Distribution of certified and foundation seeds in all blocks
2. Incentives for certified seed production and paddy machine planting in all blocks except Aravakurichi block
3. Distribution of bio-fertilizers and micronutrient mixture in all blocks
4. Distribution of tarpaulin for nursery in all blocks

Budget

The budget requirement for fulfilling the various interventions is ₹ **4019.80** Lakhs. The details of budget requirement for each intervention across the blocks are shown in Table 4.1.

Expected outcome

To enhance the production and productivity of rice through adoption of improved methods in cultivation, farm machineries and the supply of inputs.

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.1. Enhancing Rice Production in Karur District

(₹. in lakhs)

Sl. No	Interventions	Unit	Unit cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	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

Sl. No	Interventions	Unit	Unit cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
12	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
15	Demonstration of drip irrigation	ha	100000	All Blocks	20	20	20	20	20	20	20	20	20	20	100	100
						614.81		793.25		793.25		793.25		1025.23		4019.80

Aravakurichi-B1, K.Paramathi-B2, Kadavur-B3, Karur-B4, Krishnarayapuram-B5, Kulithalai-B6, Thanthoni-B7, Thogamalai

4.1.2 Enhancing millets productivity

In Karur district, sorghum is the foremost important millet crop grown in an area of 18327 ha. Average yield was around 0.14 tonnes/ha for cumbu, 0.017 tonnes/ ha for ragi, 1.1 tonnes/ ha for maize and 2.7 tonnes/ ha for sorghum. Sorghum is mostly raised under dry conditions generally for grain and to some extent for fodder. Nowadays farmers are interested to utilize the Sorghum for value addition and healthy preparation of food stuff. Sorghum being a major crop, increasing the productivity from 2.7 tonnes/ ha is most important for increasing the total production of the crop. The productivity of millets depends on the quality of seed materials and use of high yielding varieties. The adoption of package of practices like IPM and INM with high yielding varieties gives the maximum potential yield. The increasing cost of labour can be minimized by use of mechanized weeder and thresher.

Project Components

1. Expansion of area under Minor Millets (Demo - supply of seed, seed treatment & MN mixture) in Paramathi, Kadavur and Thogamalai blocks
2. Seed distribution of sorghum and maize (Thogamalai), cumbu (Thanthoni and Thogamalai), Ragi (Paramathi)
3. Distribution of millet micro nutrient mixture in sorghum (Aravakurichi, Paramathi and Thanthoni blocks), maize and cumbu (Thanthoni block)
4. Minor millet processing unit in Paramathi and Thogamalai blocks

Budget

The budget requirement for fulfilling the various interventions is ₹ 380.75 Lakhs. The details of budget requirement for each intervention across the blocks are shown in Table 4.2.

Expected outcome

There is a scope to increase the area under millets in Karur district. By distributing improved varieties/ hybrids of millets will certainly improve the living standard of the farmers of this tract. The implementation of the project will result in an increase of 10 per cent in the yield and production of millets. This will help the bakery units and to supply more of raw material for their value added products.

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.2. Enhancing Millet Production in Karur District

(₹. in lakhs)

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	B1,B8	20	2.00	75	7.50	75	7.50	85	8.50	90	9.00	345	34.50
2	Distribution on biofertilizer - Liquid / Carrier	Ha	0.003	B3,B7,B8	25	0.08	75	0.23	175	0.53	175	0.53	185	0.56	635	1.91
3	Expansion of area under Minor Millets (Demo - supply of seed, seed treatment, MN mixture & Organic package)	Ha	0.05	B2,B3,B8	1	0.05	8	0.40	14	0.70	16	0.80	17	0.85	56	2.80
4	Formation of small millet groups	Nos.	0.2	B3,B8	5	1.00	6	1.20	7	1.40	8	1.60	8	1.60	34	6.80
5	Millet Processing unit - Minor millet	Nos.	2.5	B2,B8	2	5.00	2	5.00	2	5.00	1	2.50	2	5.00	9	22.50
6	Soil moisture conservation practices	Ha	0.05	All Blocks	125	6.25	125	6.25	125	6.25	145	7.25	125	6.25	645	32.25
7	Initiative for Nutritional Security through Intensive Millet Promotion (INSIMP)	ha	0.04	All Blocks	300	12.00	300	12.00	300	12.00	300	12.00	300	12.00	1500	60.00
	Sorghum															
8	Demonstration (Supply of seed, seed treatment, MN mixture & Organic package)	Ha	0.05	B3,B8	400	20.00	805	40.25	505	25.25	305	15.25	205	10.25	2220	111.00
9	Distribution of biofertilizers - Liquid / Carrier	Ha	0.003	B1,B2,B7,B8	750	2.25	660	1.98	660	1.98	265	0.80	265	0.80	2600	7.80
10	Distribution of MN mixture (12.5kg/ha)	Ha	0.007	B1,B2,B7	300	2.10	400	2.80	400	2.80	150	1.05	150	1.05	1400	9.80
11	Seed distribution	MT	0.7	B8	4	2.80	8	5.60	5	3.50	3	2.10	2	1.40	22	15.40
	Maize															
12	Demonstration (Supply of seed, seed treatment & MN mixture, organic package)	Ha	0.05	B8	2	0.10	3	0.15	5	0.25	7	0.35	7	0.35	24	1.20
13	Distribution of biofertilizers - Liquid / Carrier	Ha	0.003	B8	2	0.01	3	0.01	5	0.02	7	0.02	7	0.02	24	0.07
14	Distribution of herbicides	Ha	0.008	B8	2	0.02	3	0.02	5	0.04	7	0.06	7	0.06	24	0.19
15	Distribution of Maize maxim (15 kg/ha)	Ha	0.045	B8	2	0.09	3	0.14	5	0.23	7	0.32	7	0.32	24	1.08
16	Drip irrigation for maize	Ha	1	B8	2	2.00	3	3.00	5	5.00	7	7.00	7	7.00	24	24.00
17	Seed Distribution	MT	0.4	B8	0	0.04	0	0.08	0	0.12	1	0.20	1	0.20	2	0.64
18	Seed Distribution Hybrid seeds for maize	MT	1.8	B8	2	3.60	3	5.40	5	9.00	7	12.60	7	12.60	24	43.20

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
	Cumbu															
19	Demonstration (Supply of seed, seed treatment & MN mixture, organic package)	Ha	0.05	B8	1	0.05	2	0.10	2	0.10	3	0.15	3	0.15	11	0.55
20	Distribution of biofertilizers Liquid / Carrier	Ha	0.003	B1,B7,B8	1	0.00	102	0.31	102	0.31	103	0.31	103	0.31	411	1.23
21	Distribution of MN mixture (12.5kg/ha)	Ha	0.007	B1,B7,B8	1	0.01	52	0.36	52	0.36	53	0.37	53	0.37	211	1.48
22	Seed Distribution	MT	0.53	B7,B8	1	0.62	0	0.24	0	0.25	1	0.29	1	0.29	3	1.69
23	Seed Distribution	MT	0.66	B2	1	0.66		0.00		0.00		0.00		0.00	1	0.66
	Total					60.72		93.01		82.57		74.03		70.41		380.75

Aravakurichi-B1, K.Paramathi-B2, Kadavur-B3, Karur-B4, Krishnarayapuram-B5, Kulithalai-B6, Thanthoni-B7, Thogamalai-B8

4.1.3 Enhancing pulses productivity

Pulses are one of the important food components for the health of the human being. The area under pulses in Karur district is about 11, 876 ha with a productivity of around 600 – 1400 kg/ha. With a decreasing area under cultivation, the possibility to improve the production of pulses is only through increasing the productivity of pulses through the adoption of better seed varieties and package of practices. The per capita consumption of pulse is also less than the recommended level by the food scientist for the health of the people. The yields of pulse crop are very low and hence non remunerative to the farmers. Under the above circumstances the option is only to increase the productivity of pulses. Thus the overall objective is to increase the yield of pulses by 5-10 percent through the certified seeds production and supply of bio-fertilizers and micro nutrient mixtures.

Project Components

1. Production and distribution of certified pulse seeds in all blocks
2. Distribution of gypsum (Kulithalai), pulse wonder (Thogamalai)
3. Distribution of bio-fertilizers in all blocks except Kulithalai
4. Seed treatment and soil application with *Trichoderma Viride* in all blocks except Kulithalai
5. Cropping system based demonstration in Kadavur, Krishnarayapuram and Thogamalai blocks

Budget

The budget requirement for fulfilling the various interventions is ₹ 758.08 Lakhs. The details of budget requirement for each intervention across the blocks are shown in Table 4.3.

Expected outcome

Increasing the productivity of pulses will result in making available of required quantity of pulses to the people as per the recommendation of the nutritionists.

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.3 Budget Requirement for Pulses in Karur District

(₹ in lakhs)

Sl. No	Interventions	Unit	Unit cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Purchase of breeder seeds	MT	250000	All Blocks	0	0.00	2.1	5.25	0.5	1.25	0	0.00	0.8	2.00	3.4	8.50
2	Production of Foundation/ Certified pulses seeds	MT	86000	All Blocks	32.5	27.95	34.5	29.67	38	32.68	41.5	35.69	42	36.12	188.5	162.11
3	Distribution of Certified Seeds	MT	100000	All Blocks Except B2	25.5	25.50	30.5	30.50	34	34.00	37	37.00	38	38.00	165	165.00
4	Distribution of Gypsum	ha	400	B6	100	0.40	100	0.40	100	0.40	100	0.40	100	0.40	500	2.00
5	Distribution of Biofertilizer/ Organic packages (Rhizobium + Phosphobacteria) - Liquid / Carrier	Ha	600	All Blocks Except B6	1100	6.60	995	5.97	1025	6.15	855	5.13	900	5.40	4875	29.25
6	Distribution of Micro Nutrients(5 kgs/ Ha)	Ha	350	All Blocks Except B4,B6	190	0.67	370	1.30	425	1.49	450	1.58	540	1.89	1975	6.91
7	DAP Spray	Ha	700	All Blocks B2,B4	1100	7.70	1090	7.63	1250	8.75	1350	9.45	1490	10.43	6280	43.96
8	Pulse wonder - 5 kg/ha	Ha	1000	B8	0	0.00	200	2.00	250	2.50	300	3.00	400	4.00	1150	11.50
9	Bund Cropping	Ha	300	All Blocks Except B2,B8	185	0.56	355	1.07	370	1.11	360	1.08	390	1.17	1660	4.98
10	Line sowing	Ha	2250	All Blocks Except B8	160	3.60	230	5.18	250	5.63	255	5.74	275	6.19	1170	26.33
11	Distribution of Yellow sticky trap /pheromone trap	ha	1000	B2,B3,B8	1000	10.00	20	0.20	20	0.20	22	0.22	25	0.25	1087	10.87
12	Cropping system based demonstration	Ha	12500	B3,B6,B8	6	0.75	32	4.00	58	7.25	58	7.25	59	7.38	213	26.63
13	Distribution of weedicide	Ha	1000	B4	10	0.10	10	0.10	10	0.10	10	0.10	10	0.10	50	0.50
14	Plant Protection Chemicals	Ha	1000	B4,B5,B8	60	0.60	85	0.85	95	0.95	105	1.05	115	1.15	460	4.60

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
15	Seed treatment and soil application with Trichoderma viridi	Ha	700	All Blocks Except B6	75	0.53	300	2.10	410	2.87	475	3.33	485	3.40	1745	12.22
16	Pure crop demonstration - Black gram and green gram	Ha	6300	All Blocks Except B3,B4	300	18.90	360	22.68	520	32.76	435	27.41	350	22.05	1965	123.80
17	Demonstration on intercropping of pulses with other crops	Ha	8300	B5,B6	50	4.15	60	4.98	65	5.40	70	5.81	75	6.23	320	26.56
18	Promotion of Redgram Transplantation for nursery preparation	Ha	5000	All Blocks Except B2,B8	290	14.50	310	15.50	355	17.75	380	19.00	405	20.25	1740	87.00
19	Seed treatment with chemicals	Ha	250	All Blocks	10	0.03	360	0.90	460	1.15	610	1.53	710	1.78	2150	5.38
	Total					122.52		140.27		162.38		164.75		168.17		758.08

Aravakurichi-B1, K.Paramathi-B2, Kadavur-B3, Karur-B4, Krishnarayapuram-B5, Kulithalai-B6, Thanthoni-B7, Thogamalai-B8

4.1.4 Enhancing oilseeds productivity

Karur district has an area of more than 9258 ha under oilseeds cultivation. The yield is around 3.2 tonnes/ha for groundnut, 732 kg for Gingelly, 612 kg for gingelly and 1.8 tonnes/ha for sunflower. This is mainly because of the labour problem in cultivation of oil seed crop as well as declining in the water table in this district. However, the farmers face the decline in the yield of groundnut year after year. To get higher yield, the high yielding varieties and modern mechanized cultivating methods are needed. Groundnut cultivation is gaining importance in the red soil tracts of Karur and Kulithalai. This was mainly due to the increased scarcity of water in this area. With a view to bring more area under oilseeds and to encourage more farmers to take up groundnut and gingelly cultivation it is essential that interventions should be targeted on foliar spray and incentives. The overall goal is to increase the yield of oil seeds up to 5 to 10 percent through the use of quality seeds along with the adoption of the recommended practices.

Project components

1. Production of sunflower foundation seeds (Thogamalai) and distribution of sunflower certified seeds (Kulithalai)
2. Production and distribution of Gingelly seed in Krishnarayapuram
3. CBD-Groundnut in all blocks except Karur and Krishnarayapuram blocks
4. Distribution of Power operated Groundnut Decorticator in Paramathi, Karur, Thanthoni and Thogamalai blocks
5. Seed drill Sowing of Groundnut with Redgram as Intercrop in Kulithalai and Thogamalai blocks

Budget

The budget requirement for fulfilling the various interventions is ₹ 466.75 Lakhs. The details of budget requirement for each intervention across the blocks are shown in Table 4.4.

Expected outcome

The improved varieties of groundnut seeds and improved package of practice will result in an increase in the yield and production of coconut. This in turn will also help in the increase in the production of groundnut oil and various value added products to the people.

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.4 Budget Requirement for Oilseeds in Karur District

(₹. in lakhs)

Sl. No	Components	Unit	Unit Cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
I	OILSEEDS															
1	Herbicide	Ha	0.01	All Blocks	0	0.00	5	0.05	5	0.05	5	0.05	5	0.05	20	0.20
2	Compact Block Demonstration - Groundnut	Ha	0.20	All Blocks Except B4,B5	64	12.80	60	12.00	76	15.20	84	16.80	93	18.60	377	75.40
3	Compact Block Demonstration - Gingelly / Castor	Ha	0.06	B3,B6,B8	10	0.60	25	1.50	30	1.80	30	1.80	30	1.80	125	7.50
II	GROUNDNUT															
4	Strengthening seed chain by foundation seed production	Mt	0.76	All Blocks Except B3,B5	10.27	7.81	10.5	7.98	11	8.36	11.5	8.74	12.5	9.50	55.77	42.39
5	Strengthening seed chain by certified seed production	Mt	0.73	All Blocks Except B5	26.6	19.42	26.5	19.35	29	21.17	30.5	22.27	32	23.36	144.6	105.56
6	Distribution of Certified seeds	Mt	0.84	All Blocks Except B1,B2,B5	11.3	9.49	21	17.64	21.5	18.06	22	18.48	22.5	18.90	98.3	82.57
7	Distribution of Seed Treatment Chemicals and Bioagents (T.Viridi)	Kg	0.00	B2,B3,B6, B8	36	0.05	48	0.07	51	0.08	56	0.08	60	0.09	251	0.38
8	Application of Gypsum to Groundnut Crop	Ha	0.02	B1,B4,B5,B7	135	2.16	175	2.80	180	2.88	195	3.12	190	3.04	875	14.00
9	Distribution of Micro Nutrient Mixture	Ha	0.02	B4	10	0.15	10	0.15	10	0.15	10	0.15	10	0.15	50	0.75

Sl. No	Components	Unit	Unit Cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
10	Distribution of Biofertilizer	Ha	0.01	B3,B6,B7,B8	220	1.32	355	2.13	370	2.22	375	2.25	380	2.28	1700	10.20
11	Distribution of Liquid Biofertilizer	Ha	0.01	All Blocks B1,B3	470	2.82	510	3.06	520	3.12	530	3.18	545	3.27	2575	15.45
12	Distribution of Rhizobium/ PSB Culture	Ha	0.01	B4,B8	70	0.42	50	0.30	50	0.30	50	0.30	50	0.30	270	1.62
13	Distribution of Pheromone Traps	Nos.	0.02	B6,B8	0	0.00	0	0.00	20	0.40	0	0.00	0	0.00	20	0.40
14	Castor as Bund crop	Ha	0.01	All Blocks Except B4	175	1.05	257	1.54	265	1.59	275	1.65	285	1.71	1257	7.54
15	Combined Nutrient Spray	Ha	0.02	B6,B8	30	0.45	20	0.30	20	0.30	20	0.30	20	0.30	110	1.65
16	Seed Drill Sowing / Line sowing of Groundnut with Pulses as intercrop(hiring charges only)	Ha	0.03	B1,B5	120	3.60	340	10.20	395	11.85	360	10.80	376	11.28	1591	47.73
17	Seed drill Sowing of Groundnut with Redgram as Intercrop	Ha	0.04	B6,B8	100	4.00	200	8.00	200	8.00	200	8.00	200	8.00	900	36.00
18	Distribution of Tractor operated thresher	Nos.	1.50	B6,B8	0	0.00	0	0.00	0	0.00	2	3.00	2	3.00	4	6.00
19	Distribution of Power operated Groundnut Decorticator	Nos.	1.00	B2,B4,B7,B8	0	0.00	0	0.00	0	0.00	3	3.00	4	4.00	7	7.00
III	SUNFLOWER															
20	Production of Foundation Seeds	Mt	0.52	B8	0	0.00	0	0.00	0	0.00	2	1.04	2	1.04	4	2.08

