NATIONAL AGRICULTURE DEVELOPMENT PROGRAMME (NADP)

DISTRICT AGRICULTURE PLAN

SIVAGANGAI

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

NATIONAL AGRICULTURE DEVELOPMENT PROGRAMME (NADP / RKVY)

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2017

CONTENTS

LIST OF TABLES

LIST OF FIGURES

Executive summary

The district of Sivagangai, extending over an area of 4468.11 Sq. km, is situated in the south eastern portion of the state. It is bounded on the north by a small portion of Tiruchirappalli and Pudukottai districts, on the east by the district of Pudukottai and Ramanathapuram, on the south by the district of Ramanathapuram and Virudhunagar and on the west by Madurai district. The administrative headquarters is located at Sivagangai town. The district lies between 9°43' and 10°2' north latitude and 77°47' and 78°49' east Longitude. The Sivagangai district comprises of six taluks namely, 1. Sivagangai, 2. Manamadurai, 3. Ilayankudi, 4. Devakottai, 5. Karaikudi and 6. Thirupathur. Ilayankudi taluk consists of the highest number of 56 villages. There are 12 blocks and 487 Villages in the district. As regards, the hierarchy of administrative arrangement, there are three municipalities, 11 town panchayats and 437 village panchayats in the district.

The hot and dry climate of the district is highly suitable for dryland crops. Agriculture in the district depends on monsoon rains; hence probability of success is limited. The average rainfall of the District is below 800 mm. Therefore, successful crop production depends heavily on the success / failure of monsoon thus making agricultural production riskier in many parts of the district. The major soil types prevalent in Sivagangai district are sandy loam, clay loam and sandy clay loam. Area under cultivation is about 1,02,710 ha of total geographical area. Agricultural area under irrigation is 89,788 ha. The share of district area under cultivable waste, current fallow and other fallow accounted for about 35.62 per cent of the total area and this would reveal that implementation of land reclamation, strengthening of irrigation facilities and so on through schemes by various departments increases the net sown area or area under forest.

Among the irrigation sources, tank ranked first with a proportion of 78.24 per cent of the irrigated area followed by open wells with 15.26 per cent of the irrigated area. Tube wells and supplementary wells were the other sources. Paddy, groundnut, black gram, coconut and sugarcane are the major agricultural crops cultivated in the district. With regards to horticultural crops cashew nut, banana, mango, guava and chilli and are major crops grown. There are opportunities to develop cold storage units to increase agricultural exports. There are ample opportunities to promote new crop varieties and new technologies such as precision farming and System of Rice Intensification as the farmers are now educated on these aspects and willing to adopt the new varieties and technologies.

In most part of the districts, 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 Sivagangai 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, chaff cutter usage to enhance digestibility and to prevent wastage of feed is proposed. Development of allied agricultural activities like animal husbandry, fisheries and forestry would bring higher income to the farmers.

Agriculture Department has proposed a budget for ₹. 33843.05 lakhs for increasing area under major crops paddy, groundnut, black gram, coconut, millets, sugarcane and other minor crops during the end of the project period and increase of productivity through various interventions by adopting improved varieties and technologies. Rainfed and semidry rice occupied larger extend in Ramanathapuram, Sivagangai, Kanchipuram, Chengalpattu, Tiruvarur, Krishnakiri and Virudhunagar districts. Evolution of an extra early duration fine grain rice variety with improved soil and crop management practices for rainfed / dryland areas of Tamil Nadu and Promotion of organic agriculture among the farmers of Sivagangai district are other important projects proposed.

Horticulture Department has proposed ₹.13966.20 lakhs for the improvement in yield, efficient water and fertilizer use, improvement of soil health which ultimately fetches additional income to the farmer. Promotion of permanent pandal system among the vegetable growers certainly improves the production capacity as well as yield of pandal vegetables. The targeted horticultural crops are banana, curry leaves, arecanut, betel vine, papaya and flower crop.

Agricultural Engineering Department, proposed projects for popularization and adoption of labour saving package for timely operation through agricultural implements and reducing post-harvest losses for improving income and value addition with a total fund requirement of ₹.4850.62 lakhs. Prosopis spread in the agriculture, community and government land of Sivagangai severely affected the agricultural production by soil deterioration and water depletion, ultimately hinder the agricultural crop production and should be removed for which Uprooting of *Prosopis juliflora* project has also been proposed.

Department of Agri Business and Marketing has proposed a total of ₹.1451.60 lakhs for the establishment of market intelligence and training centre for value addition, storage and cold storage godowns and exposure visits. Seed certification has proposed a total of ₹. 20.01 lakhs for supplying high quality seeds. Animal Husbandry Department has sought for ₹.15398.61 lakhs for five years 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. It also includes provision of mini diary unit, establishment of ultrasound scanners, Distribution of sex-sorted semen to veterinary Institution, Multiple ovulation and Embryo transfer at field level, vermicompost unit, promotion of desi bird in dry tract the district etc.

Similarly, Fisheries Department has proposed to create additional area of Government fish farms and fish marketing, quality seed production, fingerlings in irrigation tanks, establishment of mini lab facilities and to conduct trainings and exposure visits with a budget requirement of ₹.87.63 lakhs. The total geographical area of this district is 4.20 lakh ha. in which only 0.20 lakh ha (5%) is under forest. Besides climatic vulnerability for the past two decades increased the frequency of drought, which directly affected the agriculture and other allied sectors. In this context to combat climate change and create employment opportunity in this dry district establishing village level forest is one of the viable options. The Public Works Department has proposed a total of ₹.13254.00 lakhs for overall public undertakings and construction of roads and other infrastructure. The overall project cost accounts to ₹. 94882.63 Lakhs in Sivagangai district.

By implementing these programs, it is expected that agricultural production would increase considerably and lead to high per capita income growth of the farm households. Such growth would induce the private sectors to initiate the starting up of processing industries and other related industries in the district. The backward and forward linkage would ensure the overall growth of the district.

Consolidated Budget for Sivagangai District **(₹. in lakhs)**

Sl. No.	Components	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Agriculture	5439.89	9473.01	5863.42	5884.36	5559.19	30709.83
2	Agricultural Research (TNAU)	300.00	317.14	28.39	0.00	0.00	645.53
3	Horticulture	2323.50	2565.74	2768.16	3034.50	3274.31	13966.20
4	Agricultural Engineering	973.18	948.73	984.94	1023.75	920.02	4850.62
5	Agricultural Marketing	260.76	244.88	430.00	246.06	269.90	1451.56
6	Seed Certification & Organic Certification	23.36	14.76	1.40	1.40	1.40	42.32
7	Animal Husbandry	3451.67	3226.92	3353.62	2481.42	2885.00	15399.03
8	Animal Science Research (TANUVAS)	374.18	374.18	374.18	374.18	324.18	1820.90
9	Dairy Development	896.75	3717.75	1092.75	866.00	870.50	7443.75
10	Fisheries	11.02	24.04	17.04	24.95	10.59	87.63
11	Fisheries Research (TNFU)	64.76	63.16	13.16	0.26	0.26	141.60
12	Water Resource Organization (PWD)	4047.00	2370.00	1597.00	1305.00	3935.00	13254.00
13	Civil Supplies & Co-Operation	814.54	213.40	239.18	27.29	99.00	1393.41
	Grand total	**18980.61**	**23553.71**	**16763.24**	**15269.17**	**18149.35**	**91206.38**

The total budget requirement for the implementation of various interventions by different departments in Sivagangai district is **₹ 91206.38 lakhs.**

The interventions will also ensure that farmers would gain access to modern technology, training and exposure visits adequate marketing means and storage facilities in a single location. The plan was expected to increase not only productivity but also quality of the farm produce. With the implementation of the program, farmers in the district would get a remunerative price for their produce, besides ensuring that farm-related industries would be benefited much.

CHAPTER I

INTRODUCTION

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

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

Objectives of RKVY

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

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

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

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

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

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

District and State Agriculture Plans

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

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

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

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

- It should also be ensured that the strategies for convergences with other programs as well as the role assigned to the Panchayati Raj Institutions (PRIs) are appropriately incorporated in DAPs.

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

The Process

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

Revision and Updation of DAP and SAP in Tamil Nadu

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

Methodology followed

The revision of the District Agricultural Plan of Sivagangai district, was done by

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

CHAPTER II

PROFILE OF THE BLOCK AND DISTRICT

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

2.1 District at glance

2.2 Area, Location and Geographical features

2.3 Administrative Structure of Sivagangai district

2.4 Demographic profile

- 2.4.1 Population
- 2.4.2 Literacy level
- 2.4.3 Households
- 2.4.4 Working population

2.5 Topography

2.6 Soil type

2.7 Climatic Condition and Rainfall

2.8 Land Use Classification

- 2.8.1 Types of land
- 2.8.2 Land use pattern
- 2.8.3 Land holding pattern

2.9 Cropping pattern

- 2.9.1 Major crops and varieties grown
- 2.9.2 Area under different crops
- 2.9.3 Productivity of major crops

2.10 Sources of Irrigation

2.11 Consumption of Chemical Fertilizers and Pesticides

2.12 Agricultural Engineering – Machineries and Implements

2.1 Sivagangai district at a glance

The district of Sivagangai was carved out as a separate district in the year 1985 as a result of trifurcation of Ramanathapuram district of Tamil Nadu State. According to the state notification, six taluks of Tiruppattur, Karaikudi, Devakottai, Sivagangai, Manamadurai and Ilayankudi were separated from Ramanathapuram district and formed into a new district. At the time of creation of this district, it was named as PasumponMuthuramalingam, but it was changed into PasumponThevarThirumagan. Again, this district's name was changed as Sivagangai recently. As stated earlier, this district was a part of undivided Ramanathapuram; its historical past is one and the same as that of its parent district. Ramanathapuram district which originally had an area of 12606 Sq. Km has been trifurcated into Ramanathapuram, Virudhunagar and Sivagangai districts.

2.2 Area, Location and Geographical features

The district of Sivagangai, extending over an area of 4468.11 Sq. Km, is situated in the southeastern portion of the state. It is bounded on the north by a small portion of Tiruchirappalli and Pudukottai districts, on the east by the district of Pudukottai and

Ramanathapuram, on the south by the district of RamanathapuramandVirudhunagar and on the west by Madurai district. The administrative headquarters is located at Sivagangai town. The district lies between 11° 14' and 12° 53' north latitude and 77° 44' and 78° 50' east Longitude (Table 2.1).

Table 2.1 Location and Geographical Position of Sivagangai District

Location and Geographical Position	
North Latitude	Between 11^0 14` and $12^0$ 53`
East Longitude	Between 77^0 44` and $78^0$ 50`

2.3 Administrative Structure of Sivagangai district

The administrative structures details are furnished in Table 2.2 and 2.3. There are six revenue taluks namely Thirupattur, Karaikudi, Devakottai, Sivagangai, Manamadurai and Ilayankudi. The district constitutes 12 blocks and agricultural divisions as mentioned in Table 2.3. The administrative structure of the district is shown in the Figure 1. As regards to the hierarchy of administrative arrangement, there are three municipalities, 12 town panchayats and 431 village panchayats in the district.

Fig.1 Blocks in Sivagangai District

Fig.2 Taluks in Sivagangai District

Table: 2.2 Revenue Divisions of Sivagangai District

Revenue Divisions	2
Taluks	6
Blocks	12
Corporation & Municipalities	3
Town Panchayats	12
Revenue Villages	521
Panchayat Villages	431

Table 2.3 Taluks, Blocks and Agricultural Divisions in the Sivagangai District

Name of the Taluks (6)	Name of the Blocks (12)	Name of the Agrl. Division (12)
Tiruppattur	Sivagangai	Sivagangai
Karaikudi	Kalaiyarkoil	Kalaiyarkoil
Devakottai	Manamadurai	Manamadurai
Sivagangai	Thiruppuvanam	Thiruppuvanam
Manamadurai	Ilayangudi	Ilayangudi
Ilayankudi	Thiruppathur	Thiruppathur
	Singampunari	Singampunari
	Sakkottai	Sakkottai
	Kallal	Kallal
	Devakottai	Devakottai
	Kannangudi	Kannangudi
	S.Pudur	S.Pudur

2.4 Demographic profile

The demography of the district is summarized in Tables 2.4 through 2.10.

2.4.1 Population

As per Ministry of Home Affairs, Directorate of Census Operations - Tamil Nadu, Census - 2011, Sivagangai had a population of 13,39,101. Males constitute 49.93 per cent of the population and females 50.07 per cent. The male and female population is almost equal in in the district. Population Density of Sivagangai is 316/ Sq. km. In Sivagangai, 69.17 per cent of the population is from rural and 30.83 per cent from urban area.

Table 2.4 Population of Sivagangai District (2011 Census)

Description	Number	Percentage
Total Population	13,39,101	100.00
Male	6,68,672	49.93
Female	6,70,429	50.07
Rural Population	9,26,256	69.17
Urban Population	4,12,845	30.83

Block wise analysis of population (Table 2.5) revealed that in Sivagangai district, Sivagangai block is having maximum population of 1,18,107 persons comprising 59007 males and 59,100 females. Kalaiyarkoil block is next to Sivagangai block with regard to population (1,07,458) with 52,565 males and 54,893 females.Kannangudi was found with minimum population of 29,764 persons of them 15,016 were males and 14,748 are females.

Table 2.5 Block wise - Area, Population, Sex wise particulars details (2011)

S. No.	Name of the block	Area (Sq. Km.)	Population (in No's)		
			Persons	Male	Female
1	Sivagangai	443.79	1,18,107	59,007	59,100
2	Kalaiyarkoil	686.68	1,07,458	52,565	54,893
3	Manamadurai	370.90	71,926	35,948	35,978
4	Thiruppuvanam	318.03	93,857	47,629	46,228
5	Ilayangudi	451.97	86,680	42,627	44,053
6	Thiruppathur	339.27	79,629	40,051	39,578
7	Singampunari	230.82	60,691	30,534	30,157
8	Sakkottai	348.31	92,893	46,306	46,587
9	Kallal	464.50	88,117	43,327	44,790
10	Devakottai	418.77	76,037	38,448	37,589
11	Kannangudi	233.73	29,764	15,016	14,748
12	S.Pudur	160.28	47,451	23,937	23,514
	Total	**4467.05**	**727045**	**475,395**	**477,215**

Source: *Census of India 2011, District census handbook Sivagangai*

2.4.2 Literacy level

Sivagangai has an average literacy rate of 79.85 per cent, male literacy stands at 87.92 per cent, and female literacy is at 71.85 per cent (Table 2.6).

Table 2.6 Literacy Level in Sivagangai District

Description	No. of persons	Literacy rate %
Total	9,59,744	79.85
Male	5,26,304	87.92
Female	4,33,440	71.85

Source: *Census of India 2011, District census handbook Madurai*

Among the blocks, Sivagangai block has higher literacy population *ie.*80998 (45105 male and 35893 female) which is followed by Kalaiyarkoil block with 73402 (40218 male and 33184 female) literate persons (Table 2.7).

Table 2.7 Literacy Level in Sivagangai District in block level

Sl. No	Name of the Block	Persons	Male	Female
1	Sivagangai	80998	45105	35893
2	Kalaiyarkoil	73402	40218	33184
3	Manamadurai	48236	27467	20769
4	Thiruppuvanam	62502	36019	26483
5	Ilayangudi	57392	32438	24954
6	Thiruppathur	53932	30143	23789
7	Singampunari	41068	23228	17840
8	Sakkottai	66452	35958	30494
9	Kallal	62682	34170	28512
10	Devakottai	54080	30517	23563
11	Kannangudi	20639	11749	8890
12	S. Pudur	29340	17116	12224
	Total	**9,59,744**	**5,26,304**	**4,33,440**

Source: *Census of India 2011, District census handbook Sivangangi*

2.4.3 Households

Sivagangai district consist of total households of 3,38,938. Of which SC households includes 56,716 and ST households includes 175. Sivagangai block is having more number of households (30,060). Next to this, Kalaiyarkoil block holds more households (27,891). Number of scheduled caste households was high in Thiruppuvanam block i.e., 5,823. Scheduled tribes mostly spread over in Devakottai (48) and Thiruppuvanam (39). Block wise households details are presented in Table 2.8.

Table 2.8 Block wise distribution of households in Sivagangai

Blocks	Total number of house holds	Number of SC house holds	Number of ST house holds
Sivagangai	30,060	4,153	4
Kalaiyarkoil	27,891	5,030	4
Manamadurai	18,746	4,637	2
Thiruppuvanam	23,176	5,823	39
Ilayangudi	23,007	5,566	1
Thiruppathur	20,034	3,119	2
Singampunari	15,099	2,086	-
Sakkottai	23,124	3,750	9
Kallal	23,187	3,695	4
Devakottai	18,800	4,687	48
Kannangudi	7,265	2,640	2
S. Pudur	10,938	1,956	1
Total	**3,38,938**	**56,716**	**175**

2.4.4 Working Population

Table 2.9 would indicate the population by categories of workers in Sivagangai district. The total workers population is about 6,20,171 numbers and non-workers is about 1,14,547. Agricultural labourer formed the highest portion of the workers 122166 followed by cultivators 117030. Other workers apart from agriculture and household industry formed a significant portion with 212042 persons.

Table 2.9 District Population by Categories of Workers (2011)

Sl. No	Categories of workers	Persons
1	Cultivators	1,17,030
2	Agricultural Labour	1,22,166
3	Household Industry	9,864
4	Other Workers	2,12,042
5	Marginal Workers	1,59,069
	Total Workers	620,171
	Non Workers	1,14,547

Source: *Census of India 2011, District census handbook Sivagangai*

The block wise population by categories of workers is presented in Table 2.10. It could be observed from the table that workers population was highest in Kalaiyarkoil block with 56,129 workers and is followed by Sivagangai block with 55,894 and was lowest in Kannangudi block with 16,592 workers. Among the workers, cultivators population was highest in Ilayangudi (19,978) and Kalaiyarkoil block (15,981) and was lowest in Singampunari block with 4,183 cultivators. Agricultural labourer also formed a significant proportion in the blocks of the district and it was higher in Sivagangai block (18,253 Nos.) and Thiruppuvanam block (17,431 Nos.).

Table 2.10 Block wise Workforce in the Sivagangai District during 2011-12

(Numbers)

Blocks	Cultivators	Agricultural labours	Household industry workers	Other workers	Marginal workers	Total workers
Sivagangai	9,978	18,253	623	14,767	12,273	55,894
Kalaiyarkoil	15,981	13,981	546	9,924	15,697	56,129
Manamadurai	8,010	7,209	425	7,006	13,618	36,268
Thiruppuvanam	6,145	17,431	458	13,076	10,704	47,814
Ilayangudi	19,978	10,010	1,148	5,491	11,635	48,262
Thiruppathur	7,439	10,157	576	8,987	11,889	39,048
Singampunari	4,183	9,893	452	6,392	10,319	31,239
Sakkottai	5,556	4,734	537	17,919	10,751	39,497
Kallal	8,519	7,573	578	12,260	12,609	41,539
Devakottai	13,697	5,900	680	5,918	16,479	42,674
Kannangudi	8,778	2,151	155	1,437	4,071	16,592
S.Pudur	4,439	10,619	348	4,686	5,420	25,512

2.5 Topography

Generally, the region has a hot climate. Temperature is low during the month of January with the lowest mean daily temperature of 19.8°C. The hottest month in the district is July during which period the maximum temperature is 38.8°C. Mean humidity varies from 65 per cent in July to 77 per cent in November.

2.6 Soil type

The soil types (taluk wise and block wise) present in Sivagangai district is given in Table 2.11 and 2.12. The district consists of red loam, laterite soil, black soil, and red soil in major areas. The major soil types prevalent in Sivagangai district are sandy loam, clay loam and sandy clay loam. Further, red and black soils are found in Thiruppuvanam block. Also, they are deep to very deep soils and ideal for growing horticultural crops and very deep rooted perennial crops. The soils are well drained both internally and externally. They do not possess the problems of alkalinity, calcareousness and salinity.

Table 2.11 Taluk wise soil classification of Sivagangai district

Sl. No	Type of Soil	Taluk
1	**Red Loam**	Devakottai, Ilayankudi, Karaikudi, Manamadurai, Sivagangai and Thiruppathur.
2	**Laterite Soil and Sterile Soil**	Devakottai, Ilayankudi,Karaikudi, Manamadurai, Sivagangai and Thiruppathur.
3	**Black Soil**	Devakottai, Ilayankudi, Manamadurai and Sivagangai.
4	**Alluvial Soil**	-
5	**Red Soil**	Devakottai, Kannangudi, Ilayankudi, Manamadurai, Sivagangai and Thiruppathur

Table 2.12 Block wise Soil Classification in Sivagangai District

Sl No	Block	Types of soil
1.	Devakottai	Clay loam, sandy loam
2.	Kannangudi	Sandy loam
3.	Thiruppuvanam	Sandy loam, red soil, black soil
4.	Singampunari	Sandy loam, red soil
5.	Kalayarkoil	Sandy loam, sandy clay loam
6.	Kallal	Sandy loam, clay loam, sandy clay loam
7.	Sivagangai	Coarse loamy, sandy clay, sandy loam, clay loam, sandy clay loam
8.	Thirupathur	Sandy clay loam, moderate clay loam
9.	Ilayankudi	Clay loam sandy, sandy clay sandy, sandy loam
10.	S.Pudur	Sandy loam

2.7 Climate Condition and Rainfall

The rainfall data is presented in Table 2.13 and it revealed that the total rainfall of the district is 872.8mm. The North-East monsoon accounted for a highest proportion of 48.43 per cent of the total rainfall followed by South-West monsoon with 34.49 per cent. Summer rainfall was also received in the district with 13.89 per cent of the total rainfall. Winter rainfall was almost negligent in the district i.e. 3.20 per cent. The graphical representation of rainfall of Sivagangai district is depicted in Fig. 3.

Table 2.13 Month wise / season wise rainfall distribution in Sivagangai District (Actual and Normal)

Season / Month	2014-15	
	Normal	Actual
South West Monsoon		
June	6.4	41.9
July	31.1	72
August	134	88.2
September	128.5	98.9
Total	**300 (28.39)**	**301 (34.49)**
North East Monsoon		
October	267.9	187.1
November	119.2	148.5
December	81.7	87.1
Total	**468.8 (44.36)**	**422.7 (48.43)**
Winter Season		
January	17.1	15.6
February	1.7	12.3
Total	**18.8 (1.78)**	**27.9 (3.20)**
Hot Weather		
March	29.7	17.5
April	126.5	46.1
May	112.9	57.6
Total	**269.1 (25.47)**	**121.2 (13.89)**
Annual rainfall	**1056.7**	**872.8**
	(100.00)	**(100.00)**

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

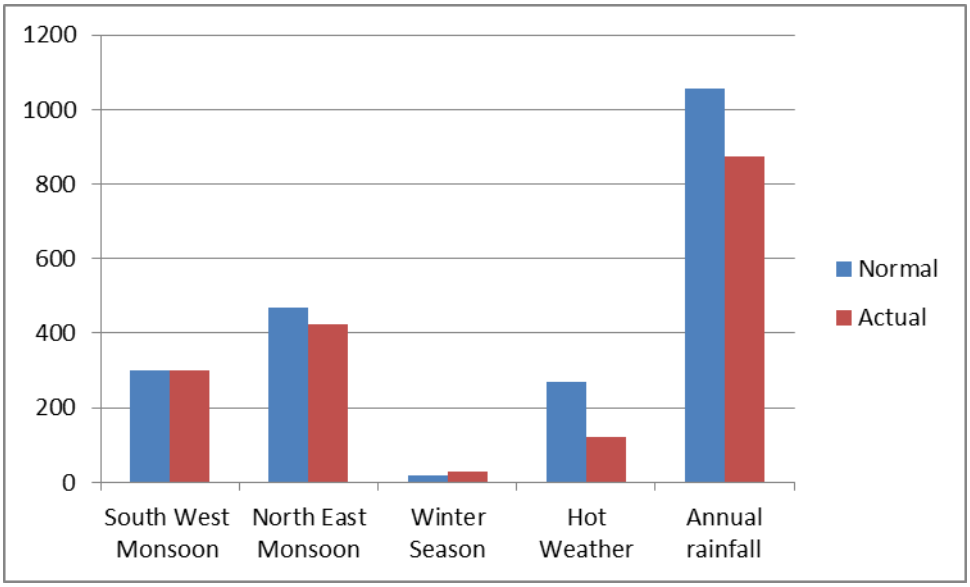

Fig.3 Season Wise Average Rainfall in mm (2014-2015)

2.8 Land use classification

2.8.1 Types of land

The total geographical area of the district is 4,18,900ha, of which net sown area accounted for 97,943 ha during 2013-14. The total forest area of the district is 16533ha i.e., 3.95 per cent only, however as per the National Forest Policy – 1988, the area under forest cover should be one third of the total geographical area in order to maintain the ecological balance. The area under wetland is about 68884 ha, garden land about 26989 ha and dry land about 26465 ha (Table 2.14).

2.8.2 Land use pattern

The land use pattern in Sivagangai district and among its different blocks is furnished in the Table 2.15 and 2.16. Area under cultivation is about 418900ha of total geographical area. Agricultural area under irrigation is 95930 ha. The share of district area under cultivable waste, current fallow and other fallow accounted for about 36.50 per cent of the total area and this would reveal that implementation of land reclamation, strengthening of irrigation facilities and so on through schemes by various departments could increase the net sown area or area under forest.

Table 2.14 Details of land types in Sivagangai district blocks

(Hectares)

Sl. No	Types of Land	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	Total
1	Wet land	7512	1950	5800	7478	5800	1520	4483	22268	5346	6727	13572	5706	**88162**
2	Garden land	6741	1080	450	228	450	1240	4294	10134	2116	256	5245	1670	**33904**
3	Dry land	1076	2540	100	63	100	600	6739	11234	3968	45	17706	8205	**52376**
	Total	**15329**	**5570**	**6350**	**7769**	**6350**	**3360**	**15516**	**43636**	**11430**	**7028**	**36523**	**15581**	**174442**

B1- Devakottai, B2- Ilayagudi, B3- Kallal, B4- Kannangudi, B5-Manamadurai, B6- S.Pudur, B7- Singampunari, B8- Sivagangai, B9- Thiruppathur, B10- Thiruppuvanam, B11- Kalaiyarkoil, B12- Sakkottai

Table 2.15 Land Use Pattern of Sivagangai District (2014-15)

S. No.	Classification	Area (ha)	percent
1	Geographical Area	418900	100
2	Forest	16533	3.95
3	Barren &Unculturable Area	4710	1.12
4	Land Put to Non-agricultural Uses	122586	29.26
5	Permanent Pastures & Other grazing lands	1367	0.33
6	Misc.tree crops & groves not incl. in the net area sown	6554	1.56
7	Current Fallow	24773	5.91
8	Other Fallow	128131	30.59
9	Net area sown	95930	22.90
10	Area sown more than once	86	0.02
11	Gross area sown	96016	22.92

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

Table 2.16 Block wise land use pattern of Sivagangai district

Sl. No	Particulars	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	Total
1	Area under forest	689	0	3729	1885	1037	1894	1333	13	650	0	2298	1737	15265
2	Barren and Uncultivable Waste	0	0	0	0	0	0	0	0	0	47	321	0	368
3	Land put to Non-agrl. Uses	12173	9697	10821	7572	11593	2694	5028	126	9971	9924	17893	12244	109736
4	Area under cultivable waste	2317	1567	1142	873	753	173	110	35	1825	1305	3270	1501	14871
5	Area under permanent pastures	141	406	108	377	256	8	14	1	121	5	122	91	1650
6	Area under miscellaneous tree crops and groves not included in net area sown	315	19	1911	132	143	17	40	2	45	41	826	2764	6255
7	Area under current fallows	688	3569	2464	234	795	2723	402	12	3873	1559	2297	980	19596
8	Area under other fallows	6506	9667	11924	3245	10587	4266	6367	190	11080	8674	15967	8371	96844
9	Net are sown	13043	19365	7161	6898	8893	4056	8886	445	4910	10665	14882	7136	106340
10	Total geographical area	35910	44915	39891	21102	39891	16023	22652	445	34549	132220	57880	34825	480303
11	Area sown more than once	1311	0	-	652		0	1470	215	0	0	0	0	3648
12	Gross cropped area	14354	19365	7161	7550	8893	4056	10356	0	4910	10665	14882	7136	109328
13	Extent of Waste Land	8823	10103	13066	4338	13066	Nil	5068	22530	13066	0	16504	1566	108130

B1- Devakottai, B2- Ilayagudi, B3- Kallal, B4- Kannangudi, B5-Manamadurai, B6- S.Pudur, B7- Singampunari, B8- Sivagangai, B9- Thiruppathur, B10- Thiruppuvanam, B11- Kalaiyarkoil, B12- Sakkottai

2.8.3 Land Holdings Pattern

The number of operational land holdings in Sivagangai district is presented in Table 2.17 and for block in Table 2.18. It could be inferred from the table that the district has the preponderance of marginal and small holdings with size of land holding below two hectares.

Table 2.17 Number of operational land holdings in Sivagangai district

Sl. No	Size Class of Holdings (Hectares)	Number
1	Below 0.50	170875
2	0.50 to 1.00	53595
3	1.00 to 2.00	30626
4	2.00 to 3.00	7632
5	3.00 to 4.00	2691
6	4.00 to 5.00	1141
7	5.00 to 7.50	1017
8	7.50.to 10.00	289
9	10.00 to 20.00	215
10	20.00 & Above	50
	TOTAL	**268131**

Table 2.18 Block wise land holding pattern of Sivagangai district

Sl. No	Land Holding Pattern	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	Total
1	> 1 ha.	7201	6935.72	3745	3802	3745	3550.92	4923	11787.5	4168	5905.66	0	0	49858.14
2	1 - 2 ha.	4004	15173.45	10071	1891	10071	2080.78	2659	13435.5	12543	3044.81	0	0	71928.73
3	2.1 - 4 ha.	2699	21480.03	7626	1419	7626	1322.57	1765	10251.75	6549	1656.56	0	0	60738.35
4	4.1 – 10 ha.	1170	2756.36	632	733.1	632	635.38	884	5841	572	925.45	0	0	13855.84
5	Above 10 ha.	255	465.65	72	42.92	72	153.93	461	2748	84	509.56	0	0	4354.5
	Total	**15329**	**46811.21**	**22146**	**7888.02**	**22146**	**7743.58**	**10692**	**44063.75**	**23916**	12042.04	**0**	**0**	**200735.56**

B1- Devakottai, B2- Ilayagudi, B3- Kallal, B4- Kannangudi, B5-Manamadurai, B6- S.Pudur, B7- Singampunari, B8- Sivagangai, B9- Thiruppathur, B10- Thiruppuvanam, B11- Kalaiyarkoil, B12- Sakkottai

2.9 Sources of Irrigation

The irrigation statistics of the district is presented in Table 2.19 and 2.20. Among the irrigation sources, tank ranked first followed by open wells of the irrigated area. Tube wells and supplementary wells were the other sources.

The details of taluk wise irrigation sources are furnished in Table 2.22. There are totally 4966 tanks of which 1937 nos. are present in Thiruppathur block and 1163 nos. in Sivagangai block. Wells used for irrigation purpose is about 15027 nos. excluding tube wells of which Sivagangai block is having more nos. i.e. 6134. The total number of tube wells present in Sivagangai district is 1370 Nos.

Table 2.19 Area Irrigated By Different Sources in Sivagangai District

(Hectares)

Sl.No.	Particularls		2012-13	2013-14	2014-15	Average
1	Tanks	Gross	50142	38608	54766	47838.67
		Net	50111	38391	54745	47749.00
2	Tube wells / Bore wells	Gross	3081	3759	3965	3601.67
		Net	3081	3759	3965	3601.67
3	Open wells	Gross	22383	23796	14096	20091.67
		Net	22383	23794	14096	20091.00
4	Supplementary wells	Gross	813	258	0	357.00
		Net	813	258	0	357.00

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

Table 2.20 Net and Gross Area Irrigated by Different Sources in Sivagangai District

Sl. No	Area irrigated	Net Area Irrigated	Gross Area Irrigated
1	Canals	0.0	0.0
2	Tanks	0.9	1.0
3	Tube wells	7.0	12.2
4	Ordinary wells	-4.1	-4.1
5	Other sources	0.0	0.0
	Total	**1.0**	**1.0**

Table 2.21 Block wise irrigation source in Sivagangai district

Sl. No	Source	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	Total
1	Canal (Length)	0	4373	0	0	0	0	0	851	0	0	0	0	851
2	Tanks (Public)	205	233	348	227	229	319	451	595	920	218	610	326	4681
3	Tanks (Private)	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Openwell	95	197	338	178	495	2255	1151	1986	1240	2696	4270	356	15257
5	Borewell	0	147	334	0	524	0	89	662	68	76	10	304	2214
6	Total	300	4950	1020	405	1248	2574	1691	4094	2228	2990	4890	986	27376
7	% of Gross Irrigated Area to Gross Cropped Area	60	81	83	68	67	87	53	57	58	-	-	-	-
		14354	19365	7161	7550	8893	4056	10356	4760	4910	0	0	0	76645

Table 2.22 Sources of water for irrigation – Taluk wise

Sl. No	Name of the Taluk	Canals No.	Length (Km)	Wells used for irrigation purpose only (Excluding tube wells)	Tube Wells No.	Wells used for Domestic & Industrial Purpose	Reservoirs	Tanks (Nos.)
1.	Sivagangai	-	-	6134	102	2857	-	1163
2.	Manamadurai i. Lift Main Cannel	1	30.15	859	95	773	-	218
	ii. Right Main Cannel	1	46.00					
3.	Ilayangudi	-	-	512	307	917	-	225
4.	Devakottai	-	-	988	190	1593	-	598
5.	Karaikudi	-	-	477	241	23022	-	637
6.	Thiruppathur	-	-	4266	219	1708	-	1937
7.	Thiruppuvanam	-	-	1791	216	514		188
	Total	1	76.15	15027	1370	31384	-	4966

Source: *Water resource, Saruganiyar Basin Division, Sivagangai and G Return*

2.10 Cropping Pattern

Paddy, groundnut, black gram, coconut and sugarcane are the major agricultural crops cultivated in the district. With regards to horticultural crops cashew nut, banana, mango, guava and chilli and are major crops grown. The details of the cropping pattern triennium average of the district are furnished in the Table 2.23.

Table 2.23 Area, production and productivity (Triennium ending 2014-15)

S.No.	Particulars	Area (in ha)	Production (in tonnes)	Productivity (in kg/ha)
1	Paddy	67055.33	133755.33	1994.70
2	Maize	203.33	1349.00	6634.53
3	Cholam	250.00	458.67	1834.68
4	Cumbu	22.67	62.33	2749.45
5	Ragi	144.00	561.00	3895.83
6	Bengal Gram	7.00	3.00	428.57
7	Red Gram	271.67	290.33	1068.69
8	Black Gram	661.33	497.00	751.52
9	Green Gram	37.00	20.00	540.54
10	Horse Gram	14.00	9.33	666.43
11	Groundnut	3006.33	5989.33	1992.24
12	Sunflower	16.67	28.00	1679.66
13	Gingelly	221.00	133.33	603.30
14	Castor	5.67	2.00	352.73
15	Cotton	459.00	1224.67	2668.13
16	Coconut	6844.67	598.33	87.42
17	Sugarcane	5043.67	406705.00	80636.72
18	Onion	45.00	412.00	9155.56
19	Brinjal	128.33	1162.00	9054.78
20	Bhendi	77.00	569.33	7393.90
21	Tomato	16.67	225.33	13517.10
22	Banana	1034.00	41075.33	39724.69

23	Mango	2107.00	14280.00	6777.41
24	Jack Fruit	31.33	392.67	12533.35
25	Grapes	1.00	14.33	14330.00
26	Chillies	4194.67	750.33	178.88
27	Coriander	2.00	1.00	500.00
28	Turmeric	3.33	12.67	3804.80
29	Tamarind	458.00	1457.67	3182.69
30	Potato	0.33	5.33	16151.52
31	Tapioca	4.67	150.33	32190.58
32	Sweet Potato	2.67	51.00	19101.12
	Total	**92369.33**	**612246.00**	**296181.51**

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

2.11 Consumption of chemical fertilizer and pesticide

The consumption of fertilizers and pesticides during 2013-14 is given in Table 2.24. Among nitrogenous, phosphates and potassic fertilizers (12187 Mt), nitrogenous fertilizer alone accounts for 7613 Mt. Pesticides consumption is about 25.50 M.T dust.

Table 2.24 Consumption of chemical fertilizer (2013-14)

Fertilizers (MT)				Pesticides	
Nitrogeneous (N)	**Phosphatic (P2 05)**	**Pottassic (K2 0)**	**Total (NPK)**	**Dust (in M.T.)**	**Liquid (in Lit.)**
7613	3339	1235	12187	25.50	15.50

Source: *http://www.tn.gov.in/deptst/agriculture.pdf*

2.12 Agricultural Machineries and Implements

The details of agricultural machineries and implements in Sivagangai district is furnished in Table 2.25. Sivagangai consists of the following agricultural machineries and implements, plough (44457 Nos.), water pumps for irrigation purpose (15041 Nos.), tractors (634 Nos.), sugarcane crushers (108 Nos.) and oil ghanis (79 Nos.). Paddy transplanter service must be provided for farmers to overcome labour problem during peak labour crisis period.

Table 2.25 Agricultural Machineries and Implements

S.No.	Item	Number
1	Plough	
	a) Wooden	34839
	b) Iron	9618
	c) Total	44457
2	Water Pumps for Irrigation Purpose	
	a) Worked by Oil Engine	1012
	b) Worked by Electric Power	14029
	c) Total	15041
3	Tractors	
	a) Government	18
	b) Private	616
	c) Total	634
4	Sugarcane Crushers	
	a) Worked by Power	0
	b) Worked by Bullocks	108
	c) Total	108
5	Oil Ghanis	
	a) 5 Kg. & above	
	b) Less than 5 Kg.	79
	c) Total	79

Source: *http://sivaganga.tn.nic.in/District_at_aglance.html*

2.13 Agricultural Marketing and Regulated Markets

The regulated markets are functioning in seven blocks of Sivagangai, Karaikudi, Manamadurai, Singampunari, Thirupuvanam, Ilayankudi and Devakottai of the district and the total merchandise in these markets between 2009-2012 is presented in Table 2.26.

Table 2.26 Regulated Markets in Sivagangai District

(Incoming of products and commerce 2009-2012)

Sl. No	Product	Arrivals (Mt)	Value of the produce (Rs. in lakh)	Farmers Participation (in No's)	Beneficiaries	Additional Income (Rs. in lakh)
1	Paddy	50729	4150	510	319	143
2	Maize	3923	350	99	35	0
3	Chilly	7	6	10	2	3
4	Cotton	7	1	20	5	3
5	Barn Yard Millet	387	46	80	31	0
6	Coconut	8167	332	210	69	14
7	Sesame	0	0	0	0	0
8	Cotton	0	0	0	0	0

Sl. No	Product	Arrivals (Mt)	Value of the produce (Rs. in lakh)	Farmers Participation (in No's)	Beneficiaries	Additional Income (Rs. in lakh)
9	Cashew nut	11	5	50	10	2
10	Sorghum	0	0	0	0	0
11	Groundnut	0	0	0	0	0
12	Green gram	0	0	0	0	0
13	Coriander	0	0	0	0	0
14	Varagu	0	0	0	0	0
	Total	**63231**	**4890**	**979**	**471**	**165**

2.14 Storage Facilities

In the Sivagangai district there are about eight rural godowns and one cold storage available. Due to lack of storage facilities farmers are forced to sell their produce in the market with prevailing rate. The glut of produce leads to lower prices. Hence, farmers are not getting premium prices. Creation of cold storage facilities at affordable cost at village level may improve farm income.

2.15 Animal Husbandry

Table 2.27 Total Livestock and poultry in the district

Sl.No.	Particulars	Population
1	Cattle	246413
2	Buffaloes	5088
3	Sheep	216577
4	Goats	345071
5	Horses and ponies	7
6	Donkeys	15
7	Camels	0
8	Pigs	3499
	Total Livestock	**816670**
9	Elephants	1
10	Dogs	58356
11	Rabbits	526
	Poultry	
12	Back yard Poultry	830445
13	Farm Poultry	180610
	Total Poultry	**1011055**

Source: *19th Livestock Population, 2012.*

2.16 Animal Husbandry

Table 2.28 Block wise details of total Livestock and poultry in the district

Sl. No	Particulars	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	District
1	Cattle	29113	10095	23296	11270	35647	8271	6571	19269	13931	28234	31367	9433	226497
2	Buffalo	948	-	115	-	1589	-	27	596	48	70	1861	33	5287
3	Sheep	7111	28746	37149	5370	23819	8683	5178	2507	2253	7603	26579	8827	163825
4	Goat	20296	30850	47166	9591	86068	11639	6464	23897	4374	24644	21935	13201	300125
5	Pigs	90	57	153	39	32	78	23	149	94	1012	996	55	2778
6	Poultry	54801	44861	71104	30681	42197	7606	138298	26788	41522	73327	104392	31933	667510
7	Others	-	-	-	-	-	-	-	-	-	-	-	-	-

B-1 Devakottai, B-2 Ilayangudi, B-3 Kalaiyarkoil, B-4 Kallal, B-5 Kannangudi, B-6 Manamadurai, B-7 S.Puthur, B-8 Sakottai, B-9 Singampuneri, B-10 Sivagangai, B-11 Tirupathur, B-12 Tirupuvanam,

Table 2.29 Block wise details of Infrastructures facilities in the district

Sl. No	Particulars	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
1	Dairy co-operative Society	Yes	-	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	Veterinary clinics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	a. Veterinary Hospital	-	-	-	-	-	-	-	-	-	-	-	-
	b. Veterinary Despencery	-	-	-	-	-	-	-	-	-	-	-	-
	c. Sub Centre	-	-	-	-	-	-	-	-	-	-	-	-
	d. mobile unit	-	-	-	-	-	-	-	-	-	-	-	-
	e. RVD	-	-	-	-	-	-	-	-	-	-	-	-
3	Milk Collection Centre	-	Yes	-	Yes	Yes	Yes	-	-	Yes	Yes	Yes	Yes
	a. Bulk Milk Cool	-	-	-	-	-	-	-	-	-	-	-	-

B-1 Devakottai, B-2 Ilayangudi, B-3 Kalaiyarkoil, B-4 Kallal, B-5 Kannangudi, B-6 Manamadurai, B-7 S.Puthur, B-8 Sakottai, B-9 Singampuneri, B-10 Sivagangai, B-11 Tirupathur, B-12 Tirupuvanam,

2.16 Fisheries

The data regarding the fishing quantity and families engaged in fishing in the districts are furnished in the Table 2.30. The total inland fish production is about 128 tonnes and totally 527 families are engaged in fishing.

Table 2.30 Details of fisheries in Sivagangai district

Fisheries details (2010-11)	Nos.
Inland Production (Tonnes)	128
Families Engaged in Fishing	527

(*Source: Sivagangai district profile (http://sivaganga.tn.nic.in/Documents/Pdf/dst_prfl.pdf)*

2.17 Banking and Insurance

Banking sector caters 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 block wise credit institutions present in the district were given in Table 2.31. Totally 199 bank branches are available in the district, of which 13 SBI bank, 84 commercial banks, 139 co-operative banks and 102 private sector banks were available for credit facilities.

Table 2.31 Financial Institutions in Sivagangai District

Sl. No	Bank branches	No. of Branches
A	**SBI**	13
B	**Commercial Banks**	
1	CANARA BANK	7
2	BANK OF BARODA	3
3	BANK OF INDIA	4
4	CENTRAL BANK	5
5	INDIAN BANK	16
6	INDIAN OVERSEAS BANK	27
7	PUNJAP NATIONAL BANK	2
8	SYNDICATE BANK	4
9	UCO BANK	4
10	UNION BANK OF INDIA	3
11	VIJAYA BANK	3
12	ALAHAPAT BANK	1
13	ANDHRA BANK	2
14	CORPORATION BANK	2
15	ORIENTAL BANK OF COMMERCE	1
C	**PRIVATE SECTOR BANK**	
1.	ICICI BANK	26

2	CITY UNION BANK	3
3	KARUR VISYA BANK	1
4	LAXMI VILAS BANK	1
5	TAMIL NADU MERCANTILE BANKBANK	2
6	IDBI BANK LTD	2
7	AXIS BANK	1
D	SIVAGANGA DT. CENTL. CO-OP BANK	30
E	PANDIAN GRAMA BANK	29
F	OTHERS – TNCSARD BANK	6
G	TIIC	1
	DISTRICT TOTAL	199

Source: Manager, Lead bank, IOB Sivagangai

CHAPTER III

DEVELOPMENT OF AGRICULTURAL AND ALLIED SECTOR

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

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 Trend in Area, Production and Yield 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) 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 rates in area, production and yield of major crops and also for which the time series data available from 1996 were worked out and the results are presented in Table 3.3.The growth in area, production and yield were found out by using the exponential growth function of the form

$$Y = a\, b^t\, e_t$$

where,

Y = Dependent variable (Area, Production and Yield)

t = time variable

e_t = Error term and a and b are unknown constants to be estimated

It could be inferred from the table that paddy and groundnut registered negative growth rate in area, production and yield while sugarcane, coconut, banana and chilli registered positive growth rate in all the three parameters. The mango and guava showed mixed trend with mango registering negative growth rate in productivity and guava registering negative growth rate in area. The study calls for arresting the negative growth rate in paddy and groundnut in Sivagangai district especially paddy with popularization of System Rice Intensification technique (SRI). It also calls for boosting sugarcane, coconut, banana and chilli in Sivagangai district which showed positive growth rate in area, production and yield.

Table 3.1 Area, Production and Yield of Major Crops in Sivagangai District (Triennium average ending 2014-15)

Sl.No	Crop	Area (Ha)	%	Production	Yield (Kg/ha)
1	Paddy	67055	74.25	155122	2001
2	Blackgram	661	0.73	301	757
3	Chillies	4195	4.64	2053	168
4	sugarcane	5044	5.58	515928	81
5	Banana	1034	1.14	39337	39706
6	Mango	2107	2.33	9338	6823
7	Guava	141	0.16	1645	6152
8	Groundnut	3006	3.33	7081	1916
9	Gingelly	221	0.24	133	602
10	Coconut	6845	7.58	N.A	N.A
	Total	**90309**	**100.00**		

N.A denotes Not Available

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

Sl.No	Crop	CGR during 2005-2006 to 2014-2015 (%)		
		Area	Production	Productivity
1	Paddy	-2.78	0.43	3.31
2	Black gram	11.28	24.23	11.65
3	Chillies	1.29	-19.41	-20.45
4	sugarcane	-0.53	-3.22	-2.74
5	Banana	4.76	1.78	-2.85
6	Mango	4.10	14.59	10.08
7	Guava	-4.68	-14.22	-10.01
8	Groundnut	-5.87	-3.01	4.95
9	Gingelly	-8.32	6.65	6.53
10	Coconut	5.08	0.00	0.00

N.A denotes Not Available

Table 3.3 Compound Growth Rate of Area, Production and Yield of Major Crops in Sivagangai District for a period from 1996 to 2011

(in %)

S. No.	Crop	Area	Production	Productivity
1	Paddy	-0.70	-3.61	-2.93
2	Chilli	1.18	11.69	10.39
3	Sugarcane	0.63	0.78	0.16
4	Groundnut	-0.64	-2.44	-1.80
5	Coconut	1.70	5.84	4.06
6	Banana	5.47	6.70	1.17
7	Mango	6.21	0.63	-5.25
8	Guava	-0.95	7.36	8.39

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

Description	Paddy			Black Gram			Groundnut			Coconut		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
Compound Growth Rate (%)	0.238	2.527	2.285	4.081	5.697	1.584	-3.030	-2.459	0.590	1.732	5.208*	2.908*
Triennium Average ending	81680	212213	2578	537	339	534	4643	8243	1592	6575	951	14448
2012-13	82125	168931	2057	474	216	455	4402	6259	1422	6742	961	14035
2013-14	82320	173200	2104	494	228	463	4268	6105	1431	6859	1011	14444
2014-15	82516	177577	2153	514	241	470	4139	5955	1439	6977	1064	14864
2015-16	82713	182065	2202	535	255	477	4014	5809	1448	7098	1119	15296

Table.3.4 (Contd…)

Description	Sugarcane			Cashewnut			Banana			Mango		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
Compound Growth Rate (%)	3.148	3.094	-0.031	-1.717	-4.911	-3.247	4.647	6.507	1.772	5.986	3.763	-2.097
Triennium Average ending	5494	574074	103	4269	1218	285	961	42118	43797	1879	10024	5367
2012-13	5747	585830	102	4184	937	224	1014	48953	48251	2175	7648	3516
2013-14	5928	603955	102	4112	891	217	1061	52138	49106	2305	7936	3442
2014-15	6114	622640	102	4041	847	210	1111	55530	49976	2443	8235	3370
2015-16	6307	641904	102	3972	805	203	1162	59143	50861	2590	8544	3299

Table.3.4 (Contd…)

Description	Guava			Chilli		
	Area	**Production**	**Yield**	**Area**	**Production**	**Yield**
Compound Growth Rate (%)	-3.901	1.230	5.338	2.143	12.777	10.450
Triennium Average ending	166	1547	9180	4513	2493	535
2012-13	155	1799	11632	4770	3168	665
2013-14	149	1821	12253	4872	3573	734
2014-15	143	1843	12907	4976	4030	811
2015-16	137	1866	13596	5083	4544	896

3.1.2 Major Identified Agricultural Crops in Sivagangai District

The major identified agricultural crops and horticultural crops in Sivagangai district are presented respectively in Table 3.5 and 3.6. From Table 3.5, it could be inferred that the major crops identified in the district are Paddy, Sugarcane, Coconut and Groundnut as these crops accounted for 84.46 per cent (as against the stipulation of 80.00 per cent) of the net sown area of 113427 hectares. From Table 3.6, it could be inferred that the major identified horticultural crops are chilli, cashew nut, mango, banana, tamarind and guava as these crops accounted for 93.39 per cent (as against the stipulation of 80.00 per cent) of the horticultural area of 13483 hectares which included the area under flowers, fruits and vegetables and, spices and condiments. Table 3.7 lists the ruling varieties of the identified agricultural and horticultural crops of all the blocks of Sivagangai district.

Table 3.5 Major identified agricultural crops in Sivagangai District

Sl. No	Year	2008-09	2009-10	2010-11	Avg.	NSA	%	Cumulative
1	Paddy	80833	77332	83927	80697	113427	71.14	-
2	Coconut	6317	6396	6599	6437	113427	5.68	76.82
3	Sugarcane	5298	4980	5219	5165	113427	4.55	81.37
4	Groundnut	4126	3729	4012	3955	113427	3.49	84.46

Table 3.6 Major Identified Horticultural Crops in Sivagangai District

Sl. No	Year	2008-09	2009-10	2010-11	Average	Total horticultural area	%	Cumulative
1	Chilli	4652	4762	4714	4709	13483	34.93	-
2	Cashewnut	4617	4776	4278	4557	13483	33.80	68.73
3	Mango	1719	1816	1816	1784	13483	13.23	81.96
4	Banana	735	919	939	864	13483	6.41	88.37
5	Tamarind	508	509	494	503	13483	3.74	92.11
6	Guava	177	177	163	172	13483	1.28	93.39

Table. 3.7. Major identified crops and varieties in Sivagangai District

Sl. No	Crops	Ruling Varieties
I	**Agricultural Crops**	
1	Paddy	ADT 39, ADT 45
2	Sugarcane	COC 6304, COC 86032
3	Coconut	Tall, Tall x Dwarf
4	Groundnut	TMV 7, VRI 2
II	**Horticultural Crops**	
1	Chilli	Ramanathapuram, US agri seeds,Nunhems and Namthari
2	Cashewnut	VRI1 and VRI2
3	Mango	Himam Pasand, Alphosa, Banglora, Neelum and Banganapalli
4	Banana	Poovan, G 9 and Naadu
5	Tamrind	PKM 1, Local
6	Guava	Lucknow 49, Allahabad and Local

3.3 Yield Gap Analysis

Methodology

The yield gap analysis and projection of production of identified ten crops are discussed in this section. The yield gap analysis is given in the first table. The Yield gap I is worked out by deducting the progressive farmer yield from the potential yield. The Yield gap II is worked out by deducting the average yield from the progressive farmer yield. The overall yield gap is obtained by deducting the average yield from the potential yield.

The second table portrays the growth rate of major crops worked out by zeroing the yield gap with average yield that is yield gap/ average yield. The annual growth rate is then worked out by dividing the required growth rate by the number of years to reach 2022-23 from 2010-11 (the basic year) that is twelve. The third table presents the projected yield from 2011-12 by multiplying the basic yield in 2010-11 with the compound growth rates of each year. The fourth table projects a simple calculation of doubling the production with the existing yield. The final fifth table gives the projected production from 2011-12 to 2022-23 by multiplying the area with the projected yield from the third table. The analysis is done variety wise and then summed up for the crop. A comparative analysis is then finally done by matching the projected production obtained by zeroing the yield gap with targeted production from the fourth table.

The above said methodology is followed for all the crops and the results are presented in five tables for all the ten identified crops. A brief discussion is provided at the end for each crop.

1. PADDY

Table. 3.8. Yield Gap (Kg./ha.)

Variety	Yield GAP I	Yield GAP II	Over All Yield GAP
ADT 39	140	667	807
ADT 45	242	27	269

Table. 3.9. Growth Rate(%)

Ruling Varieties	ADT 39	ADT 45
Potential Yield	7000	8000
Progressive farmer yield	6860	7758
Average Yield	6193	7731
Overall Yield Gap	807	269
Required Growth Rates	13.03	3.48
Annual Growth Rate	1.09	0.29

Table. 3.10. Projected Yield (Kg/ha)

Sl. No	Year	ADT 39	ADT 45
1	2010-11	6193	7731
2	2011-12	6261	7753
3	2012-13	6329	7776
4	2013-14	6398	7798
5	2014-15	6467	7821
6	2015-16	6538	7844
7	2016-17	6609	7866
8	2017-18	6681	7889
9	2018-19	6754	7912
10	2019-20	6828	7935
11	2020-21	6902	7958
12	2021-22	6977	7981
13	2022-23	7053	8004

Table. 3.11. Doubling the Production

Area under Paddy	83927	ha
Production	584131	tonnes
Yield	6.96	tonnes
Doubling the production	**1168262**	tonnes
Yield	13.92	tonnes

Table. 3.12. Projected Production (Tonnes)

	ADT 39	**ADT 45**	
Proportion of varieties	0.6	0.4	1
Area	50356.2	33570.8	83927
2011-12	315255	260289	575543.7
2012-13	318691	261043	579734.8
2013-14	322165	261800	583965.6
2014-15	325677	262560	588236.4
2015-16	329227	263321	592547.7
2016-17	332815	264085	596899.9
2017-18	336443	264850	601293.4
2018-19	340110	265619	605728.7
2019-20	343817	266389	610206.2
2020-21	347565	267161	614726.3
2021-22	351353	267936	619289.6
2022-23	355183	268713	**623896.3**

The yield gap for paddy in Sivagangai district is 807 Kg. /ha. in ADT 39 and 269 Kg./ha. in ADT 45 variety. Bridging the yield gap requires a growth rate of 1.09 per cent per annum in ADT 39 and 0.29 per cent per annum in ADT 45 variety. Doubling the paddy production requires a target of 1168262 tonnes but the projected production with bridging the yield gap is 623896 tonnes.

2. GROUNDNUT

Table. 3.13. Yield Gap (kg./ha.)

Variety	Yield GAP I	Yield GAP II	Overall YG
TMV-7			500
VRI-2			500

Table. 3.14. Growth Rate (%)

Ruling Varieties	TMV 7	VRI 2
Potential Yield	1900	2560
Progressive farmer yield		
Average Yield	1400	2060
Overall Yield Gap	500	500
Required Growth Rates	35.71	24.27
Annual Growth Rate	2.98	2.02

Table. 3.15. Projected Yield (Kg./ha.)

Sl. No	Year	TMV 7	VRI 2
1	2010-11	1400	2060
2	2011-12	1442	2102
3	2012-13	1485	2144
4	2013-14	1529	2187
5	2014-15	1574	2232
6	2015-16	1621	2277
7	2016-17	1670	2323
8	2017-18	1719	2370
9	2018-19	1771	2417
10	2019-20	1823	2466
11	2020-21	1878	2516
12	2021-22	1934	2567
13	2022-23	1991	2619

Table 3.16. Doubling the Production

		Units
Area under Groundnut	4012	ha
Production	4757	tonnes
Yield	1.19	tonnes
Doubling the production	**9514**	tonnes
Yield	2.37	tonnes

Table. 3.17. Projected Production (Tonnes)

	TMV 7	VRI 2	
Proportion of varieties	0.6	0.4	1
Area	2407.2	1604.8	4012
2011-12	3471	3373	6843
2012-13	3574	3441	7015
2013-14	3680	3510	7191
2014-15	3790	3581	7371
2015-16	3903	3654	7557
2016-17	4019	3727	7747
2017-18	4139	3803	7942
2018-19	4262	3879	8142
2019-20	4390	3958	8347
2020-21	4520	4038	8558
2021-22	4655	4119	8774
2022-23	4794	4203	**8996**

The yield gap for groundnut in Sivagangai district is 500 Kg./ha. in TMV-7 and 500 Kg./ha. in VRI 2 variety. Bridging the yield gap requires a growth rate of 2.98 per cent per annum in TMV 7 and 2.02 per cent per annum in VRI 2 variety. Doubling the groundnut production requires a target of 9514 tonnes but the projected production with bridging the yield gap is 8996 tonnes and it FALLS SHORT OF THE TARGET MARGINALLY BY 520 TONNES.