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
21	Distribution of certified seeds	Mt	0.57	B6	0	0.00	0.1	0.06	0.1	0.06	0.15	0.09	0.1	0.06	0.45	0.26
IV	GINGELLY															
22	Production of Foundation Seeds	Mt	1.13	B8	0.1	0.11	0	0.00	0	0.00	0	0.00	0	0.00	0.1	0.11
23	Production of Certified Seeds	Mt	1.09	B5	0.1	0.11	0.1	0.11	0.1	0.11	0.1	0.11	0.1	0.11	0.5	0.55
24	Distribution of certified seeds	Mt	1.25	B5	0.1	0.13	0.1	0.13	0.1	0.13	0.1	0.13	0.1	0.13	0.5	0.63
25	Distribution of Micro nutrients (Manganese sulphate/ Zinc sulphate)	Ha	0.00	B3,B6	0	0.00	45	0.18	45	0.18	55	0.22	55	0.22	200	0.80
	Total					66.49		87.54		96.00		105.55		111.18		466.75

Aravakurichi-B1, K.Paramathi-B2, Kadavur-B3, Karur-B4, Krishnarayapuram-B5, Kulithalai-B6, Thanthoni-B7, Thogamalai-B8

4.1.5 Oil palm

Enhancing the productivity of Oil palm

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

Project components

- Oil palm area expansion programme and inputs for intercropping in Krishnarayapuram, Kulithali, Thanthoni and Thogamalai blocks
- Supply of diesel pumps in Krishnarayapuram and Kulithali blocks
- Supply of aluminium ladder, wire mesh in Kulithali and Thanthoni blocks

Budget

It is proposed to incur ₹.114.02 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.

Table 4.5. Budget Requirement for Oilpalm in Karur District

(₹. 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
II	OILPALM															
1	NMOOP -Mini Mission -II (Oilpalm)															
2	Oilpalm Area Expansion Programme	Ha	0.14	B5,B6,B7,B8	35	4.90	32	4.48	32	4.48	32	4.48	22	3.08	153	21.42
3	Cultivation maintenance	Ha	0.1	B5,B6,B7,B8	35	3.50	37	3.70	42	4.20	51	5.10	53	5.30	218	21.80
4	Inputs for Intercropping	Ha	0.1	B5,B6,B7,B8	35	3.50	37	3.70	42	4.20	51	5.10	53	5.30	218	21.80
5	Supply of Diesel pumps	No	0.3	B5,B6	3	0.90	3	0.90	3	0.90	3	0.90	3	0.90	15	4.50
6	Construction of Borewells	No	1	B6,B8	1	1.00	1	1.00	2	2.00	1	1.00	1	1.00	6	6.00
7	Motorised Chisel	No	0.2	B5,B8	2	0.40	2	0.40	2	0.40	1	0.20	2	0.40	9	1.80
8	Aluminium portable ladder	No	0.06	B6,B8	1	0.06	1	0.06	2	0.12	1	0.06	1	0.06	6	0.36
9	Wire mesh	No	0.1	B5,B6,B7,B8	29	2.90	27	2.70	27	2.70	17	1.70	17	1.70	117	11.70
10	Oilpalm Cutter	No	0.03	B5,B6,B8	2	0.06	3	0.09	3	0.09	2	0.06	3	0.09	13	0.39
11	NMOOP -Mini Mission - III (Tree Borne Oilseeds)															
12	Neem / Pungam Area Expansion Programme	Ha	0.2	B7,B6,B5,B8	18	3.60	20	4.00	16	3.20	20	4.00	20	4.00	94	18.80
13	Cultivation maintenance	Ha	0.05	B7,B5,B8	2	0.10	10	0.50	14	0.70	10	0.50	14	0.70	50	2.50
14	Inputs for Intercropping	Ha	0.05	B5,B6,B8	7	0.35	11	0.55	15	0.75	11	0.55	15	0.75	59	2.95
	Total					21.27		22.08		23.74		23.65		23.28		114.02

Aravakurichi-B1, K.Paramathi-B2, Kadavur-B3, Karur-B4, Krishnarayapuram-B5, Kulithalai-B6, Thanthoni-B7, Thogamalai-B8

4.1.6 Enhancing sugarcane productivity

The world demand for sugar is the primary driver of sugarcane agriculture. Cane accounts for 80% of sugar produced. Other than sugar, products derived from sugarcane include molasses, rum, bagasse, and ethanol. In some regions, people use sugarcane needs to make pens, mats, screens, and thatch. In Karur district sugarcane is cultivated in an area of 2946 ha and the total yield of sugarcane is around 101 tonnes/ha. Non availability of quality seed materials, slower adoption of new techniques and red rot infection are the major issues with regard to sugarcane cultivation. More labour and water is being spent for raising this crop. Moisture conservation and minimizing the water usage must be given preference to motivate the farmers in bringing more area under sugarcane. Trash mulching is improves oil fertility status and also to increase water use efficiency and increase the productivity of sugarcane. Thus the overall objective is to increase the yield of sugarcane by 5 percent/ha through trash mulching.

Project components

- Trash mulching in Karur, Thanthoni and Thogamalai blocks
- Demonstration on intercropping in Sugarcane in Karur, Kulithalai, Thanthoni and Thogamalai blocks
- Distribution of micro nutrients in all blocks except Aravakurichi, Paramathi, Kadavur, and Thanthoni blocks
- Micro irrigation - Drip in Karur, Thanthoni and Thogamalai blocks
- State Level training in Sugarcane cultivation in Aravakurichi, Thanthoni and Thogamalai blocks
- Sustainable Sugarcane Initiative (SSI) in all blocks

Budget

The budget requirement for fulfilling the various interventions is ₹ 4694.81 Lakhs. The details of budget requirement for each intervention across the blocks are shown in Table 4.6.

Expected outcome

Trash mulching techniques will improve the soil health and nutrient status. Hence assurance of nutritional sustainability will be kept. The timely supply of inputs will increase the production and productivity of sugarcane.

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.6 Budget Requirement for Sugarcane in Karur District

(₹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 Gypsum (500 Kg/Ha)	Ha	0.02	B8	10	0.20	20	0.40	20	0.40	20	0.40	20	0.40	90	1.80
2	District. of biofertilizer (Ha)	Ha	0.006	B7,B8	10	0.06	30	0.18	40	0.24	40	0.24	40	0.24	160	0.96
3	District. of weedicide (Ha)	Ha	0.01	B8	0	0.00	10	0.10	10	0.10	10	0.10	10	0.10	40	0.40
4	Distribution of Chip Cutter	Nos	0.05	B4,B5,B7,B8	30	1.50	30	1.50	32	1.60	35	1.75	36	1.80	163	8.15
5	Distribution of FeSO4 Spray	Ha	0.005	All Blocks Except B1,B8,B2,B3	80	0.40	90	0.45	80	0.40	80	0.40	120	0.60	450	2.25
6	Distribution of ZnSO4 Spray	Ha	0.005	B4,B5,B6,B7	80	0.40	90	0.45	80	0.40	80	0.40	120	0.60	450	2.25
7	Distribution of Micro Nutrient Mixture	Ha	0.02	All Blocks Except B1,B2,B3,B7	40	0.80	50	1.00	35	0.70	35	0.70	80	1.60	240	4.80
8	Distribution of Parasite Trichogramma	Ha	0.00125	All Blocks Except B1,B2,B3,	205	0.26	216	0.27	215	0.27	216	0.27	366	0.46	1218	1.52
9	Distribution of Protray (2500 nos/ha)	Nos	0.0008	B4,B8	2	0.00	10002	8.00	10003	8.00	10003	8.00	10003	8.00	40013	32.01
10	Distribution of Sugarcane Booster (10 Kg/Ha)	Ha	0.035	B8,B4	10	0.35	10	0.35	13	0.46	13	0.46	13	0.46	59	2.07
11	Distribution of Sugarcane Harvester	Nos	75	B4,B7,B8	2	150.00	8	600.00	9	675.00	14	1050.00	15	1125.00	48	3600.00
12	Distribution of Water Soluble Fertilizers	ha	0.25	B4,B8	60	15.00	65	16.25	75	18.75	80	20.00	80	20.00	360	90.00
13	Micro irrigation - Drip (1.2x0.6)	ha	1.24	B4,B7,B8	60	74.40	64	79.36	64	79.36	65	80.60	65	80.60	318	394.32

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)															
14	A. Establishment of Shade net	Nos	1.5	All Blocks	17	25.50	21	31.50	19	28.50	20	30.00	28	42.00	105	157.50
15	B. Distribution of Single Bud Seedling	Ha	0.225	All Blocks	200	45.00	300	67.50	335	75.38	360	81.00	390	87.75	1585	356.63
16	Trash Mulching	Ha	0.04	B4,B7,B8	75	3.00	82	3.28	87	3.48	82	3.28	82	3.28	408	16.32
17	Demonstration on intercropping in Sugarcane	Ha	0.08	B4,B6,B7,B8	2	0.16	64	5.12	69	5.52	69	5.52	69	5.52	273	21.84
20	State Level training in Sugarcane cultivation	No	0.4	B1,B7,B8	0	0.00	2	0.80	1	0.40	0	0.00	2	0.80	5	2.00
	Grand Total					317.03		816.51		898.95		1283.12		1379.20		4694.81

Aravakurichi-B1, K.Paramathi-B2, Kadavur-B3, Karur-B4, Krishnarayapuram-B5, Kulithalai-B6, Thanthoni-B7, Thogamalai-B8

4.1.7 Enhancing coconut production

Coconut gains importance because of its use in the day to day food preparation, value addition by way of crushing in to coconut oil and as a healthy drink as tender coconut. The farmers of coconut gardens need to get a fair return from this crop. Karur district has an area of more than 6599 ha under coconut cultivation. To get higher yield the existing gardens are to be rejuvenated with high yielding varieties. The introduction of high yielding hybrids (Tall × Dwarf) would add profit and increase the numbers and productivity of coconut trees. There is also scope for increasing the area under coconut in Karur district by developing improved tall varieties or hybrids.

Project components

1. Tall and TXD hybrid in all blocks
2. Distribution of micro nutrient mixture in all blocks except Aravakurichi and Krishnarayapuram blocks
3. Demonstration on Integrated fertilizer management in Karur and Thogamalai blocks
4. Establishment of Neera processing unit in Karur, Thanthoni and Thogamalai blocks
5. Management of Black headed caterpillar in Karur, Thanthoni and Thogamalai blocks
6. Replanting and Rejuvenation of coconut gardens in Kadavur, Karur, Thanthoni and Thogamalai blocks

Budget

The total cost of the project for five years works to ₹ 8638.20 Lakhs. The details of budget requirement for each intervention across the blocks are shown in Table 4.7.

Expected outcome

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

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.7 Budget Requirement for Coconut in Karur District

(₹.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 T x D hybrid seedlings	No	0.0006	All Blocks	4250	2.55	3950	2.37	4260	2.56	4350	2.61	4450	2.67	21260	12.76
2	Distribution of Tall Seedlings	No	0.0004	All Blocks	6500	2.60	5950	2.38	6100	2.44	6300	2.52	6400	2.56	31250	12.50
5	Distribution of power operated coconut leaf shredder	No	0.6000	B8	0	0.00	0	0.00	2	1.20	2	1.20	3	1.80	7	4.20
6	Distribution of MN mixture	Ha	0.1000	All Blocks Except B1,B5	1560	156.00	1575	157.50	1580	158.00	1585	158.50	1590	159.00	7890	789.00
7	Distribution of Pheromone traps for Red palm weevil/ Rhinoceros beetle	Ha	0.0160	B2,B4,B6,B8	170	2.72	175	2.80	175	2.80	180	2.88	185	2.96	885	14.16
8	Distribution of power operated rocker sprayer	No	0.1000	B7,B8	0	0.00	2	0.20	3	0.30	4	0.40	4	0.40	13	1.30
9	Distribution of Solar copra drier	No	0.2000	B4	1	0.20	1	0.20	1	0.20	1	0.20	1	0.20	5	1.00
10	Distribution of tree climbers	No	0.1500	B4,B7,B8	4	0.60	10	1.50	11	1.65	10	1.50	11	1.65	46	6.90
11	Drip irrigation	Ha	0.3500	B4,B7,B8	52	18.20	58	20.30	59	20.65	60	21.00	60	21.00	289	101.15
13	Intercropping with green manures	Ha	0.0300	B4,B6,B7,B8	130	3.90	165	4.95	170	5.10	170	5.10	200	6.00	835	25.05
14	Management of Black headed caterpillar	Ha	0.0500	B4,B7,B8	10	0.50	22	1.10	27	1.35	27	1.35	32	1.60	118	5.90
15	Replanting and Rejuvenation of coconut gardens	Ha	0.4500	B3,B4,B6,B8	60	27.00	90	40.50	110	49.50	90	40.50	100	45.00	450	202.50
16	Thanjore wilt management (root)	Ha	0.0300	B6	0	0.00	1	0.03	1	0.03	1	0.03	1	0.03	4	0.12

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
	feeding /soil application)															
17	Demonstration on Integrated fertilizer management	Ha	0.7500	B4,B8	16	12.00	17	12.75	18	13.50	18	13.50	19	14.25	88	66.00
18	Distribution of coconut seedlings to school children	No	0.0004	B4,B8	200	0.08	200	0.08	250	0.10	250	0.10	250	0.10	1150	0.46
19	Control of Eriophid mite	No. of tree	0.0002	B2,B4	600	0.12	600	0.12	600	0.12	600	0.12	600	0.12	3000	0.60
20	Establishment of Neera processing unit	No	600.000	B4,B6,B8	2	1200.00	2	1200.00	2	1200.00	3	1800.00	3	1800.00	12	7200.00
21	Control of slug caterpillar	No. of tree	0.0003	B2,B8	50	0.02	60	0.02	70	0.02	80	0.02	80	0.02	340	0.10
22	Training on neera production	Batches	0.2500	B2,B6,B8	3	0.75	4	1.00	3	0.75	4	1.00	4	1.00	18	4.50
25	corpus fund release for FPG (2000 nos.)	No	5.0000	B8,B4,B5,B6	20	100.00	3	15.00	6	30.00	3	15.00	6	30.00	38	190.00
	Grand Total					1527.24		1462.80		1490.27		2067.53		2090.36		8638.20

Aravakurichi-B1, K.Paramathi-B2, Kadavur-B3, Karur-B4, Krishnarayapuram-B5, Kulithalai-B6, Thanthoni-B7, Thogamalai-B8

4.1.8 Training to farmers

Enhancing the livelihood of farmers through training

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

Project components

- District level trainings to farmers in all blocks
- State level and interstate level training programmes to farmers in all blocks
- Exposure visits in all blocks

Budget

It is proposed to incur ₹.782.20 lakhs over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing Agency

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

Table 4.8. Training of Farmers in Karur District

(₹. in lakhs)