3. COCONUT (NUTS)

Table. 3.18. Yield Gap (no/ha.)

Variety	Yield GAP I	Yield GAP II	Overall YG
Tall			6168
Tall dwarf			6740

Table. 3.19. Growth Rate (%)

Potential Yield	18000	20000
Progressive farmer yield		
Average Yield	11832	13260
Overall Yield Gap	6168	6740
Required Growth Rates	52.13	51.85
Annual Growth Rate	4.34	4.32

Table. 3. 20. Projected Yield (no./ha.)

Year	Tall	Tall dwarf
2010-11	11832	13260
2011-12	12346	13833
2012-13	12881	14430
2013-14	13440	15054
2014-15	14024	15704
2015-16	14632	16383
2016-17	15267	17090
2017-18	15930	17829
2018-19	16621	18599
2019-20	17343	19402
2020-21	18095	20240
2021-22	18881	21115
2022-23	19700	22027

Table. 3.21. Doubling the Production

		Units
Area under coconut	6599	ha
Production	80906.38	T.nuts
Yield	12.26	T.nuts
Doubling the production	**161812.76**	T.nuts
Yield	24.52	T.nuts

Table. 3.22. Projected Production (T.nuts/ha.)

	Tall	Tall dwarf	
Proportion of varieties	0.7	0.3	1
Area	4619.3	1979.7	6599
2011-12	57028	27385	84412
2012-13	59503	28568	88070
2013-14	62085	29802	91887
2014-15	64780	31089	95869
2015-16	67591	32433	100023
2016-17	70524	33834	104358
2017-18	73585	35295	108880
2018-19	76779	36820	113599
2019-20	80111	38411	118522
2020-21	83588	40070	123658
2021-22	87215	41801	129016
2022-23	91001	43607	134607

The yield gap for coconut in Sivagangai district is 6168 numbers in tall variety and 6740 numbers in tall dwarf variety. Bridging the yield gap requires a growth rate of 4.34 per cent per annum in tall variety and 4.32 per cent per annum in tall dwarf variety. Doubling the coconut production requires a target of 161812 tonne nuts but the projected production with bridging the yield gap is 134607 tonne nuts.

4. SUGARCANE

Table. 3.23. Yield Gap (Kg./ha.)

Variety	Yield GAP I	Yield GAP II	Over All Yield GAP
COC6304	46000	14000	60000
COC86032	102000	12000	114000

Table. 3.24.Growth Rate (%)

Ruling Varieties	COC6304	COC86032
Potential Yield	200000	220000
Progressive farmer yield	154000	118000
Average Yield	140000	106000
Overall Yield Gap	60000	114000
Required Growth Rates	42.86	107.55
Annual Growth Rate	3.57	8.96

Table. 3.25. Projected Yield (Kg./ha.)

Sl. No	Year	COC6304	COC86032
1	2010-11	140000	106000
2	2011-12	145000	115000
3	2012-13	150000	126000
4	2013-14	156000	137000
5	2014-15	161000	149000
6	2015-16	167000	163000
7	2016-17	173000	177000
8	2017-18	179000	193000
9	2018-19	185000	211000
10	2019-20	192000	229000
11	2020-21	199000	250000
12	2021-22	206000	272000
13	2022-23	213000	297000

Table. 3.26. Doubling the Production

		Units
Area under Sugarcane	5219	ha
Production	1043800	tonnes
Yield	200.00	tonnes
Doubling the production	**2087600**	tonnes
Yield	400.00	tonnes

Table. 3.27. Projected Production (Tonnes)

	COC 6304	COC 86032	
Proportion of varieties	0.5	0.5	1
Area	2609.5	2609.5	5219
2011-12	378372	301391	679763.3
2012-13	391880	328396	720275.8
2013-14	405870	357820	763690.2
2014-15	420360	389881	810240.4
2015-16	435367	424814	860180.5
2016-17	450909	462877	913786.4
2017-18	467007	504351	971357.7
2018-19	483679	549541	1033220
2019-20	500946	598780	1099726
2020-21	518830	652430	1171260
2021-22	537352	710888	1248240
2022-23	556536	774584	**1331119**

The yield gap for sugarcane in Sivagangai district is 60000 Kg./ha. in COC 6304 and 114000 Kg./ha. in COC 86032 variety. Bridging the yield gap requires a growth rate of 3.57 per cent per annum in COC 6304 and 8.96 per cent per annum in COC 86032 variety. Doubling the sugarcane production requires a target of 2087600 tonnes but the projected production with bridging the yield gap is 1331119 tonnes.

5. CASHEW NUT

Table 3.28 Yield Gap (Kg./ha.)

Variety	Yield GAP I	Yield GAP II	Overall YG
VRI 1	-	-	650
VRI 2	-	-	780

Table 3.29 Growth Rate (%)

Ruling Varieties	VRI 1	VRI 2
Potential Yield	1400	1600
Progressive farmer yield		
Average Yield	750	820
Overall Yield Gap	650	780
Required Growth Rates	86.67	95.12
Annual Growth Rate	7.22	7.93

Table 3.30 Projected Yield (Kg./ha.)

Year	VRI 1	VRI 2
2010-11	750	820
2011-12	804	885
2012-13	862	955
2013-14	924	1031
2014-15	991	1113
2015-16	1063	1201
2016-17	1140	1296
2017-18	1222	1399
2018-19	1310	1510
2019-20	1405	1630
2020-21	1506	1759
2021-22	1615	1898
2022-23	1731	2049

Table. 3.31. Doubling the Production

		Units
Area under cashewnut	4278	ha
Production	3298	tonnes
Yield	0.77	tonnes
Doubling the production	**6596**	tonnes
Yield	1.54	tonnes

Table 3.32 Projected Production (Tonnes)

	VRI 1	VRI 2	
Proportion of varieties	0.7	0.3	1
Area	2994.6	1283.4	4278
2012-13	2408	1136	3543.95
2013-14	2582	1226	3807.8876
2014-15	2768	1323	4091.5211
2015-16	2968	1428	4396.3232
2016-17	3183	1541	4723.8769
2017-18	3412	1664	5075.884
2018-19	3659	1795	5454.1738
2019-20	3923	1938	5860.7128
2020-21	4206	2091	6297.6148
2021-22	4510	2257	6767.1522
2022-23	4835	2436	7271.7677

The yield gap for cashewnut in Sivagangai district is 650 Kg./ha. in VRI 1 and 780 Kg./ha.in VRI 2 variety. Bridging the yield gap requires a growth rate of 7.22 per cent per annum in VRI 1 variety and 7.93 per cent per annum in VRI 2 variety. Doubling the cashewnutproduction requires a target of 6596 tonnes and the projected production with bridging the yield gap is 7272 tonnes and it exceeds the target by 676 tonnes.

6. BANANA

Table 3.33 Yield Gap (kg./ha.)

Variety	Yield GAP I	Yield GAP II	Overall YG
Poovan			8000
G9			2000
Nadu			2000

Table 3.34 Growth Rate (%)

Ruling Varieties	Poovan	G9	Nadu
Potential Yield	30000	35000	28000
Progressive farmer yield			
Average Yield	22000	33000	26000
Overall Yield Gap	8000	2000	2000
Required Growth Rates	36.36	6.06	7.69
Annual Growth Rate	3.03	0.51	0.64

Table 3.35 Projected Yield (Kg./ha.)

Year	Poovan	G9	Nadu
2010-11	22000	33000	26000
2011-12	22667	33168	26166
2012-13	23353	33337	26334
2013-14	24061	33507	26502
2014-15	24790	33678	26672
2015-16	25541	33850	26843
2016-17	26315	34023	27015
2017-18	27112	34196	27187
2018-19	27934	34371	27361
2019-20	28780	34546	27537
2020-21	29652	34722	27713
2021-22	30551	34899	27890
2022-23	31477	35077	28069

Table 3.36 Doubling the Production

		Units
Area under banana	939	Ha
Production	9517	Tones
Yield	10.13	Tones
Doubling the production	**19034**	Tones
Yield	20.27	Tones

Table. 3.37. Projected Production (Tonnes)

	Poovan	**G9**	**Nadu**	
Proportion of varieties	0.4	0.04	0.56	1
Area	375.6	37.56	525.84	939
2011-12	8514	1246	13759	23518.72
2012-13	8772	1252	13847	23871.09
2013-14	9037	1259	13936	24231.88
2014-15	9311	1265	14025	24601.32
2015-16	9593	1271	14115	24979.66
2016-17	9884	1278	14205	25367.15
2017-18	10183	1284	14296	25764.07
2018-19	10492	1291	14388	26170.67
2019-20	10810	1298	14480	26587.25
2020-21	11137	1304	14572	27014.07
2021-22	11475	1311	14666	27451.45
2022-23	11823	1318	14760	27899.69

The yield gap for banana in Sivagangai district is 8000 Kg./ha. in Poovan variety, 2000 Kg./ha. in G9 variety and 2000 Kg./ha. in Nadu variety. Bridging the yield gap requires a growth rate of 3.03 per cent per annum in Poovan and 0 .51 per cent per annum in G9 variety and 0.64 per cent per annum in Nadu variety. Doubling the banana production requires a target of 19034 tonnes and the projected production with bridging the yield gap is 27891 tonnes. The projected production exceeds the target by 8857 tonnes.

7. MANGO

Table.3.38. Yield Gap (kg./ha.)

Variety	Yield GAP I	Yield GAP II	Overall YG
HimamPasand(A)			1000
Alphonsa(B)			200
Banglora (C)			200
Neelam(D)			300
Banganapalli(E)			300

Table.3.39. Growth Rate (%)

Ruling Varieties	A	B	C	D	E
Potential Yield	8000	7000	7200	7500	7400
Progressive farmer yield					
Average Yield	7000	6800	7000	7200	7100
Overall Yield Gap	1000	200	200	300	300
Required Growth Rates	14.29	2.94	2.86	4.17	4.23
Annual Growth Rate	1.19	0.25	0.24	0.35	0.35

Table.3.40. Projected Yield (Kg./ha.)

Sl. No	Year	A	B	C	D	E
1	2010-11	7000	6800	7000	7200	7100
2	2011-12	7083	6817	7017	7225	7125
3	2012-13	7168	6834	7034	7250	7150
4	2013-14	7253	6851	7051	7276	7175
5	2014-15	7339	6868	7067	7301	7200
6	2015-16	7427	6885	7084	7327	7225
7	2016-17	7515	6903	7101	7353	7250
8	2017-18	7604	6920	7118	7378	7276
9	2018-19	7695	6937	7136	7404	7301
10	2019-20	7786	6955	7153	7430	7327
11	2020-21	7879	6972	7170	7456	7352
12	2021-22	7973	6989	7187	7482	7378
13	2022-23	8068	7007	7204	7508	7404

Table.3.41. Doubling the Production

		Units
Area under mango	1816	ha
Production	12748.32	tonnes
Yield	7.02	tonnes
Doubling the production	**25496.64**	tonnes
Yield	14.04	tonnes

Table.3.42. Projected Production (Tonnes)

	A	**B**	**C**	**D**	**E**	**Total**
Proportion of varieties	0.2	0.2	0.2	0.2	0.2	1
Area	363.2	363.2	363.2	363.2	363.2	1816
2011-12	2573	2476	2549	2624	2588	12809
2012-13	2603	2482	2555	2633	2597	12870
2013-14	2634	2488	2561	2643	2606	12932
2014-15	2666	2495	2567	2652	2615	12994
2015-16	2697	2501	2573	2661	2624	13056
2016-17	2729	2507	2579	2670	2633	13119
2017-18	2762	2513	2585	2680	2643	13183
2018-19	2795	2520	2592	2689	2652	13247
2019-20	2828	2526	2598	2699	2661	13311
2020-21	2862	2532	2604	2708	2670	13376
2021-22	2896	2539	2610	2717	2680	13442
2022-23	2930	2545	2617	2727	2689	13508

The yield gap for mango in Sivagangai district is 1000 Kg./ha. forHimamPasand variety , 200 Kg./ha. for Alphonsa variety, 200 Kg./ha. Banglora Variety, 300 Kg./ha. in Neelam variety and 300 Kg./ha. in Banganapalli variety. Bridging the yield gap requires a growth rate of 1.19 per cent per annum in HimamPasand variety, 0.25 per cent in Alphonsa variety, 0.24 per cent in Banglora Variety, 0.35 per cent in Neelam variety and 0.35 per cent in Banganapalli variety. Doubling the mango production requires a target of 25497 tonnes but the projected production with bridging the yield gap is 13508 tonnes.

8.GUAVA

Table.3.43. Yield Gap (Kg./ha.)

Variety	Yield GAP I	Yield GAP II	Overall YG
Lucknow49			5000
Allahabad			5000
Local			4000

Table.3.44. Growth Rate (%)

Ruling Varieties	luck now 49	Allahabad	Local
Potential Yield	35000	32000	25000
Progressive farmer yield			
Average Yield	30000	27000	21000
Overall Yield Gap	5000	5000	4000
Required Growth Rates	16.67	18.52	19.05
Annual Growth Rate	1.39	1.54	1.59

Table. 3.45. Projected Yield (Kg./ha.)

Year	Luck now 49	Allahabad	Local
2010-11	30000	27000	21000
2011-12	30417	27416	21334
2012-13	30840	27838	21673
2013-14	31268	28267	22018
2014-15	31703	28702	22368
2015-16	32144	29144	22723
2016-17	32591	29593	23085
2017-18	33044	30049	23452
2018-19	33503	30511	23825
2019-20	33969	30981	24203
2020-21	34441	31458	24588
2021-22	34919	31943	24979
2022-23	35405	32435	25376

Table.3.46. Doubling the Production

		Units
Area under guava	163	Ha
Production	4238	Tonnes
Yield	26.00	Tonnes
Doubling the production	**8476**	Tonnes
Yield	52.00	Tonnes

Table.3.47.Projected Production (Tonnes)

	Luck now 49	**Allahabad**	**Local**	
Proportion of varieties	0.3	0.3	0.4	1
Area	48.9	48.9	65.2	163
2011-12	1487	1341	1391	4218.994
2012-13	1508	1361	1413	4282.431
2013-14	1529	1382	1436	4346.825
2014-15	1550	1404	1458	4412.19
2015-16	1572	1425	1482	4478.542
2016-17	1594	1447	1505	4545.894
2017-18	1616	1469	1529	4614.263
2018-19	1638	1492	1553	4683.664
2019-20	1661	1515	1578	4754.111
2020-21	1684	1538	1603	4825.622
2021-22	1708	1562	1629	4898.212
2022-23	1731	1586	1655	4971.897

The yield gap for guava in Sivagangai district is 5000 Kg./ha. in luck now 49 variety, 5000 Kg./ha. in Allahabad variety and 4000 Kg./ha. in local variety. Bridging the yield gap requires a growth rate of 1.39 per cent per annum in luck now 49 variety, 1.54 per cent per annum in Allahabad variety and 1.59 per cent in local variety Doubling the guava production requires a target of 8476 tonnes but the projected production with bridging the yield gap is 4972 tonnes.

9. CHILLY

Table. 3.48. Yield Gap (Kg./Ha.)

Variety	Yield GAP I	Yield GAP II	Overall YG
Ramanathapuram			700
US agri. seeds			200
Nunhems			200
Namthari			200

Table. 3.49. Growth Rate (%)

Ruling Varieties	Ramanathapuram	US agri. seeds	Nunhems	Namthari
Potential Yield	1500	1400	1400	1400
Progressive farmer yield				
Average Yield	800	1200	1200	1200
Overall Yield Gap	700	200	200	200
Required Growth Rates	87.50	16.67	16.67	16.67
Annual Growth Rate	7.29	1.39	1.39	1.39

Table. 3.50. Projected Yield (Kg./ha.)

Sl.No	Year	Ramanathapuram	US agri seeds	Nunhems	Namthari
1	2010-11	800	1200	1200	1200
2	2011-12	858	1217	1217	1217
3	2012-13	921	1234	1234	1234
4	2013-14	988	1251	1251	1251
5	2014-15	1060	1268	1268	1268
6	2015-16	1137	1286	1286	1286
7	2016-17	1220	1304	1304	1304
8	2017-18	1309	1322	1322	1322
9	2018-19	1405	1340	1340	1340
10	2019-20	1507	1359	1359	1359
11	2020-21	1617	1378	1378	1378
12	2021-22	1735	1397	1397	1397
13	2022-23	1861	1416	1416	1416

Table. 3.51. Doubling the Production

		Units
Area under chillies	4714	Ha
Production	5185	Tonnes
Yield	1.10	Tonnes
Doubling the production	**10370**	Tonnes
Yield	2.20	Tonnes

Table. 3.52. Projected Production (Tonnes)

	Ramanathapuram	**US agri seeds**	**Nunhems**	**Namthari**	
Proportion of varieties	0.7	0.12	0.1	0.08	1
Area	3299.8	565.68	471.4	377.12	4714
2011-12	2832	688	574	459	4552.913
2012-13	3039	698	582	465	4783.303
2013-14	3260	708	590	472	5029.078
2014-15	3498	717	598	478	5291.339
2015-16	3753	727	606	485	5571.268
2016-17	4027	737	615	492	5870.133
2017-18	4320	748	623	498	6189.295
2018-19	4635	758	632	505	6530.211
2019-20	4973	769	641	512	6894.447
2020-21	5335	779	649	520	7283.682
2021-22	5724	790	658	527	7700
2022-23	6142	801	668	534	8144

The yield gap for chilly in Sivagangai district is 700 Kg./ha. inRamanathapuram variety , 200 Kg./ha. in US agricultural seeds variety, 200 Kg./ha. inNunhems variety and 200 Kg./ha. inNamthari variety. Bridging the yield gap requires a growth rate of 7.29 per cent per annum in Ramanathapuram variety, 1.39per cent in US agri seeds variety, 1.39 per cent in Nunhems variety and 1.39 per cent in Namthari variety. Doubling the chilly production requires a target of 10370 tonnes but the projected production with bridging the yield gap is 8144 tonnes.

10. TAMARIND

Table 3.53. Yield Gap (Kg./ha.)

Variety	Yield GAP I	Yield GAP II	Overall YG
PKM 1`			2150
Local			2700

Table 3.54. Growth Rate (%)

Ruling Varieties	PKM 1	Local
Potential Yield	12000	7000
Progressive farmer yield		
Average Yield	9850	4300
Overall Yield Gap	2150	2700
Required Growth Rates	21.83	62.79
Annual Growth Rate	1.82	5.23

Table 3.55. Projected Yield (Kg./ha.)

Year	PKM 1	Local
2010-11	9850	4300
2011-12	10029	4525
2012-13	10212	4762
2013-14	10398	5011
2014-15	10587	5273
2015-16	10780	5548
2016-17	10976	5839
2017-18	11176	6144
2018-19	11379	6465
2019-20	11586	6803
2020-21	11797	7159
2021-22	12012	7534
2022-23	12230	7928

Table 3.56. Doubling the Production

		Units
Area under Tamarind	494	Ha
Production	4043.39	Tonnes
Yield	8.19	Tonnes
Doubling the production	**8086.78**	Tonnes
Yield	16.37	Tonnes

Table 3.57. Projected Production (Tonnes)

	PKM 1	Local	
Proportion of varieties	0.7	0.3	1
Area	345.8	148.2	494
2011-12	3468	671	4139
2012-13	3531	706	4237
2013-14	3596	743	4338
2014-15	3661	781	4442
2015-16	3728	822	4550
2016-17	3795	865	4661
2017-18	3864	911	4775
2018-19	3935	958	4893
2019-20	4006	1008	5015
2020-21	4079	1061	5140
2021-22	4154	1116	5270
2022-23	4229	1175	5404

The yield gap for tamarind in Sivagangai district is 2150 Kg./ha. in PKM 1 and 2700 Kg./ha. in Local variety. Bridging the yield gap requires a growth rate of 1.82 per cent per annum in PKM 1 variety and 5.23 per cent per annum in local variety. Doubling the tamarind production requires a target of 8087 tonnes but the projected production with bridging the yield gap is 5404 tonnes.

Table 3.58 Milk yield gap of different animals in the blocks

Sl. No	Type of Animal	Devakottai			Ilayangudi			Kalaiyarkoil		
		Potential	**Actual**	**Reason**	**Potential**	**Acutual**	**Reason**	**Potential**	**Acutual**	**Reason**
1	**Cows**									
	a. Local	5 kg	2 kg	Shortage of green fodder Lack of sufficient man power in the main service providing sector like Department of Animal Husbandry and Aavin	5 kg	2 kg	Shortage of green fodder Lack of sufficient man power in the main service providing sector this Department of Animal Husbandry and Aavin	5 kg	2 kg	Shortage of green fodder Lack of sufficient man power in the main service providing sector this Department of Animal Husbandry and Aavin
	b.Cross breed	12 kg	8 kg		12 kg	8 kg		12 kg	8 kg	
2	**Buffalo**									
	a. Local	4 kg	2 kg	Very low buffalo population	4 kg	2 kg	Very low buffalo population	4 kg	2 kg	Very low buffalo population
	b.Cross breed	8 kg	6 kg		8 kg	6 kg		8 kg	6 kg	

Sl. No	Type of Animal	Kallal			Kannangudi			Manamadurai		
		Potential	**Actual**	**Reason**	**Potential**	**Acutual**	**Reason**	**Potential**	**Acutual**	**Reason**
1	**Cows**									
	a.Local	5 kg	2 kg	Shortage of green fodder Lack of sufficient man power in the main service providing sector like Department of Animal Husbandry and Aavin	5 kg	2 kg	Shortage of green fodder Lack of sufficient man power in the main service providing sector this Department of Animal Husbandry and Aavin	5 kg	2 kg	Shortage of green fodder Lack of sufficient man power in the main service providing sector this Department of Animal Husbandry and Aavin
	b.Cross breed	12 kg	8 kg		12 kg	8 kg		12 kg	8 kg	
2	**Buffalo**									
	a.Local	4 kg	2 kg		4 kg	2 kg		4 kg	2 kg	
	b.Cross breed	8 kg	6 kg	Very low buffalo population	8 kg	6 kg	Very low buffalo population	8 kg	6 kg	Very low buffalo population

Sl. No	Type of Animal	S.Puthur			Sakottai			Singampuneri		
		Potential	**Actual**	**Reason**	**Potential**	**Acutual**	**Reason**	**Potential**	**Acutual**	**Reason**
1	**Cows**									
	a.Local	5 kg	2 kg	Shortage of green fodder Lack of sufficient man power in the main service providing sector like Department of Animal Husbandry and Aavin	5 kg	2 kg	Shortage of green fodder Lack of sufficient man power in the main service providing sector this Department of Animal Husbandry and Aavin	5 kg	2 kg	Shortage of green fodder Lack of sufficient man power in the main service providing sector this Department of Animal Husbandry and Aavin
	b.Cross breed	12 kg	8 kg		12 kg	8 kg		12 kg	2 kg	
2	**Buffalo**								8 kg	
	a.Local	4 kg	2 kg	Very low buffalo population	4 kg	2 kg	Very low buffalo population	4 kg	2 kg	Very low buffalo population
	b.Cross breed	8 kg	6 kg		8 kg	6 kg		8 kg	6 kg	

Sl. No	Type of Animal	Sivagangai			Tirupathur			Tirupuvanam		
		Potential	**Actual**	**Reason**	**Potential**	**Acutual**	**Reason**	**Potential**	**Acutual**	**Reason**
1	**Cows**									
	a.Local	5 kg	2 kg	Shortage of green fodder Lack of sufficient man power in the main service providing sector like Department of Animal Husbandry and Aavin	5 kg	2 kg	Shortage of green fodder Lack of sufficient man power in the main service providing sector this Department of Animal Husbandry and Aavin	5 kg	2 kg	Shortage of green fodder Lack of sufficient man power in the main service providing sector this Department of Animal Husbandry and Aavin
	b.Cross breed	12 kg	8 kg		12 kg	8 kg		12 kg	8 kg	
2	**Buffalo**									
	a.Local	4 kg	2 kg	Very low buffalo population	4 kg	2 kg	Very low buffalo population	4 kg	2 kg	Very low buffalo population
	b.Cross breed	8 kg	6 kg		8 kg	6 kg		8 kg	6 kg	

CHAPTER IV

DISTRICT PLAN

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

4.1. Agriculture

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

4.1.1. Enhancing the rice productivity in Sivagangai District

The farmers of Sivagangai District mainly depend upon the rainfed farming which is prone to high degree of risk and difficult to survive with low financial availability. In recent days, due to the climatic changes, there is an increase in vulnerability of pest and disease incidence in rice crop and over dose of fertilizer application in single stroke severely affects the production of BPT 5204 and Jothi varieties. In this context popularizing alternate variety having fine grain nature with pest and disease resistance in the BPT 5204 growing semi-dry rice areas of Sivagangai District. The selection and promotion will be done by farmer's participatory approach from the released cultivars and pre released cultures already available at TNAU.

Project components

- Promotion of SRI (Devakottai, Ilayangudi, Kalaiyarkoil, Kannangudi block)
- Distribution of certified seeds (Thiruppathur block)
- Distribution of foundation seeds (All blocks)
- Foundation/certified seed production (All blocks)

- Incentives for paddy machine planting (Kallal, S.P.Pudur, Sakkottai, Singampunari, Thiruppuvanam block)
- Distribution of Protray (Manamadurai, Thiruppuvanam block)
- Distribution of MN mixture, biofertilizer and zinc sulphate (All blocks)
- Distribution of biocontrol agents/biopesticides (Singampunari, Thiruppathur block)
- Gypsum application (Kalaiyarkoil, Kallal, Manamadurai, Sakkottai, Sivagangai block)
- Distribution of herbicides (Thiruppuvanam block) and polyvinyl coated Tarpaulin (Singampunari block)

Budget

The budget requirement for fulfilling the various interventions is **₹. 2745.92 lakhs**. The details of budget requirement for each intervention across the blocks are shown in Table 4.1.

Expected outcome

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

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.1. Budget Requirement for Rice Crop in Sivagangai 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
1	Promotion of SRI	Ha	0.15	All Blocks	520	78.00	548	82.20	602	90.30	694	104.10	832	124.80	3196	479.40
2	Distribution of High Yielding Varieties	MT	0.35	All Blocks	120	42.00	128	44.80	140	49.00	160	56.00	192	67.20	740	259.00
5	seed production - Certified class	MT	0.26	All Blocks	120	31.20	128	33.28	140	36.40	160	41.60	192	49.92	740	192.40
6	Incentives for paddy machine planting	Ha	0.1	All Blocks	2100	210.00	2206	220.60	2426	242.60	2792	279.20	3350	335.00	12874	1287.40
7	Distribution of Protray	No	0.0008	All Blocks	20800	16.64	21840	17.47	24024	19.22	27628	22.10	33154	26.52	127446	101.96
8	Distribution of MN mixture/ Copper Sulphate	Ha	0.01	All Blocks	700	7.00	736	7.36	810	8.10	932	9.32	1118	11.18	4296	42.96
9	Distribution of biofertilizer / PPFM / bioinputs / plant nutrient mobilizing bacteria	Ha	0.003	All Blocks	700	2.10	736	2.21	810	2.43	932	2.80	1118	3.35	4296	12.89
10	Distribution of Zinc sulphate (Soil application & foliar)	Ha	0.01	All Blocks	1900	19.00	1996	19.96	2196	21.96	2526	25.26	3030	30.30	11648	116.48
13	Distribution of herbicides	Ha	0.01	All Blocks	1900	19.00	1996	19.96	2196	21.96	2526	25.26	3030	30.30	11648	116.48
15	Polyvinyl coated Tarpaulin (6m x 5m)	No	0.02	All Blocks	300	6.00	318	6.36	348	6.96	402	8.04	480	9.60	1848	36.96
18	Demonstration of drip irrigation	ha	1	All Blocks	20	20.00	20	20.00	20	20.00	20	20.00	20	20.00	100	100.00
	Total					**450.94**		**474.20**		**518.93**		**593.68**		**708.18**		**2745.92**

Devakottai – B1, Ilayangudi – B2, Kalaiyarkoil – B3, Kallal – B4, Kannangudi – B5, Manamadurai – B6, S.P.Pudur – B7, Sakkottai – B8, Singampunari – B9, Sivagangai – B10, Thiruppathur – B11, Thiruppuvanam – B12

4.1.2. Enhancing the millets productivity in Sivagangai District

Millets occupies a minor area in production when compared to all other agricultural crops. In this context, overcoming the moisture stress and improving the nutritional status of the people and to feed the poultry and animals are the main aims of the programme. Supply of quality seeds through millets mission programme in the subsidized rate is very important to enhance the millet production in the district.

Project components

- Expansion of area under Minor Millets and formation of small millet groups (Kallal, S.P.Pudur, Singampunari, Thiruppuvanam block)
- Minor millet processing unit (Kallal, Sakkottai, Singampunari, Sivagangai, Thiruppuvanam block)
- Distribution of biofertilizers (Devakottai, Ilayangudi, Kannangudi, Manamadurai, S.P.Pudur block)
- Demonstration and distribution of seeds, biofertilizers and MN mixture for sorghum (Sivagangai block)
- Demonstration in maize and cumbu (Manamadurai, Sakkottai, Sivagangai block)
- Distribution of biofertilizers, herbicides, maize maxim and hybrid seed in Maize (Sivagangai block)
- Distribution of biofertilizers and MN mixtures (Sivagangai block)
- Distribution of cumbu hybrid seed (Manamadurai block)
- Demonstration in ragi (All blocks)
- Distribution of biofertilizers in ragi (S.P.Pudur, Sakkottai, Singampunari, Thiruppuvanam block)
- Distribution of MN mixture for ragi (Devakottai, Ilayangudi, Kannangudi, Thiruppuvanam block)

Budget

The total cost of the project for five years works to **₹. 556.64 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 Sivagangai district. By distributing improved varieties / hybrids of millets will certainly improve the living standard of the farmers of this tract. Supply of quality seeds of newly released varieties will certainly increase the production and productivity.

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.2. Budget Requirement for Millets in Sivagangai 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
	Millets															
1	Distribution of LPG operated Bird Scarrer	Nos.	0.1	B1, B2, B5	0	0.00	8	0.80	8	0.80	8	0.80	8	0.80	32	3.20
2	Distribution on biofertilizer - Liquid / Carrier	Ha	0.003	B1, B2, B5, B6, B7	20	0.06	555	1.67	725	2.18	845	2.54	905	2.72	3050	9.15
3	Expansion of area under Minor Millets (Demo - supply of seed, seed treatment, MN mixture & Organic package)	Ha	0.05	B4, B9, B7, B12	20	1.00	165	8.25	185	9.25	220	11.00	245	12.25	835	41.75
4	Formation of small millet groups	Nos.	0.2	B10	0	0.00	1	0.20	2	0.40	2	0.40	2	0.40	7	1.40
5	Millet Processing unit-Minor millet	Nos.	2.5	B4, B8, B9, B10, B12	0	0.00	4	10.00	1	2.50	1	2.50	1	2.50	7	17.50
	Sorghum															
6	Demonstration (Supply of seed, seed treatment, MN mixture & Organic package)	Ha	0.05	B10	0	0.00	5	0.25	10	0.50	10	0.50	10	0.50	35	1.75
7	Distribution of biofertilizers Liquid / Carrier	Ha	0.003	B10	0	0.00	20	0.06	25	0.08	25	0.08	30	0.09	100	0.30
8	Distribution of MN mixture (12.5kg/ha)	Ha	0.007	B10	0	0.00	10	0.07	15	0.11	20	0.14	25	0.18	70	0.49

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
9	Seed distribution	MT	0.7	B10	0	0.00	0.5	0.35	1	0.70	1	0.70	1	0.70	3.5	2.45
	Maize															
10	Demonstration (Supply of seed, seed treatment & MN mixture, organic package)	Ha	0.05	B6, B8, B10	40	2.00	55	2.75	65	3.25	75	3.75	85	4.25	320	16.00
11	Distribution of biofertilizers Liquid / Carrier	Ha	0.003	B8, B10	30	0.09	50	0.15	65	0.20	80	0.24	95	0.29	320	0.96
12	Distribution of herbicides	Ha	0.008	B10	0	0.00	10	0.08	15	0.12	20	0.16	25	0.20	70	0.56
13	Distribution of Maize maxim (15 kg/ha)	Ha	0.045	B10	0	0.00	10	0.45	15	0.68	20	0.90	25	1.13	70	3.15
14	Drip irrigation for maize	Ha	1	B10	0	0.00	0	0.00	1	1.00	1	1.00	1	1.00	3	3.00
15	Seed Distribution	MT	0.4	B6, B10	0	0.00	0.2	0.08	0.25	0.10	0.3	0.12	0.35	0.14	1.1	0.44
16	Seed Distribution Hybrid seeds for maize	MT	1.8	B10	10.6	19.08	10.7	19.26	10.8	19.44	10.85	19.53	10.9	19.62	53.85	96.93
	Cumbu															
17	Demonstration (Supply of seed, seed treatment & MN mixture, organic package)	Ha	0.05	B6, B8, B10	15	0.75	20	1.00	25	1.25	25	1.25	30	1.50	115	5.75
18	Distribution of biofertilizers Liquid / Carrier	Ha	0.003	B10	0	0.00	10	0.03	10	0.03	10	0.03	10	0.03	40	0.12
19	Distribution of cumbu hybrid seed	MT	2.6	B6	10	26.00	10	26.00	10	26.00	10	26.00	10	26.00	50	130.00
20	Distribution of MN mixture (12.5kg/ha)	Ha	0.007	B10	0	0.00	10	0.07	10	0.07	10	0.07	10	0.07	40	0.28
21	Seed Distribution	MT	0.53	B6	0	0.00	0.3	0.16	0.5	0.27	0.5	0.27	0.75	0.40	2.05	1.09
	Ragi															

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
22	Demonstration (supply of seed, seed treatment, MN mixture & organic package)	Ha	0.05	All blocks	370	18.50	400	20.00	440	22.00	440	22.00	455	22.75	2105	105.25
23	Distribution of biofertilizers Liquid / Carrier	Ha	0.003	B7, B8, B9, B12	370	1.11	350	1.05	440	1.32	445	1.34	450	1.35	2055	6.17
24	Distribution of MN mixture	Ha	0.007	B1, B2, B5, B12	370	2.59	265	1.86	305	2.14	305	2.14	310	2.17	1555	10.89
25	Seed Distribution	MT	0.66	B4, B7, B9, B12	24.5	16.17	30.6	20.20	31.05	20.49	31.15	20.56	31.3	20.66	148.6	98.08
	Grand total					**87.35**		**114.78**		**114.85**		**117.99**		**121.68**		**556.64**

Devakottai – B1, Ilayangudi – B2, Kalaiyarkoil – B3, Kallal – B4, Kannangudi – B5, Manamadurai – B6, S.P.Pudur – B7, Sakkottai – B8, Singampunari – B9, Sivagangai – B10, Thiruppathur – B11, Thiruppuvanam – B12

4.1.3. Enhancing the pulses productivity in Sivagangai District

The past experience would indicate that whenever a good amount of rainfall is received, the farmers are willing to go for pulse after rice and assured irrigated farmers regularly going for pulse cultivation. Non-availability of seeds of recent varieties at appropriate time is a major threat to the farmers of this district. To enhance the pulse production and productivity, timely supply of quality seed is the utmost important. So in order to ensure the seed availability strengthening the pulse seed production through farmers' participatory mode is the viable option to meet out the seed demand of farmers of this district.

Project components

- Production and distribution of foundation/certified pulses seeds (All blocks)
- Distribution of biofertilizer (Rhizobium + Phosphobacteria) - liquid / carrier (All blocks)
- Distribution of MN mixture and DAP spray (Kallal, Manamadurai, S.P.Pudur, Singampunari, Sivagangai block)
- Cropping system based demonstration (Kalaiyarkoil, Manamadurai, Singampunari, Thiruppuvanam block)
- Pure crop demonstration - black gram and green gram (S.P.Pudur, Singampunari, Sivagangai, Thiruppuvanam block)
- Demonstration on intercropping of pulses with other crops (Sivagangai, Thiruppuvanam block)
- Distribution of yellow sticky trap/pheromone trap (Kalaiyarkoil, Manamadurai, Singampunari, Sivagangai block)
- Seed treatment and soil application with *Trichoderma viridi* (Devakottai block)
- Demonstration through NGOs (Sakkottai, Sivagangai block)
- Promotion of Redgram Transplantation for nursery preparation (S.P.Pudur, Sivagangai block)

Budget

The total budget for the proposed intervention is **₹. 762.13 Lakhs**. The details of budget requirement for each intervention across the blocks are shown in Table 4.3.

Expected outcome

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

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.3. Budget Requirement for Pulses in Sivagangai District

(₹. in lakhs)

Sl. No.	Interventions	Unit	Unit cost (in Rs.)	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Production of Foundation/ Certified pulses seeds	MT	86000	All blocks	16	13.76	21.5	18.49	25.5	21.93	27.5	23.65	29	24.94	119.5	102.77
2	Distribution of Certified Seeds	MT	100000	All blocks	23.5	23.50	17.5	17.50	18	18.00	21	21.00	19.5	19.50	99.5	99.50
3	Distribution of Gypsum	ha	400	B3,B6,B10, B12	250	1.00	80	0.32	80	0.32	120	0.48	160	0.64	690	2.76
4	Distribution of Biofertilizer/ Organic packages (Rhizobium + Phosphobacteria) - Liquid / Carrier	Ha	600	All blocks	1450	8.70	835	5.01	960	5.76	1025	6.15	1090	6.54	5360	32.16
5	Distribution of Micro Nutrients(5 kgs/ Ha)	Ha	350	B4, B6, B7, B9, B10	270	0.95	405	1.42	510	1.79	565	1.98	610	2.14	2360	8.26
6	DAP Spray	Ha	700	B4, B6, B7, B9, B10	1700	11.90	500	3.50	600	4.20	630	4.41	650	4.55	4080	28.56
7	Pulse wonder - 5 kg/ha	Ha	1000	B6, B10, B11	0	0.00	30	0.30	30	0.30	60	0.60	90	0.90	210	2.10
8	Bund Cropping	Ha	300	B4, B9, B12	100	0.30	325	0.98	340	1.02	425	1.28	435	1.31	1625	4.88
9	Line sowing	Ha	2250	B3, B6, B9, B10	0	0.00	40	0.90	40	0.90	40	0.90	30	0.68	150	3.38
10	Distribution of Yellow sticky trap /pheromone trap	ha	1000	B3, B6, B9, B10	600	6.00	280	2.80	280	2.80	280	2.80	280	2.80	1720	17.20
11	Cropping system based demonstration	Ha	12500	B3, B6, B9, B12	300	37.50	290	36.25	290	36.25	290	36.25	340	42.50	1510	188.75
12	Distribution of weedicide	Ha	1000	B3, B6, B9, B7	50	0.50	140	1.40	135	1.35	145	1.45	180	1.80	650	6.50

Sl. No.	Interventions	Unit	Unit cost (in Rs.)	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
13	Plant Protection Chemicals	Ha	1000	B3, B6, B7, B12	100	1.00	180	1.80	180	1.80	180	1.80	220	2.20	860	8.60
14	Seed treatment and soil application with *Trichoderma viridi*	Ha	700	B1	1300	9.10	695	4.87	790	5.53	815	5.71	900	6.30	4500	31.50
15	Pure crop demonstration - Black gram and green gram	Ha	6300	B7, B9, B10, B12	1300	81.90	360	22.68	360	22.68	360	22.68	360	22.68	2740	172.62
16	Demonstration on intercropping of pulses with other crops	Ha	8300	B10, B12	0	0.00	110	9.13	110	9.13	110	9.13	110	9.13	440	36.52
17	Demonstration through NGOs	Ha	8250	B8, B10	0	0.00	20	1.65	25	2.06	30	2.48	35	2.89	110	9.08
18	Promotion of Redgram Transplantation for nursery preparation	Ha	5000	B7, B10	20	1.00	30	1.50	30	1.50	30	1.50	30	1.50	140	7.00
	Grand total					**197.11**		**130.49**		**137.32**		**144.23**		**152.98**		**762.13**

Devakottai – B1, Ilayangudi – B2, Kalaiyarkoil – B3, Kallal – B4, Kannangudi – B5, Manamadurai – B6, S.P.Pudur – B7, Sakkottai – B8, Singampunari – B9, Sivagangai – B10, Thiruppathur – B11, Thiruppuvanam – B12

4.1.4. Enhancing the oilseeds productivity in Sivagangai District

Groundnut is a second most important crop in this district and it was frequently affected by soil moisture stress. It occupies approximately 3500 ha with the production potential of 1600 kg/ha. In this context, to overcome the moisture stress by providing drought tolerant variety seeds to the farmers is prerequisite to sustain the groundnut area and increase the production in this district. Enhancing the groundnut production and productivity, and timely supply of quality seed is the prime important. So in order to ensure the seed availability, strengthening the groundnut seed production through farmers' participatory mode is the viable option to meet out the seed demand of farmers of this district.

Project components

- Foundation/certified seed production in groundnut (Devakottai, Ilayangudi, Kalaiyarkoil, Kannangudi block)
- Distribution of certified seeds in groundnut (All blocks)
- Application of gypsum in groundnut (Devakottai, Ilayangudi, Kalaiyarkoil, Kannangudi block)
- Distribution of MN mixture in groundnut (Devakottai, Ilayangudi, Kalaiyarkoil, Kannangudi block)
- Distribution of biofertilizers in groundnut (Devakottai, Ilayangudi, Kalaiyarkoil, Kannangudi block)
- Seed Drill Sowing / Line sowing of Groundnut with Pulses as intercrop (Kalaiyarkoil, S.P.Pudur, Singampunari, Sivagangai block)
- Production of foundation seeds in gingelly (Kalaiyarkoil, Kannangudi, Manamadurai, Sivagangai block)
- Production of certified seeds in gingelly (S.P.Pudur, Sakkottai block)

Budget

The total cost of the project for five years works to **₹. 1602.89 Lakhs**. The details of budget requirement for each intervention across the blocks are shown in Table 4.4.

Expected outcome

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

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.4. Budget Requirement for Oilseeds in Sivagangai 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	**OILSEEDS**															
1	Purchase of Breeder seed	Mt	1.50	B10	1	1.50	1	1.50	1	1.50	1	1.50	1	1.50	5	7.50
2	Polythene mulch Inclusive of erection	Ha	0.50	B6,B10	0	0.00	2	1.00	2	1.00	2	1.00	2	1.00	8	4.00
3	Herbicide	Ha	0.01	B6, B7, B8, B10	100	1.00	100	1.00	105	1.05	125	1.25	125	1.25	555	5.55
4	Light trap (NCIPM)	Nos.	0.01	B6,B8, B10	20	0.20	22	0.22	22	0.22	42	0.42	42	0.42	148	1.48
5	Bio pesticide/fungicide	Ha	0.01	B6,B7,B8,B10	160	1.60	170	1.70	200	2.00	200	2.00	200	2.00	930	9.30
6	Compact Block Demonstration - Groundnut	Ha	0.20	B1,B2,B5, B8	90	18.00	130	26.00	130	26.00	140	28.00	130	26.00	620	124.00
7	Compact Block Demonstration - Gingelly / Castor	Ha	0.06	B1,B2,B5	25	1.50	25	1.50	25	1.50	25	1.50	25	1.50	125	7.50
8	**GROUNDNUT**															
9	Strengthening seed chain by foundation seed production	Mt	0.76	B1, B2, B3,B5	15.5	11.78	23	17.48	28	21.28	33	25.08	38	28.88	137.5	104.50
10	Strengthening seed chain by certified seed production	Mt	0.73	B1, B2, B3, B5	87	63.51	124.5	90.89	137	100.01	149	108.77	159	116.07	656.5	479.25
11	Distribution of Certified seeds	Mt	0.84	All blocks	72.75	61.11	116.5	97.86	132.5	111.30	149.5	125.58	164.5	138.18	635.75	534.03
12	Distribution of Seed Treatment Chemicals and Bioagents (*T.Viridi*)	Kg	0.00	B1, B2, B3, B5	196	0.29	310	0.47	385	0.58	440	0.66	515	0.77	1846	2.77
13	Application of Gypsum to Groundnut Crop	Ha	0.02	B1, B2, B3, B5	415	6.64	650	10.40	760	12.16	810	12.96	810	12.96	3445	55.12

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
14	Distribution of Micro Nutrient Mixture	Ha	0.02	B1, B2, B3, B5	140	2.10	275	4.13	360	5.40	405	6.08	510	7.65	1690	25.35
15	Distribution of Biofertilizer	Ha	0.01	B1, B2, B3, B5	1610	9.66	1270	7.62	1330	7.98	1355	8.13	1400	8.40	6965	41.79
16	Distribution of Liquid Biofertilizer	Ha	0.01	B1,B2,B3,B5	1110	6.66	520	3.12	580	3.48	680	4.08	580	3.48	3470	20.82
17	Distribution of Rhizobium/ PSB Culture	Ha	0.01	B3	50	0.30	25	0.15	30	0.18	125	0.75	100	0.60	330	1.98
18	Distribution of Pheromone Traps	Nos.	0.02	B3,B6,B8,B7, B10	10	0.20	75	1.50	85	1.70	85	1.70	85	1.70	340	6.80
19	Distribution of Light Traps	Nos.	0.02	B1,B2, B3,B5	30	0.60	72	1.44	82	1.64	82	1.64	92	1.84	358	7.16
20	Castor as Bund crop	Ha	0.01	B1,B2,B4,B5	70	0.42	110	0.66	110	0.66	130	0.78	130	0.78	550	3.30
21	Combined Nutrient Spray	Ha	0.02	B3,B6,B7,B10	90	1.35	70	1.05	70	1.05	70	1.05	70	1.05	370	5.55
22	Seed Drill Sowing / Line sowing of Groundnut with Pulses as intercrop (hiring charges only)	Ha	0.03	B3,B9,B7,B10	70	2.10	320	9.60	330	9.90	330	9.90	330	9.90	1380	41.40
23	Seeddrill Sowing of Groundnut with Redgram as Intercrop	Ha	0.04	B7,B9,B12	90	3.60	130	5.20	130	5.20	130	5.20	130	5.20	610	24.40
24	Distribution of Tractor operated thresher	Nos.	1.50	B8	0	0.00	0	0.00	1	1.50	1	1.50	1	1.50	3	4.50
25	Distribution of Power operated Groundnut Decorticator	Nos.	1.00	B8, B12	0	0.00	2	2.00	3	3.00	6	6.00	6	6.00	17	17.00
26	**GINGELLY**															
27	Production of Foundation Seeds	Mt	1.13	B3, B5, B6, B10	2.1	2.37	3	3.39	3	3.39	3	3.39	3	3.39	14.1	15.93
28	Production of Certified Seeds	Mt	1.09	B7, B8	3	3.27	6.5	7.09	6.5	7.09	6.5	7.09	6.5	7.09	29	31.61
29	Distribution of certified	Mt	1.25	B1, B2, B3,	0	0.00	3.5	4.38	3.5	4.38	3.5	4.38	3.5	4.38	14	17.50

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
	seeds			B4, B5, B10												
30	Distribution of Micro nutrients (Manganese sulphate/ Zinc sulphate)	Ha	0.00	B2, B3, B6, B10	0	0.00	25	0.10	25	0.10	25	0.10	25	0.10	100	0.40
31	**CASTOR**															
32	Production of Foundation Seeds	Mt	0.52	B10	0	0.00	0	0.00	0.5	0.26	0.5	0.26	0.5	0.26	1.5	0.78
33	Production of Certified Seeds	Mt	0.50	B10	0	0.00	0	0.00	0.5	0.25	0.5	0.25	0.5	0.25	1.5	0.75
34	Distribution of certified seeds	Mt	0.58	B10	0	0.00	0	0.00	0.5	0.29	0.5	0.29	0.5	0.29	1.5	0.87
	Grand total					**199.77**		**301.43**		**336.04**		**371.28**		**394.38**		**1602.89**

Devakottai – B1, Ilayangudi – B2, Kalaiyarkoil – B3, Kallal – B4, Kannangudi – B5, Manamadurai – B6, S.P.Pudur – B7, Sakkottai – B8, Singampunari – B9, Sivagangai – B10, Thiruppathur – B11, Thiruppuvanam – B12

4.1.5. Enhancing the oil palm productivity in Sivagangai District

India is the largest consumer of palm oil in the world, consuming around 17 per cent of total world consumption. India is also the largest importer of palm oil amounting to 44 per cent of world imports. Palm Oil contains an equal proportion of saturated and unsaturated fatty acid containing about 40 per cent oleic acid, 10 per cent linoleic acid, 44 per cent palmitic acid and 5 per cent stearic acid. The unprocessed palm oil is used for cooking in various countries. Palm Oil is a very rich source of Beta Carotene, an important source of Vitamin A and it contains Tecopherols and Tocotrienols, a natural source of Vitamin E. Vitamin A and Vitamin E contents are the highest in palm oil in comparison with any other types of oil and hence consumption of the same boosts health. By virtue of the high vitamin contents the Red Palm Oil is a nature's gift for the human beings. In view of the rich content of vitamins, palm oil can be utilized for the preparation of cosmetics as well 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

- Neem/ Pungam Area Expansion Programme (All blocks)
- Cultivation maintenance (All blocks)
- Inputs for Intercropping (All blocks)

Budget

It is proposed to incur **₹. 11.18 Lakhs** over a period of five years (Table 4.5) with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing agency

Department of Agriculture will implement the project

Table 4.5. Budget Requirement for Oil palm in Sivagangai 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
1	**NMOOP -Mini Mission - III (Tree Borne Oilseeds)**															
2	Neem/ Pungam Area Expansion Programme	Ha	0.2	All blocks	31	6.20	3	0.60	3	0.60	3	0.60	3	0.60	43	8.60
3	Cultivation maintenance	Ha	0.05	All blocks	31	1.55	3	0.15	3	0.15	3	0.15	3	0.15	43	2.15
4	Inputs for Intercropping	Ha	0.05	All blocks	31	0.31	3	0.03	3	0.03	3	0.03	3	0.03	43	0.43
	Grand total					**8.06**		**0.78**		**0.78**		**0.78**		**0.78**		**11.18**

Devakottai – B1, Ilayangudi – B2, Kalaiyarkoil – B3, Kallal – B4, Kannangudi – B5, Manamadurai – B6, S.P.Pudur – B7, Sakkottai – B8, Singampunari – B9, Sivagangai – B10, Thiruppathur – B11, Thiruppuvanam – B12

4.1.6. Enhancing the coconut productivity in Sivagangai District

In Sivagangai, coconut occupies an area of 6905 ha. Nearly 60% of coconut trees showing the symptom of boron deficiency, which severely affected the coconut production in this district. To increase nut production balanced nutrient supply is very essential. Supply of MN mixture to coconut is very essential in this district to increase flower setting in coconut. MN mixture applications undoubtedly increase the nuts and improve the quality.

Project components

- Distribution of T × D and D × T hybrid seedlings and tall seedlings (All blocks)
- Boom sprayer (Kallal, Singampunari, Sivagangai block)
- Distribution of power operated coconut leaf shredder (Kalaiyarkoil, Manamadurai, Sakkottai block)
- Distribution of MN mixture (Manamadurai, S.P.Pudur, Sakkottai, Sivagangai block)
- Distribution of pheromone traps for red palm weevil/rhinocerous beetle (Devakottai, Ilayangudi, Kalaiyarkoil, Kannangudi block)
- Distribution of tree climbers (S.P.Pudur block)
- Drip irrigation (Devakottai, Ilayangudi, Kannangudi, S.P.Pudur block)
- Replanting and rejuvenation of coconut gardens (Manamadurai, Singampunari, Sivagangai block)
- Demonstration on IFM (Kalaiyarkoil, Manamadurai, S.P.Pudur, Singampunari, Sivagangai block)
- Collective farming - corpus fund release for FPG (S.P.Pudur, Singampunari, Sivagangai block)
- Establishment of Neera processing unit (S.P.Pudur, Singampunari block)

Budget

The total cost of the project for five years works to **₹. 8667.36 Lakhs**. The details of budget requirement for each intervention across the blocks are shown in Table 4.6.

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 4.6. Budget Requirement for Coconut in Sivagangai 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
1	Distribution of T x D hybrid seedlings	No	0.0006	All blocks	2700	1.62	4900	2.94	5400	3.24	6000	3.60	5960	3.58	24960	14.98
2	Distribution of Tall Seedlings	No	0.0004	All blocks	2650	1.06	6350	2.54	6400	2.56	6450	2.58	5960	2.38	27810	11.12
3	Boom sprayer	No	0.2000	B4,B9,B10	5	1.00	13	2.60	13	2.60	13	2.60	13	2.60	57	11.40
4	Distribution of D x T hybrid Seedlings	No	0.0015	All blocks	950	1.43	950	1.43	1300	1.95	1300	1.95	1400	2.10	5900	8.85
5	Distribution of power operated coconut leaf shredder	No	0.6000	B3,B6,B8	4	2.40	6	3.60	6	3.60	6	3.60	6	3.60	28	16.80
6	Distribution of MN mixture	Ha	0.1000	B6,B7,B8,B 10	165	16.50	180	18.00	180	18.00	180	18.00	180	18.00	885	88.50
7	Distribution of Pheromone traps for Red palm weevil/ Rhinocerous beetle	Ha	0.0160	B1,B2,B3, B5	65	1.04	175	2.80	195	3.12	175	2.80	175	2.80	785	12.56
8	Distribution of power operated rocker sprayer	No	0.1000	B3,B6,B8	0	0.00	8	0.80	8	0.80	8	0.80	8	0.80	32	3.20
9	Distribution of tree climbers	No	0.1500	B7	100	15.00	100	15.00	100	15.00	100	15.00	100	15.00	500	75.00
10	Drip irrigation	Ha	0.3500	B1,B2,B5, B7	63	22.05	97	33.95	99	34.65	102	35.70	107	37.45	468	163.80
11	Establishment of nursery- Area	ha	2.0000	B6,B10	2	4.00	2	4.00	2	4.00	2	4.00	2	4.00	10	20.00
12	Intercropping with green manures	Ha	0.0300	B6,B8,B10	10	0.30	15	0.45	15	0.45	15	0.45	15	0.45	70	2.10
13	Management of	Ha	0.0500	B6,B7,B8,	60	3.00	70	3.50	70	3.50	70	3.50	70	3.50	340	17.00

Sl. No.	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Black headed caterpillar			B10												
14	Replanting and Rejunation of coconut gardens	Ha	0.4500	B6,B9,B10	50	22.50	115	51.75	115	51.75	115	51.75	115	51.75	510	229.50
15	Thanjavur wilt management (root feeding /soil application)	Ha	0.0300	B3,B6,B7,B10	60	1.80	95	2.85	95	2.85	95	2.85	95	2.85	440	13.20
16	Demonstration on Integrated fertiliser management	Ha	0.7500	B3, B6, B7, B9, B10	28	21.00	41	30.75	41	30.75	41	30.75	41	30.75	192	144.00
17	Distribution of coconut seedlings to school children	No	0.0004	All blocks	1550	0.62	1550	0.62	1550	0.62	1550	0.62	1550	0.62	7750	3.10
18	Control of Eriophid mite	No. of tree	0.0002	B7,B8, B10	500	0.10	500	0.10	500	0.10	500	0.10	500	0.10	2500	0.50
19	Establishment of Neera processing unit	No	600.0000	B7,B9	3	1800.00	3	1800.00	2	1200.00	3	1800.00	2	1200.00	13	7800.00
20	Training on neera production	Batches	0.2500	B3,B6,B7,B10	3	0.75	6	1.50	6	1.50	6	1.50	6	1.50	27	6.75
21	corpus fund release for FPG (2000 nos.)	No	5.0000	B7,B9,B10	0	0.00	4	20.00	0	0.00	1	5.00	0	0.00	5	25.00
	Grand total					**1916.17**		**1999.18**		**1381.04**		**1987.15**		**1383.83**		**8667.36**

Devakottai – B1, Ilayangudi – B2, Kalaiyarkoil – B3, Kallal – B4, Kannangudi – B5, Manamadurai – B6, S.P.Pudur – B7, Sakkottai – B8, Singampunari – B9, Sivagangai – B10, Thiruppathur – B11, Thiruppuvanam – B12

4.1.7. Enhancing the sugarcane productivity in Sivagangai District

Sugarcane occupies a major place in the Sivagangai district in terms of production and productivity. The major varieties grown are COC6304 and COC 86032. To increase the production and productivity, sustainable sugarcane initiative and enrichment of soil fertility through sugarcane thrash mulching must be implemented. Supply of quality sets and implementing sustainable sugarcane initiative is very important to enhance the sugarcane production in the district.

Project components

- Sustainable Sugarcane Initiative (Shade net establishment and distribution of single bud seedling) (Ilayangudi block)
- Distribution of gypsum (Kalaiyarkoil, S.P.Pudur, Sakkottai, Singampunari block)
- Distribution of biofertilizer (Ilayangudi, Kallal, Kannangudi, Singampunari, Thiruppuvanam block)
- Distribution of weedicide (Kalaiyarkoil, Sakkottai, Sivagangai block)
- Distribution of chipcutter (Kalaiyarkoil, S.P.Pudur, Sakkottai, Sivagangai block)
- Distribution of MN mixture (Kalaiyarkoil, Manamadurai, Singampunari, Sivagangai block)
- Distribution of sugarcane booster (Kalaiyarkoil, Manamadurai, Sivagangai block)
- Distribution of water soluble fertilizers (Manamadurai, S.P.Pudur, Sivagangai block)
- Micro-irrigation – drip (Ilayangudi block)

Budget

The total cost of the project for five years works to **₹. 2468.69 Lakhs**. The details of budget requirement for each intervention across the blocks are shown in Table 4.7.