Sl. No	Cafeteria of Activities	Unit	Unit Cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	District Level															
	Training of Farmers															
1	Inter State Training of Farmers	Nos.	1.25	All Blocks	16	20.00	16	20.00	16	20.00	16	20.00	16	20.00	80	100.00
2	Inter State Training of Farmers	Nos.	1.75	All Blocks	16	28.00	16	28.00	16	28.00	16	28.00	16	28.00	80	140.00
3	Training of 536 Groups of Seed Village Farmers in quality Seed Production technology.	Nos.	0.1	All Blocks	16	1.60	16	1.60	16	1.60	16	1.60	16	1.60	80	8.00
4	Training of Farmers under Mission Soil Health Card	Nos.	0.15	All Blocks	40	6.00	40	6.00	40	6.00	40	6.00	40	6.00	200	30.00
5	With in the district training of Farmers	Nos.	0.1	All Blocks	32	3.20	32	3.20	32	3.20	32	3.20	32	3.20	160	16.00
6	With in the State training of Farmers	Nos.	1.2	All Blocks	40	48.00	40	48.00	40	48.00	40	48.00	40	48.00	200	240.00
	Training of Farmers With in the district															
7	Awareness campaigns	Nos.	0.1	All Blocks	24	2.40	24	2.40	24	2.40	24	2.40	24	2.40	120	12.00
8	IFS	Nos.	0.1	All Blocks	32	3.20	32	3.20	32	3.20	32	3.20	32	3.20	160	16.00
9	Major & Minor Millets	Nos.	0.1	All Blocks	16	1.60	16	1.60	16	1.60	16	1.60	16	1.60	80	8.00
10	Moisture conservation practices	Nos.	0.1	All Blocks	32	3.20	32	3.20	32	3.20	32	3.20	32	3.20	160	16.00
11	oil Palm	Nos.	0.1	B5	0	0.00	1	0.10	0	0.00	0	0.00	1	0.10	2	0.20
12	Organic cultivation practices	Nos.	0.1	All Blocks	24	2.40	24	2.40	24	2.40	24	2.40	24	2.40	120	12.00
13	Paddy	Nos.	0.1	All Blocks	32	3.20	32	3.20	32	3.20	32	3.20	32	3.20	160	16.00
14	Pulses	Nos.	0.1	All Blocks	16	1.60	16	1.60	16	1.60	16	1.60	16	1.60	80	8.00
15	Sugarcane	Nos.	0.1	All Blocks	40	4.00	40	4.00	40	4.00	40	4.00	40	4.00	200	20.00
16	Value addition training	Nos.	0.1	All Blocks	32	3.20	32	3.20	32	3.20	32	3.20	32	3.20	160	16.00

Sl. No	Cafeteria of Activities	Unit	Unit Cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Exposure visit of Farmers															
17	Rodent Pest Management Demonstration	Nos.	0.04	All Blocks	40	1.60	40	1.60	40	1.60	40	1.60	40	1.60	200	8.00
18	With in State Exposure visit	Nos.	0.4	All Blocks	40	16.00	40	16.00	40	16.00	40	16.00	40	16.00	200	80.00
19	Organization of Kisangosthies on Soil test based nutrient application (Campaign)	Nos.	0.15	All Blocks	24	3.60	24	3.60	24	3.60	24	3.60	24	3.60	120	18.00
20	With in the district exposure visit	Nos.	0.15	All Blocks	24	3.60	24	3.60	24	3.60	24	3.60	24	3.60	120	18.00
	TOTAL					156.40		156.50		156.40		156.40		156.50		782.20

Aravakurichi-B1, K.Paramathi-B2, Kadavur-B3, Karur-B4, Krishnarayapuram-B5, Kulithalai-B6, Thanthoni-B7, Thogamalai-B8

4.1.9 Infrastructure

Facilities for Seed production

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

After harvesting, cleaning, drying, processing, and packaging, the representative samples of seed lot are required to be taken and sent to the laboratory for quality testing. From the test results, genetic, physical, physiological, and health qualities of seeds are determined. Different countries have set their own standards to find out these qualities in the seed lot. The National Seed Board, for instance, has approved maximum amount of moisture content, minimum germination potential, and minimum physical purity in foundation, certified and truthfully labeled seeds of different crops as basic seed standards. The test results must conform the approved seed standards to send the seeds in the market for commercial transaction. The overall budget required to strengthen seed sector in order to maintain the quality of seeds are ₹.89.00 lakhs.

Establishment of Laboratories

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

The major interventions are

1. Additional Seed Godown in Karur
2. Construction of IAEC with vehicle shed and compound wall in K. Paramathi, Karur, Krishnarayapuram and Thogamalai blocks
3. Tonnage, Electronic platform balance and Moisture meter in all blocks except Thogamalai
4. Establishment of Thrashing floor/drying yard in all blocks except Thogamalai
5. Strengthening of MSTL in Karur

Budget

It is proposed to incur ₹.1960.08 lakhs 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.

Implementing Agency

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

Table 4.9 Infrastructure Development in Karur District

(₹. in lakhs)

Sl. No	Components	Unit	Unit Cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Seed Godown (300 MT)	Nos.	2500000	B4	0	0.00	1	25.00	0	0.00	0	0.00	0	0.00	1	25.00
2	Seed Processing Unit Machineries	Nos.	2650000	B4	0	0.00	0	0.00	1	26.50	0	0.00	0	0.00	1	26.50
3	Additional Seed Godown	Nos.	1250000	B1,B6,B8	1	12.50	1	12.50	0	0.00	0	0.00	1	12.50	3	37.50
4	Construction of Integrated Agricultural Extension Centre with vehicle shed and compound wall	Nos.	25000000	B2,B4,B5,B8	3	750.00	0	0.00	0	0.00	1	250.00	0	0.00	4	1000.00
5	Construction of Sub-Agricultural Extension Centre (498 Nos.)	Nos.	3000000	All Blocks	1	30.00	1	30.00	2	60.00	0	0.00	0	0.00	4	120.00
6	Strengthening of Mobile Soil Testing Laboratory	Nos.	3000000	B4	1	30.00	0	0.00	0	0.00	0	0.00	0	0.00	1	30.00
7	Establishment of Threshing floor/drying yard	Nos.	500000	All Blocks Except B8	0	0.00	14	70.00	0	0.00	0	0.00	0	0.00	14	70.00
8	Dunnage	Nos.	7500	All Blocks Except B8	0	0.00	35	2.63	0	0.00	0	0.00	0	0.00	35	2.63
9	Moisture meter	Nos.	25000	All Blocks Except B8	0	0.00	14	3.50	0	0.00	0	0.00	0	0.00	14	3.50
10	Bag closure	Nos.	10000	All Blocks Except B8	0	0.00	14	1.40	0	0.00	0	0.00	0	0.00	14	1.40
11	Electronic platform balance	Nos.	150000	All Blocks Except B8	0	0.00	7	10.50	0	0.00	0	0.00	0	0.00	7	10.50
12	Seed rack	Nos.	30000	All Blocks Except B8	0	0.00	21	6.30	0	0.00	0	0.00	0	0.00	21	6.30
13	Tarpaulin	Nos.	25000	All Blocks Except B8	0	0.00	35	8.75	0	0.00	0	0.00	0	0.00	35	8.75
14	Office Furnishings and other amenities	Nos.	200000	All Blocks Except B8	0	0.00	34	68.00	0	0.00	0	0.00	0	0.00	34	68.00
15	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
16	Infrastructure for empowerment of coconut nurseries	Nos.	5000000	All Blocks	0	0.00	0	0.00	0	0.00	0	0.00	1	50.00	1	50.00
	Grand total					822.50		738.58		86.50		250.00		62.50		1960.08

Aravakurichi-B1, K.Paramathi-B2, Kadavur-B3, Karur-B4, Krishnarayapuram-B5, Kulithalai-B6, Thanthoni-B7, Thogamalai-B8

4.1.10 Soil Health Management

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

1. Project Component:

- Composting of Farm Waste Through *Pluerotus* (Production and Distribution of Kits) in Thogamalai block
- Distribution of Soil Health Card in all blocks
- Green Manuring in all blocks except Aravakurichi block
- HDPE Vermi compost units in all blocks except Thanthoni and Krishnarayapuram blocks
- Permanent Vermi compost units in all blocks
- Procurement and Distribution of Blue Green Algae in Thanthoni block
- Production of Enriched FYM in Kadavur, Thanthoni and Thogamalai block
- Reclamation of Acid Soil in Thanthoni block

2. Budget:

Enhancing soil health by distributing enriched farm yard manure, micro-nutrient mixture, gypsum, bio-fertilizers, *etc.* is essential to maximize profitability. The overall budget to undertake the various interventions in Karur district is ₹.749.40 lakhs.

3. 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.

4. Implementing Agency:

The projects will be implemented by the Department of Agriculture.

Table 4.10 Soil Health Management in Karur District

(₹. 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	Permanent Vermi compost units	Cluster Nos.	50000	All Blocks	10	5.00	19	9.50	28	14.00	32	16.00	35	17.50	124	62.00
2	HDPE Vermi compost units	Kit Nos	12000	All Blocks Except B7,B5	9	1.08	16	1.92	20	2.40	23	2.76	28	3.36	96	11.52
3	Reclamation of Acid Soil	L. No.	6000	B7	0	0.00	10	0.60	10	0.60	10	0.60	10	0.60	40	2.40
4	Green Manuring	Nos	4000	All Blocks Except B1	600	24.00	1125	45.00	1285	51.40	1295	51.80	1380	55.20	5685	227.40
5	Procurement and Distribution of Blue Green Algae	Nos	2500	B7	0	0.00	10	0.25	10	0.25	10	0.25	10	0.25	40	1.00
6	Production of Enriched FYM	MT	2500	B3,B7,B8	10	0.25	46	1.15	71	1.78	72	1.80	72	1.80	271	6.78
7	Composting of Farm Waste Through Ploverotus (Production and Distribution of Kits)	MT	200	B8	5	0.01	10	0.02	15	0.03	20	0.04	25	0.05	75	0.15
8	Distribution of Soil Health Card	Ha	300	All Blocks	77290	231.87	68761	206.28	0	0.00	0	0.00	0	0.00	146051	438.15
	Total					262.21		264.72		70.46		73.25		78.76		749.40

Aravakurichi-B1, K.Paramathi-B2, Kadavur-B3, Karur-B4, Krishnarayapuram-B5, Kulithalai-B6, Thanthoni-B7, Thogamalai-B8

4.11 Rainfed Area Development

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

Project components

- Stress Management in crops by the Application of Pink Pigmented Facultative Methyloprophs (PPFM spray)/ KCL Spray in all blocks except Aravakurichi and Thanthoni blocks
- Milch Animal (1 no) + 1 ha cropping system with inter crop & border plantation like castor/sesbania etc. in K. Paramathi and Thogamalai blocks
- Small ruminant (9+1) + 1 ha cropping system with inter crop & border plantation like castor/sesbania etc. Organic Mulching in Kadavur, Krishnarayapuram and Thogamalai blocks
- Creation of Farm pond in Thogamalai block
- Soil Moisture conservation strategies (contour bunding/Dust mulching/Polythene mulch etc.,) in K. Paramathi and Thogamalai blocks
- Promotion of Farmers club for Sustainable Dry land Agriculture in all blocks except Karur and Krishnarayapuram blocks

Budget

It is proposed to incur ₹. 808.72 lakhs over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing Agency

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

Table 4.11. Rainfed Area Development in Karur District

(₹. in lakhs)

Sl. No	Components	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Stress Management in crops by the Application of Pink Pigmented Facultative Methyloprophs (PPFM spray)/ KCL Spray	Ha	0.004	B2,B3,B4,B5,B8	0	0.00	100	0.40	130	0.52	50	0.20	160	0.64	440	1.76
2	Milch Animal (1 no) + 1 ha cropping farming system (Cropping system with inter crop & border plantation like castor/sesbania etc.) @ Rs.27500/ as subsidy per Unit	Ha	0.55	B2,B8	0	0.00	0	0.00	150	82.50	50	27.50	5	2.75	205	112.75
3	Organic Mulching	Ha	0.06	B3,B5,B8	0	0.00	0	0.00	41	2.46	1	0.06	61	3.66	103	6.18
4	Creation of Farm pond	Nos.	0.75	B8	0	0.00	1	0.75	2	1.50	2	1.50	3	2.25	8	6.00
5	Soil Moisture conservation strategies(contour bunding/Dust mulching/Polythene mulch etc.)	Ha.	0.1	B2,B8	0	0.00	2	0.20	8	0.80	7	0.70	8	0.80	25	2.50
6	Promotion of Farmers club for Sustainable Dry land Agriculture	Cluster	84.9415	All Blocks Except B4,B5	8	679.53	0	0.00	0	0.00	0	0.00	0	0.00	8	679.53
	Grand Total					679.53		1.35		87.78		29.96		10.10		808.72

Aravakurichi-B1, K.Paramathi-B2, Kadavur-B3, Karur-B4, Krishnarayapuram-B5, Kulithalai-B6, Thanthoni-B7, Thogamalai-B8

4.12 Integrated Pest Management (IPM)

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

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

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

Interventions

1. Farmers Field Schools (FFS) in Kadavur, Krishnarayapuram and Kulithalai blocks
2. Field days in Thogamalai block
3. Integrated Pest Management Villages in Thogamalai block
4. IPM School in Thogamalai block

Budget

It is proposed to incur ₹.13.00 lakhs over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing Agency

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

Table 4.12 Integrated Pest Management in Karur District

(₹. 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	B3,B5,B6	0	0	2	0.40	1	0.20	3	0.60	3	0.60	9	1.80
2	Field days	No.	20000	B8	0	0	6	1.20	6	1.20	7	1.40	7	1.40	26	5.20
3	Integrated Pest Management Villages	Nos.	100000	B8	0	0	1	1.00	0	0.00	1	1.00	2	2.00	4	4.00
4	IPM School	Nos.	40000	B8	0	0	0	0.00	1	0.40	2	0.80	2	0.80	5	2.00
	Total					0		2.60		1.80		3.80		4.80		13.00

Aravakurichi-B1, K.Paramathi-B2, Kadavur-B3, Karur-B4, Krishnarayapuram-B5, Kulithalai-B6, Thanthoni-B7, Thogamalai-B8

4.13 Farm Mechanization

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

1. Project Component:

- Distribution of tractor in K.Paramathi, Kulithalai and Thogamalai bocks
- Distribution of MB plough, mini tractor, baler, combine harvester, multi crop thrasher, paddy transplanter, Solar power pump system in Thogamalai bocks
- Distribution of power operated sprayers in all blocks except Kulithalai
- Distribution of mobile sprinklers in Thanthoni and Thogamalai blocks

2. 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 ₹. 1147.00 lakhs.

3. 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.

4. Implementing Agency:

The projects will be implemented by the Department of Agriculture.

Table 4.13 Farm Machineries in Karur District

(₹. in lakhs)

Sl. No	Components	Unit	Unit Cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Solar light trap	No.	4000	All Blocks Except B6	91	3.64	147	5.88	154	6.16	171	6.84	114	4.56	677	27.08
2	Battery operated sprayer	Nos.	4000	B1,B6,B7,B8	20	0.80	41	0.84	36	1.04	42	1.28	46	1.44	185	5.40
3	Power operated sprayer	Nos.	8000	All Blocks Except B6	32	2.56	44	3.52	46	3.68	49	3.92	61	4.88	232	18.56
4	Hand operated sprayer	Nos.	1500	All Blocks Except B3,B7	87	1.31	120	1.50	133	1.85	151	2.12	161	2.27	652	9.03
5	Distribution of Baler	Nos	350000	B8	0	0.00	1	3.50	0	0.00	0	0.00	0	0.00	1	3.50
7	Distribution of combine harvester	Nos	1700000	B8	0	0.00	1	17.00	0	0.00	0	0.00	0	0.00	1	17.00
11	Distribution of MB plough	Nos	80000	B8	0	0.00	1	0.80	1	0.80	1	0.80	0	0.00	3	2.40
12	Distribution of Mini Tractor	Nos	300000	B8	0	0.00	1	3.00	1	3.00	1	3.00	1	3.00	4	12.00
13	Distribution of Mobile Sprinklers	Ha	30000	B7,B8	2	0.60	5	1.50	7	2.10	9	2.70	12	3.60	35	10.50
14	Distribution of multicrop thresher	Nos	400000	B8	0	0.00	1	4.00	2	8.00	2	8.00	2	8.00	7	28.00
15	Distribution of Paddy transplanter	Nos	1200000	B8	0	0.00	0	0.00	1	12.00	1	12.00	2	24.00	4	48.00
17	Distribution of Powertiller	Nos	150000	All Blocks Except B1,B7	20	30.00	20	22.50	20	22.50	20	22.50	20	22.50	100	120.00
18	Distribution of Pumpset	Nos	30000	B2,B8	1	0.30	2	0.60	3	0.90	3	0.90	3	0.90	12	3.60

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
19	Distribution of Rain guns	Ha	40000	All Blocks Except B1,B6	215	80.50	175	64.00	155	56.00	160	58.00	190	70.00	895	328.50
21	Distribution of Rotavator	Nos	80000	All Blocks Except B5	51	40.80	54	35.20	58	38.40	57	37.60	58	38.40	278	190.40
22	Distribution of Tarpaulins	Nos	8000	All Blocks Except B4,B5	120	9.60	142	7.36	169	9.52	183	10.64	185	10.80	799	47.92
23	Distribution of Tractor	Nos	600000	B2,B6,B8	6	36.00	7	18.00	6	12.00	7	18.00	7	18.00	33	102.00
25	PVC Pipes to carry Irrigation water from source to field	Unit	40000	All Blocks Except B1	58	21.50	72	19.80	78	22.20	75	21.00	79	22.60	362	107.10
27	Solar power pump system	Nos	600000	B8	1	6.00	2	12.00	2	12.00	2	12.00	4	24.00	11	66.00
	Total					233.61		221.01		212.15		221.30		258.95		1147.00

Aravakurichi-B1, K.Paramathi-B2, Kadavur-B3, Karur-B4, Krishnarayapuram-B5, Kulithalai-B6, Thanthoni-B7, Thogamalai-B8

4.14 Strengthening of State Seed Farm

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

Project components

- 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 Krishnarayapuram block
- Supply of machineries viz., Tonnage, seed grading machine, paddy transplanter, rotovator, tractor, power tiller, generator in all blocks
- Farm protection structure, new threshing floor, seed godown, farm office, farm office renovation, farm connectivity in Krishnarayapuram block

Budget

It is proposed to incur ₹.286.28 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 farmers and it will increase supply of good quality seed which increase the production of the crops and the income of the farmers of Tamil Nadu.

Implementing Agency

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

Table 4.14 State Seed Farm in Karur District

(₹. 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	Irrigation Component															
1	Solar pumpsets	nos	6	B5	1	6.00	0	0.00	0	0.00	0	0.00	0	0.00	1	6.00
2	Deepening of bore well	nos	4	B5	1	4.00	0	0.00	0	0.00	0	0.00	0	0.00	1	4.00
3	Mobile sprinkler	nos	0.3	B5	3	0.90	0	0.00	0	0.00	0	0.00	0	0.00	3	0.90
4	New bore well with EB connection	nos	8	B5	1	8.00	0	0.00	0	0.00	0	0.00	0	0.00	1	8.00
5	Farm Pond	nos	1	B5	1	1.00	0	0.00	0	0.00	0	0.00	0	0.00	1	1.00
II	Machineries															
6	Tonnage (Poly Pallets)	nos	0.075	B5	15	1.13	0	0.00	0	0.00	0	0.00	0	0.00	15	1.13
7	Seed grading machine	nos	20	B5	2	40.00	0	0.00	0	0.00	0	0.00	0	0.00	2	40.00
8	Paddy Transplanter	nos	5	B5	1	5.00	0	0.00	0	0.00	0	0.00	0	0.00	1	5.00
9	Rotavator	nos	1	B5	1	1.00	0	0.00	0	0.00	0	0.00	0	0.00	1	1.00
10	Tractor and accessories	nos	10	B5	1	10.00	0	0.00	0	0.00	0	0.00	0	0.00	1	10.00
11	Power Tiller	nos	3	B5	1	3.00	0	0.00	0	0.00	0	0.00	0	0.00	1	3.00
12	Tarpaulin	nos	0.1	B5	5	0.50	0	0.00	0	0.00	0	0.00	0	0.00	5	0.50
13	Generator	nos	7	B5	2	14.00	0	0.00	0	0.00	0	0.00	0	0.00	2	14.00
III	Civil Works															
14	Farm protection structure	mt	0.15	B5	750	112.50	0	0.00	0	0.00	0	0.00	0	0.00	750	112.50
15	New Threshing floor	nos	5	B5	2	10.00	0	0.00	0	0.00	0	0.00	0	0.00	2	10.00
16	seed godown	nos	25	B5	2	50.00	0	0.00	0	0.00	0	0.00	0	0.00	2	50.00
17	Farm office	nos	8	B5	1	8.00	0	0.00	0	0.00	0	0.00	0	0.00	1	8.00
18	Farm office renovation	nos	3	B5	2	6.00	0	0.00	0	0.00	0	0.00	0	0.00	2	6.00
19	Farm connectivity	Meter	0.015	B5	350	5.25	0	0.00	0	0.00	0	0.00	0	0.00	350	5.25
	Total					286.28		0.00		0.00		0.00		0.00		286.28

Aravakurichi-B1, K.Paramathi-B2, Kadavur-B3, Karur-B4, Krishnarayapuram-B5, Kulithalai-B6, Thanthoni-B7, Thogamalai-B8

4.15 Information Technology in Agriculture

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

Role of IT in Agriculture

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

Components

- Procurement of hardware for replacement of old hardware in all blocks except K.Paramathi and Kadavur blocks
- Distribution of laptop/desktop in all blocks except K.Paramathi and Thogamalai blocks
- Distribution of audio visual aids in all blocks except K.Paramathi block

Budget

It is proposed to incur ₹. 67.94 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.

Table 4.15 Information Technology in Karur District

(₹. 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 replacement of old hardware	Nos	50000	All Blocks Except B2,B3	8	4.00	0	0.00	0	0.00	0	0.00	0	0.00	8	4.00
2	Connectivity Charges	Nos	11000	B8,B7,B6,B5,B1,B4	11	1.21	0	0.00	0	0.00	0	0.00	0	0.00	11	1.21
3	Printer cum Scanner	Nos	20000	B8,B7,B6,B5,B1,B4	14	2.80	0	0.00	0	0.00	0	0.00	0	0.00	14	2.80
4	UPS and Electrical Accessories	Nos	35000	B8,B7,B6,B5,B1,B4	14	4.90	0	0.00	0	0.00	0	0.00	0	0.00	14	4.90
5	Xerox machine	Nos	75000	B8,B7,B6,B5,B1,B4	9	6.75	0	0.00	0	0.00	0	0.00	0	0.00	9	6.75
6	Laptop/Desktop	Nos	50000	B8,B7,B6,B5,B1,B4	14	7.00	0	0.00	0	0.00	0	0.00	0	0.00	14	7.00
7	Anti -virus software	Nos	2500	B8,B7,B6,B5,B1,B4	13	0.33	0	0.00	0	0.00	0	0.00	0	0.00	13	0.33
8	Television	Nos	100000	B8,B7,B6,B5,B1,B4	7	7.00	0	0.00	0	0.00	0	0.00	0	0.00	7	7.00
9	Colour printer	Nos	15000	B8,B7,B6,B5,B1,B4	9	1.35	0	0.00	0	0.00	0	0.00	0	0.00	9	1.35
10	4G Internet - Dongle	Nos	2500	B8,B7,B6,B5,B1,B4	14	0.35	0	0.00	0	0.00	0	0.00	0	0.00	14	0.35
11	Equipments for Documentation															
a	Handycamer	Nos	30000	B8,B7,B6,B5,B1,B4	7	2.10	0	0.00	0	0.00	0	0.00	0	0.00	7	2.10
b	Camera	Nos	25000	B8,B7,B6,B5,B1,B4	7	1.75	0	0.00	0	0.00	0	0.00	0	0.00	7	1.75
c	GPS instrument	Nos	20000	B8,B7,B6,B5,B1,B4	9	1.80	0	0.00	0	0.00	0	0.00	0	0.00	9	1.80
d	Android mobile	Nos	15000	B8,B7,B6,B5,B1,B4	18	2.70	0	0.00	0	0.00	0	0.00	0	0.00	18	2.70
e	External Hard disk	Nos	5000	B8,B7,B6,B5,B1,B4	10	0.50	0	0.00	0	0.00	0	0.00	0	0.00	10	0.50
12	Audio - visual Aids	Nos	150000	B8,B7,B6,B5,B1,B4	7	10.50	0	0.00	0	0.00	0	0.00	0	0.00	7	10.50
	LCD projector	Nos	75000	B8,B7,B6,B5,B1,B4	7	5.25	0	0.00	0	0.00	0	0.00	0	0.00	7	5.25
	Pico Projector	Nos	35000	B8,B7,B6,B5,B1,B4	7	2.45	0	0.00	0	0.00	0	0.00	0	0.00	7	2.45
13	Air conditioner for computer room	Nos	40000	B8,B7,B6,B5,B1,B4	13	5.20	0	0.00	0	0.00	0	0.00	0	0.00	13	5.20
	Total					67.94		0.00		0.00		0.00		0.00		67.94

Aravakurichi-B1, K.Paramathi-B2, Kadavur-B3, Karur-B4, Krishnarayapuram-B5, Kulithalai-B6, Thanthoni-B7, Thogamalai-B8

Table 4.16 Consolidated Agriculture Budget for Karur District

(₹. in lakhs)

Sl. No.	Particulars	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Rice	614.81	793.25	793.25	793.25	1025.23	4019.80
2	Millets	60.72	93.01	82.57	74.03	70.41	380.75
3	Pulses	122.52	140.27	162.38	164.75	168.17	758.08
4	Oilseeds	66.49	87.54	96.00	105.55	111.18	466.75
5	Oilpalm	21.27	22.08	23.74	23.65	23.28	114.02
6	Sugarcane	317.03	816.51	898.95	1283.12	1379.20	4694.81
7	Coconut	1527.24	1462.80	1490.27	2067.53	2090.36	8638.20
8	Trainings	156.40	156.50	156.40	156.40	156.50	782.20
9	Infrastructure	822.50	738.58	86.50	250.00	62.50	1960.08
10	Soil Health Management	262.21	264.72	70.46	73.25	78.76	749.40
11	Rainfed Area Development	679.53	1.35	87.78	29.96	10.10	808.72
12	Integrated Pest Management	0.00	2.60	1.80	3.80	4.80	13.00
13	Farm Mechanization	233.61	221.01	212.15	221.30	258.95	1147.02
14	Strengthening of State Farm	286.28	0.00	0.00	0.00	0.00	286.28
15	Agriculture Information Technology	67.94	0.00	0.00	0.00	0.00	67.94
	Total	5238.55	4800.22	4162.25	5246.59	5439.44	24887.05

4.2 Horticulture sector

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

Area expansion of Horticultural crops

a. Fruit Crops

Today's changing food pattern enhances the area expansion under fruits. The preferable choices of fruits are Mango, Apple, Banana, Grapes, Orange, Guava, Pomegranate, Saputo etc. Fruits are rich in fiber which is very essential for the smooth movement of the digestive system. There are some fruits that give body energy as they contain carbohydrates which are the main source of energy. Carbohydrates in fruits are mainly sugar which actually breaks down easily and make a quick source of energy. They also contain minerals, vitamins and nutrients that are useful for a healthy life. Considering the importance of fruits, the productivity can be increased by promotion of cultivation of mango, guava, litchi, pomegranate (all blocks except Aravakurichi, Karur, kadavur blocks), banana and pineapple suckers (Aravakurichi, Karur, Krishnarayapuram, Kulithalai).

b. Vegetable crops

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

c. Flower crops

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

Improving Infrastructural facilities for production

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

Maintenance of Plantation

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

Area expansion by Precision Farming Technology

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

Area expansion by high density planting

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

Area expansion by Normal Planting

Besides precision farming and high density planting, the area could be increased by normal planting in mango (all blocks), jack (K.Paramathi), sapota (K.Paramathi and Karur) as well by using pedigree planting materials in fruits, spices, flowers and plantation crops. Similarly, by extending support for the planting materials of high value vegetables, the protected cultivation of vegetable area could also be increased. Likewise, cultivation of cut flowers and filler foliage also need to be encouraged.

Protected cultivation

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

Rejuvenation of Old Orchards – Mango and Guava

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

internal bearing wood. The rejuvenation of mango (Aravakurichi and K.Paramathi), INM/IPM for horticultural crops and mulching (all blocks) is needed.

Organic farming

Organic farming is an alternative agricultural system which originated early in the 20th Century in reaction to rapidly changing farming practices. It relies on fertilizers of organic origin such as compost, manure, green manure, and bone meal and places emphasis on techniques such as crop rotation, companion planting. Biological pest control, mixed cropping and fostering of insect predators are encouraged. Since 1990, the market for organic food and other products has grown rapidly, reaching \$63 billion worldwide in 2012. This demand has driven a similar increase in organically managed farmland that grew from 2001 to 2011 at a compounding rate of 8.9 per cent per annum. As of 2011, approximately 3.70 lakh hectares worldwide were farmed organically, representing approximately 0.9 per cent of total world farmland. Organic farming encourages crop diversity. The science of agro ecology has revealed the benefits of polyculture (multiple crops in the same space), which is often employed in organic farming. Planting a variety of vegetable crops supports a wider range of beneficial insects, soil microorganisms, and other factors that add up to overall farm health. Crop diversity helps environments thrive and protects species from going extinct. The profitability of organic agriculture can be attributed to a number of factors. First, organic farmers do not rely on synthetic fertilizer and pesticide inputs, which can be costly. In addition, organic foods currently enjoy a price premium over conventionally produced foods, meaning that organic farmers can often get more for their yield.

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

Post-Harvest Management in all blocks

In agriculture, postharvest handling is the stage of crop production immediately following harvest, including cooling, cleaning, sorting and packing. Postharvest treatment largely determines final quality, whether a crop is sold for fresh consumption, or used as an ingredient in a processed food product. The most important goals of post-harvest handling is

to avoid moisture loss and slow down undesirable chemical changes, and avoiding physical damage such as bruising, to delay spoilage. Sanitation is also an important factor, to reduce the possibility of pathogens that could be carried by fresh produce, for example, as residue from contaminated washing water.

Marketing Interventions

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

Capacity building

Capacity building of Horticultural Officers and Farmers in all blocks

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

Bee keeping in all blocks

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

Apiary honey is produced in bee hives and is harvested by extraction in honey extractors. Other types of beekeeping equipment like queen excluder, smoker, hive tool, pollen trap and honey processing plant are also used. Indian honey has a good export

market. With the use of modern collection, storage, beekeeping equipment, honey processing plants and bottling technologies, the potential export market can be tapped.

Mechanization in cultivation of horticultural crops in all blocks

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

Micro Irrigation, Water harvesting and Management in all blocks

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

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

Special Interventions

Production Enhancement through Precision Farming

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

assistance for inputs like water soluble fertilizers, hybrid/ high yielding vegetable seeds, plant protection chemicals etc., with subsidy.

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

Pandal vegetables being short duration crops fit very well in the cropping system by offering viable option to the growers to get increased income per unit area. However, the cultivation of vegetables is too constrained due to high initial investment cost. With the objective of enhancing area under pandal vegetables and encouraging farmers to realize increased income, this project is proposed by popularizing high yielding/hybrid seed materials and dissemination of improved method of cultivation to farmers. It is proposed to cover at least 500 hectares in crops like bitter gourd, ribbed gourd, snake gourd, pandal beans etc.

Banana Bunch Sleeve in all blocks except K.Paramathi, Kadavur, Karur blocks

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

Agro Ecosystem Analysis (AESA) based IPM in all blocks

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

Promotion of Roof top Garden / Potager garden in all blocks

The traditional kitchen garden, also known as a potager is a space separate from the rest of the residential garden i.e. the ornamental plants and lawn areas. Most vegetable gardens are still miniature versions of old family farm plots, but the kitchen garden is

different not only in its history, but also its design. The kitchen garden may serve as the central feature of an ornamental, all-season landscape, or it may be little more than a humble vegetable plot. It is a source of herbs, vegetables and fruits, but it is often also a structured garden space with a design based on repetitive geometric patterns. The kitchen garden has year-round visual appeal and can incorporate permanent perennials or woody shrub plantings around (or among) the annuals.

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

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

Perimetro Vegetable Cluster Development Programme

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

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

Computerization and Governance in all blocks

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

Budget

The budget requirement for fulfilling the various interventions is ₹11763.01 lakhs. 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 Horticulture.