Expected outcome

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

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.7. Budget Requirement for Sugarcane in Sivagangai 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
1	Distribution of Gypsum (500 Kg/Ha)	Ha	0.02	B3,B7,B8,B9	135	2.70	170	3.40	170	3.40	170	3.40	170	3.40	815	16.30
2	Distribution of biofertilizer (Ha)	Ha	0.006	B2,B4,B5,B9, B12	310	1.86	345	2.07	345	2.07	345	2.07	345	2.07	1690	10.14
3	Distribution of weedicide (Ha)	Ha	0.01	B3,B8,B10	125	1.25	135	1.35	135	1.35	135	1.35	135	1.35	665	6.65
4	Distribution of Chip Cutter	Nos	0.05	B3,B7,B8, B10	37	1.85	22	1.10	22	1.10	22	1.10	22	1.10	125	6.25
5	Distribution of FeSO4 Spray	Ha	0.005	B7,B10	25	0.13	25	0.13	25	0.13	25	0.13	25	0.13	125	0.63
6	Distribution of ZnSO4 Spray	Ha	0.005	B10	25	0.13	25	0.13	25	0.13	25	0.13	25	0.13	125	0.63
7	Distribution of Micro Nutrient Mixture	Ha	0.02	B3,B6, B9, B10	110	2.20	110	2.20	110	2.20	110	2.20	110	2.20	550	11.00
8	Distribution of Parasite Trichogramma	Ha	0.00125	B3,B6,B7,B8, B10	90	0.11	100	0.13	100	0.13	100	0.13	100	0.13	490	0.61
9	Distribution of Protray (2500 nos/ha)	Nos	0.0008	B10	10	0.01	10	0.01	10	0.01	10	0.01	10	0.01	50	0.04
10	Distribution of Sugarcane Booster (10 Kg/Ha)	Ha	0.035	B3,B6,B10	110	3.85	110	3.85	110	3.85	110	3.85	110	3.85	550	19.25
11	Distribution of Water Soluble Fertilizers	ha	0.25	B6,B7,B10	45	11.25	45	11.25	45	11.25	45	11.25	45	11.25	225	56.25
12	Microirrigation - Drip (1.2x0.6)	ha	1.24	B2	350	434.00	320	396.80	305	378.20	294	364.56	304	376.96	1573	1950.52

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
	Sustainable Sugarcane Initiative (SSI)															
13	A. Establishment of Shadenet	Nos	1.5	B2	34	51.00	5	7.50	5	7.50	5	7.50	5	7.50	54	81.00
14	B. Distribution of Single Bud Seedling	Ha	0.225	B2	312	70.20	237	53.33	237	53.33	221	49.73	226	50.85	1233	277.43
15	Trash Mulching	Ha	0.04	B3,B6,B7, B10	130	5.20	155	6.20	155	6.20	155	6.20	155	6.20	750	30.00
16	Demonstration on intercropping in Sugarcane	Ha	0.08	B10	5	0.40	5	0.40	5	0.40	5	0.40	5	0.40	25	2.00
	Grand total					**586.13**		**489.83**		**471.23**		**453.99**		**467.51**		**2468.69**

Devakottai – B1, Ilayangudi – B2, Kalaiyarkoil – B3, Kallal – B4, Kannangudi – B5, Manamadurai – B6, S.P.Pudur – B7, Sakkottai – B8, Singampunari – B9, Sivagangai – B10, Thiruppathur – B11, Thiruppuvanam – B12

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

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

Project components

- District level trainings of farmers (All blocks)
- Within the district trainings of farmers (All blocks except few)
- Exposure visits (All blocks)

Budget

It is proposed to incur **₹. 411.05 Lakhs** over a period of five years (Table 4.8) with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing agency

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

Table 4.8. Budget Requirement for Training in Sivagangai District

(₹. in lakhs)

Sl. No.	Cafeteria of Activities	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	All Blocks	25	31.25	25	31.25	25	31.25	25	31.25	25	31.25	125	156.25
2	Training of 536 Groups of Seed Village Farmers in quality Seed Production technology	All Blocks	35	3.5	35	3.5	35	3.5	35	3.5	35	3.5	175	17.5
3	Training of Farmers under Mission Soil Health Card	All Blocks	12	1.8	12	1.8	12	1.8	12	1.8	12	1.8	60	9
4	With in the district training of Farmers	All Blocks	76	7.6	76	7.6	76	7.6	76	7.6	76	7.6	380	38
5	With in the State training of Farmers	All Blocks	13	15.6	13	15.6	13	15.6	13	15.6	13	15.6	65	78
	Training of Farmers With in the district													
6	Awareness campaigns	All Blocks	16	1.6	16	1.6	16	1.6	16	1.6	16	1.6	80	8
7	Groundnut	All blocks except Devakotai	12	1.2	12	1.2	12	1.2	12	1.2	12	1.2	60	6
8	IFS	All blocks except S. pudhur	11	1.1	11	1.1	11	1.1	11	1.1	11	1.1	55	5.5
9	Major & Minor Millets	All Blocks	11	1.1	11	1.1	11	1.1	11	1.1	11	1.1	55	5.5
10	Moisture conservation practices	All blocks except S. pudhur	11	1.1	11	1.1	11	1.1	11	1.1	11	1.1	55	5.5
11	Organic cultivation practices	All Blocks	14	1.4	14	1.4	14	1.4	14	1.4	14	1.4	70	7
12	Paddy	All Blocks	24	2.4	24	2.4	24	2.4	24	2.4	24	2.4	120	12

Sl. No.	Cafeteria of Activities	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
13	Pulses	All Blocks	13	1.3	13	1.3	13	1.3	13	1.3	13	1.3	65	6.5
14	Sugarcane	All blocks except Ilayangudi and S. pudhur	10	1	10	1	10	1	10	1	10	1	50	5
15	Value addition training	All Blocks	13	1.3	13	1.3	13	1.3	13	1.3	13	1.3	65	6.5
	Exposure visit of Farmers													
16	Rodent Pest Management Demonstration	All Blocks	24	0.96	24	0.96	24	0.96	24	0.96	24	0.96	120	4.8
17	With in State Exposure visit	All Blocks	11	4.4	11	4.4	11	4.4	11	4.4	11	4.4	55	22
18	Organisation of Kisan gosthies on Soil test based nutrient application (Campaign)	All blocks except S. pudhur	11	1.65	11	1.65	11	1.65	11	1.65	11	1.65	55	8.25
19	With in the district exposure visit	All Blocks	13	1.95	13	1.95	13	1.95	13	1.95	13	1.95	65	9.75
	Grand total			**82.21**		**82.21**		**82.21**		**82.21**		**82.21**		**411.05**

Devakottai – B1, Ilayangudi – B2, Kalaiyarkoil – B3, Kallal – B4, Kannangudi – B5, Manamadurai – B6, S.P.Pudur – B7, Sakkottai – B8, Singampunari – B9, Sivagangai – B10, Thiruppathur – B11, Thiruppuvanam – B12

4.1.9. Infrastructure Development in Sivagangai District

Quality control is the process of checking the quality of the material against the standard set by the organizations and if the material does not match with the standards, then such material is said to be substandard. Quality control laboratories are being established by the Government with an intention to supply quality inputs *viz.,* seed, fertilizers and pesticide and services like soil testing to the farmers. Storage Godown, Seed Processing Unit Machineries, Construction of Uzhavar Maiyam/Farmers Hub, IAEC and Sub-AEC, Strengthening of STL, MSTL, FCL, CCL, BFQCL, PTL, Organic Fertlizer Testing Lab and Bio-fertilizer production unit operating in the State are doing yeomen services to the farming community and public by providing technical advices and expertise for the holistic development of the farmers. They also prioritize their actions so as to ensuring food and nutritional security. However, they are not endeavored with adequate infrastructure, which is absolutely essential for growth and development. Strengthening the existing and creating new assets/amenities would bring profound influence on the constructive and technical services effectively.

Project components

- Additional seed godown (Devakottai, Kannangudi block)
- Dunnage, electronic platform balance, moisture meter, bag closure, seed rack and tarpaulin (All blocks)
- Construction of IAEC (Devakottai, Kannangudi, Thiruppuvanam block)
- Construction of Sub AEC (Kannangudi, Manamadurai block)

Budget

It is proposed to incur **₹. 3295.30 Lakhs** over a period of five years (Table 4.9) with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing agency

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

Table 4.9. Budget Requirement for Infrastructure in Sivagangai District

(₹. in lakhs)

Sl. No.	Components	Unit	Unit Cost (in Rs.)	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Additional Seed Godown	Nos.	1250000	B1,B5	0	0.00	9	112.50	0	0.00	0	0.00	0	0.00	9	112.50
2	Construction of Integrated Agricultural Extension Centre with vehicle shed and compound wall	Nos.	25000000	B1, B5, B12	0	0.00	9	2250.00	0	0.00	0	0.00	0	0.00	9	2250.00
3	Construction of Sub-Agricultural Extension Centre (498 Nos.)	Nos.	3000000	B5, B6	0	0.00	11	330.00	0	0.00	0	0.00	0	0.00	11	330.00
4	Dunnage	Nos.	7500	All blocks	0	0.00	160	12.00	0	0.00	0	0.00	160	12.00	320	24.00
5	Moisture meter	Nos.	25000	All blocks	0	0.00	12	3.00	0	0.00	0	0.00	0	0.00	12	3.00
6	Bag closure	Nos.	10000	All blocks	0	0.00	12	1.20	0	0.00	0	0.00	0	0.00	12	1.20
7	Electronic platform balance	Nos.	150000	All blocks	0	0.00	12	18.00	0	0.00	0	0.00	0	0.00	12	18.00
8	Seed rack	Nos.	30000	All blocks	0	0.00	12	3.60	0	0.00	0	0.00	0	0.00	12	3.60
9	Tarpaulin	Nos.	25000	All blocks	0	0.00	12	3.00	0	0.00	0	0.00	0	0.00	12	3.00
10	Infrastructure for empowerment of coconut nurseries	Nos.	5000000	All Blocks	0	0.00	1	50.00	0	0.00	0	0.00	0	0.00	1	50.00
	Grand total					**0.00**		**2783.30**		**500.00**		**0.00**		**12.00**		**3295.30**

Devakottai – B1, Ilayangudi – B2, Kalaiyarkoil – B3, Kallal – B4, Kannangudi – B5, Manamadurai – B6, S.P.Pudur – B7, Sakkottai – B8, Singampunari – B9, Sivagangai – B10, Thiruppathur – B11, Thiruppuvanam – B12

4.1.10. Soil Health Management in Sivagangai District

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

Project component

- Green manuring and production of enriched FYM (Sivagangai block)
- Establishment of permanent and HDPE vermicompost units (All blocks)
- Distribution of soil health card (All blocks)
- Reclamation of acid and alkali soil (Kalaiyarkoil, Sivagangai block)
- Composting of farm waste (Kalaiyarkoil, Sivagangai block)

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 Sivagangai district is **₹. 1454.55 lakhs (Table 4.10)**.

Expected outcome

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

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.10. Budget Requirement for Soil Health Management in Sivagangai 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
1	Permanent Vermi compost units	Cluster Nos.	50000	All blocks	70	35.00	80	40.00	80	40.00	80	40.00	80	40.00	390	195.00
2	HDPE Vermi compost units	Kit Nos	12000	All blocks	70	8.40	80	9.60	80	9.60	80	9.60	80	9.60	390	46.80
3	Reclamation of Alkali Soil	MT	50000	B3,B10	110	55.00	110	55.00	120	60.00	40	20.00	40	20.00	420	210.00
4	Reclamation of Acid Soil	L. No.	6000	B3,B10	145	8.70	170	10.20	220	13.20	270	16.20	320	19.20	1125	67.50
5	Green Manuring	Nos	4000	B10	10	0.40	10	0.40	10	0.40	10	0.40	10	0.40	50	2.00
6	Production of Enriched FYM	MT	2500	B10	10	0.25	10	0.25	10	0.25	10	0.25	10	0.25	50	1.25
7	Composting of Farm Waste Through Pluerotus (Production and Distribution of Kits)	MT	200	B3,B10	200	0.40	200	0.40	200	0.40	200	0.40	200	0.40	1000	2.00
8	Distribution of Soil Health Card	Ha	300	All blocks	50000	150.00	54000	162.00	62000	186.00	70000	210.00	74000	222.00	310000	930.00
	Grand total					**258.15**		**277.85**		**309.85**		**296.85**		**311.85**		**1454.55**

Devakottai – B1, Ilayangudi – B2, Kalaiyarkoil – B3, Kallal – B4, Kannangudi – B5, Manamadurai – B6, S.P.Pudur – B7, Sakkottai – B8, Singampunari – B9, Sivagangai – B10, Thiruppathur – B11, Thiruppuvanam – B12

4.1.11. Rainfed Area Development in Sivagangai District

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

Project components

- Milch Animal (1 no) + 1 ha cropping system with inter crop & border plantation like castor/sesbania *etc*. (Kalaiyarkoil, S.P.Pudur, Singampunari, Thiruppuvanam block)
- Promotion of Farmers club for Sustainable Dryland Agriculture (All blocks)
- Stress Management in crops by the Application of Pink Pigmented Facultative Methylotrophs (PPFM spray)/Kcl Spray (All blocks except Thiruppuvanam block)
- Small ruminant (9+1) + 1 ha Tree based farming system (Kalaiyarkoil block)
- Creation of Farm pond (All blocks except Singampunari, Thiruppuvanam block)

Budget

It is proposed to incur **₹. 2995.05 Lakhs** over a period of five years (Table 4.11) with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing agency

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

Table 4.11. Budget Requirement for Rainfed Area Development in Sivagangai 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
1	Stress Management in crops by the Application of Pink Pigmented Facultative Methylotrophs (PPFM spray)/ Kcl Spray	Ha	0.004	All blocks except B12	1950	7.80	2100	8.40	2150	8.60	2200	8.80	2250	9.00	10650	42.60
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	B3, B7, B9, B12	600	330.00	400	220.00	200	110.00	200	110.00	200	110.00	1600	880.00
3	Small ruminant (9+1)+ 1 ha Tree based farming system (Cropping system with inter crop & border plantation like castor/sesbania etc.) @ Rs.23500/ as subsidy per Unit	Ha	0.47	B3	50	23.50	50	23.50	50	23.50	50	23.50	50	23.50	250	117.50

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
4	Organic Mulching	Ha	0.06		0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
5	Creation of Farm pond	Nos.	0.75	All blocks except B12, B9	72	54.00	124	93.00	124	93.00	124	93.00	124	93.00	568	426.00
6	Promotion of Farmers club for Sustainable Dryland Agriculture	Cluster	84.9415	All blocks	4	339.77	10	849.42	3	254.82	0	0.00	1	84.94	18	1528.95
	Grand total					**755.07**		**1194.32**		**489.92**		**235.30**		**320.44**		**2995.05**

Devakottai – B1, Ilayangudi – B2, Kalaiyarkoil – B3, Kallal – B4, Kannangudi – B5, Manamadurai – B6, S.P.Pudur – B7, Sakkottai – B8, Singampunari – B9, Sivagangai – B10, Thiruppathur – B11, Thiruppuvanam – B12

4.1.12. Integrated Pest Management in Sivagangai District

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

Project components

- Farmers Field Schools (FFS) (All blocks)
- Field days (All blocks)
- Integrated Pest Management Villages (S.P.Pudur block)
- IPM School (Kannangudi, Manamadurai block)

Budget

It is proposed to incur **₹. 67.80 Lakhs** over a period of five years (Table 4.12) with the finance facilities under the NADP and other sources.

Expected outcome

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.

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.12. Budget Requirement for Integrated Pest Management in Sivagangai District

(₹. in lakhs)

Sl. No.	Interventions	Unit	Unit Cost (in Rs.)	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Farmers Field Schools (FFS)	Nos.	20000	All blocks	13	2.60	21	4.20	23	4.60	39	7.80	39	7.80	135	27.00
2	Field days	No.	20000	All blocks	15	3.00	15	3.00	15	3.00	15	3.00	15	3.00	75	15.00
3	Integrated Pest Management Villages	Nos.	100000	B7	1	1.00	1	1.00	1	1.00	1	1.00	1	1.00	5	5.00
4	IPM School	Nos.	40000	B5,B6	1	0.40	12	4.80	13	5.20	13	5.20	13	5.20	52	20.80
	Grand total					**7.00**		**13.00**		**13.80**		**17.00**		**17.00**		**67.80**

Devakottai – B1, Ilayangudi – B2, Kalaiyarkoil – B3, Kallal – B4, Kannangudi – B5, Manamadurai – B6, S.P.Pudur – B7, Sakkottai – B8, Singampunari – B9, Sivagangai – B10, Thiruppathur – B11, Thiruppuvanam – B12

4.1.13. Farm Mechanization in Sivagangai District

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

Project component

- Distribution of tractor, mini tractor, power tiller, combine harvester, rotavator and tarpaulin (All blocks)
- Distribution of pump set and PVC pipes to carry irrigation water from source to field (All blocks)
- Distribution of hand/power operated sprayers (All blocks)
- Distribution of oil engine pumpset (All blocks)
- Solar light trap (All blocks except S.P.Pudur block)
- Distribution of rainguns (All blocks except Kallal, Kannangudi, Sakkottai, Singampunari, Thiruppuvanam block)
- Solar power pump system (All blocks except Kalaiyarkoil, Manamadurai, S.P.Pudur, Sivagangai block)

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 **₹. 5569.63 lakhs** (Table 4.13).

Expected outcome

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

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.13. Budget Requirement for Farm Mechanization in Sivagangai District

(₹. in lakhs)

Sl. No	Interventions	Unit	Unit Cost (in Rs.)	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Solar light trap	No.	4000	All blocks except S. Pudhur	172	6.88	250	10.00	250	10.00	250	10.00	250	10.00	922	36.88
2	Battery operated sprayer	Nos.	4000	S. Pudhur	10	0.40	10	0.40	10	0.40	10	0.40	10	0.40	40	1.60
3	Power operated sprayer	Nos.	8000	All blocks	140	11.20	140	11.20	140	11.20	140	11.20	140	11.20	560	44.80
4	Hand operated sprayer	0	0	All blocks	150	2.25	220	3.30	290	4.35	360	5.40	430	6.45	1230	18.45
5	Distribution of Baler	Nos	350000	S. Pudhur	0	0.00	4	14.00	4	14.00	4	14.00	4	14.00	12	42.00
6	Distribution of chaff cutter	Nos	25000	Sivagangai, Manamadurai	2	0.50	2	0.50	2	0.50	2	0.50	2	0.50	8	2.00
7	Distribution of combine harvester	Nos	1700000	All blocks	11	187.00	12	204.00	11	187.00	12	204.00	11	187.00	45	765.00
9	Distribution of Laser leveller	Nos	380000	Sivagangai, Manamadurai and S. Pudhur	2	7.60	5	19.00	5	19.00	5	19.00	5	19.00	17	64.60
10	Distribution of Manual Weeder	Nos	2000	S. Pudhur	10	0.20	10	0.20	10	0.20	10	0.20	10	0.20	40	0.80
12	Distribution of Mini Tractor	Nos	300000	All blocks	26	78.00	46	138.00	46	138.00	46	138.00	46	138.00	164	492.00
13	Distribution of Mobile Sprinklers	Ha	30000	All blocks except Kalayarkovil, Ilayangudi, Devakotai and S. Pudhur	74	22.20	74	22.20	74	22.20	74	22.20	74	22.20	296	88.80
17	Distribution of Powertiller	Nos	150000	All blocks	58	87.00	68	102.00	68	102.00	68	102.00	68	102.00	262	393.00
19	Distribution of	Ha	40000	All blocks	169	67.60	209	83.60	219	87.60	289	115.60	259	103.60	936	374.40

Sl. No	Interventions	Unit	Unit Cost (in Rs.)	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Rain guns			except Kanakudi, Sakkotai, Kallal, Thiripuvanam and Singamapunari												
21	Distribution of Rotavator	Nos	80000	All blocks	49	39.20	49	39.20	49	39.20	49	39.20	49	39.20	196	156.80
22	Distribution of Tarpaulins	Nos	8000	All blocks	130	10.40	370	29.60	450	36.00	530	42.40	610	48.80	1720	137.60
23	Distribution of Tractor	Nos	600000	All blocks	35	210.00	101	606.00	101	606.00	101	606.00	101	606.00	338	2028.00
24	Distribution of Tractor Drawn Seed cum Fertilizer Drill	Nos	70000	S. Pudhur	2	1.40	2	1.40	2	1.40	2	1.40	2	1.40	8	5.60
25	PVC Pipes to carry Irrigation water from source to field	Unit	40000	All blocks	84	33.60	116	46.40	116	46.40	116	46.40	116	46.40	432	172.80
27	Solar power pump system	Nos	600000	All blocks except Sivagangai, Kalayarkovil, Manamadurai, Thimiri and S. Pudhur	14	77.00	14	77.00	14	77.00	14	77.00	14	77.00	56	308.00
28	Distribution Oil Engine Pumpset	0	0	All blocks	165	49.50	340	102.00	350	105.00	430	129.00	510	153.00	1455	436.50
	Grand total					**891.93**		**1510.00**		**1507.45**		**1583.90**		**1586.35**		**5569.63**

Devakottai – B1, Ilayangudi – B2, Kalaiyarkoil – B3, Kallal – B4, Kannangudi – B5, Manamadurai – B6, S.P.Pudur – B7, Sakkottai – B8, Singampunari – B9, Sivagangai – B10, Thiruppathur – B11, Thiruppuvanam – B12

4.1.14. Agricultural Information Technology in Sivagangai District

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

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

Project components

Components include input devices, output devices, processors, storage devices, software, networking devices, transmission media and other accessories (All blocks)

Budget

It is proposed to incur **₹. 101.64 Lakhs** over a period of five years (Table 4.14) 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 4.14. Budget Requirement for Information Technology in Sivagangai District

(₹. in lakhs)

Sl. No	Interventions	Unit	Unit Cost (in Rs.)	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Procurement of Hardware for replacement of old hardware	Nos	50000	All blocks	0	0.00	36	18.00	0	0.00	0	0.00	0	0.00	36	18.00
2	Connectivity Charges	Nos	11000	All blocks	0	0.00	24	2.64	0	0.00	0	0.00	0	0.00	24	2.64
3	Printer cum Scanner	Nos	20000	All blocks	0	0.00	24	4.80	0	0.00	0	0.00	0	0.00	24	4.80
4	UPS and Electrical Accessories	Nos	35000	All blocks	0	0.00	24	8.40	0	0.00	0	0.00	0	0.00	24	8.40
5	Xerox machine	Nos	75000	All blocks	0	0.00	12	9.00	0	0.00	0	0.00	0	0.00	12	9.00
6	Laptop/Desktop	Nos	50000	All blocks	0	0.00	12	6.00	0	0.00	0	0.00	0	0.00	12	6.00
7	Anti -virus software	Nos	2500	All blocks	0	0.00	12	0.30	0	0.00	0	0.00	0	0.00	12	0.30
8	Television	Nos	100000	All blocks	0	0.00	12	12.00	0	0.00	0	0.00	0	0.00	12	12.00
9	Colour printer	Nos	15000	All blocks	0	0.00	12	1.80	0	0.00	0	0.00	0	0.00	12	1.80
10	4G Internet - Dongle	Nos	2500	All blocks	0	0.00	12	0.30	0	0.00	0	0.00	0	0.00	12	0.30
11	**Equipments for Documentation**															
a	Handycam	Nos	30000	All blocks	0	0.00	12	3.60	0	0.00	0	0.00	0	0.00	12	3.60
b	Camera	Nos	25000	All blocks	0	0.00	12	3.00	0	0.00	0	0.00	0	0.00	12	3.00
c	GPS instrument	Nos	20000	All blocks	0	0.00	12	2.40	0	0.00	0	0.00	0	0.00	12	2.40
d	Android mobile	Nos	15000	All blocks	0	0.00	12	1.80	0	0.00	0	0.00	0	0.00	12	1.80
e	External Hard disk	Nos	5000	All blocks	0	0.00	12	0.60	0	0.00	0	0.00	0	0.00	12	0.60
12	Audio - visual Aids	Nos	150000	All blocks	0	0.00	12	18.00	0	0.00	0	0.00	0	0.00	12	18.00
	LCD projector	Nos	75000	All blocks	0	0.00	12	9.00	0	0.00	0	0.00	0	0.00	12	9.00
	Grand total					**0.00**		**101.64**		**0.00**		**0.00**		**0.00**		**101.64**

Devakottai – B1, Ilayangudi – B2, Kalaiyarkoil – B3, Kallal – B4, Kannangudi – B5, Manamadurai – B6, S.P.Pudur – B7, Sakkottai – B8, Singampunari – B9, Sivagangai – B10, Thiruppathur – B11, Thiruppuvanam – B12

Table 4.15. Consolidated Agriculture Budget for Sivagangai District

(₹. in lakhs)

S.No.	Interventions	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Rice	450.94	474.20	518.93	593.68	708.18	2745.92
2	Millets	87.35	114.78	114.85	117.99	121.68	556.64
3	Pulses	197.11	130.49	137.32	144.23	152.98	762.13
4	Oilseeds	199.77	301.43	336.04	371.28	394.38	1602.89
5	Oilpalm	8.06	0.78	0.78	0.78	0.78	11.18
6	Sugarcane	586.13	489.83	471.23	453.99	467.51	2468.69
7	Coconut	1916.17	1999.18	1381.04	1987.15	1383.83	8667.36
8	Trainings	82.21	82.21	82.21	82.21	82.21	411.05
9	Infrastructure Development	0.00	2783.30	500.00	0.00	12.00	3295.30
10	Soil Health Management	258.15	277.85	309.85	296.85	311.85	1454.55
11	Rainfed Area Development	755.07	1194.32	489.92	235.30	320.44	2995.05
12	Integrated Pest Management	7.00	13.00	13.80	17.00	17.00	67.80
13	Farm Mechanization	891.93	1510.00	1507.45	1583.90	1586.35	5569.63
14	Information Technology	0.00	101.64	0.00	0.00	0.00	101.64
	Grand total	**5439.89**	**9473.01**	**5863.42**	**5884.36**	**5559.19**	**30709.83**

4.2. Agricultural Research

Establishment of advanced photosynthetic analytic laboratory

Increasing the yield potential of the major food crops has contributed very significantly to a rising food supply over the past 50 years, and a until recently it kept pace with rising global demand. The photosynthesis is a fundamental process in crops and the carbon fixed during this process is the major contributor to the plant growth and development and to the overall yield and performance in a crop context. Based on this back ground, the present research is proposed to establish the facility for photosynthesis improvement in major crops like rice, groundnut, sunflower, green gram and black gram to promote a new agricultural revolution and contribute towards the challenge of meeting global food demands. Improving photosynthesis is the most significant opportunity for raising the yield potential of major crops and it addresses the new risks associated with future climate change conditions. Hence the Improvements in this fundamental process can be achieved by exploiting and translating new photosynthetic discoveries by establishment of advanced photosynthetic analytic laboratory with the proposed budget of ₹. 300.00 lakhs for Sakkottai block of Sivagangai district.

Construction of Farmers Trainees Hostel

Farmers training will reduce the time lag between generation of technology at the research institutions and it's transfer to the farmer's field for increasing production, productivity and income from the agriculture and allied sectors on a sustained basis. In this connection, establishment of farmers trainees hostel is very essential to transfer the new technologies directly to farming communities in Sakkottai block of Sivagangai district with the proposed budget of ₹. 200.00 lakhs.

Farmers participatory demonstration of moisture conservation and drought mitigation technologies to enhance rainfed crop productivity

The project is proposed to demonstrate the soil moisture conservation and drought mitigation technologies developed and evaluated at Sakkottai block to enhance the rainfed crops productivity and farm income with a total budget outlay of ₹. 71.08 lakh. This project aims to enhance 20-25% yield of rainfed crops and increase the farm income with soil health improvement and environment sustainability.

Budget

The budget requirement for the above research and development activities is estimated at **₹. 645.53 lakhs** over a period of five years (Table 4.16).

Expected outcome

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

Implementing agency

Tamil Nadu Agricultural University will be implementing the project.

Table 4.16. Budget Requirement for Agricultural Research Infrastructure in Sivagangai District

(₹. in lakhs)

Sl. No.	Interventions	Blocks Covered	Unit Cost in lakhs	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
				Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
1	Establishment of Advanced photosynthetic analytic laboratory	Sakkottai	300	1	300.00	0	0.00	0	0.00	0	0.00	0	0.00	1	300.00
2	Construction of Farmers Trainees Hostel	Sakkottai	200	0	0.00	1	200.00	0	0.00	0	0.00	0	0.00	1	200.00
3	Establishment of Palmyrah and jack fruit processing pilot plant for demonstration cum training on value added products for rural empowerment	Sakkottai	74.45	0	0.00	1	57.60	0	16.85	0	0.00	0	0.00	1	74.45
4	Farmers participatory demonstration of moisture conservation and drought mitigation technologies to enhance rainfed crop productivity	Sakkottai	71.08	0	0.00	1	59.54	0	11.54	0	0.00	0	0.00	1	71.08
	Grand total				**300.00**		**317.14**		**28.39**		**0.00**		**0.00**		**645.53**

4.3. Horticulture

4.3.1 Enhancing the productivity of horticultural crops

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

Area expansion of Horticultural crops

a. Fruit Crops

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

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.