Table 4.17 Budget Requirement for Horticulture Interventions in Karur District

(₹in lakhs)

Sl. No.	Interventions	Unit	Unit cost	Blocks Covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
A	Production Growth															
I	Area expansion of fruit crops															
1	Banana / Hill Banana sucker & Pine apple sucker	Ha	0.875	B1,B4, B5,B6	95	83.13	115	100.63	140	122.50	165	144.38	210	183.75	725	634.38
2	HDP in Mango, Guava, Litchi, Pomegranate	Ha	1	B2,B5,B6, B7, B8	9	9.00	15	15.00	22	22.00	28	28.00	34	34.00	108	108.00
3	Normal Planting in lime / lemons	Ha	0.6	B2,B7, B8	4	2.40	6	3.60	9	5.40	12	7.20	15	9.00	46	27.60
4	Normal Planting in Mango	Ha	0.6	All Blocks	22	13.20	31	18.60	41	24.60	51	30.60	61	36.60	206	123.60
5	Normal planting in Guava	Ha	0.6	B2,B5,B6, B7, B8	11	6.60	18	10.80	22	13.20	29	17.40	34	20.40	114	68.40
6	Normal planting in Saputo	Ha	0.6	B2,B4	3	1.80	6	3.60	9	5.40	12	7.20	12	7.20	42	25.20
7	Normal planting in Amla	Ha	0.6	B2,B3,B4, B7	6	3.60	11	6.60	15	9.00	19	11.40	24	14.40	75	45.00
8	Normal planting in Papaya	Ha	0.6	B2,B4, B6	5	3.00	7	4.20	9	5.40	11	6.60	12	7.20	44	26.40
9	Normal planting in Jack	Ha	0.6	B2	0	0.00	1	0.60	1	0.60	1	0.60	1	0.60	4	2.40
10	Banana for leaf production	Ha	0.6	B5,B6	30	18.00	40	24.00	48	28.80	55	33.00	65	39.00	238	142.80
11	Commercial production of Traditional fruits (Wood apple, Manila Tamarind, Jamun, Ber, Karonda, Annona, Egg fruit, etc.,)	Ha	0.6		5	3.00	5	3.00	5	3.00	5	3.00	5	3.00	25	15.00
II	Area expansion of vegetable crops															
12	Brinjal	Ha	0.5	All Blocks	23	11.50	31	15.50	38	19.00	46	23.00	54	27.00	192	96.00
13	Bhendi	Ha	0.5	All Blocks	17	8.50	21	10.50	27	13.50	34	17.00	45	22.50	144	72.00

Sl. No.	Interventions	Unit	Unit cost	Blocks Covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
14	Green Chillies	Ha	0.5	All Blocks	29	14.50	46	23.00	62	31.00	72	36.00	82	41.00	291	145.50
15	Tomato	Ha	0.5	B1,B2,B5,B6,B7,B8	16	8.00	23	11.50	28	14.00	36	18.00	47	23.50	150	75.00
16	Gourds including pumpkin and tinda	Ha	0.5	B2,B3,B5,B6,B7,B8	19	9.50	24	12.00	27	13.50	32	16.00	36	18.00	138	69.00
17	Greens	Ha	0.5	B2,B7,B8	11	5.50	18	9.00	22	11.00	26	13.00	30	15.00	107	53.50
18	Small Onion	Ha	0.5	B2,B4,B5,B6,B7,B8	82	41.00	113	56.50	139	69.50	165	82.50	191	95.50	690	345.00
19	Annual Moringa	Ha	0.5	B2,B3,B4	222	111.00	279	139.50	336	168.00	393	196.50	450	225.00	1680	840.00
20	Cucumber/gherkin	Ha	0.5	B3	1	0.50	2	1.00	3	1.50	4	2.00	5	2.50	15	7.50
21	Cluster bean	Ha	0.5	B8	1	0.50	1	0.50	1	0.50	1	0.50	1	0.50	5	2.50
22	Tapioca	Ha	0.5	B2,B4,B5,B6,B7,B8	160	80.00	190	95.00	220	110.00	250	125.00	280	140.00	1100	550.00
23	Yams and colacassia	Ha	0.5	B2,B5,B6	3	1.50	5	2.50	7	3.50	9	4.50	11	5.50	35	17.50
III	Area expansion of Medicinal and Aromatic plants															
1	Amla	Ha	0.7771	B2	2	1.55	2	1.55	2	1.55	1	0.78	2	1.55	9	6.99
2	Gloriosa	Ha	1.6438	B3,B4	30	49.31	60	98.63	87	143.01	94	154.52	101	166.02	372	611.49
3	Periwinkle	Ha	0.2988	B5,B6	2	0.60	2	0.60	2	0.60	2	0.60	2	0.60	10	2.99
IV	Area expansion of Spices crops															
1	Seed and Rhizomatic spices (Coriander, Turmeric, Ginger, Dry Chilly, Cumin, Fennel, Fenugreek, Dil, Cardamom etc.)	Ha	0.3	B2,B3,B4	80	24.00	65	19.50	110	33.00	125	37.50	140	42.00	520	156.00
V	Area expansion of Flower crops															
1	Loose flowers - Jasminum sp, Crossandra, Marigold,	Ha	0.4	B2,B3,B5,B6,B7,B8	37	14.80	51	20.40	61	24.40	74	29.60	89	35.60	312	124.80

Sl. No.	Interventions	Unit	Unit cost	Blocks Covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
	Rose, Chrysanthemum, Nerium, Torenia															
2	Bulbous flowers - Tube rose, Gladioli, Dahlia, Bird of paradise, Heliconia, Tulip	Ha	1.5	B1,B7,B8	3	4.50	6	9.00	9	13.50	12	18.00	15	22.50	45	67.50
VI	Area expansion /Gap filling of Plantation crops															
1	Betelvine	Ha	0.5	B1,B6	40	20.00	50	25.00	60	30.00	70	35.00	80	40.00	300	150.00
VII	Rejuvenation/INM-IPM/Mulching/Anti bird net															
1	Mango/Cashew - Rejuvenation	Ha	0.4	B1,B2	4	1.60	4	1.60	4	1.60	4	1.60	4	1.60	20	8.00
2	INM/IPM for Horticultural crops	Ha	0.04	All Blocks	160	6.40	200	8.00	240	9.60	280	11.20	320	12.80	1200	48.00
3	Mulching	Ha	0.32	All Blocks	10	3.20	18	5.76	26	8.32	34	10.88	42	13.44	130	41.60
VIII	Pollination Support through Bee Keeping															
1	Bee hive & Colony	No	0.04	All Blocks	80	3.20	80	3.20	80	3.20	80	3.20	80	3.20	400	16.00
2	Honey Extractor	No	0.2	All Blocks	8	1.60	8	1.60	8	1.60	8	1.60	8	1.60	40	8.00
IX	Organic Farming															
1	Organic farming and PGS certification in 50 acre cluster	1 cluster	14.95	B2,B3,B5,B6,B7,B8	0	0.00	0	0.00	4	59.80	2	29.90	0	0.00	6	89.70
2	HDPE Vermi bed	No	0.16	All Blocks	24	3.84	40	6.40	64	10.24	80	12.80	0	0.00	208	33.28
X	Rainfed Area development															
1	Integrated farming system - Horticulture Based farming	Ha	0.5	All Blocks	145	72.50	185	92.50	225	112.50	265	132.50	305	152.50	1125	562.50
2	Green manuring	Ha	0.04	All Blocks	80	3.20	120	4.80	160	6.40	200	8.00	240	9.60	800	32.00

Sl. No.	Interventions	Unit	Unit cost	Blocks Covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
3	Moisture stress management - Minimum irrigation gurantee by PUSA hydrogel	Ha	0.1	All Blocks	480	48.00	480	48.00	480	48.00	480	48.00	480	48.00	2400	240.00
B	Infra structures and Assets creation															
1	Poly Green House	1000 Sq.m	9.35	All Blocks	4	37.40	4.2	39.27	4	37.40	4	37.40	3	28.05	19.2	179.52
II	Mushroom production															
42	Cottage mushroom unit	1 No.	1		0	0.00	0	0.00	0	0.00	1	1.00	1	1.00	2	2.00
III	Vermicompost unit															
1	Permanent Vermicompost Unit	600 cu.ft	1	All Blocks	16	16.00	24	24.00	32	32.00	40	40.00	48	48.00	160	160.00
IV	Supporting structures for Horticulture crop production															
1	Permanent Pandhal structure	Ha	4	All Blocks	16	64.00	24	96.00	32	128.00	40	160.00	48	192.00	160	640.00
V	District Horticulture information and training centre															
VI	Community seed bank															
C	Special interventions															
1	Offseason Annual Moringa production - Pod	Ha	1.25	B3,B4	15	18.75	20	25.00	20	25.00	20	25.00	20	25.00	95	118.75
2	Offseason Annual Moringa production - Leaf	Ha	2	B3	0	0.00	0	0.00	1	2.00	0	0.00	0	0.00	1	2.00
3	Farm deficiency correction	Ha	0.04	All Blocks	80	3.20	120	4.80	160	6.40	200	8.00	240	9.60	800	32.00
4	Promotion of Roof top Garden/ Potager garden Kit	No	0.005	All Blocks	85	0.43	125	0.63	165	0.83	205	1.03	245	1.23	825	4.13

Sl. No.	Interventions	Unit	Unit cost	Blocks Covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
5	Promotion of Roof top Garden/ Potager garden Kit with shade net	No	0.0735	All Blocks	85	6.25	125	9.19	165	12.13	205	15.07	245	18.01	825	60.64
6	Banana Bunch Sleeve	Ha	0.25	B1,B5,B6, B7,B8	110	27.50	135	33.75	160	40.00	185	46.25	210	52.50	800	200.00
7	AESA based IPM in fruits and vegetables Pheromone trap	Ha	0.04	All Blocks	80	3.20	120	4.80	160	6.40	200	8.00	240	9.60	800	32.00
8	AESA Based IPM in fruits and vegetables Yellow sticky trap	Ha	0.04	All Blocks	80	3.20	120	4.80	160	6.40	200	8.00	240	9.60	800	32.00
9	AESA Based IPM in fruits and vegetables Light trap	Ha	0.08	All Blocks	80	6.40	120	9.60	160	12.80	200	16.00	240	19.20	800	64.00
D	Post Harvest Management															
12	Banana Ripening chamber (300 mt)	1 No	300	B5	0	0.00	0	0.00	1	300.00	0	0.00	0	0.00	1	300.00
E	Development of Farms, Nurseries and Parks															
13	Developmental activities in new/ existing state Horticultural farm, Keelapalur	No	25	B8	0	0.00	0	0.00	0	0.00	0	0.00	1	25.00	1	25.00
F	Mechanization - Machineries, Equipments & Tools															
1	Power tiller/Tractor/Mini tractor	Nos	1	All Blocks	8	8.00	8	8.00	8	8.00	8	8.00	8	8.00	40	40.00
2	Manual Sprayer- Knapsack/Foot operated Sprayer	Nos	0.12	All Blocks	120	14.40	160	19.20	200	24.00	240	28.80	280	33.60	1000	120.00
3	Tractor Mounted / Operated Sprayer (Below 20HP)	Nos	0.2	All Blocks	8	1.60	8	1.60	8	1.60	8	1.60	8	1.60	40	8.00
4	Tractor Mounted / Operated Sprayer (Above 20HP)	Nos	1.26	All Blocks	8	10.08	8	10.08	8	10.08	8	10.08	8	10.08	40	50.40

Sl. No.	Interventions	Unit	Unit cost	Blocks Covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
5	Hand operated sprayer with face mask	Nos	0.025	All Blocks	80	2.00	120	3.00	160	4.00	200	5.00	240	6.00	800	20.00
6	Nets for safe harvesting of fruits, Head lights for flower picking	Nos	0.005	B7,B8	30	0.15	45	0.23	60	0.30	75	0.38	90	0.45	300	1.50
7	Power operated sprayer	Nos	0.05	All Blocks	24	1.20	32	1.60	40	2.00	48	2.40	56	2.80	200	10.00
8	Plastic crates for vegetable & fruits handling	No of sets containing 10crates	0.075	All Blocks	40	3.00	80	6.00	120	9.00	160	12.00	200	15.00	600	45.00
9	Pepper Spike Thresher Stripper, Pepper peeler cum Washer	No	0.15	B4	5	0.75	5	0.75	5	0.75	5	0.75	5	0.75	25	3.75
10	Oil engine	No	0.15	All Blocks	29	4.35	55	8.25	81	12.15	107	16.05	130	19.50	402	60.30
11	5 layered Polythene spread sheets for drying horticulture produce	No	0.16	All Blocks	40	6.40	80	12.80	120	19.20	160	25.60	200	32.00	600	96.00
12	Aluminium Ladders for Harvesting	No	0.2	All Blocks	16	3.20	24	4.80	40	8.00	56	11.20	72	14.40	208	41.60
G	Water / Irrigation Management															
1	Micro Irrigation - Drip	Ha	1.12	All Blocks	90	100.80	130	145.60	170	190.40	210	235.20	250	280.00	850	952.00
2	Rain gun	Ha	0.34	All Blocks	80	27.20	120	40.80	160	54.40	200	68.00	240	81.60	800	272.00
3	Water harvesting system for individuals	No	1.5	All Blocks	19	28.50	35	52.50	51	76.50	67	100.50	83	124.50	255	382.50
H	Capacity Building															
1	Training to farmers within the State. 2 days Rs.1000/farmer/day	No	0.02	All Blocks	400	8.00	400	8.00	400	8.00	400	8.00	400	8.00	2000	40.00
2	Training to farmers outside the state. 30 farmers/Batch	No	0.105	All Blocks	8	0.84	8	0.84	8	0.84	8	0.84	8	0.84	40	4.20
3	Training to farmers at HTC	No	0.0025	All Blocks	160	0.40	200	0.50	240	0.60	280	0.70	320	0.80	1200	3.00

Sl. No.	Interventions	Unit	Unit cost	Blocks Covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
4	Exposure visit of farmers outside India	No	4	All Blocks	0	0.00	8	32.00	0	0.00	0	0.00	0	0.00	8	32.00
5	Training to staff outside the state / Batch of 5 members	No	0.04	All Blocks	8	0.32	8	0.32	8	0.32	8	0.32	8	0.32	40	1.60
6	Training to staff outside India	No	6	All Blocks	8	48.00	8	48.00	8	48.00	8	48.00	8	48.00	40	240.00
7	Computerization & governance	No	1	All Blocks	0	0.00	0	0.00	8	8.00	0	0.00	0	0.00	8	8.00
8	Publicity and Documentation	No	0.5		592	296.00	640	320.00	680	340.00	712	356.00	752	376.00	3376	1688.00
I	Crop Insurance and Risk Mitigating schemes															
1	Crop Insurance	Ha	0.025	All Blocks	800	20.00	800	20.00	800	20.00	800	20.00	800	20.00	4000	100.00
	Total					1465.54		1910.36		2657.71		2684.20		3045.19		11763.01

Aravakurichi-B1, K.Paramathi-B2, Kadavur-B3, Karur-B4, Krishnarayapuram-B5, Kulithalai-B6, Thanthoni-B7, Thogamalai-B8

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 in all blocks.
- Demonstration, Training and Distribution of post-harvest Technology and Management (PHTM) in all blocks 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, power operated sprayer, manual sprayer in all blocks, pepper spike thresher (Karur), polythene spread sheets, aluminium ladder for harvesting in all blocks.
- Provision of suitable financial assistance to establish farm machinery banks for custom hiring for appropriate locations and crops in all blocks.
- Promotion of appropriate technologies and to set up farm machinery banks in identified villages in Kulathur block.
- Provision of financial assistance on per hectare basis to the beneficiaries hiring machinery/equipments from custom hiring centres in all blocks.
- Increases the tractor hire services in the farms of small and marginal farmers

- Strengthening of Minor irrigation for the rainfed and hard rock areas. It would establish through construction of open well, tube wells and Bore wells. Revitalisation of wells by side boring and blasting in hard rock areas.
- Introduction of renewable energy in the villages which would replace other fuels. Also attractive for water pumping applications in remote areas. Hence solar operated photovoltaic water pumping system provides better sustainable alternative option to fulfill irrigation requirement of agriculture.
- Provision of components in Kadavur, Krishnarayapuram, Kulithalai and Thogamalai blocks such as High tech Earth excavator, Poly Green House with Fogging facility, Vermi Compost unit with packing accessories, Farm pond / Fish pond, Farmers kit (Crow bar, Hand hoe, rose can, pruning siccature, coconut dehusker, trolley etc.), Land levelling, Pipe laying, Stening wall, Well deepening, Replacement of old Pumpsets, Infrastructure like packing unit, godown, cattle shed and Threshing floor, Publicity and propaganda for farm mechanization in AED, Special Training for Coconut Growers, Special Training for Coconut Tree Climbing, J C B, Mini Drill, Compartmental Bund Formation, Farm Ponds, Community Bore wells, Deepening of Open Wells, Renovation of MI Tanks, Check Dam, Percolation Pond, Recharge Shaft, Summer Ploughing, PVP pipe laying, Replacement of Submersible Motors pump sets, Telescopic Pruner, Motorized Rubber Roller, Trays for Paddy Nursery Raising, Combine Harvester, Diesel Pump, Rotary Tiller, Smoke House, Mist Blower, Tea Harvester, Construction of LD & MI Repair Shed and Construction of Training Centre for farmers with furniture and accessories at the department of Agricultural engineering
- Strengthening of communication and information facilities in order to disseminate the information in rural areas in Kadavur, Krishnarayapuram, Kulithalai and Thogamalai blocks.
- 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, Plucker) in all blocks, Post-harvest equipments for grains, oil seeds and Horticultural crops (Mini Dhall mill, Millet Mill, Oil mill with filters, Extractor, Dehydration unit, Pricking Machine, Humidifier, Packing machine, this would make sure that more value is added to farm outputs locally in Kadavur, Krishnarayapuram, Kulithalai and Thogamalai blocks.

- Establishment of Agricultural Engineering Extension centres (all blocks) in order to collect information related to Government subsidy on agricultural / machineries / equipment / irrigation systems etc., compilation of latest technologies related to Agricultural Engineering and Development of video cassettes library related to Processing of agricultural products, Working of important agricultural machines and equipment and Repair, maintenance and proper setting of the different agricultural Machines / and equipment

Expected outcome

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

Budget

Agriculture continues to be the most predominant sector of this district economy, as 70 percent of the population is engaged in Agriculture and allied activities for their livelihood. Agricultural Mechanization could provide the stability in agricultural production in a sustainable manner to meet the food requirement of growing population and also to meet the raw material needs of agro based industries, thereby providing employment opportunities to the rural population. The overall budget requirement for implementation of above interventions is ₹ 2919.53 lakhs . The details of budget requirement for each intervention across the blocks are shown in Table 4.18.

Implementing agency

The projects will be implemented by the Department of Agricultural Engineering

Table 4.18. Budget requirement for Agricultural Engineering

(₹. in lakhs)

Sl. No	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Capacity Building															
2	Demonstration of Agricultural	All Blocks	No's/Ha	0.04	24.00	0.96	24.00	0.96	24.00	0.96	24.00	0.96	24.00	0.96	120.00	4.80
3	Training of farmers	All Blocks	No's/Ha	0.04	160.00	6.40	160.00	6.40	160.00	6.40	160.00	6.40	160.00	6.40	800.00	32.00
4	Training of Rural Youth in	B6, B5, B3, B8	No's/Ha	0.04	160.00	6.40	160.00	6.40	160.00	6.40	160.00	6.40	160.00	6.40	800.00	32.00
5	Demonstration of Post Harvest	All Blocks	No's/Ha	0.04	20.00	0.80	20.00	0.80	20.00	0.80	20.00	0.80	20.00	0.80	100.00	4.00
6	Financial assistance for Tractors	B2,B6,B5	No's/Ha	4.00	5.00	20.00	5.00	20.00	5.00	20.00	5.00	20.00	5.00	20.00	25.00	100.00
7																
8	Tractor (8-15 PTO HP)	All Blocks	No's/Ha	3.00	2.00	6.00	2.00	6.00	2.00	6.00	2.00	6.00	2.00	6.00	10.00	30.00
9	Tractor (15-20 PTO HP)	All Blocks	No's/Ha	4.00	14.00	56.00	14.00	56.00	14.00	56.00	14.00	56.00	14.00	56.00	70.00	280.00
10	Tractor (40-70 PTO HP)	All Blocks	No's/Ha	8.50	8.00	68.00	8.00	68.00	8.00	68.00	8.00	68.00	8.00	68.00	40.00	340.00
11	Power Tillers															
12	Power Tiller (below 8 BHP)	All Blocks except B3	No's/Ha	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	5.00	5.00
13	Power Tiller (8 BHP & above)	All Blocks	No's/Ha	1.75	22.00	38.50	12.00	21.00	12.00	21.00	12.00	21.00	12.00	21.00	70.00	122.50
14	Rice Transplanter															
15	Self Propelled Rice Transplanter	B6, B8	No's/Ha	16.00	1.00	16.00	0.00	0.00	1.00	16.00	0.00	0.00	0.00	0.00	2.00	32.00
16	Self Propelled Machinery															
17	e. Harvesting and Threshing															

Sl. No	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
18	Brush Cutter	All Blocks	No's/Ha	0.25	4.00	1.00	4.00	1.00	4.00	1.00	4.00	1.00	4.00	1.00	20.00	5.00
19	f. Chaff Cutter (Operated by	All Blocks	No's/Ha	0.25	44.00	11.00	34.00	8.50	34.00	8.50	29.00	7.25	29.00	7.25	170.00	42.50
20	a. Land Development,															
21	Cultivator	All Blocks	No's/Ha	0.30	20.00	6.00	18.00	5.40	18.00	5.40	16.00	4.80	16.00	4.80	88.00	26.40
22	Leveler Blade	All Blocks	No's/Ha	0.30	4.00	1.20	4.00	1.20	4.00	1.20	3.00	0.90	3.00	0.90	18.00	5.40
23	Ridger	All Blocks	No's/Ha	0.40	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	Rotavator	All Blocks	No's/Ha	0.95	40.00	38.00	40.00	38.00	35.00	33.25	35.00	33.25	35.00	33.25	185.00	175.75
25	b. Sowing Planting, Reaping															
26	Zero till seed cum fertilizer drill	All Blocks	No's/Ha	0.70	1.00	0.70	1.00	0.70	1.00	0.70	1.00	0.70	1.00	0.70	5.00	3.50
27	d. Harvesting & Threshing															
28	Thresher/Multi Crop threshers	All Blocks	No's/Ha	4.00	7.00	28.00	7.00	28.00	7.00	28.00	2.00	8.00	2.00	8.00	25.00	100.00
29	e. Equipments for Residue															
30	Sugarcane thrash Cutter	B6 and B8	No's/Ha	2.00	2.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	4.00
31	Coconut Frond chopper	B6 and B8	No's/Ha	1.05	2.00	2.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.10
32	Sugarcane ration manager	B6 and B8	No's/Ha	1.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
33	All Manual/animal drawn															
34	Tree climber	B6 and B8	No's/Ha	0.07	4.00	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.28
35	Plant protection equipments															

Sl. No	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
36	Manual sprayer: Knapsack/foot	All Blocks	No's/Ha	0.015	4.00	0.06	4.00	0.06	4.00	0.06	4.00	0.06	4.00	0.06	20.00	0.30
37	Powered Knapsack Sprayer/Power	All Blocks	No's/Ha	0.060	8.00	0.48	8.00	0.48	8.00	0.48	8.00	0.48	8.00	0.48	40.00	2.40
38	Powered Knapsack Sprayer/Power	All Blocks	No's/Ha	0.080	4.00	0.32	4.00	0.32	4.00	0.32	4.00	0.32	4.00	0.32	20.00	1.60
39	Powered Knapsack Sprayer/Power	All Blocks	No's/Ha	0.10	3.00	0.30	3.00	0.30	3.00	0.30	3.00	0.30	3.00	0.30	15.00	1.50
40	Establishment of Farm Machinery	All Blocks	No's/Ha	28.00	3.00	84.00	2.00	56.00	2.00	56.00	2.00	56.00	2.00	56.00	11.00	308.00
41	Promotion of Farm Mechanization in	B6	No's/Ha	11.50	4.00	46.00	4.00	46.00	4.00	46.00	4.00	46.00	4.00	46.00	20.00	230.00
42	Financial assistance for	All Blocks	No's/Ha	0.04	45.00	1.80	45.00	1.80	45.00	1.80	45.00	1.80	45.00	1.80	225.00	9.00
43	Tractor Hiring Scheme															
44	Purchase of Tractors for AED	B6, B5, B3	No's/Ha	8.00	1.00	8.00	0.00	0.00	1.00	8.00	1.00	8.00	0.00	0.00	3.00	24.00
45	Purchase of Tractor drawn implements	All Blocks	No's/Ha	0.50	6.00	3.00	0.00	0.00	4.00	2.00	4.00	2.00	4.00	2.00	18.00	9.00
46	Purchase of Bull Dozers for AED	B3, B8	No's/Ha	80.00	1.00	80.00	0.00	0.00	0.00	0.00	1.00	80.00	0.00	0.00	2.00	160.00
47	Solar Energy															
48	5 hp	All Blocks	No's/Ha	3.75	25.00	93.75	20.00	75.00	15.00	56.25	15.00	56.25	15.00	56.25	90.00	337.50
49	7.5 hp	All Blocks	No's/Ha	5.30	12.00	63.60	12.00	63.60	2.00	10.60	2.00	10.60	2.00	10.60	30.00	159.00
50	Any other innovative															
51	Publicity and propaganda for	All Blocks	No's/Ha	0.50	4.00	2.00	4.00	2.00	4.00	2.00	4.00	2.00	4.00	2.00	20.00	10.00
52	Information Technology (IT)															
53	Computer & its accessories	B6, B5, B3, B8	No's/Ha	0.80	0.00	0.00	3.00	2.40	3.00	2.40	0.00	0.00	0.00	0.00	6.00	4.80

Sl. No	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
54	Tablet (Tab)	All Blocks	No's/Ha	0.25	0.00	0.00	8.00	2.00	8.00	2.00	2.00	0.50	0.00	0.00	18.00	4.50
55	Xerox machine	B6, B5, B3	No's/Ha	1.50	0.00	0.00	2.00	3.00	1.00	1.50	0.00	0.00	0.00	0.00	3.00	4.50
56	Post Harvest Technology and															
57	Chain saw/ Wheel barrow/ Mango		No's/Ha	1.00	0.00	0.00	0.00	0.00	20.00	20.00	20.00	20.00	20.00	20.00	60.00	60.00
58	Aluminium Ladder/ Ladder	All Blocks	No's/Ha	0.20	0.00	0.00	25.00	5.00	25.00	5.00	25.00	5.00	35.00	7.00	110.00	22.00
59	Plucker	All Blocks	No's/Ha	0.02	0.00	0.00	5.00	0.10	5.00	0.10	0.00	0.00	0.00	0.00	10.00	0.20
60	Post Harvest Equipments for															
61	Mini Dal Mill	B6, B5, B3, B8	No's/Ha	1.70	0.00	0.00	1.00	1.70	1.00	1.70	1.00	1.70	1.00	1.70	4.00	6.80
62	Millet Mill	B6, B5, B3, B8	No's/Ha	1.50	0.00	0.00	1.00	1.50	1.00	1.50	1.00	1.50	1.00	1.50	4.00	6.00
63	Oil mill with filter press (for all type of	B6, B5, B3, B8	No's/Ha	1.20	0.00	0.00	2.00	2.40	2.00	2.40	2.00	2.40	2.00	2.40	8.00	9.60
64	Dehydration unit/ Pricking Machine/	B6, B5, B3, B8	No's/Ha	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	4.00
65	Packing Machines (for all types of	B6, B5, B3, B8	No's/Ha	3.00	0.00	0.00	2.00	6.00	2.00	6.00	2.00	6.00	2.00	6.00	8.00	24.00
66	All types of Power driven Dehisce/	B6, B5, B3, B8	No's/Ha	1.20	0.00	0.00	2.00	2.40	2.00	2.40	2.00	2.40	2.00	2.40	8.00	9.60
67	All types of Boiler/ Steamer/ Dryer solar (for all type of	B6, B5, B3, B8	No's/Ha	2.00	0.00	0.00	1.00	2.00	1.00	2.00	1.00	2.00	1.00	2.00	4.00	8.00
68	Construction of Agricultural	B6,B8	No's/Ha	75.00	0.00	0.00	0.00	0.00	1.00	75.00	1.00	75.00	0.00	0.00	2.00	150.00
	Total					698.45		545.22		588.22		624.57		463.07		2919.53

Aravakurichi-B1, K.Paramathi-B2, Kadavur-B3, Karur-B4, Krishnarayapuram-B5, Kulithalai-B6, Thanthoni-B7, Thogamalai-B8

4.4 Agricultural Marketing

The Government is taking every effort to attain sustainable agricultural development by transforming agriculture into a commercial venture, by switching over to new scientific methods of cultivation so as to increase the productivity manifold. Besides, through value addition, processing and utilization of the marketing opportunities, the 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 promotion of commodity groups and market information, strengthening of Uzhavar shandies and regulated markets, construction of storage godown, provision of market access and market activities, supply chain and post-harvest management, infrastructure and assets, and capacity building of farmers.

The core problem however in Agribusiness development is the general failure in coordinating the decisions of the private stake holder'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 service providers to address their specific technology and knowledge needs that would enable them into high-value production systems.

Entrepreneurs 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. The inadequacy in certification, quality assurance systems and inadequate infrastructure continues to limit the integration of production and international markets.

Agricultural produce are seasonal and perishable in nature. In a good season there may be a local glut, but because of insufficient transport facilities, lack of good roads and poor availability of packaging materials, the surplus cannot be taken quickly enough to the natural markets in urban areas. Moreover, the surplus often cannot be stored for sale in the off-season because of inadequate local storage facility; the farmers are often forced to market their produce at low price. Thus, the cultivars do not get a good price for their produce because of the glut, and some of it is spoiled resulting in complete loss. Currently pulses are processed manually using thorough, Ural, khaki, etc., which is laborious and time consuming. Due to existing problems in processing of pulses and millets, their market is not profitable for the

farmers growing pulses. To reduce the loss of agricultural produce which are up to 30 per cent, necessary provisions are needed to ensure remunerative price to the produce, encourage processing from the present level of 10 per cent of the total.

So, to accelerate the growth substantially, a new way of linking of Agricultural produce and marketing and promoting Agribusiness are focused. Promotion of commodity groups, farmer producer agencies, marketing organization and market linkage, encouraging of private players in marketing, value addition, crop specific supply chain management, more infrastructural facilities for processing and sensitizing the farmers for market-led agriculture by rendering crop advisory and market information are focused. 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.

Components

- Promotion of e-learning centre and construction of marketing centre in K.Paramthi block
- Construction of cold storage in Krishnarayapuram block
- Construction of drying yards, Tarpaulins in all blocks
- Formation of Farmer Producer Organizations (FPO) in all blocks except K.Paramthi, Kulithalai and Thogamalai block
- Exposure visit (within state & outside state) for commodity group farmers to acquire value addition technologies in all blocks

Budget

The district plan proposes an outlay of ₹. 1160.00 lakhs over a period of five years for Karur district (Table 4.19).

Expected Outcome

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

will also provide higher-value for consumers, value that will be shared as distributed benefits to value chain stakeholders including farmers, entrepreneurs and workers.

Implementing Agency

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

Table 4.19 Budget for strengthening of Agricultural Marketing and Agri-Business in Karur District

(₹. in lakhs)

Sl. No	Intervention	Unit	Unit cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Promotion of Commodity Groups and Market Information															
1	e-learning Centre	1	10	B2	1	10.00	0	0.00	0	0.00	0	0.00	0	0	1	10.00
2	Construction of Marketing Centre	1	10	B2	1	10.00	0	0.00	0	0.00	0	0.00	0	0	1	10.00
	Strengthening of UzhavarSandhai and Regulated Market															
3	Cold Storage	1	3	B5	1	3.00	0	0.00	0	0.00	0	0.00	0	0	1	3.00
4	Drying Yard	1	5	All Blocks	8	40.00	9	45.00	9	45.00	9	45.00	9	45.00	44	220.00
	Formation of FPO / Strengthening of Existing Commodity Groups															
5	FPO	1	60	B1, B3, B4, B5, B7	3	180.00	2	120.00	2	120.00	2	120.00	2	120.00	11	660.00
6	Tarpaulin	1	0.01	All Blocks	44	0.00	56	1.00	54	1.00	57	1.00	64	1	275	3.00
	Capacity building Programme															
7	Exposure Visits - within state	1	0.75	All Blocks	16	12.00	15	11.00	17	13.00	16	12.00	17	13	81	61.00
8	Exposure Visits - outside state - 3 days	1	2	All Blocks	15	30.00	18	36.00	17	34.00	18	36.00	17	34	85	170.00
9	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	0.2	All Blocks	23	5.00	23	5.00	23	5.00	23	5.00	26	5.00	118	24.00
	Total					290.04		217.00		217.00		218.00		218.00		1160.00

B1-Karur, B2-Thanthoni, B3-Aravakurichi, B4-K.Paramathi, B5-Kulithalai, B6-Krishnarayapuram, B7-Kadavur, B8-Thogamalai

4.5 Seed and Organic Certification

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

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

Project components

- Strengthening of Seed Testing laboratories

Samples received in a seed testing laboratory should be processed through various stages in the laboratory as quickly as possible so that result may be sent to sender promptly. The space provided for seed testing, the arrangement of that space and furnishing available would contribute greatly in the efficient functioning of the laboratory. In order to carry out seed quality tests and maintaining the purity in the seed testing laboratory the equipments such as air conditioner, blower, conductivity

meter, dehuller, dunnage, hot air oven, incubator, moisture meter, packing machine, seed grinder, sieve in all blocks are required.,

- Capacity building in all blocks

Promotion of quality seed production and distribution the training programmes would be organized. The training to be given on the seed production to seed producers. The training includes seed growers who are mostly small and marginal farmers. Also training has to be given to the seed dealers on quality maintenance in storage, selling of seeds.

- Strengthening of communication and networking facilities in all blocks

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

Expected outcome

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

Budget

Seed testing plays a pivotal role in modern agriculture. It is being carried out to analyze factors like germination, physical purity, moisture, seed health and admixture of other distinguishable varieties. Seed testing is carried out in the notified seed testing laboratories. The Seed testing results are very important for the successful implementation of Seed Certification and Seed Law Enforcement programmes. Apart from certified seed samples and samples received from the seed quality control wing, the service samples sent by the farmers, seed dealers and seed producers are also tested in these laboratories of Karur district. The overall budget requirement for implementation of above interventions is ₹274.76 lakhs. The details of budget requirement for each intervention across the blocks are shown in Table 4.20.

Implementing agency

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

Table 4.20 Budget for strengthening of Seed Certification in Karur District

(₹. 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,	No's	13.36	All Blocks	0.00	0.00	1.00	13.36	0.00	0.00	0.00	0.00	0.00	0.00	1.00	13.36
II	Strengthening of communication and networking facilities															
	Computer accessories	No's	0.50	All Blocks	10.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	5.00
III	Capacity Building															
	Training to seed grower for quality seed production	No's	0.20	All Blocks	0.00	0.00	8.00	1.60	8.00	1.60	8.00	1.60	8.00	1.60	32.00	6.40
IV	Infrastructure and assets															
	Strengthening of office premises by constructing new buildings	m2	0.17	All Blocks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00	250.00	1500.00	250.00
	Total					5.00		14.96		1.60		1.60		251.60		274.76

Aravakurichi-B1, K.Paramathi-B2, Kadavur-B3, Karur-B4, Krishnarayapuram-B5, Kulithalai-B6, Thanthoni-B7, Thogamalai-B8

4.6 Animal Husbandry sector

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

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

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

1. Increasing the availability of fodder through field level interventions
2. Increasing the availability of fodder by strengthening farm infrastructure
3. Livestock breeding management
4. Livestock health
5. Improving the livestock productivity
6. Improving the service delivery at veterinary institutions
7. Enhancing livestock management
8. Capacity building

Increasing the availability of fodder through field level interventions

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

The increasing number of livestock and the changing dynamics of animal husbandry practices require corresponding increase in the type of fodder needed to meet the requirements of these new situations. To overcome these issues the following field level interventions are proposed to improve the fodder availability.