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 traditional and cut flowers are planned for different flower crops.

d. Spice crops

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

e. Plantation crops

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

f. 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.

g. 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.

h. Area expansion by Normal Planting

Besides precision farming and high density planting, the area could be increased by normal planting as well by using pedigree planting materials in 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.

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.

Pollination support

Pollination of fruits, vegetables, spices and plantation crops would be enhanced through the establishment of bee hives and colonies.

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.

Rainfed Area Development Programme (RADP)

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

Special Interventions

a. 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.

b. Pandal / Trellis cultivation, Propping / Support / Staking

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

c. Banana Bunch Sleeve

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

d. Agro Ecosystem Analysis (AESA) based IPM

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

e. Control of coconut Red Palm weevil

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

f. Promotion of Roof top Garden / Potager garden

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.

g. 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.

h. Establishing Centre of Excellence for different crops

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

i. Computerization and Governance

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

j. Research on Crop Diversification

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

Crop Insurance

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

Infra structures and Assets

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.

Mushroom production

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

Vermicompost unit

Earthworms are often referred to as farmer's friend s and nature's ploughmen. Earthworms are extremely important in soil formation, principally through their activities in consuming organic matter, fragmenting and mixing it intimately with mineral particles to form aggregates. During their feeding, earthworms promote microbial activity greatly, which in turn accelerates the breakdown of organic matter and stabilization of soil aggregates. The end product, commonly termed vermicompost and obtained as the organic wastes pass through the earthworm gut, is quite different from the parent waste material. Therefore it's necessary to establish a permanent vermicompost unit.

Supporting structures for vegetable production

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

a. Staking, trellis and propping

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

b. Pandal structure

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

District Horticulture information and training centre

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

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

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

Post-Harvest Management

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.

Modernization of State Horticulture Farms

In Tamil Nadu, there are 52 State Horticulture Farms including six parks and garden. The prime objectives of these farms are to produce pedigree planting materials of fruits, flowers, spices and vegetables. The quality planting materials produced in these farms are distributed to the farmers directly and through various schemes of the department. The parks and garden serve as study centre to the students apart from educating the public on Eco preservation. It is programmed to expand the production of planting materials of various kinds of fruits viz., mango, guava, sapota and flowers like rose, jasmine and ornamental plants and avenue trees by modernizing the nurseries, developing the farms as demonstration centres for the latest techniques in horticulture, enhancing the productivity and augmenting farm mechanization for increasing the efficiency.

Horticultural mechanization

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

Micro Irrigation, Water harvesting and Management

With increasing demand on water from various sectors, the availability of water is under severe stress. Agriculture sector is the largest use of water. While irrigation projects (Major and medium) have contributed to the development of water resources, conventional methods of irrigation are inefficient and lead to wastage of water. It has been recognized

that the use of modern irrigation methods like drip and sprinkler irrigation are the ways for the efficient use of surface as well as ground water resources. Majority of fruit trees / orchards are under rainfed cultivation. It is advisable to bring a minimum percentage of the area under irrigation by providing and strengthening the water harvesting system. This includes provision of drip irrigation facilities wherever possible, recharge of defunct bore wells, provision of pipes and protected distribution system, provision of water lifting devices, Insitu water conservation and the like.

Capacity building of Horticultural Officers and Farmers

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

Project components

- Area expansion of fruit crops (All blocks except few)
- Area expansion of vegetable crops (All blocks)
- Area expansion of medicinal, aromatic and spice crops (All blocks)
- Area expansion of flower and plantation crops (All blocks)
- Rejuvenation/INM/IPM/Mulching (All blocks)
- Pollination support through bee keeping (All blocks)
- Organic farming (Sivagangai block)
- Rainfed Area Development (All blocks)
- Infrastructure and assets creation (All blocks except few)
- District horticulture information and training centre, and special Interventions (All blocks)
- Mechanization and irrigation management (All blocks)
- Capacity building, crop insurance and risk mitigating scheme (All blocks except few)

Budget

The budget requirement for fulfilling the various interventions is **₹. 13966.20 Lakhs**. The details of budget requirement for each intervention across the blocks are shown in Table 4.17.

Implementing agency

The projects will be implemented by the Department of Horticulture.

Table 4.17. Budget Requirement for Horticulture in Sivagangai District

(₹. in lakhs)

Sl. No.	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Tota	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
A	**Production Growth**															
I	**Area expansion of fruit crops**															
1	UHDP in Papaya, Mango, Guava, Pomegranate, Acidlime	Ha	1.25	All Blocks except B2 & B5	7	8.13	7	8.13	8	10.00	8	10.00	8	10.00	37	46.25
2	HDP in Mango, Guava, Litchi, Pomegranate	Ha	1	All Blocks	54	54.00	73	73.00	93	93.00	93	93.00	105	105.00	418	418.00
3	Area expansion fruits with traditional varieties	Ha	0.6	B3, B6 & B12	10	6.00	14	8.40	18	10.80	22	13.20	26	15.60	90	54.00
4	Normal planting in Guava	Ha	0.6	All Blocks	14	8.40	14	8.40	25	15.00	25	15.00	36	21.60	114	68.40
5	Normal planting in Papaya	Ha	0.6	All Blocks except B8	100	60.00	110	66.00	133	79.80	133	79.80	157	94.20	633	379.80
II	**Area expansion of vegetable crops**															
6	Brinjal	Ha	0.5	All Blocks	30	15.00	39	19.50	39	19.50	36	18.00	48	24.00	192	96.00
7	Bhendi	Ha	0.5	All Blocks	36	18.00	36	18.00	36	18.00	60	30.00	60	30.00	228	114.00
8	Green Chillies	Ha	0.5	All Blocks	40	20.00	40	20.00	40	20.00	42	21.00	42	21.00	204	102.00
9	Tomato	Ha	0.5	All Blocks	24	12.00	36	18.00	36	18.00	36	18.00	48	24.00	180	90.00

Sl. No.	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Tota	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
III	**Area expansion of Medicinal and Aromatic plants**															
10	Amla	Ha	0.7771	All Blocks	15	11.66	18	13.99	18	13.99	27	20.98	30	23.31	108	83.93
IV	**Area expansion of Spices crops**															
11	Seed and Rhizomatic spices (Coriander, Turmeric, Ginger, Dry Chilly, Cumin, Fennel, Fenu greek, Dil, Cardamom etc.,)	Ha	0.3	All Blocks	161	48.30	205	61.50	234	70.20	276	82.80	319	95.70	1195	358.50
V	**Area expansion of Flower crops**															
12	Loose flowers - Jasminum sp, Crossandra, Marigold, Rose, Chrysanthemum, Nerium, Torenia	Ha	0.4	All Blocks	24	9.60	36	14.40	60	24.00	60	24.00	60	24.00	240	96.00
13	Bulbous flowers - Tube rose, Gladioli, Dahlia, Bird of paradise, Heliconia, Tulip	Ha	1.5	All Blocks except B1, B2, B5, B7 & B9	11	16.50	11	16.50	19	28.50	25	37.50	28	42.00	94	141.00
VI	**Area expansion /Gap filling of Plantation crops**															
14	Cashew	Ha	0.5	All Blocks	42	21.00	60	30.00	84	42.00	108	54.00	132	66.00	426	213.00

Sl. No.	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Tota	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
VII	**Rejuvenation/INM-IPM/Mulching/Anti bird net**															
15	Mango/Cashew - Rejuvenation	Ha	0.4	All Blocks	52	20.80	74	29.60	74	29.60	98	39.20	128	51.20	426	170.40
16	INM/IPM for Horticultural crops	Ha	0.04	All Blocks	167	6.68	201	8.04	203	8.12	225	9.00	280	11.20	1076	43.04
17	Mulching	Ha	0.32	All Blocks	120	38.40	135	43.20	153	48.96	168	53.76	195	62.40	771	246.72
18	Anti Bird net	1000 Sq.m	0.35	All Blocks	42	14.70	45	15.75	66	23.10	87	30.45	90	31.50	330	115.50
VIII	**Pollination Support through Bee Keeping**															
19	Bee hive & Colony	No	0.04	All Blocks	600	24.00	720	28.80	720	28.80	840	33.60	1200	48.00	4080	163.20
20	Honey Extractor	No	0.2	All Blocks	60	12.00	72	14.40	72	14.40	84	16.80	120	24.00	408	81.60
IX	**Organic Farming**															
21	Organic farming and PGS certification in 50 acre cluster	1 cluster	14.95	B10	1	14.95	1	14.95	1	14.95	1	14.95	1	14.95	5	74.75
22	HDPE Vermibed	No	0.16	All Blocks	12	1.92	24	3.84	27	4.32	27	4.32	39	6.24	129	20.64
X	**Rainfed Area development**															
23	Integrated farming system - Horticulture Based farming	Ha	0.5	All Blocks	84	42.00	108	54.00	120	60.00	132	66.00	156	78.00	600	300.00
24	Moisture stress management -	Ha	0.1	All Blocks	57	5.70	81	8.10	87	8.70	108	10.80	138	13.80	471	47.10

Sl. No.	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Tota	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
	Minimum irrigation gurantee by PUSA hydrogel															
B	**Infra structures and Assets creation**															
I	Protected cultivation															
1	Poly Green House	1000 Sq.m	9.35	B3, B7 & B10	4	37.40	5	46.75	5	46.75	6	56.10	6	56.10	26	243.10
2	Shadenet	1000 Sq.m	7.1	All Blocks	12	81.65	12	81.65	12	81.65	23	159.75	23	159.75	80	564.45
III	**Vermicompost unit**															
3	Permanent Vermicompost Unit	600 cu.ft	1	All Blocks except B5	11	11.00	11	11.00	11	11.00	11	11.00	11	11.00	55	55.00
IV	**Supporting structures for Horticulture crop production**															
4	Staking/ Trellies/ Propping	Ha	1	All Blocks	8	7.50	11	10.50	18	18.00	23	22.50	26	25.50	84	84.00
5	Permanent Pandhal structure	Ha	4	All Blocks	11	42.00	11	42.00	12	48.00	14	54.00	23	90.00	69	276.00
V	**District Horticulture information and training centre**															
VI	**Community seed bank**															
C	**Special interventions**															

Sl. No.	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Tota	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
6	Farm deficiency correction	Ha	0.04	All Blocks	1200	48.00	1800	72.00	1875	75.00	1875	75.00	1950	78.00	8700	348.00
7	Promotion of Roof top Garden/ Potager garden Kit	No	0.005	All Blocks	570	2.85	805	4.03	865	4.33	865	4.33	1040	5.20	4145	20.73
8	Promotion of Roof top Garden/ Potager garden Kit with shadenet	No	0.0735	All Blocks	12	0.88	12	0.88	12	0.88	12	0.88	12	0.88	60	4.41
9	Banana Bunch Sleeve	Ha	0.25	All Blocks	65	16.25	69	17.25	114	28.50	165	41.25	165	41.25	578	144.50
10	AESA based IPM in fruits and vegetables Pheramone trap	Ha	0.04	All Blocks	75	3.00	75	3.00	81	3.24	81	3.24	90	3.60	402	16.08
11	AESA Based IPM in fruits and vegetables Yellow sticky trap	Ha	0.04	All Blocks	75	3.00	75	3.00	81	3.24	81	3.24	90	3.60	402	16.08
12	AESA Based IPM in fruits and vegetables Light trap	Ha	0.08	All Blocks	75	6.00	75	6.00	81	6.48	81	6.48	90	7.20	402	32.16
D	**Post Harvest Management**															
13	Pack house (9m X 6m)	1 No	4	All Blocks	12	48.00	15	60.00	15	60.00	18	72.00	18	72.00	78	312.00
14	Low cost onion structure 25 mt	1 No	1.75	B3, B10 & B12	8	14.00	11	19.25	12	21.00	13	22.75	16	28.00	60	105.00
E	**Development of Farms, Nurseries and Parks**															

Sl. No.	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Tota	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
15	Developmental activities in new/ exsisting state Horticultural farm, Keelapalur	No	25	B1 & B8	2	50.00	2	50.00	2	50.00	2	50.00	2	50.00	10	250.00
F	**Mechanization - Machineries, Equipments & Tools**															
16	Power tiller/Tractor/ Minitractor	Nos	1	All Blocks	24	24.00	36	36.00	36	36.00	48	48.00	48	48.00	192	192.00
17	Manual Sprayer-Knapsack/Foot operated Sprayer	Nos	0.12	All Blocks	120	14.40	120	14.40	180	21.60	180	21.60	180	21.60	780	93.60
18	Hand operated sprayer with face mask	Nos	0.025	All Blocks	120	3.00	144	3.60	144	3.60	180	4.50	180	4.50	768	19.20
19	Nets for safe harvesting of fruits,Headlights for flower picking	Nos	0.005	All Blocks	120	0.60	180	0.90	180	0.90	240	1.20	240	1.20	960	4.80
20	Power operated sprayer	Nos	0.05	All Blocks	60	3.00	60	3.00	84	4.20	144	7.20	144	7.20	492	24.60
21	Plastic crates for vegetable & fruits handling	No of sets containing 10crates	0.075	All Blocks	600	45.00	720	54.00	840	63.00	900	67.50	960	72.00	4020	301.50
22	Oil engine	No	0.15	All Blocks	60	9.00	60	9.00	60	9.00	60	9.00	72	10.80	312	46.80
23	5 layered Polythene spread sheets for drying horticulture	No	0.16	All Blocks	60	9.60	60	9.60	120	19.20	120	19.20	180	28.80	540	86.40

Sl. No.	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Tota	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
	produce															
24	Aluminium Ladders for Harvesting	No	0.2	All Blocks	36	7.20	60	12.00	60	12.00	60	12.00	84	16.80	300	60.00
G	**Water / Irrigation Management**															
25	Micro Irrigation - Drip	Ha	1.12	All Blocks	220	246.40	250	280.00	272	304.64	273	305.76	273	305.76	1288	1442.56
26	Rain gun	Ha	0.34	All Blocks	120	40.80	175	59.50	202	68.68	235	79.90	290	98.60	1022	347.48
27	Sprinkler	No	0.195	All Blocks	55	10.73	24	4.68	24	4.68	58	11.31	58	11.31	219	42.71
H	**Capacity Building**															
28	Training to farmers within the State. 2 days Rs.1000/farmer/day	No	0.02	All Blocks	600	12.00	720	14.40	720	14.40	720	14.40	720	14.40	3480	69.60
29	Training to farmers outside the state. 30 farmers/Batch	No	0.105	All Blocks	36	3.78	60	6.30	60	6.30	84	8.82	120	12.60	360	37.80
30	Exposure visit to farmers for 5 days. Rs.1000/farmer/day	No	0.05	All Blocks	60	3.00	60	3.00	120	6.00	180	9.00	180	9.00	600	30.00
31	Exposure visit of farmers outside India	No	4	All Blocks	12	48.00	12	48.00	12	48.00	12	48.00	12	48.00	60	240.00
32	Training to staff outside the state /	No	0.04	All Blocks	12	0.48	12	0.48	12	0.48	12	0.48	60	2.40	108	4.32

Sl. No.	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Tota	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
	Batch of 5 members															
33	Training to staff outside India	No	6	All Blocks	12	72.00	12	72.00	12	72.00	12	72.00	12	72.00	60	360.00
34	HRD for supervisors and enterpreuners	No	20		0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
35	HRD for gardeners	No	15	All Blocks	60	900.00	60	900.00	60	900.00	60	900.00	60	900.00	300	4500.00
36	District level seminar	No	2	All Blocks except B4, B5, B8 and B12	0	0.00	0	0.00	0	0.00	1	2.00	1	2.00	2	4.00
37	Computerization & governance	No	1	All Blocks	0	0.00	0	0.00	0	0.00	1	1.00	1	1.00	2	2.00
38	Publicity and Documentation	No	0.5	All Blocks	12	6.00	14	7.20	16	7.80	17	8.40	24	12.00	83	41.40
I	**Crop Insurance and Risk Mitigating schemes**															
	Crop Insurance	Ha	0.025	B1, B2, B3, B6, B10 & B12	130	3.25	155	3.88	155	3.88	182	4.55	182	4.55	804	20.10
	Grand total					**2323.50**		**2565.74**		**2768.16**		**3034.50**		**3274.31**		**13966.20**

Devakottai – B1, Ilayangudi – B2, Kalaiyarkoil – B3, Kallal – B4, Kannangudi – B5, Manamadurai – B6, S.P.Pudur – B7, Sakkottai – B8, Singampunari – B9, Sivagangai – B10, Thiruppathur – B11, Thiruppuvanam – B12

4.4. Agricultural Engineering

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

Strategies:

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

- ✓ Strengthening of communication and information facilities in order to disseminate the information in rural areas (All blocks)
- ✓ Awareness to be created towards the usage of Sugarcane infielder, Bird scarer, Mechanized row crop cultivation and Modernization of tractor workshop which indirectly increase the production (All blocks except few)
- ✓ Promotion of agro-processing and management machinery at community level through supply of post-harvest machinery such as self-propelled/other driven horticultural machinery (Chain saw/ wheel barrow/ Mango grader/ planter and other suitable self-propelled machineries and equipments), Manual horticultural equipments (Aluminium ladder/ Ladder, Aluminium pole, Plucker), Post-harvest equipments for grains, oil seeds and Horticultural crops (Mini Rice mill, Mini Dhall mill, Millet Mill, Oil mill with filters, Extractor, pomegranate air extractor, Custard apple pulper, Dehydration unit, Pricking Machine, Humidifier, Packing machine, power driven dehusker, thresher, Harvester, De-spiking, Deconing, Peeler, Splitter, Stripper, Boiler, Steamer, Dryer solar, Washing Machine, Grinder, Pulveriser, Polisher, Cleaner cum grader, gradient separator, Specific gravity separator) this would make sure that more value is added to farm outputs locally (All blocks except few)
- ✓ Establishment of Agricultural Engineering Extension centres in order to collect information related to Government subsidy on agricultural / machineries / equipment / irrigation systems etc., compilation of latest technologies related to Agricultural Engineering and Development of video cassettes library related to Processing of agricultural products, Working of important agricultural machines and equipment and Repair, maintenance and proper setting of the different agricultural Machines / and equipment (All blocks except few)
- ✓ Promotion of training to AED engineers on post-harvest techniques and bio energy (All blocks)

Expected outcome

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

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

Budget

The overall budget requirement for implementation of above interventions is **₹. 4850.62 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 Sivagangai District (₹. in lakhs)

Sl. No.	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Capacity Building															
1	**Demonstration of Agricultural Machinery**	All Blocks	No's/Ha	0.04	2	0.08	2	0.08	2	0.08	2	0.08	2	0.08	10	0.40
2	**Training of farmers**	All Blocks	No's/Ha	0.04	2	0.08	2	0.08	2	0.08	2	0.08	2	0.08	10	0.40
3	**Tractors**															
4	Tractor (15-20 PTO HP)	All Blocks	No's/Ha	4	40	160.00	40	160.00	40	160.00	40	160.00	48	192.00	208	832.00
5	Tractor (Above 20-40 PTO HP)	All Blocks	No's/Ha	6	6	36.00	6	36.00	6	36.00	6	36.00	6	36.00	30	180.00
6	Tractor (40-70 PTO HP)	All Blocks	No's/Ha	8.5	24	204.00	24	204.00	28	238.00	28	238.00	26	221.00	130	1105.00
7	**Power Tillers**															
8	Power Tiller (8 BHP & above)	All Blocks	No's/Ha	1.75	80	140.00	80	140.00	80	140.00	90	157.50	80	140.00	410	717.50
9	**Rice Transplanter**															
10	Self Propelled Rice Transplanter (4 rows)	All Blocks	No's/Ha	2.5	2	5.00	2	5.00	4	10.00	4	10.00	4	10.00	16	40.00
11	Self Propelled Rice Transplanter (Above 4-8 rows)	All Blocks	No's/Ha	16	1	16.00	1	16.00	1	16.00	2	32.00	2	32.00	7	112.00
12	**e. Harvesting and Threshing equipments**															
13	Brush Cutter	All Blocks	No's/Ha	0.25	2	0.50	4	1.00	4	1.00	4	1.00	4	1.00	18	4.50
14	**f. Chaff Cutter (Operated by**	All Blocks	No's/Ha	0.25	4	1.00	4	1.00	4	1.00	4	1.00	4	1.00	20	5.00

Sl. No.	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	engine / electric motor below 3 hp and by power tiller and tractor of below 20 BHP tractor)															
15	**Tractor (above 20-35 BHP) driven equipments**															
16	**a. Land Development, tillage and seed bed preparation equipments**															
17	Disc Plow	All Blocks	No's/Ha	0.4	6	2.40	6	2.40	6	2.40	6	2.40	6	2.40	30	12.00
18	Cultivator	All Blocks	No's/Ha	0.25	6	1.50	6	1.50	8	2.00	10	2.50	12	3.00	42	10.50
19	Leveler Blade	All Blocks	No's/Ha	0.25	2	0.50	2	0.50	2	0.50	2	0.50	2	0.50	10	2.50
20	Reversible Mechanical plough	All Blocks	No's/Ha	0.65	2	1.30	2	1.30	2	1.30	2	1.30	2	1.30	10	6.50
21	Rotavator	All Blocks	No's/Ha	0.8	16	12.80	16	12.80	16	12.80	16	12.80	16	12.80	80	64.00
22	Rotopuddler	All Blocks	No's/Ha	1.2	2	2.40	2	2.40	2	2.40	2	2.40	2	2.40	10	12.00
23	**b. Sowing, Planting, Reaping and Digging Equipments**															
24	Post Hole digger	All Blocks	No's/Ha	0.9	2	1.80	2	1.80	4	3.60	4	3.60	4	3.60	16	14.40
25	Seed drill	All Blocks	No's/Ha	0.5	2	1.00	2	1.00	2	1.00	2	1.00	2	1.00	10	5.00
26	**c.Inter Cultivation Equipments**															
27	Power Weeder (engine operated	All Blocks	No's/Ha	0.7	2	1.40	2	1.40	2	1.40	2	1.40	2	1.40	10	7.00

Sl. No.	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	above 2 BHP)															
28	**e.Harvesting & Threshing Equipments**															
29	Brush Cutter	All Blocks	No's/Ha	0.3	2	0.60	2	0.60	2	0.60	2	0.60	2	0.60	10	3.00
30	**Tractor (above 35 BHP) driven equipments**															
31	**a.Land Development, tillage and seed bed preparation equipments**															
32	Disc Plow	All Blocks	No's/Ha	0.6	2	1.20	4	2.40	4	2.40	4	2.40	4	2.40	18	10.80
33	Cultivator	All Blocks	No's/Ha	0.3	4	1.20	6	1.80	6	1.80	6	1.80	6	1.80	28	8.40
34	Harrow		No's/Ha	1	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
35	Leveler Blade	All Blocks	No's/Ha	0.3	2	0.60	2	0.60	2	0.60	2	0.60	2	0.60	10	3.00
36	Rotavator	All Blocks	No's/Ha	0.95	25	23.75	25	23.75	25	23.75	25	23.75	25	23.75	125	118.75
37	**d.Harvesting & Threshing Equipments**															
38	Thresher/Multi Crop threshers	All Blocks	No's/Ha	4	2	8.00	2	8.00	4	16.00	4	16.00	4	16.00	16	64.00
39	**e.Equipments for Residue management/Hay and Forage Equipments**															
40	Coconut Frond chopper	All Blocks	No's/Ha	1.05	2	2.10	2	2.10	2	2.10	2	2.10	2	2.10	10	10.50

Sl. No.	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
41	Balers (Round)	All Blocks	No's/Ha	3.5	2	7.00	4	14.00	4	14.00	2	7.00	2	7.00	14	49.00
42	Baler (Rectangular)	All Blocks	No's/Ha	8	2	16.00	2	16.00	2	16.00	2	16.00	2	16.00	10	80.00
43	**Plant protection equipments**															
44	Manual sprayer: Knapsack/foot operated sprayer	All Blocks	No's/Ha	0.015	10	0.15	1	0.02	10	0.15	10	0.15	10	0.15	41	0.62
45	Powered Knapsack Sprayer/Power operated Taiwan sprayer (capacity above 12-16 lts)	All Blocks	No's/Ha	0.08	4	0.32	4	0.32	4	0.32	6	0.48	6	0.48	24	1.92
46	**Establishment of Farm Machinery Banks for Custom Hiring**	All Blocks	No's/Ha	28	3	84.00	2	56.00	2	56.00	2	56.00	0	0.00	9	252.00
47	**Tractor Hiring Scheme**															
48	Purchase of Tractors for AED	B1 , B5 , B8, B4	No's/Ha	8	2	16.00	0	0.00	0	0.00	2	16.00	0	0.00	4	32.00
49	Purchase of Tractor drawn implements for AED	All Blocks	No's/Ha	0.5	2	1.00	2	1.00	2	1.00	4	2.00	4	2.00	14	7.00
50	**Minor Irrigation Scheme**															
51	Purchase of Rotary Drill for AED	B1 , B5	No's/Ha	72	1	72.00	1	72.00	0	0.00	0	0.00	0	0.00	2	144.00
52	**Solar Energy**															
53	**5 hp**	All Blocks	No's/Ha	3.75	20	75.00	16	60.00	16	60.00	10	37.50	10	37.50	72	270.00
54	**7.5 hp**	All Blocks	No's/Ha	5.3	10	53.00	10	53.00	4	21.20	16	84.80	10	53.00	50	265.00
55	**10 hp**	All Blocks	No's/Ha	6.75	2	13.50	2	13.50	0	0.00	6	40.50	6	40.50	16	108.00

Sl. No.	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
56	**upto 400sq.ft**	All Blocks	No's/Ha	4.25	0	0.00	2	8.50	2	8.50	2	8.50	2	8.50	8	34.00
57	**400-600sq.ft**	All Blocks	No's/Ha	6.5	0	0.00	2	13.00	2	13.00	2	13.00	2	13.00	8	52.00
58	**Information Technology (IT) related items**															
59	Computer & its accessories	B1 , B8	No's/Ha	0.8	0	0.00	1	0.80	0	0.00	0	0.00	1	0.80	2	1.60
60	Xerox machine	B1 , B5 , B8	No's/Ha	1.5	0	0.00	2	3.00	0	0.00	0	0.00	1	1.50	3	4.50
61	**Sugarcane Infielder**	B8, B11	No's/Ha	7	0	0.00	0	0.00	1	7.00	1	7.00	0	0.00	2	14.00
62	**Bird Scarer**	B1 , B5 , B8, B4, B11, B9 & B7	No's/Ha	0.4	0	0.00	0	0.00	3	1.20	0	0.00	3	1.20	6	2.40
63	Chain saw/ Wheel barrow/ Mango grader/ planter and other suitable self propelled machineries and equipments for horticulture crops	All Blocks	No's/Ha	1	5	5.00	7	7.00	11	11.00	2	2.00	9	9.00	34	34.00
64	**Manual Horticultural Equipments**															
65	Aluminium Ladder/ Ladder	All Blocks	No's/Ha	0.2	5	1.00	9	1.80	4	0.80	6	1.20	4	0.80	28	5.60
66	Aluminium pole	All Blocks	No's/Ha	0.03	20	0.60	30	0.90	30	0.90	25	0.75	30	0.90	135	4.05
67	Plucker	All Blocks	No's/Ha	0.02	10	0.20	5	0.10	13	0.26	13	0.26	16	0.32	57	1.14
68	**Post Harvest Equipments for food grains, oil**															

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
	seeds and Horticultural Equipments															
69	Mini Rice Mill	B1 , B5 , B8	No's/Ha	1.5	0	0.00	0	0.00	1	1.50	1	1.50	1	1.50	3	4.50
70	Millet Mill	B1 , B5 , B8	No's/Ha	1.5	0	0.00	0	0.00	1	1.50	1	1.50	1	1.50	3	4.50
71	Oil mill with filter press (for all type of Horticulture / Food grain / Oil seeds crop)	B8, B4, B11	No's/Ha	1.2	0	0.00	0	0.00	1	1.20	1	1.20	0	0.00	2	2.40
72	Extractor (for all type of Horticulture / Food grain / Oil seeds crop)	B8, B4, B11	No's/Ha	1	0	0.00	0	0.00	1	1.00	1	1.00	1	1.00	3	3.00
73	Packing Machines (for all types of Horticulture / Food grain / Oil seeds crop)	All Blocks	No's/Ha	3	0	0.00	0	0.00	4	12.00	4	12.00	4	12.00	12	36.00
74	All types of Power driven Dehusker/ sheller/ Threshers/ Harvesters/ De-spiking/ Deconing Machine/ Peeler/ Splitter/ Stripper (for all type of Horticulture / Food grain / Oil seeds crop)	B1 , B5 , B8, B4, B11, B9 & B7	No's/Ha	1.2	0	0.00	0	0.00	2	2.40	2	2.40	2	2.40	6	7.20
75	All types of Boiler/ Steamer/ Dryer solar (for all type of	B8	No's/Ha	2	0	0.00	0	0.00	1	2.00	0	0.00	0	0.00	1	2.00

Sl. No.	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Horticulture / Food grain / Oil seeds crop)															
76	**Bio- mass gasifier**															
77	**Construction of Agricultural Engineering Extension centres (AEECs)**	B11	No's/Ha	75	0	0.00	0	0.00	1	75.00	0	0.00	0	0.00	1	75.00
78	**Training of AED Engineers on " Agricultural Processing" and " Bio- Energy"**	All Blocks	No's/Ha	0.04	5	0.20	7	0.28	5	0.20	5	0.20	4	0.16	26	1.04
	Grand total					**973.18**		**948.73**		**984.94**		**1023.75**		**920.02**		**4850.62**

Devakottai – B1, Ilayangudi – B2, Kalaiyarkoil – B3, Kallal – B4, Kannangudi – B5, Manamadurai – B6, S.P.Pudur – B7, Sakkottai – B8, Singampunari – B9, Sivagangai – B10, Thiruppathur – B11, Thiruppuvanam – B12

4.5. 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 stakeholders *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 thirugu, ural, chakki, *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.

Project components

- Construction of cold storage (Singampunari block)
- Construction of storage godown and drying yard for commodity groups (All blocks)
- Formation of Farmer Producer Organizations (FPO) (Ilayangudi, Singampunari block)
- Distribution of plastic crates and tarpaulin (All blocks) and dunnage (S.P.Pudur block)
- Establishment of coconut sugar production and virgin coconut oil production unit in Coconut market complex (Singampunari block)
- Coconut ladder (All blocks except Devakottai, Ilayangudi, Kallal, Kannangudi, S.P.Pudur, block)
- Millet mini mill and dhall processing unit (Devakottai, Sakkottai block)
- Purchase of groundnut decorticator (Kalaiyarkoil, Kallal, S.P.Pudur, Singampunari, Thiruppathur block) and stripper (Singampunari block)
- Pack house for cut flowers (Sakkottai block)

- Solar dryer (All blocks except Devakottai, Kallal, Kannangudi, S.P.Pudur, block)
- Exposure visit (within state & outside state) for commodity group farmers to acquire value addition technologies (All blocks)

Budget

The district plan proposes an outlay of **₹. 1451.56 lakhs** over a period of five years for Sivagangai district. The details of budget requirement for each intervention across the blocks are shown in 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 Sivagangai District (₹. in lakhs)

Sl. No.	Intervention	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Strengthening of Uzhavar Sandhai and Regulated Market															
1	Cold Storage	Nos.	12	B11		0.00	1	12.00		0.00		0.00		0.00	1	12.00
2	Drying Yard	Nos.	4	All Blocks	15	60.00	13	52.00	18	72.00	16	64.00	20	80.00	82	328.00
3	Storage godown	Nos.	10	All Blocks	9	90.00	3	30.00	8	80.00	4	40.00	9	90.00	33	330.00
	Formation of FPO / Strengthening of Existing Commodity Groups															
4	FPO	Nos.	10	B5, B11	1	10.00	0	0.00	1	10.00	0	0.00	0	0.00	2	20.00
	Provision of Market Access and Market Activities															
5	Dunnage	Nos.	0.04	B12	90	3.60	30	1.20	85	3.40	40	1.60	100	4.00	345	13.80
6	Plastic crates	Nos.	0.004	All Blocks	1150	4.60	1325	5.30	1375	5.50	1625	6.50	1675	6.70	7150	28.60
7	Tarpaulin	Nos.	0.1	All Blocks	210	21.00	215	21.50	265	26.50	290	29.00	300	30.00	1280	128.00

Sl. No.	Intervention	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Post Harvest Infrastructure and Machinaries															
8	Coconut Ladder	Nos.	0.04	All Blocks except B5, B7, B8, B9, B12	41	1.64	43	1.72	37	1.48	31	1.24	31	1.24	183	7.32
9	Dhal processing Unit	Nos.	15	B6, B8	0	0.00	0	0.00	2	30.00	0	0.00	0	0.00	2	30.00
10	Establishment of Coconut Sugar Production unit in Coconut market complex	Nos.	50	B11		0.00		0.00	1	50.00		0.00		0.00	1	50.00
11	Establishment of Virgin Coconut Oil Production unit in Coconut market complex	Nos.	30	B11		0.00		0.00	1	30.00		0.00		0.00	1	30.00
12	Groundnut decorticator (power)	Nos.	2.5	B2, B7, B10, B11, B12	5	12.50	7	17.50	5	12.50	5	12.50	4	10.00	26	65.00
13	Groundnut Stripper	Nos.	3.5	B11	5	17.50	7	24.50	5	17.50	5	17.50	4	14.00	26	91.00

Sl. No.	Intervention	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
14	Millet Mini Mill	Nos.	15	B6, B8	0	0.00	0	0.00	1	15.00	1	15.00	0	0.00	2	30.00
15	Pack House for cut flowers	Nos.	30	B6		0.00		0.00	1	30.00		0.00		0.00	1	30.00
16	Solar Dryer	Nos.	5	All Blocks except B7, B8, B9, B12	5	25.00	8	40.00	6	30.00	3	15.00	3	15.00	25	125.00
	Capacity building Programme															
17	Exposure Visits - within state	Nos.	0.4	All Blocks	14	5.60	16	6.40	19	7.60	17	6.80	18	7.20	84	33.60
18	Exposure Visits - outside state - 3 days	Nos.	0.48	All Blocks	14	6.72	12	5.76	11	5.28	19	9.12	17	8.16	73	35.04
19	Training on Market led Extension, Agmark grading&Food safety, post harvest technology, Supply Chain Management, Grading-sorting-packing, Market linkages &	Nos.	0.2	All Blocks	13	2.60	15	3.00	16	3.20	19	3.80	18	3.60	81	16.20

Sl. No.	Intervention	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Exports, Food processing and value addition at district level															
	Grand total					**260.76**		**244.88**		**430.00**		**246.06**		**269.90**		**1451.56**

B1-Sivaga ngai, B2- Kalayarkoil, B3- Manamadurai, B4- Thiruppuvanam, B5-Ilayangudi, B6- Sakkottai, B7-Kallal, B8-Devakottai, B9-Kannangudi, B10- thiruppathur, B11-Singampunari, B12-S.Pudur

4.6. 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 (All blocks)

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

Thermo hydrometer, Digital Moisture meter, Microscope, Working table, Working Chair, Air conditioner, Sample Racks, Geaser, Heater, Trolley for Carriages, Generator 30KV, Induction Stove, Fabricated Display Racks, Conductivity Meter, Dehuller/Scarifier, Seed Grinder, Blower, Hot Air oven, Incubator and Miscellaneous are required.

- Creation of infrastructure facilities in seed testing laboratories

A laboratory may be a completely separate building, or a part of a larger building housing a department. Regardless of how this space need is met a minimum of 1500 sq. ft. of working space should be provided for the laboratory analyzing about 10000 samples annually. The space provided should be divided into general work areas. These may be completely separate rooms or they may be portions of the same room. The areas to be considered include sample receiving, preparation, purity analysis, germination, seed storage, tags, supplies, mailing, general storage and office with a main objective to occupy large number of samples.

- Capacity building (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 to be given to the seed dealers on quality maintenance in storage, selling of seeds.

- Strengthening of communication and networking facilities (All blocks)

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

Expected outcome

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

Budget

The overall budget requirement for implementation of above interventions is **₹. 42.32 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 Seed and Organic Certification in Sivagangai District

(₹. in lakhs)

Sl. No.	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
I	**Strengthening of Seed Certification lab**															
1	Blower, Conductivity meter, Dehuller/Scarifier, Dehumidifier Air Conditioner, Digital moisture meter, Dunnage, Fabricated display Racks ,Geaser, Generator, Heater, Hot air oven, Humidifier, Incubator, Induction stove, Microscope, Moisture meter, Packing machine,R. O system, Sample racks, Seed Grinder,Sieve,Thermohydro meter,Dunnage,Trolley for carriages,Working chair,Working table, Miscellaneous,	All Blocks	No's	13.36	1	13.36	1	13.36	0	0.00	0	0.00	0	0.00	2	26.72
II	**Strengthening of communication and networking facilities**															
2	Computer accessories	All Blocks	No's	0.5	20	10.00	0	0.00	0	0.00	0	0.00	0	0.00	20	10.00
III	**Capacity Building**															
3	Training to seed grower for quality seed production	All Blocks	No's	0.2	0	0.00	5	1.00	5	1.00	5	1.00	5	1.00	20	4.00
4	Training to seed producers on seed certification procedures	All Blocks	No's	0.1	0	0.00	4	0.40	4	0.40	4	0.40	4	0.40	16	1.60
	Total					**23.36**		**14.76**		**1.40**		**1.40**		**1.40**		**42.32**

Devakottai – B1, Ilayangudi – B2, Kalaiyarkoil – B3, Kallal – B4, Kannangudi – B5, Manamadurai – B6, S.P.Pudur – B7, Sakkottai – B8, Singampunari – B9, Sivagangai – B10, Thiruppathur – B11, Thiruppuvanam – B12

4.7. Animal Husbandry

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

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

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

- ✓ Increasing the availability of fodder through field level interventions
- ✓ Increasing the availability of fodder by strengthening farm infrastructure
- ✓ Livestock breeding management
- ✓ Improving the livestock productivity
- ✓ Improving the service delivery at veterinary institutions
- ✓ Capacity building

Increasing the availability of fodder through field level interventions

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

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

- ✓ Establishment of vermicomposting unit (All blocks except Kalaiyarkoil, Kallal, Thiruppathur block)
- ✓ Distribution of Azolla trays (Manamadurai, S.P.Pudur, Sakkottai, Thiruppathur block)
- ✓ Fodder plot development (All blocks)
- ✓ Meikal land development (All blocks except few)
- ✓ Distribution of seedlings, sprinklers, grass cutter and raingun to the farmers (All blocks except few)
- ✓ Development of seed production plots (All blocks except few)

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 centres where best practices can be disseminated to the farmers. The following infrastructure facilities will strengthen the fodder availability such as

- ✓ Establishment of farm production cover (Sakkottai block)
- ✓ Construction of silo pit and overhead tanks (Sakkottai block)
- ✓ Establishment of feed mixing units (Sakkottai block)
- ✓ Installation of rain gun and sprinklers (Sakkottai block)
- ✓ Procurement of agri inputs (Sakkottai block)

Livestock breeding management

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

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

Livestock industry continues to demonstrate a beneficial impact on rural people by improving their income, employment and consumption and thereby acting as a potential tool in alleviating rural poverty. Artificial insemination (AI) has proven to be very effective for the improvement of the genetic potential of animals for higher production and there is no surprise why today AI is the back bone of all breeding programmes in

India. The replacement of unproductive and ageing animals in the herd and its expansion are very important to maintain the scale of economy of the farm. Augmentation of fertility in repeat breeders and sex-sorted semen are some of the modern scientific tools which have been proposed to be employed for effective breeding management to enhance the livestock fertility and productivity. The following interventions will help to improve livestock breeding management, such as

- ✓ CIDR (All blocks)
- ✓ Establishment and distribution of sex-sorted semen facility (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

- ✓ Distribution of sheep, goat, buffalo, piggery, poultry units (All blocks except Kannangudi, Sakkottai block)
- ✓ Establishment of modern poultry, rabbit , piggery, sheep, goat and bull shed (Sakkottai block)

Improving the service delivery at veterinary institutions

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

- ✓ Deep freezer facility for storage of vaccines and medicines (All blocks)

- ✓ Establishment of infrastructure facilities, disease diagnostic lab, mobile veterinary units, surgical theatres and ambulance facilities (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 (Sivagangai block)
- ✓ Conducting demonstrations camps and campaigns (All blocks)
- ✓ Creating awareness of livestock management to the farmers through training programmes (All blocks)

Budget

The major themes proposed in the plan for animal husbandry sector with a total budget out lay of **₹. 15399.03 Lakhs (Table 4.21).**

Implementing agency

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

Table 4.21 Budget requirement for Animal Husbandry Sector in Sivagangai 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
1	**Increasing the Availability of Fodder through Field level Interventions**															
2	Establishment of Vermicomposting unit (single bed)	Nos	0.05	All Blocks Except B3, B4, B11	350	17.50	310	15.50	310	15.50	310	15.50	310	15.50	1590	79.50
3	Fodder production to the farmers by Hydrophonic methods	Nos	0.1	B3, B6, B7	7	0.70	7	0.70	7	0.70	7	0.70	7	0.70	35	3.50
4	Distribution of Azolla trays	Nos	0.03	B6, B7, B8, B11	110	3.30	110	3.30	110	3.30	110	3.30	110	3.30	550	16.50
5	Distribution of Silage bags for conservation of fodder crops	Nos	0.005	All Blocks Except B1, B3, B8	233	1.17	233	1.17	233	1.17	233	1.17	233	1.17	1165	5.83
6	Fodder plot development	acre	0.05	All blocks	400	20.00	400	20.00	400	20.00	200	10.00	200	10.00	1600	80.00
7	Meikal land development (incl infrastructure development)	Nos	6	B5, B4, B2, B9, B10, B12	12	72.00	12	72.00	12	72.00	12	72.00	12	72.00	60	360.00
8	Distribution of Chaff Cutter to farmers	Nos	0.2	All Blocks	215	43.00	215	43.00	215	43.00	215	43.00	215	43.00	1075	215.00

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
9	Distribution of Grass Cutter to farmers	Nos	0.25	All Blocks Except B3, B4, B11	195	48.75	195	48.75	195	48.75	195	48.75	195	48.75	975	243.75
10	Development of Seed Production plots	Nos	0.25	B5, B4, B2, B9, B10, B12, B7	285	71.25	255	63.75	255	63.75	255	63.75	255	63.75	1305	326.25
11	Distribution of Raingun to Livestock farmers	Nos	0.25	B8	50	12.50	50	12.50	50	12.50	50	12.50	50	12.50	250	62.50
12	Distribution of sprinkler for fodder production	Nos	0.15	B8	50	7.50	50	7.50	50	7.50	50	7.50	50	7.50	250	37.50
13	**Increasing the Availability of Fodder by Strengthening Farm Infrastructure**															
14	Establishment of Vermicompost unit (10 beds) at Farms	Nos	4	B8	10	40.00	10	40.00	10	40.00	10	40.00	10	40.00	50	200.00
15	Erection of Transformers to improve irrigation facility in Govt.farm	Nos	30	B8	0	0.00	1	30.00	0	0.00	0	0.00	0	0.00	1	30.00
16	Establishment of Farm Protection Cover (Bio-security wall)	km	5	B8	0	0.00	20	100.00	0	0.00	0	0.00	0	0.00	20	100.00

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
17	Establishment of Feed mixing/ feed block units	Nos	25	B8	0	0.00	1	25.00	0	0.00	0	0.00	0	0.00	1	25.00
18	Construction of silo Pit for livestock farm	Nos	1	B8	5	5.00	4	4.00	4	4.00	4	4.00	4	4.00	21	21.00
19	Construction of Over Head Tanks/ GLR / Pre-fabricated tanks in farm	Nos	20	B8	0	0.00	2	40.00	0	0.00	0	0.00	0	0.00	2	40.00
20	Drip irrigation for livestock farms	acre	0.6	B8	50	30.00	50	30.00	50	30.00	50	30.00	50	30.00	250	150.00
21	Borewell for livestock farms	Nos	8	B8	2	16.00	2	16.00	2	16.00	2	16.00	2	16.00	10	80.00
22	Installation of Raingun in Govt.farm in cultivated areas	acre	0.4	B8	20	8.00	20	8.00	20	8.00	20	8.00	20	8.00	100	40.00
23	Installation of Sprinkler system in fodder cultivated areas in Govt.farm	acre	0.4	B8	10	4.00	10	4.00	10	4.00	10	4.00	10	4.00	50	20.00
24	Procurement of Agri inputs for Farms	acre	0.15	B8	80	12.00	80	12.00	80	12.00	80	12.00	80	12.00	400	60.00
25	Procurement of Agricultural implements (tractor, trailers, harvesters, ploughs, chaff	Pack	50	B8	1	50.00	1	50.00	1	50.00	1	50.00	1	50.00	5	250.00

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	cutter, grass cutter etc)															
26	**Livestock Breeding Management**															
27	CIDR (Controlled Internal Drug Release) for increasing Fertility in Cattle	Nos	0.01	All Blocks	3900	39.00	3800	38.00	3800	38.00	3800	38.00	3800	38.00	19100	191.00
28	Distribution of sex sorted semen to veterinary institution	Nos	0.015	All Blocks	3350	50.25	3200	48.00	3100	46.50	3100	46.50	3100	46.50	15850	237.75
29	Induction of new Genetic Pool	Nos	0.4	B8	50	20.00	50	20.00	50	20.00	20	8.00	20	8.00	190	76.00
30	**Livestock Health**															
31	Animal Quarantine Facility in Govt.farm to prevent disease outbreak	Nos	50	B8	1	50.00	0	0.00	0	0.00	0	0.00	0	0.00	1	50.00
32	**Improving the Livestock Productivity**															
33	Distribution of Sheep/Goat units -semi intensive system	Nos	0.6	All Blocks Except B5, B8	810	486.00	810	486.00	747	448.20	810	486.00	810	486.00	3987	2392.20

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
34	Distribution of Buffalo units(5 Buffaloes)	Nos	4.5	All Blocks	203	913.50	203	913.50	203	913.50	203	913.50	203	913.50	1015	4567.50
35	Integrated farming (Goat+Cattle+Fish+Agriculture /Horticulture)	Unit	2	All Blocks	5	10.00	5	10.00	5	10.00	5	10.00	5	10.00	25	50.00
36	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
37	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
38	Milking Mechine	Nos	0.5	B8	10	5.00	0	0.00	20	10.00	0	0.00	20	10.00	50	25.00
39	Distribution of Piggery units (fattening-5 Nos)	Nos	1.25	B3, B12	19	23.75	19	23.75	19	23.75	19	23.75	19	23.75	95	118.75
40	Establishment of Modern Poultry Shed	Nos	25	B8	1	25.00	1	25.00	1	25.00	1	25.00	1	25.00	5	125.00
41	Establishment of Modern Hatchery Complex	Nos	300	B8	0	0.00	0	0.00	1	300.00	0	0.00	0	0.00	1	300.00
42	Establishment of Modern Dairy/ Bull Shed	Nos	150	B8	1	150.00	0	0.00	1	150.00	0	0.00	1	150.00	3	450.00
43	Establishment of Modern Piggery Shed	Nos	150	B8	1	150.00	0	0.00	1	150.00	0	0.00	1	150.00	3	450.00

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
44	Establishment of Modern Sheep/Goat Shed	Nos	50	B8	1	50.00	0	0.00	1	50.00	0	0.00	2	100.00	4	200.00
45	**Improving the Service Delivery at Veterinary Institutions**															
46	Deep freezer facility for Storage of vaccines and Medicines	Nos	10	All Blocks	0	0.00	0	0.00	12	120.00	0	0.00	0	0.00	12	120.00
47	Establishment of Infrastructure facilities for Veterinary Institutions	Nos	30	All Blocks	12	360.00	11	330.00	9	270.00	7	210.00	8	240.00	47	1410.00
48	Establishment of Mobile Disease Diagnostic Labs	Nos	20	All Blocks	8	160.00	3	60.00	0	0.00	1	20.00	0	0.00	12	240.00
49	Establishment of Mobile Veterinary Units	Nos	10	All Blocks	11	110.00	1	10.00	0	0.00	0	0.00	0	0.00	12	120.00
50	Establishment of surgical theatres at veterinary institution	Nos	30	All Blocks	2	60.00	3	90.00	3	90.00	2	60.00	2	60.00	12	360.00
51	Providing solar lighting panels at veterinary	Nos	1	All Blocks	37	37.00	33	33.00	24	24.00	16	16.00	0	0.00	110	110.00

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	institution															
52	Package of Modern Veterinary Diagnostic Aids to Veterinary Institutions such as Computerised X rays, Ultrasound, Diathermy etc.	Nos	30	All Blocks	2	60.00	3	90.00	3	90.00	2	60.00	2	60.00	12	360.00
53	Establishment of Ambulance facility for animals	Nos	80	B10	1	80.00	1	80.00	0	0.00	0	0.00	0	0.00	2	160.00
54	**Livestock Management**															
55	Conservation of Indigenous breeds	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
56	Livestock Shandy improvement works	Pack	10	All Blocks	1	10.00	1	10.00	1	10.00	1	10.00	1	10.00	5	50.00
57	**Capacity Building**															
58	Establishment of Farmers training Centre	Nos	200	B10	0	0.00	1	200.00	0	0.00	0	0.00	0	0.00	1	200.00
59	Conducting Demonstrations, Camps and Campaigns	Nos	0.1	All Blocks	260	26.00	260	26.00	260	26.00	260	26.00	260	26.00	1300	130.00

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
60	Creating awareness of livestock management to the farmers through Training Programmes	Nos	0.1	All Blocks	335	33.50	335	33.50	335	33.50	335	33.50	335	33.50	1675	167.50
	Grand total					**3451.67**		**3226.92**		**3353.62**		**2481.42**		**2885.00**		**15399.03**

Devakottai – B1, Ilayangudi – B2, Kalaiyarkoil – B3, Kallal – B4, Kannangudi – B5, Manamadurai – B6, S.P.Pudur – B7, Sakkottai – B8, Singampunari – B9, Sivagangai – B10, Thiruppathur – B11, Thiruppuvanam – B12

4.8. Animal Science Research

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

Project components

The following infrastructure facilities will strengthen the fodder availability such as

- Genetic conservation centres (All blocks)
- Farm animal waste management (All blocks)
- Livestock conservation centre (All blocks)

Budget

The major themes proposed in the plan for animal science research with a total budget out lay of **₹. 1820.90 lakhs (Table 4.22).**

Implementing agency

The projects proposed will be implemented by TANUVAS.

Table 4.22. Budget requirement for Animal Science Research in Sivagangai District (₹. in lakhs)

Sl. No.	Interventions	Blocks Covered	Unit	Unit Cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
I	**Infrastructure and Assets**															
1	Genetic Conservation Centres	All Blocks	No	168.25	1	168.25	1	168.25	1	168.25	1	168.25	1	168.25	5	841.25
2	Farm animal waste management	All Blocks	No	50	2	100.00	2	100.00	2	100.00	2	100.00	1	50.00	9	450.00
3	Livestock conservation centre	All Blocks	Nos	105.93	1	105.93	1	105.93	1	105.93	1	105.93	1	105.93	5	529.65
	Grand total					**374.18**		**374.18**		**374.18**		**374.18**		**324.18**		**1820.90**

Devakottai – B1, Ilayangudi – B2, Kalaiyarkoil – B3, Kallal – B4, Kannangudi – B5, Manamadurai – B6, S.P.Pudur – B7, Sakkottai – B8, Singampunari – B9, Sivagangai – B10, Thiruppathur – B11, Thiruppuvanam – B12

4.9. Dairy Development

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

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

Strengthening of milk storages and processing units

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

The major interventions are,

- ✓ Milk storage tanks of various capacities
- ✓ Milk tankers
- ✓ Milk pumps
- ✓ Processing equipment’s
- ✓ Pasteurizers
- ✓ Heaters and chillers

- ✓ Washer and conveyors
- ✓ Pipes and fittings
- ✓ Cleaning equipment's
- ✓ Electrical installations (UPS, generators, stabilizers, control panel)

Enhancing milk production and milk processing units

The quality of animals is critical in determining its milk productivity and hence overall production. Currently, low productivity per animal hinders development of the dairy sector. Despite being the world's largest milk producer, India's productivity per animal is very low, at 987 kg per lactation, compared with the global average of 2038 kg per lactation. The low productivity is a result of ineffective cattle and buffalo breeding programmes, limited extension and management on dairy enterprise development, traditional feeding practices that are not based on scientific feeding methods, and limited availability and affordability of quality feed and fodder. Animal health and breeding services provision, veterinary infrastructure development and vaccinations are the responsibility of the state government. These services have traditionally been provided for free or at a very subsidized rate but in the past few years it has been payable. state livestock development agencies are being set up as autonomous bodies to offer services in animal breeding in the form of procurement, production and distribution of breeding inputs (such as semen and liquid nitrogen), training and promotional activities. Despite these initiatives, the availability of services remains limited and extension activities in dairy management are woefully lacking. Let to get a better improvement in milk production than before the following inputs have been suggested (All blocks).

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

Capacity building

India is the largest milk producer in the world with an annual production of over 155.4 metric tonnes of milk, yet the sector faces numerous issues. One of the major challenges facing the dairy sector is the growing gap between milk supply and demand. Another major challenge arises from the fact that more than 92 per cent of the animals are owned by smallholders who had little ownership of land to manage them. The small farmers do not have sufficient resources and lack training in dairy sector that leads to poor animal health and low milk yield. Furthermore, the small farmers lack knowledge of modern breeding practices. To make the farmers as scholars in particular thing some trainings and camps has to be conducted. To make sure this the following intervention has been proposed in all blocks of Sivagangai district.

- ✓ Training of personnel of MPCS, Union and federation
- ✓ Infertility camps

Marketing structures

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

- ✓ Parlour structure
- ✓ Milk product storage cabinets
- ✓ Product billing system

Quality control

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

- ✓ Adulteration detection equipment's
- ✓ Milk testing equipment and laboratory

Processing and value addition

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

- ✓ Skim milk powder plant
- ✓ Dairy processing plants
- ✓ Water and effluent treatment plants
- ✓ Steam raisning plant
- ✓ Fat handling and other dairy equipment's

Development for dairy sector

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

1. Construction of dairy farm and skim milk powder plant
2. BMC building
3. Cattle feed plants

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

Budget

An outlay of **₹. 7443.75 lakhs** is proposed to fulfill the aforementioned interventions for five years. This foresighted implementation of developmental schemes in Dairy Sector has enabled to increase the per capita income of rural households in backward Districts. The details of budget requirement for each intervention across the blocks are shown in **Table 4.23**.