1. Establishment of vermicomposting unit in all blocks
2. Distribution of Azolla trays in all blocks
3. Fodder plot development in all blocks
4. Meikal land development in Aravakurichi, K.Paramthi, Kadavur and Kulithalai blocks
5. Distribution of seedlings, sprinklers, grass cutter and raingun to the farmers in all blocks
6. Development of seed production plots in Kulithalai, Thanthoni and Thogamalai blocks

Increasing the availability of fodder by strengthening farm infrastructure

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

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

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

1. Distribution of silage bags for conservation of fodder crops in all blocks
2. Feed production to the farmers by hydroponic methods in all blocks

Livestock breeding management

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

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

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

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

1. CIDR in all blocks
2. Establishment of infrastructure facilities for veterinary institution in all blocks except Aravakurichi, K.Paramathi and Kulithalai blocks
3. Establishment of mobile veterinary units in K.Paramathi and Krishnarayapuram blocks

Livestock health

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

1. Establishment of surgical theatres at veterinary institution in all blocks
2. Providing solar lighting panels in all blocks
3. Package of modern veterinary diagnostic aids to veterinary institutions in all blocks

Improving the livestock productivity

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

1. Distribution of sheep, goat, buffalo, piggery, poultry units in all blocks
2. Establishment of disposal pits for poultry units in all blocks
3. Development of native chicken farm in all blocks
4. Integrated farming in all blocks

Improving the service delivery at veterinary institutions

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

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

Enhancing livestock management

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

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

Capacity building

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

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

Establishment of farmers training Centre

1. Conducting demonstrations camps and campaigns
2. Creating awareness of livestock management to the farmers through training programmes.

Budget allocation

The major themes proposed in the plan for animal husbandry sector with a total budget out lay of ₹. 2328.30

Project implementing agency

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

Table 4.21 Budget requirement for Animal Husbandry in Karur District

(₹.in lakhs)

Sl. No	Components	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Increasing the Availability of Fodder through Field level Interventions															
1	Establishment of Vermicomposting unit (single bed)	Nos	0.05	All Blocks	8	0.40	8	0.40	8	0.4	8	0.4	8	0.4	40	2.00
2	Fodder production to the farmers by Hydroponic methods	Nos	0.1	All Blocks	8	0.80	8	0.80	8	0.8	8	0.8	8	0.8	40	4.00
3	Distribution of Azolla trays	Nos	0.03	All Blocks	64	1.92	64	1.92	64	1.92	64	1.92	64	1.92	320	9.60
4	Distribution of Silage bags for conservation of fodder crops	Nos	0.005	All Blocks	8	0.04	8	0.04	8	0.04	8	0.04	8	0.04	40	0.20
5	Fodder plot development	acre	0.05	All blocks	400	20.00	400	20.00	400	20	200	10.00	200	10.00	1600	80.00
6	Meikal land development (incl. infrastructure development)	acre	6	B1, B2, B3, B6	1	6.00	1	6.00	1	6	0	0.00	0	0.00	3	18.00
7	Distribution of Chaff Cutter to farmers	Nos	0.25	All Blocks	64	16.00	64	16.00	64	16	64	16.00	64	16.00	320	80.00
8	Distribution of Grass Cutter to farmers	Nos	0.2	All Blocks	64	12.80	64	12.80	64	12.8	64	12.80	64	12.80	320	64.00
9	Development of Seed Production plots	acre	0.25	B6, B7, B8	3	0.75	3	0.75	3	0.75	3	0.75	3	0.75	15	3.75
	Livestock Breeding Management															
25	CIDR (Controlled Internal Drug Release) for increasing Fertility in Cattle	Nos	0.01	All Blocks	690	6.90	690	6.90	690	6.9	690	6.90	690	6.90	3450	34.5

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
	Improving the Livestock Productivity															
39	Distribution of Sheep/Goat units -semi intensive system	Nos	0.6	All Blocks	64	38.4	64	38.4	64	38.4	64	38.40	64	38.40	320	192.00
40	Distribution of Buffalo units(5 Buffaloes)	Nos	4.5	All Blocks Except B1, B4, B8	8	36.00	8	36.00	8	36.00	8	36.00	8	36.00	40	180.00
41	Integrated farming (Goat+Cattle+Fish+Agri culture /Horticulture)	Unit	2	All Blocks	5	10.00	5	10.00	5	10.00	5	10.00	5	10.00	25	50.00
42	Development of Native chicken farms	Farm	1	All Blocks	25	25.00	25	25.00	25	25.00	25	25.00	25	25.00	125	125.00
43	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
44	Milking Machine															
45	Distribution of Piggery units (fattening-5 Nos)	Nos	1.25	All Blocks Except B2, B4, B7	4	5.00	4	5.00	5	6.25	4	5.00	4	5.00	21	26.25
	Improving the Service Delivery at Veterinary Institutions															
55	Deep freezer facility for Storage of vaccines and Medicines	Nos	10	All Blocks	0	0.00	0	0.00	8	80.00	0	0.00	0	0.00	8	80.00
56	Establishment of Infrastructure facilities for Veterinary Institutions	Nos	30	All Blocks except B1, B2, B6	2	60.00	1	30.00	1	30.00	1	30.00	2	60.00	7	210.00
57	Establishment of Mobile Disease Diagnostic Labs	Nos	20	B4	1	20.00	0	0.00	0	0.00	0	0.00	0	0.00	1	20.00
58	Establishment of Mobile Veterinary Units	Nos	10	B2, B5	1	10.00	1	10.00	0	0.00	0	0.00	0	0.00	2	20.00
59	Establishment of surgical theatres at	Nos	30	All Blocks	2	60.00	2	60.00	2	60.00	2	60.00	0	0.00	8	240.00

Sl. No	Components	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	veterinary institution															
60	Providing solar lighting panels at veterinary institution	Nos	1	All Blocks	10	10.00	11	11.00	15	15.00	15	15.00	13	13.00	64	64.00
61	Package of Modern Veterinary Diagnostic Aids to Veterinary Institutions such as Computerized X rays, Ultrasound, Diathermy etc.	Nos	30	All Blocks	2	60.00	2	60.00	2	60.00	2	60.00	0	0.00	8	240.00
62	Establishment of Ambulance facility for animals	Nos	80	B4	1	80.00	1	80.00	0	0.00	0	0.00	0	0.00	2	160.00
	Livestock Management															
63	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
64	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															
67	Establishment of Farmers training Centre	Nos	200	B4	0	0.00	1	200.00	0	0.00	0	0.00	0	0.00	1	200.00
68	Conducting Demonstrations, Camps and Campaigns	Nos	0.1	All Blocks	8	0.80	8	0.80	8	0.8	8	0.8	8	0.8	40	4.00
69	Creating awareness of livestock management to the farmers through Training Programmes	Nos	0.1	All Blocks	8	0.80	8	0.80	8	0.8	8	0.8	8	0.8	40	4.00
						546.61		670.61		465.86		368.61		276.61		2328.30

Aravakurichi-B1, K.Paramathi-B2, Kadavur-B3, Karur-B4, Krishnarayapuram-B5, Kulithalai-B6, Thanthoni-B7, Thogamalai-B8

4.7 Dairy development

India has the highest livestock population in the world with 57% of the buffaloes and 14% of the world's cattle population, most of which are milch cows and milch buffaloes. India's dairy industry is considered as one of the most successful development programmes in the post-independence period. The dairy industry recorded the annual growth of 4% which is almost 3 times the average growth rate of the dairy industry in the world. Milk processing in India is around 35% of which organized dairy industry account for 13% of the milk produced, while the rest of milk either consumed at farm level, or sold as fresh , non-pasteurized milk through unorganized channels. In order to meet the growing demand for milk with a focus to improve milch animal productivity and increase milk production through strengthening and expanding village level infrastructure for milk procurement and provide producers with greater access to markets.

The strategies involves improving genetic potential of bovines, producing required number of quality bulls and superior quality frozen semen and adopting adequate bio-security measures etc. This sector plays a significant role in Indian economy, particularly for the welfare of rural population of India. Hence the following interventions are suggested to enhance the dairy development.

I. Infrastructure and assets

Even though milk production has reached up to the level, 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. The milk producers, mostly small and marginal farmers and landless agricultural labourers are forced to sell their product at a low price as the commodity is perishable in nature. It is proposed to increase the handling capacity of fluid milk by the dairies under the co-operative sector at the rate of 10% per annum, augment/strengthen the marketing network to promote sale of products and bring under the cooperative fold an additional 50% of the farmers. Moreover, providing proper infrastructure to the veterinary health care institutions is necessary for the timely diagnosis and treatment of animal diseases. Further, a strong program for the supply of sufficient veterinary vaccine is imperative. Each veterinary health care institution is to be provided with cold storage facilities to store vaccine. Sensitization of the general public and livestock farmers on various livestock diseases through information, education and communication campaign would help in education the people about animal diseases.

II. Strengthening of milk storage and processing unit

Dairying provides the main source of income next to agriculture. In a tropical country like India, agriculture may fail sometimes, due to monsoon failure but dairying never fails and gives them regular, steady income. 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 the chaff cutter machine, milking pails, milk cans and minor implements. On farms maintaining more than 20 milch animals, machine milking may be economical and more convenient as compared to hand milking. Installation of fans and misting cooling devices in animal sheds for protection against heat stress is also a must if one wishes to keep high yielding crossbred cows. Dairy farms with 50 or more milch animals may also require a milk cooler, electricity generator set and a utility vehicle for the procurement of farm supplies and marketing of produce besides a tractor with implements for the cultivation of fodder crops and their harvesting, transportation chaffing, processing etc.

The major interventions are

1. Electrical installation like transformer, UPS, stabilisers in all blocks
2. Milk storage units in various capacities in all blocks
3. Tub washer, can washer, crate conveyor system in all blocks
4. Curd processing equipments in all blocks

III. Enhancing milk production and milk processing unit

Most of the rural people especially women make their livelihood by rearing milch animals and by supplying milk to the Co-operatives. There were wide disparities in the prices paid for milk in flush season and in the summer months no scientific system of payment related to quality existed. Adulteration of milk was rampant. The collection machinery was erratic and farmers were at the mercy of the agents or middlemen who often forced the milk producers to sell at distress prices. Enhancing the production of livestock is absolutely essential. The production cost of cattle feed coupled with erratic supply of green fodder due to frequent drought condition aggravate the situation. Hence, improving fodder production by promoting high yielding fodder varieties is needed.

The major interventions are,

1. Electronic milk test equipments in all blocks
2. Milk cans, milking machine in all blocks
3. Bulk milk coolers of various capacities in all blocks
4. Veterinary medicines in all blocks
5. Cryogenic containers in all blocks
6. Equipments for artificial insemination in all blocks

IV. Capacity Building

Development of high quality human resources for timely and efficient implementation of activities under dairy development is considered essential to manage the continuous metamorphosis taking place in the dairy sector. Hence it is necessary to implement the following intervention in order to enhance the dairy production.

1. Farmers training in all blocks
2. Infertility Camps in all blocks

Budget

The budget requirement for fulfilling the various above interventions is ₹ 3049.25 Lakhs. 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 4.22 Budget Requirement for Dairy Development in Karur District

(₹.in lakhs)

Sl. No	Components	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Engineering section															
1	Electrical installation like Transformer, UPS, Stabilisers, Control Panel MCC etc.,	All blocks	1	25	1	25.00	0	0.00	1	25.00	0	0.00	0	0.00	2	50.00
2	Milk Storage Tanks of various capacities	All blocks	1	15	1	15.00	1	15.00	1	15.00	1	15.00	1	15.00	5	75.00
3	Tub washer, Can washers, Crate conveyer systems.	All blocks	1	10	0	0.00	1	10.00	0	0.00	1	10.00	1	10.00	3	30.00
5	SS pipes and fittings	All blocks	1	5	1	5.00	1	5.00	1	5.00	1	5.00	1	5.00	5	25.00
6	Solar system for water heating	All blocks	1	2	1	2.00	1	2.00	1	2.00	1	2.00	1	2.00	5	10.00
7	Packing Machineries for milk, Butter, Ghee, SMP and Other Milk products	All blocks	1	18	0	0.00	1	18.00	1	18.00	0	0.00	0	0.00	2	36.00
8	Plate Heat type Chillers and pasteurizers	All blocks	1	10	0	0.00	0	0.00	0	0.00	1	10.00	1	10.00	2	20.00
10	Milk Pumps of Various capacities	All blocks	1	0.5	3	1.50	3	1.50	3	1.50	3	1.50	3	1.50	15	7.50
11	Generator of various capacities	All blocks	1	20	0	0.00	1	20.00	0	0.00	0	0.00	0	0.00	1	20.00
12	Curd processing equipments	All blocks	1	50	0	0.00	0	0.00	1	50.00	0	0.00	0	0.00	1	50.00
13	Cleaning In Place equipments with accessories	All blocks	1	75	0	0.00	1	75.00	0	0.00	0	0.00	0	0.00	1	75.00
	Procurement and Input															
14	Veterinary Medicine	All blocks	1	2	3	6.00	3	6.00	3	6.00	3	6.00	4	8.00	16	32.00
15	Two wheeler for AI technician	All blocks	1	0.5	5	2.50	5	2.50	5	2.50	5	2.50	5	2.50	25	12.50
16	Computer system with accessories	All blocks	1	0.5	5	2.50	5	2.50	5	2.50	5	2.50	5	2.50	25	12.50
17	Fodder seed materials	All blocks	1	0.25	10	2.50	10	2.50	10	2.50	10	2.50	10	2.50	50	12.50
18	Fodder development equipments like chaff cutter,	All blocks	1	0.2	30	6.00	30	6.00	30	6.00	30	6.00	30	6.00	150	30.00

Sl. No	Components	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Mower etc.,															
19	Bulk Milk coolers of Various capacities	All blocks	1	15	6	90.00	4	60.00	4	60.00	2	30.00	2	30.00	18	270.00
20	Milk cans	All blocks	1	0.035	500	17.50	500	17.50	500	17.50	500	17.50	500	17.50	2500	87.50
21	Electronic weighing scales of various capacities.	All blocks	1	0.3	25	7.50	25	7.50	25	7.50	25	7.50	25	7.50	125	37.50
22	Electronic milk testing equipments	All blocks	1	1.25	20	25.00	20	25.00	20	25.00	20	25.00	20	25.00	100	125.00
23	Milking machine	All blocks	1	0.8	10	8.00	10	8.00	10	8.00	10	8.00	10	8.00	50	40.00
24	Cow shed	All blocks	1	5	5	25.00	5	25.00	5	25.00	5	25.00	5	25.00	25	125.00
25	Society Buildings	All blocks	1	20	5	100.00	5	100.00	5	100.00	5	100.00	5	100.00	25	500.00
26	Cryogenic containers	All blocks	1	0.35	15	5.25	15	5.25	15	5.25	15	5.25	15	5.25	75	26.25
27	Equipments for Artificial Insemination	All blocks	1	0.5	4	2.00	4	2.00	4	2.00	4	2.00	4	2.00	20	10.00
	Capacity building															
28	Training of personnel of MPCS, Union and Federation.	All blocks	1	0.05	100	5.00	100	5.00	100	5.00	100	5.00	100	5.00	500	25.00
29	Infertility Camps	All blocks	1	0.2	0	0.00	0	0.00	50	10.00	50	10.00	50	10.00	150	30.00
	Marketing															
30	Parlour structures	All blocks	1	5	10	50.00	10	50.00	10	50.00	10	50.00	10	50.00	50	250.00
31	Milk product storage cabinets	All blocks	1	0.3	10	3.00	10	3.00	10	3.00	10	3.00	10	3.00	50	15.00
32	Product Billing systems	All blocks	1	0.3	10	3.00	10	3.00	10	3.00	10	3.00	10	3.00	50	15.00
	Quality control	All blocks														
33	Adulteration detection equipments	All blocks	1	4	1	4.00	1	4.00	1	4.00	1	4.00	1	4.00	5	20.00
34	Milk testing equipment and Laboratory.	All blocks	1	5	1	5.00	1	5.00	1	5.00	1	5.00	1	5.00	5	25.00

Sl. No	Components	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Processing															
38	Water Treatment Plants. Reverse Osmosis plant	All blocks	1	100	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	1	100.00
39	Effluent treatment plant	All blocks	1	100	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	1	100.00
42	Dairy equipments	All blocks	1	50	1	50.00	1	50.00	1	50.00	1	50.00	1	50.00	5	250.00
	Civil work Infrastructure															
45	BMC buildings	All blocks	1	15	6	90.00	4	60.00	4	60.00	4	60.00	2	30.00	20	300.00
49	Ware house for Dairy consumables	All blocks	1	200	0	0.00	0	0.00	0	0.00	0	0.00	1	200.00	1	200.00
	Grand Total					558.25		696.25		676.25		473.25		645.25		3049.25

Aravakurichi-B1, K.Paramathi-B2, Kadavur-B3, Karur-B4, Krishnarayapuram-B5, Kulithalai-B6, Thanthoni-B7, Thogamalai-B8

4.8 Fisheries

As the human population continues to grow, finding means to feed those people is one of the most important challenges faced around the globe. Even in troubled economic times, men, women and children need to eat. And a healthy diet, high in protein is necessary to ensure that growing population does not succumb to sickness and disease. Fish and other aquatic organisms fit the model for healthy sources of protein.

Indian fisheries and aquaculture is an important sector of food production, providing nutritional security to the food basket, contributing to the agricultural exports and engaging about fourteen million people in different activities. With diverse resources ranging from deep seas to lakes in the mountains and more than 10% of the global biodiversity in terms of fish and shellfish species, the country has shown continuous and sustained increments in fish production since independence. Constituting about 6.3% of the global fish production, the sector contributes to 1.1% of the GDP and 5.15% of the agricultural GDP. The total fish production of 10.07 million metric tonnes presently has nearly 65% contribution from the inland sector and nearly the same from culture fisheries. Hence it's necessary to improve the fisheries development throughout the country.

Tremendous potential exists in India to augment fish production from freshwater aquaculture resources, which are spread across the length and breadth of the country. 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 through increasing fishing efficiency of inland fishermen and fish farmers.

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.

Inland fisheries (defined as inland capture plus aquaculture) is rapidly expanding and competing for natural resources with other uses. Consequently, there is an increasing need to monitor the sector to ensure responsible use of resources while increasing production.

Introduction of aquaculture in reservoirs/PWD & Panchayat Tanks, excavated ponds, promotion of cage farming in open water bodies, integrated aquaculture practice with agriculture & livestock and promotion of brackish water shrimp/fish culture are the few key opportunities available for aquaculture in Tamil Nadu.

Today cage culture is receiving more attention by both researchers and commercial producers. Factors such as increasing consumption of fish, declining stocks of wild fishes and poor farm economy has increased interest in fish production in cages. Many small or limited resource farmers are looking for alternatives to traditional agricultural crops. Aquaculture appears to be a rapidly expanding industry and it offer opportunities even on a small scale. Cage culture also offers the farmer a chance to utilize existing water resources in which most cases have only limited use for other purposes.

In addition to the popular inland fish varieties, the need for mass multiplication of new fish varieties/ ornamental varieties like Nile Tilapia was stressed and establishing Nile Tilapia hatchery by Government to ensure production and supply of quality seed was suggested. In the reservoirs, setting up of 'Tilapia Parks' can also be considered. In this regard, it was suggested that a comprehensive Leasing Policy shall be prepared and released.

These interventions includes,

1. Biological Control of Aquatic Weeds by Stocking of Grass Carps in Aquatic Weed Infested water bodies in Kulithalai block
2. Increasing Fishing production in existing fish by providing aerators in Aravakurichi block
3. Establishment of direct extension and training centre in Aravakurichi block
4. Establishment of marine fish seed rearing units in Kulithalai block

Creation of infrastructure facilities

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. Quality fish seed is the pre-requisite for successful fish farming. Department is using the techniques of hypophysation for the production of fish seed of culturable varieties. Brood stocks of required fish are maintained and sex-wise segregate

is made two months before. The pairing is made and injected with calculated dose of pituitary gland or ova prim, ovatide or ovpal is injected to male and female fish. Within the 6-8 hours of the injection eggs from female and sperm from male are released in the water. The fertilizer is external. Normally one kg fish releases about one lakh eggs. Hence it is necessary to construct the fish seed rearing centres and Establishment of gift farms and provision of inputs in this district.

These interventions include,

1. Establishment of fish culture ponds and provision of inputs in Krishnarayapuram and Kulithalai blocks
2. Increasing seed availability by establishing seed rearing units in Kulithalai blocks

Capacity building programme

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. Promotion of innovation in application of information communication technology in fisheries and dissemination of knowledge plays a critical role in knowledge-based growth. Therefore, it is imperative to update the professional skills of farmers and extension specialists in the latest knowledge and techniques in the field of their specialization to bring about the desired qualitative improvement and necessary orientation to contemporary problems to make research and education more relevant.

Farmers training programme is important to disseminate information about new technologies so that the farmer is able to make use of the latest agricultural developments. There also exists a gap between research findings and the needs of farmers. For technology to be successful, it is important that it should serve a useful purpose to the end user. The institution that bridges the gap between farmers and agricultural research scientists is the Agricultural Extension Service. This service works through an Agricultural Research System in the States.

The major interventions are

1. Promotion of sea wood culture in Aravakurichi block
2. Training to fish farmers in Aravakurichi block

The budget requirement for fulfilling the above interventions from all sectors is ₹ 163 lakhs.

Implementing agency

Department of Fisheries will be implementing the project.

Table 4.23 Budget Requirement for Fishery in Karur District

(₹ In lakhs)

Sl. No	Components	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Enhancement of fisheries															
1	Providing 50 % subsidy assistance to traditional fishermens of Cauvery waters for the purchase of Bamboo layered coracle	Kulithalai		0.00001	100000	1.00	0	0.00	0	0.00	0	0.00	0	0.00	100000	1.00
2	Promotion of Ornamental fish culture	Aravakurichy, Krishnarayapuram, Kulithalai		0.5	0	0.00	25	12.50	0	0.00	0	0.00	0	0.00	25	12.50
3	Introduction of IMC seeds in riverine check dams and weirs (ha.) (2000 AFL/ha. @Rs.2/seed- 100% subsidy)	Krishnarayapuram		0.79	0	0.00	1	0.79	0	0.00	0	0.00	0	0.00	1	0.79
4	Increasing fish production in existing fish/shrimp farms by providing aerators and infrastructure	Aravakurichy		0.15	50	7.50	0	0.00	0	0.00	0	0.00	0	0.00	50	7.50
5	Increasing fish production in Tamil Nadu through production and distribution of genetically improved Tilapia	Aravakurichy		3.35	0	0.00	1	3.35	0	0.00	0	0.00	0	0.00	1	3.35
6	Improvement of Hygienic fish marketing by Establishing	Krishnarayapuram		0.065	24	1.56	0	0.00	0	0.00	0	0.00	0	0.00	24	1.56

Sl. No	Components	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Mordern Fish Market															
7	Improvement of hygienic fish marketing by establishing modern fish stall/fish kiosk/	Kulithalai		16.5	0	0.00	0	0.00	1	16.50	0	0.00	0	0.00	1	16.50
8	Diversification of fishing by promoting squid jigging	Krishnarayapuram, Kulithalai		0.04	0	0.00	50	2.00	50	2.00	0	0.00	0	0.00	100	4.00
9	Biological Control of Aquatic Weeds by Stocking of Grass Carps in Aquatic Weed Infested water bodies	Kulithalai		2	1	2.00	0	0.00	0	0.00	0	0.00	0	0.00	1	2.00
10	Assistance for construction of shrimp farms for DFFDA farmers	Krishnarayapuram, Kulithalai		0.02	50	1.00	0	0.00	0	0.00	0	0.00	0	0.00	50	1.00
11	Creation of infrastructure facilities			23	100125	13.00	77	19.00	51	19.00	0	0.00	0	0.00	100253	50.00
12	Increasing seed availability by establishing seed rearing units	Kulithalai		30	0	0.00	0	0.00	1	30.00	1	30.00	0	0.00	2	60.00
13	Establishment of fish culture ponds and provision of inputs	Krishnarayapuram, Kulithalai		5	0	0.00	2	10.00	0	0.00	0	0.00	0	0.00	2	10.00
14	Establishment of District Extension and Training centres	Aravakurichy		4.5	0	0.00	1	4.50	0	0.00	0	0.00	0	0.00	1	4.50

Sl. No	Components	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
15	Infrastructure and Assets			40	0	0	3	15	1	30	1	30	0	0	5	75.00
16	Establishment of marine fish seed rearing units	Kulithalai		5	0	0.00	1	5.00	0	0.00	0	0.00	0	0.00	1	5.00
17	Capacity building programme			5	0	0	1	5	0	0	0	0	0	0	1	5.00
18	Establishment of Seafood Knowledge Highway to improve health, combat malnutrition and enhance income of fisheries	Krishnarayapuram		11.1	0	0.00	0	0.00	0	0.00	1	11.10	0	0.00	1	11.10
19	Improvement of GIFT Tilapia Government Fish Farm	Aravakurichy		0.06	0	0.00	10	0.60	0	0.00	0	0.00	0	0.00	10	0.60
20	Organization of Fish festival															
21	Promotion of sea weed culture	Aravakurichy		5	0	0.00	1	5.00	1	5.00	1	5.00	1	5.00	4	20.00
22	Training to fish farmers	Aravakurichi		0.03	20	0.60	0	0.00	0	0.00	0	0.00	0	0.00	20	0.60
	Grand Total					14.00		44.00		54.00		46.00		5.00		163.00

Aravakurichi-B1, K.Paramathi-B2, Kadavur-B3, Karur-B4, Krishnarayapuram-B5, Kulithalai-B6, Thanthoni-B7, Thogamalai-B8

4.9 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

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

Budget

The budget requirement for fulfilling the above interventions is ₹. 141.60 Lakhs

Expected outcome

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

Implementing agency

The projects will be implemented by Tamil Nadu Fisheries University in the various colleges and research stations.

Table 4.24 Budget Requirement for Fisheries Research in Karur District

(₹ In lakhs)

Sl. No	Interventions	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Harvest and Post harvest														
a	Enhancement of per capita consumption of fish														
	Awareness campaign on health beneficial attributes of fish	0.005	Karur	52	0.26	52	0.26	52	0.26	52	0.26	52	0.26	260	1.30
	Production of short films on nutritive value of fish and screening in theatres and television channels	50	Karur	0	0.00	0	0.00	1	50.00	0	0.00	0	0.00	1	50.00
b	Ensuring nutritional security through fish and fishery products														
	supply of preserved ready to eat and ready to cook fish products through public distribution systems	12.9	Karur	1	12.90	0	0.00	0	0.00	0	0.00	0	0.00	1	12.90
	Supply of fish and fish products in mid day meal programme	12.9	Karur	0	0.00	1	12.90	0	0.00	0	0.00	0	0.00	1	12.90
	Supply chain management to promote consumption of farmed freshwater fishes	64.5	Karur	1	64.50	0	0.00	0	0.00	0	0.00	0	0.00	1	64.50
	Grand total				77.66		13.16		50.26		0.26		0.26		141.60

4.10 Public Works Department

Increasing the ground water level

Karur town is located on the bank of Amaravathi river. Due to discharge of effluent by the textile bleaching and dyeing units, the river and the ground water are polluted. In Karur district, the surface water resources have been utilized fully. The surface flow in the rivers can be observed only during monsoon periods. The deficient monsoon rainfall has affected the flow of surface water into reservoirs, anaicuts, lakes etc. Hence under these circumstances the agriculturist has to totally depend upon an alternate source, viz. groundwater to meet-out their irrigation requirements. In Tamil Nadu, groundwater development is increased drastically for agricultural developments due to the non-availability of required surface water. Most of the banana and paddy farmers living in the Cauvery basin are of Karur district. Most paddy farmers suffer when temperature rises during the summer and drinking water storage comes down and these dams would solve such problems. 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.

Project components

1. Construction of Check dam across Kodaganar River near Pannaipatti Village of Aravakurichi Taluk in Karur District.
2. Construction of Check dam across Kodaganar River near Venjamangudalur Village of Aravakurichi Taluk in Karur District.
3. Rehabilitation of Left Main Canal and Right Main Canal of Kodaganar Dam in Karur District.
4. Construction of Check dam across Nagnajiyar River in Velambadi Village of Aravakurichi Taluk in Karur District.
5. Construction of Check dam across Nagnajiyar River near Poolanvalasu Village of Aravakurichi Taluk in Karur District.
6. Construction of check dam Across Amaravathi River at Nanjaikalakuruchi Village in Aravakkuruchi Taluk of Karur District.
7. Construction of Check dam across Amaravathi River at Periyathirumangalam Village in Aravakkurichi Taluk of Karur District.
8. Construction of Check dam across Amaravathi River at Koyamballi Village in Karur Taluk of Karur District.

Budget

It is proposed to incur ₹.8025.00 Lakhs over a period of five years

Expected outcome

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

Implementing agency

Department of Public Works will be implementing the project.

Table 4.25 Budget Estimate for PWD works in Karur district

(₹. in lakhs)

Sl. No.	Intervention	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Construction of Check dam across Kodaganar River near Pannaipatti Village of Aravakurichi Taluk in Karur District	Aravakurichi	Ha	3.00	239.68	720.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	239.68	720.00
2	Construction of Check dam across Kodaganar River near Venjamangudalur Village of Aravakurichi Taluk in Karur District	Aravakurichi	Ha	0.23	2160.82	500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2160.82	500.00
3	Rehabilitation of Left Main Canal and Right Main Canal of Kodaganar Dam in Karur District	Aravakurichi	Ha	2.44	119.03	290.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	119.03	290.00
4	Construction of Check dam across Nagnajiyar River in Velambadi Village of Aravakurichi Taluk in Karur District	Aravakurichi	Ha	2.50	106.07	265.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	106.07	265.00
5	Construction of Check dam across Nagnajiyar River Near Poolanvalasu Village of Aravakurichi Taluk in Karur District	Aravakurichi	Ha	4.12	60.73	250.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.73	250.00
6	Construction of check dam Across Amaravathi River at Nanjaikalakuruchi Village in	K.Paramathy	Ha	12.50	0.00	0.00	80.00	1000.00	0.00	0.00	0.00	0.00	0.00	0.00	80.00	1000.00
7	Construction of Check dam Across Amaravathi River at Periyathirumangalam Village in Aravakkuruchi Taluk of Karur District	Aravakurichi	Ha	10.20	0.00	0.00	196.00	2000.00	0.00	0.00	0.00	0.00	0.00	0.00	196.00	2000.00
8	Construction of Check dam Across Amaravathi River at Koyamballi Village in Karur Taluk of Karur District.	Karur	Ha	27.27	0.00	0.00	110.00	3000.00	0.00	0.00	0.00	0.00	0.00	0.00	110.00	3000.00
	Total					2025.00		6000.00		0.00		0.00		0.00		8025.00

4.10 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

- Infrastructure viz., furniture, solar panel, AC (all blocks)
- Capital Asset Creation and office building renovation in all blocks

Budget

It is proposed to incur ₹1171.04 lakh over a period of five years.

Implementing agency

Department of Cooperation will be implementing the project.

Table 4.26 Budget Estimate for Co-operation in Karur district

(₹. in lakhs)

Sl. No	Co-operation	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Construction of Office Building	All blocks except B7	0	0.00	9	224.43	1	30.00	1	20.00	1	11.48	12	285.91
2	Renovation of Godown	All blocks	17	71.30	2	4.23	1	1.75	1	4.75	1	1.50	22	83.53
3	Renovation of Office Building	All blocks	151	349.54	10	32.79	0	0.00	0	0.00	1	3.29	162	385.62
4	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	141	306.80	43	75.96	2	6.90	5	17.50	3	8.82	194	415.98
	Total			727.64		337.41		38.65		42.25		25.09		1171.04

Aravakurichi-B1, K.Paramathi-B2, Kadavur-B3, Karur-B4, Krishnarayapuram-B5, Kulithalai-B6, Thanthoni-B7, Thogamalai-B8

Table 4.27 Budget Abstract for Karur District

(₹. In lakhs)

Sl. No	Sectors	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Agriculture	5238.55	4800.22	4162.25	5246.59	5439.44	24887.05
2	Horticulture	1465.54	1910.36	2657.71	2684.20	3045.19	11763.00
3	Agricultural Engineering	698.45	545.22	588.22	624.57	463.07	2919.53
4	Agricultural Marketing	290.04	217.00	217.00	218.00	218.00	1160.04
5	Seed Certification and Organic Certification	5.00	14.96	1.60	1.60	251.60	274.76
6	Animal Husbandry	546.61	670.61	465.86	368.61	276.61	2328.30
7	Animal Sciences Research (TANUVAS)	0.00	0.00	0.00	0.00	0.00	0.00
8	Dairy Development	558.25	696.25	676.25	473.25	645.25	3049.25
9	Fisheries	14.00	44.00	54.00	46.00	5.00	163.00
10	Fisheries Research (TNFU)	77.66	13.16	50.26	0.26	0.26	141.60
11	Public Welfare Department	2025.00	6000.00	0.00	0.00	0.00	8025.00
12	Civil Supplies & Co operation	727.64	337.41	38.65	42.25	25.09	1171.04
	Total	11646.74	15249.19	8911.80	9705.33	10369.51	55882.57

The total budget requirement for the implementation of various interventions by different departments in Karur district is ₹. **55882.57 lakhs.**