Implementing agency

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

Table 4.23. Budget requirement for Dairy Development Sector in Sivagangai District

(₹. 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
	Engineering section															
1	Electrical installation like Tranformemr, UPS, Stabilisers, Control Panel MCC etc.,	All blocks	No.	25	1	25.00	1	25.00	1	25.00	1	25.00	1	25.00	5	125.00
2	Milk Storage Tanks of various capacities	All blocks	No.	15	2	30.00	2	30.00	2	30.00	2	30.00	2	30.00	10	150.00
3	Tub washer, Canwashers, Crate conveyor systems.	All blocks	No.	10	1	10.00	1	10.00	1	10.00	1	10.00	1	10.00	5	50.00
4	SS pipes and fittings	All blocks	No.	5	1	5.00	1	5.00	1	5.00	1	5.00	1	5.00	5	25.00
5	Solar system for water heating	All blocks	No.	2	2	4.00	2	4.00	2	4.00	2	4.00	2	4.00	10	20.00
6	Packing Machineries for milk, Butter, Ghee, SMP and Other Milk products	All blocks	No.	18	2	36.00	2	36.00	2	36.00	2	36.00	2	36.00	10	180.00
7	Plate Heat type Chillers and pasteurizers	All blocks	No.	10	2	20.00	2	20.00	2	20.00	2	20.00	2	20.00	10	100.00
8	Milk Pumps of Vaious capacities	All blocks	No.	0.5	8	4.00	8	4.00	8	4.00	8	4.00	8	4.00	40	20.00
9	Generator of various capacities	All blocks	No.	20	1	20.00	1	20.00	1	20.00	0	0.00	0	0.00	3	60.00
10	Curd processing equipments	All blocks	No.	50	0	0.00	1	50.00	0	0.00	0	0.00	0	0.00	1	50.00
11	Cleaning In Place equipments with accessories	All blocks	No.	75	0	0.00	1	75.00	0	0.00	0	0.00	0	0.00	1	75.00
12	**Procurement and Input**															
13	Veterinary Medicine	All blocks	No.	2	3	6.00	3	6.00	3	6.00	3	6.00	3	6.00	15	30.00

Sl. No.	Interventions	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
14	Two wheeler for AI technician	All blocks	No.	0.5	5	2.50	5	2.50	5	2.50	5	2.50	5	2.50	25	12.50
15	Computer system with accessories	All blocks	No.	0.5	5	2.50	5	2.50	5	2.50	5	2.50	5	2.50	25	12.50
16	Fodder seed materials	All blocks	No.	0.25	45	11.25	45	11.25	45	11.25	30	7.50	40	10.00	205	51.25
17	Fodder development equipments like chaff cutter, Mower etc.,	All blocks	No.	0.2	45	9.00	45	9.00	45	9.00	30	6.00	40	8.00	205	41.00
18	Bulk Milk coolers of Various capacities	All blocks	No.	15	3	45.00	3	45.00	3	45.00	3	45.00	3	45.00	15	225.00
19	Milk cans	All blocks	No.	0.035	500	17.50	500	17.50	500	17.50	500	17.50	500	17.50	2500	87.50
20	Electronic weighing scales of various capacities.	All blocks	No.	0.3	30	9.00	30	9.00	30	9.00	30	9.00	30	9.00	150	45.00
21	Electronic milk testing equipments	All blocks	No.	1.25	30	37.50	30	37.50	30	37.50	30	37.50	30	37.50	150	187.50
22	Milking machine	All blocks	No.	0.8	30	24.00	30	24.00	30	24.00	30	24.00	30	24.00	150	120.00
23	Cow shed	All blocks	No.	5	25	125.00	25	125.00	25	125.00	25	125.00	25	125.00	125	625.00
24	Society Buildings	All blocks	No.	20	5	100.00	5	100.00	5	100.00	5	100.00	5	100.00	25	500.00
25	Cryogenic containers	All blocks	No.	0.35	20	7.00	20	7.00	20	7.00	20	7.00	20	7.00	100	35.00
26	Equipments for Artificial Insemination	All blocks	No.	0.5	5	2.50	5	2.50	5	2.50	5	2.50	5	2.50	25	12.50
27	**Capacity building**															
28	Training of personnel of MPCS, Union and Federation.	All blocks	No.	0.05	200	10.00	200	10.00	200	10.00	200	10.00	200	10.00	1000	50.00
29	Infertility Camps	All blocks	No.	0.2	50	10.00	50	10.00	50	10.00	50	10.00	50	10.00	250	50.00
30	**Marketing**															
31	Parlour structures	All blocks	No.	5	30	150.00	30	150.00	30	150.00	30	150.00	30	150.00	150	750.00
32	Milk product storage cabinets	All blocks	No.	0.3	200	60.00	200	60.00	200	60.00	200	60.00	200	60.00	1000	300.00

Sl. No.	Interventions	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
33	Product Billing systems	All blocks	No.	0.3	20	6.00	20	6.00	20	6.00	20	6.00	20	6.00	100	30.00
34	**Quality control**															
35	Adulteration detection equipments	All blocks	No.	4	2	8.00	1	4.00	1	4.00	1	4.00	1	4.00	6	24.00
36	Milk testing equipment and Laboratory.	All blocks	No.	5	1	5.00	1	5.00	1	5.00	1	5.00	1	5.00	5	25.00
37	**Processing**															
38	Refrigeration Plants	All blocks	No.	500	0	0.00	1	500.00	0	0.00	0	0.00	0	0.00	1	500.00
39	Water Treatment Plants. Reverse Osmosis plant	All blocks	No.	100	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	1	100.00
40	Effluement treatment plant	All blocks	No.	100	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	1	100.00
41	Steam raisning plant with accessories	All blocks	No.	100	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	1	100.00
42	Fat handling equipments	All blocks	No.	200	0	0.00	1	200.00	0	0.00	0	0.00	0	0.00	1	200.00
43	Dairy equipments	All blocks	No.	50	1	50.00	1	50.00	1	50.00	1	50.00	1	50.00	5	250.00
44	**Civil work Infrastructure**															
45	Construction of Dairy	All blocks	No.	1500	0	0.00	1	1500.00	0	0.00	0	0.00	0	0.00	1	1500.00
46	BMC buildings	All blocks	No.	15	3	45.00	3	45.00	3	45.00	3	45.00	3	45.00	15	225.00
47	Ware house for Dairy products	All blocks	No.	200	0	0.00	1	200.00	0	0.00	0	0.00	0	0.00	1	200.00
48	Ware house for Dairy consumables	All blocks	No.	200	0	0.00	0	0.00	1	200.00	0	0.00	0	0.00	1	200.00
	Grand total		No.			**896.75**		**3717.75**		**1092.75**		**866.00**		**870.50**		**7443.75**

Devakottai – B1, Ilayangudi – B2, Kalaiyarkoil – B3, Kallal – B4, Kannangudi – B5, Manamadurai – B6, S.P.Pudur – B7, Sakkottai – B8, Singampunari – B9, Sivagangai – B10, Thiruppathur – B11, Thiruppuvanam – B12

4.10. Fisheries

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. 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. Paradigm shifts in terms of increasing contributions from inland sector and further from aquaculture are significat over the years. With high growth rates, the different facets of marine fisheries, coastal aquaculture, inland fisheries, fresh water aquaculture, cold water fisheries to food, health, economy, exports, employment and tourism of the country.

Enhancement of fisheries production

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

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

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

In the inland fisheries sector, aquaculture is poised to play a pivotal role in increasing fish production, ensuring food security and enhancing growth of the State's economy. To maximize fish production from an unit area and to generate maximum income to the fish farmers, the Government has initiated innovative approaches such as stocking of fast growing fish species in the short seasonal water bodies, integrating aquaculture in the existing irrigation systems / rain water harvesting systems, brood stock development to produce quality fish fingerlings, promotion of fish culture in farm ponds and introduction of cage culture in reservoirs etc. With concerted efforts to mobilize farmers to adopt fish farming, application of appropriate technologies for sustainable fish farming and fish seed production and availability of institutional finance, it would be possible to bring in substantial hikes in the annual fish production from the aquaculture sector within a span of 5 years. Hence in this district it suggested to implement the following intervention to enhance the production and growth of fisheries with budget cost of ₹. 29.36 lakhs.

The interventions are

- Propagation of Fish Culture in Multi-purpose farm ponds in Tamil Nadu (Ilayangudi, Kannangudi, Manamadurai, Sakkottai, Singampunari, Thiruppuvanam blocks)
- Promotion of Ornamental fish culture (Manamadurai, S.P.Pudur, Sakkottai, Singampunari, Thiruppuvanam block)
- Introduction of short seasonal fish species in existing farm ponds (All blocks except S.P.Pudur, Singampunari, Thiruppathur, Thiruppuvanam block)
- Enhancement of fish production in irrigation tanks and panchayat tanks by stocking fish seeds (All blocks except Ilayangudi, Singampunari block)

Infrastructure and assets

Fish Farming is an age old activity and in practice from ancient times. The successful fish culture requires ploughing of pond, addition of manure, stocking of fish seed; eradication of unwanted aquatic plants and animals, watering the pond; harvesting

the crop and marketing of the produce. The fish culture technologies and economics are simple and understandable to the fish farmers. Also, the fishery wealth in the inshore waters is being overexploited due to excessive fishing pressure on the resources. Artificial reefs help in augmenting the productivity of the marine ecosystem. Artificial reefs act as habitats to marine aquatic organisms enhance the fish production through increased breeding activity and survival of young ones and act as a barrier for bottom trawling operations.

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Capacity Building

Effective extension support is essential for the promotion of Aquaculture in freshwater and brackish water areas. It is necessary to establish the information centres/data dissemination centres in Fishermen villages, animation camps in fisheries villages, seminars, exhibitions and workshop, and awareness centres for linking the fishing villages, marketing centres and the district offices. Hence in this district it is necessary to give training to fish farmers and organization of fish exhibitions with budget of cost of ₹. 18.90 lakhs (All blocks except few).

Budget

The budget requirement for fulfilling the above interventions is **₹. 87.63 lakhs (Table 4.24).**

Implementing agency

Department of Fisheries will be implementing the project

Table 4.24. Budget Requirement for Fisheries in Sivagangai District **(₹. 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
	Enhancement of fisheries															
1	Propagation of Fish Culture in Multi-purpose farm ponds in Tamil Nadu	Ilayangudi, Kannangudi, Manamadurai, Sakkottai , Singampunari, Thiruppuvanam	1 ha	0.23	1	0.23	2	0.46	2	0.35	1	0.23	2	0.35	7	1.61
2	Promotion of Ornamental fish culture	Manamadurai, S.Pudur, Sakkottai, Singampunari, Thiruppuvanam	1	3	0	0.00	2	6.00	1	3.00	1	3.00	1	3.00	5	15.00
3	Introduction of short seasonal fish species in existing farm ponds	All Blocks Except S.Pudur, Singampunari, Thiruppathur, Thiruppuvanam	1 ha	0.79	2	1.19	2	1.58	1	0.40	1	0.79	1	0.40	6	4.35
4	Enhancement of Fish production in irrigation tanks and Panchayat tanks by stocking fish seeds	All Blocks Except Ilayangudi, Singampunari	1 ha	0.04	30	1.20	40	1.60	40	1.60	60	2.40	40	1.60	210	8.40
	Creation of infrastructure facilities															
5	Establishment of fish culture ponds and provision of inputs	All Blocks Except Kannangudi, Manamadurai, S.Pudur,	1 ha	4.5	1	4.50	2	9.00	2	6.75	3	14.63	1	4.50	9	39.38

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
		Singampunari														
	Capacity building programme															
6	Exposure visit to farmers to other states	Devakottai,Ilayan gudi, Kalaiyarkoil, Manamadurai, S.Pudur, Singampunari, Thiruppuvanam	1 batch	1.2	2	2.40	2	2.40	1	1.20	2	2.40	0	0.00	7	8.40
7	Training to fish farmers	All Blocks Except Devakottai	1 batch	0.75	2	1.50	4	3.00	5	3.75	2	1.50	1	0.75	14	10.50
	Grand total					**11.02**		**24.04**		**17.04**		**24.95**		**10.59**		**87.63**

4.11. Fisheries Research

Establishment of marine cage system with feeding support system will be helpful to develop and maintain the broodstock needed for the hatchery. Establishing essential facilities in the center like road formation, compound formation, water supply systems etc has to be provided for effectively functioning the centre. Strengthening the larval rearing system with Re-circulatory Units needs to be enhanced to provide adequate seed to the farmers. Creation of ornamental broodbank and supply center will help to develop the marine ornamental fish rearing in a sustainable manner. It will be assist the farmers to stock the disease free stock and regularly monitor the water quality. It helps to document the resource and disseminate the information to the locals. Alternate livelihood option will be created based on ecotourism and fishing. Initiative will be taken to create livelihood option by protecting the fisheries habitat through Fish Aggregation sites and organized line fishing or ecofriendly fishing practice. This will help to develop the complex into a full-fledged Institute to offer course in Mariculture/resource conservation and management.

Project components

- Awareness campaign on health beneficial attributes of fish (Sivagangai block)
- Production of short films on nutritive value of fish and screening in theatres and television channels (Sivagangai block)
- Supply of preserved ready to eat and ready to cook fish products through public distribution systems (Sivagangai block)
- Supply of fish and fish products in mid-day meal programme (Sivagangai block)
- Supply chain management to promote consumption of farmed freshwater fishes (Sivagangai block)

Budget

The budget requirement for fulfilling the above interventions is **₹. 141.60 lakhs (Table 4.25)**.

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 4.25. Budget Requirement for Fisheries Research in Sivagangai District

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
A	**Enhancement of per capita consumption of fish**														
1	Awareness campaign on health beneficial attributes of fish	0.005	Sivagangai	52	0.26	52	0.26	52	0.26	52	0.26	52	0.26	260	1.30
2	Production of short films on nutritive value of fish and screening in theatres and television channels	50	Sivagangai	0	0.00	1	50.00	0	0.00	0	0.00	0	0.00	1	50.00
B	**Ensuring nutritional security through fish and fishery products**														
3	supply of preserved ready to eat and ready to cook fish products through public distribution sytems	12.9	Sivagangai	0	0.00	0	0.00	1	12.90	0	0.00	0	0.00	1	12.90
4	Supply of fish and fish products in mid day meal programme	12.9	Sivagangai	0	0.00	1	12.90	0	0.00	0	0.00	0	0.00	1	12.90
5	Supply chain management to promote consumption of farmed freshwater fishes	64.5	Sivagangai	1	64.50	0	0.00	0	0.00	0	0.00	0	0.00	1	64.50
	Grand total				**64.76**		**63.16**		**13.16**		**0.26**		**0.26**		**141.60**

4.12. Public Works Department

Among the irrigation sources of Sivaganagai district, tank ranked first with a proportion of 78.24 per cent of the irrigated area followed by open wells with 15.26 per cent of the irrigated area. Tube wells and supplementary wells were the other sources. There are totally 4966 tanks of which 1937 nos. are present in Thiruppathur block and 1163 nos. in Sivagangai block. The source of the water for tanks is only from the monsoon rains. The livelihood of the people in this basin depends on agriculture only. Most of the canals and tanks are silted and bushes occupied major part of the tanks and canals, which are major source of flow water for tanks during the rainy period, there by storage capacity of the tank is very much reduced. Hence, to raise the water table level, construction of check dams, anicuts, bed dams and dividing dams need to be taken up in canals to increase the storage capacity of the tanks and there by crop cultivation area in tank ayacut area may be increased.

Project components

- Construction of check dams across the rivers (Kalaiyarkoil, Kallal, Manamadurai, Sakkottai, Sivagangai, Thiruppathur block)
- Construction of anicut in different rivers (Kallal, Thiruppathur block)
- Construction of a bed dam across in different rivers (Devakottai, Kannangudi, Manamadurai, Sakkottai, Thiruppathur block)
- Construction of dividing dams to control the overflow of water (Devakottai, Kannangudi, Sakkottai, Thiruppathur block)
- Formation of new branch canal from Subbankal to feed Vadakku Chandanur tank and other tanks in Manamadurai and Ilayankudi taluk (Manamadurai, Ilayankudi block)

Budget

The budget requirement for fulfilling the above interventions is **₹. 13254.00 Lakhs (Table 4.26)**.

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 Water Resources Development will be implementing the project.

Table 4.26. Budget Requirement for PWD in Sivagangai District **(₹. 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	Construction of anicut across Palar river to feed Perumi tank in Thiruvudayarpatti village of Thiruppathur taluk	Thiruppathur	Ha	1.56	240	376.00	0	0.00	0	0.00	0	0.00	0	0.00	240	376.00
2	Construction of check dam across Uppar river near Periyakottai Village in Sivagangai Taluk	Mana-madurai	Ha	8.59	24	203.00	0	0.00	0	0.00	0	0.00	0	0.00	24	203.00
3	Construction of check dam across Uppar river near Thamaraki vadakoor in Sivagangai Taluk	Sivagangai	Ha	8.59	22	187.00	0	0.00	0	0.00	0	0.00	0	0.00	22	187.00
4	Construction of check dam across Nattar river near Mudikarai village in Kalayarkoil Taluk	Kalayarkoil	Ha	1.71	111	190.00	0	0.00	0	0.00	0	0.00	0	0.00	111	190.00
5	Construction of check dam across Uppar river near Vellur Village in Manamadurai Taluk	Mana-madurai	Ha	3.36	20	68.00	0	0.00	0	0.00	0	0.00	0	0.00	20	68.00

Sl. No	Interventions	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
6	Construction of an anicut across Manimuthar river in S.R.Pattinam village to feed S.R.Pattinam tank and other tanks in Karaikudi Taluk	Kallal	Ha	7.08	177	1250.00	0	0.00	0	0.00	0	0.00	0	0.00	177	1250.00
7	Construction of a bed dam across Manimuthar river to feed Tirumanavayal tank and other tanks in Devakottai Taluk .	Devakottai	Ha	2.83	166	470.00	0	0.00	0	0.00	0	0.00	0	0.00	166	470.00
8	Construction of dividing dam across Nagaramangalam tank surplus course to feed Kulamangalam tank in Devakottai Taluk .	Devakottai	Ha	3.05	44	135.00	0	0.00	0	0.00	0	0.00	0	0.00	44	135.00
9	Construction of a Bed dam across Kottakudi river to feed Kalathur tank and other tanks in Devakottai Taluk .	Kannangudi	Ha	1.42	251	357.00	0	0.00	0	0.00	0	0.00	0	0.00	251	357.00
10	Construction of Bed dam across Sarugani river to	Devakottai	Ha	5.31	42	223.00	0	0.00	0	0.00	0	0.00	0	0.00	42	223.00

Sl. No	Interventions	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	feed S. Pudukottai tank and other tanks in Devakottai Taluk .															
11	Construction of anicut across Palar river to feed Keelakanmoi tank in Kirungakottai village of Thiruppathur taluk.	Thiruppathur	Ha	3.26	129	420.00	0	0.00	0	0.00	0	0.00	0	0.00	129	420.00
12	Construction of check dam across Palar river near Kalapur village of Thiruppathur taluk.	Thiruppathur	Ha	1.87	90	168.00	0	0.00	0	0.00	0	0.00	0	0.00	90	168.00
13	Construction of bed dam across Vaigai river to feed Keelapasalai tank in Manamadurai Taluk of Sivagangai Dist.	Mana-madurai	Ha	3.09	0	0.00	468	1446.00	0	0.00	0	0.00	0	0.00	468	1446.00
14	Construction of Dividing dam across Thenar river to feed Nattavali and Siruvali tanks in Devakottai Taluk .	Kannankudi	Ha	7.65	0	0.00	23	176.00	0	0.00	0	0.00	0	0.00	23	176.00
15	Construction of a Bed dam across Thenar river to	Sakkottai	Ha	8.97	0	0.00	26	231.00	0	0.00	0	0.00	0	0.00	26	231.00

Sl. No	Interventions	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	feed Uyyankondan tank and other tanks in Karaikudi Taluk .															
16	Construction of check dam across Manimuthar river in Sevarakottai village of Karaikudi Taluk.	Kallal	Ha	7.08	0	0.00	30	209.00	0	0.00	0	0.00	0	0.00	30	209.00
17	Construction of anicut across Palar river in Karuppur village of Thiruppathur .	Thiruppathur	Ha	1.04	0	0.00	295	308.00	0	0.00	0	0.00	0	0.00	295	308.00
18	Construction of check dam across Manimuthar river near Kallipattu village in Thiruppathur Taluk .	Thiruppathur	Ha	19.15	0	0.00	0	0.00	22	417.00	0	0.00	0	0.00	22	417.00
19	Construction of Check dam across Ariyakudi tank surplus course in Ariyakudi village of Karaikudi Taluk .	Sakkottai	Ha	8.29	0	0.00	0	0.00	18	150.00	0	0.00	0	0.00	18	150.00
20	Construction of check dam across Mathur tank surplus course in Mathur village of	Sakkottai	Ha	8.47	0	0.00	0	0.00	21	179.00	0	0.00	0	0.00	21	179.00

Sl. No	Interventions	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Karaikudi Taluk.															
21	Construction of check dam across Virusuliyar river near Valayapatti village of Thiruppathur taluk .	Thiruppathur	Ha	4.74	0	0.00	0	0.00	73	345.00	0	0.00	0	0.00	73	345.00
22	Construction of anicut across Palar river to feed Kottaiyiruppu and Nattarmangalam tanks in Mathavarayanpatti village of Thiruppathur taluk.	Thiruppathur	Ha	2.67	0	0.00	0	0.00	190	506.00	0	0.00	0	0.00	190	506.00
23	Construction of check dam across Manimuthar river near Keelakottai village in Sivagangai Taluk .	Kalayarkoil	Ha	35.71	0	0.00	0	0.00	0	0.00	11	381.00	0	0.00	11	381.00
24	Construction of check dam across Kooraiyar at Kannankottai village of Devakottai Taluk.	Kallal	Ha	9.88	0	0.00	0	0.00	0	0.00	17	168.00	0	0.00	17	168.00
25	Construction of check dam across Pirambuvayal	Sakkottai	Ha	6.05	0	0.00	0	0.00	0	0.00	22	132.00	0	0.00	22	132.00

Sl. No	Interventions	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	tank surplus course in Pirambuvayal village of Karaikudi Taluk .															
26	Construction of dividing dam across Sunnampuruppu surplus course to feed Thanneer Kanmai in T. Viravanpatti village of Thiruppathur taluk.	Thiruppathur	Ha	0.26	0	0.00	0	0.00	0	0.00	547	144.00	0	0.00	547	144.00
27	Construction of anicut across Palar river to feed Managudi and Kaaraiyur tanks in Kaaraiyur village of Thiruppathur taluk .	Thiruppathur	Ha	1.90	0	0.00	0	0.00	0	0.00	252	480.00	0	0.00	252	480.00
28	Construction of check dam across Manimuthar river near Kattapattu village in Sivagangai Taluk	Kalayarkoil	Ha	21.23	0	0.00	0	0.00	0	0.00	0	0.00	21	450.00	21	450.00
29	Construction of check dam across Periyakottai tank surplus course in Periyakottai village of	Sakkottai	Ha	5.67	0	0.00	0	0.00	0	0.00	0	0.00	29	163.00	29	163.00

Sl. No	Interventions	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Karaikudi Taluk.															
30	Construction of check dam across Illupakudi tank surplus course in Illupakudi village of Karaikudi Taluk .	Sakkottai	Ha	4.71	0	0.00	0	0.00	0	0.00	0	0.00	33	157.00	33	157.00
31	Construction of anicut across Palar river to feed Velankudi tanks in k.vairavanpatti village of Thiruppathur taluk .	Thiruppathur	Ha	5.70	0	0.00	0	0.00	0	0.00	0	0.00	55	315.00	55	315.00
32	Construction of bed dam across Palar river Ranasingapuram village of Thiruppathur taluk.	Thiruppathur	Ha	1.29	0	0.00	0	0.00	0	0.00	0	0.00	195	250.00	195	250.00
33	Formation of new branch canal from Subbankal to feed Vadakku Chandanur tank and other tanks in Manamadurai & Ilayankudi taluk in Sivagangai District.	Mana-madurai & Illayankudi	Ha	0.28	0	0.00	0	0.00	0	0.00	0	0.00	1987	550.00	1987	550.00

Sl. No	Interventions	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
34	Construction of check dam across Manimuthar river near Kollampatti Village in Thiruppathur Taluk.	Thiruppathur	Ha	34.18	0	0.00	0	0.00	0	0.00	0	0.00	11	375.00	11	375.00
35	Formation of new branch canal from Subbankal to feed Vadakku Chandanur tank and other tanks in Manamadurai & Ilayankudi taluk .	Mana-madurai & Illayankudi	Ha	0.42	0	0.00	0	0.00	0	0.00	0	0.00	1987	830.00	1987	830.00
36	Construction of check dam across Kundrakudi tank surplus course in Kundrakudi village of Karaikudi Taluk .	Sakkottai	Ha	4.44	0	0.00	0	0.00	0	0.00	0	0.00	38	169.00	38	169.00
37	Construction of bed dam across Kottakudi river to feed Palavayal tank and other tanks in Karaikudi Taluk .	Sakkottai	Ha	9.13	0	0.00	0	0.00	0	0.00	0	0.00	30	273.00	30	273.00
38	Construction of check dam across Virusuliyar river near Nerkuppai village of Thiruppathur taluk.	Thiruppathur	Ha	3.57	0	0.00	0	0.00	0	0.00	0	0.00	55	195.00	55	195.00

Sl. No	Interventions	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
39	Construction of check dam across Virusuliyar river near Tuvar village of Thiruppathur taluk.	Thiruppathur	Ha	4.11	0	0.00	0	0.00	0	0.00	0	0.00	51	208.00	51	208.00
	Grand total					**4047.00**		**2370.00**		**1597.00**		**1305.00**		**3935.00**		**13254.00**

4.13. Cooperatives

Agricultural cooperatives or farmers' cooperatives are cooperatives where farmers pool their resources for mutual economic benefit. Agricultural cooperatives are broadly divided into agricultural service cooperatives, which provide various services to their individual farming members, and agricultural production cooperatives, where production resources such as land or machinery are pooled and members farm jointly. Agricultural supply cooperatives aggregate purchases, storage, and distribution of farm inputs for their members. By taking advantage of volume discounts and utilizing other economies of scale, supply cooperatives bring down members' costs. Supply cooperatives may provide seeds, fertilizers, chemicals, fuel, and farm machinery. Some supply cooperatives also operate machinery pools that provide mechanical field services (*e.g.,* plowing, harvesting) to their members. Agricultural marketing cooperatives are often formed to promote specific commodities.

Project components

- Construction of Office Building (Devakottai, Manamadurai, S.P.Pudur, Sakkottai, Singampunari block)
- Construction of compound wall (All blocks except Kallal block)
- Office building renovation (Ilayangudi, Kannangudi, Manamadurai, Singampunari, Thiruppuvanam block)
- Purchase of Invertor, xerox machine, computer and peripherals (All Blocks)
- Agricultural Equipments, Godown Renovation, Modern counter (Ilayangudi, Manamadurai block)
- Generator (All Blocks except Devakottai block)
- Packing Machine (Sakkottai, Thiruppuvanam block)
- RO Water (Ilayangudi, Manamadurai, Sakkottai, Sivagangai, Thiruppathur block)
- Smart Card Printing Machine (Devakottai, Ilayangudi, Kalaiyarkoil block)
- Processing unit (Sakkottai, Singampunari block) and godown construction (Singampunari block)
- Safety Locker (Devakottai, Ilayangudi, Kallal block)
- 100 MT Cold Storage Construction (Sivagangai block)
- Defender Door (Devakottai, Kallal block)
- Gas Agency (Devakottai, Ilayangudi, Kannangudi, Singampunari, Thiruppuvanam block)

Budget

The budget requirement for fulfilling the above interventions is **₹. 1393.41 Lakhs (Table 4.27)**.

Expected outcome

Agricultural marketing cooperatives will provide the services involved in moving a product from the point of production to the point of consumption. Agricultural marketing includes a series of interconnected activities involving planning production, growing and harvesting, grading, packing, transport, storage, food processing, distribution and sale.

Implementing agency

Department of Cooperative Societies will be implementing the project.

Table 4.27. Budget Requirement for Cooperatives in Sivagangai 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 Cold Storage (100 MT)	B10	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
2	Construction of Compound wall	All Blocks except B4	8	47.43	13	63.28	18	126.41	6	23.00	6	26.00	51	286.12
3	Construction of Godown	B9	1	20.00	0	0.00	0	0.00	0	0.00	0	0.00	1	20.00
4	Construction of Office Building	B1, B6, B7, B8 and B9	3	52.00	2	20.00	0	0.00	0	0.00	0	0.00	5	72.00
5	Establishment of Processing unit	B8 and B9	1	23.00	0	0.00	0	0.00	0	0.00	1	23.00	2	46.00
6	Renovation of Godown	B2 and B6	1	8.00	1	5.00	1	2.50	1	1.79	0	0.00	4	17.29
7	Renovation of Office Building	B2, B5, B6, B9 and B12	6	38.02	4	10.12	0	0.00	0	0.00	0	0.00	10	48.14
8	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,	All Blocks	959	404.09	1	15.00	22	60.27	1	2.50	0	0.00	983	481.86

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
	Automatic Printer machine, Conveyer, E-Tender process, Fork Lifter, Gunny Bag Stitching machine, Jewel tester, Pallets, Tarpaulin, Trolley and Printing Press machineries)													
9	Amenities for Cooperative Centres (RO Water unit, Sanitation, Vehicle Parking Shed, Construction and renovation of Marriage Hall, Construction and renovation of amenity centres)	All Blocks	9	122.00	2	100.00	1	50.00	0	0.00	1	50.00	13	322.00
	Total			**814.54**		**213.40**		**239.18**		**27.29**		**99.00**		**1393.41**

Devakottai – B1, Ilayangudi – B2, Kalaiyarkoil – B3, Kallal – B4, Kannangudi – B5, Manamadurai – B6, S.P.Pudur – B7, Sakkottai – B8, Singampunari – B9, Sivagangai – B10, Thiruppathur – B11, Thiruppuvanam – B12

Table 4.28. Consolidated Budget for Sivagangai District

(₹. in lakhs)

Sl. No.	Components	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Agriculture	5439.89	9473.01	5863.42	5884.36	5559.19	30709.83
2	Agricultural Research (TNAU)	300.00	317.14	28.39	0.00	0.00	645.53
3	Horticulture	2323.50	2565.74	2768.16	3034.50	3274.31	13966.20
4	Agricultural Engineering	973.18	948.73	984.94	1023.75	920.02	4850.62
5	Agricultural Marketing	260.76	244.88	430.00	246.06	269.90	1451.56
6	Seed Certification & Organic Certification	23.36	14.76	1.40	1.40	1.40	42.32
7	Animal Husbandry	3451.67	3226.92	3353.62	2481.42	2885.00	15399.03
8	Animal Science Research (TANUVAS)	374.18	374.18	374.18	374.18	324.18	1820.90
9	Dariy Development	896.75	3717.75	1092.75	866.00	870.50	7443.75
10	Fisheries	11.02	24.04	17.04	24.95	10.59	87.63
11	Fisheries Research (TNFU)	64.76	63.16	13.16	0.26	0.26	141.60
12	Water Resource Organization (PWD)	4047.00	2370.00	1597.00	1305.00	3935.00	13254.00
13	Civil Supplies & Co-Operation	814.54	213.40	239.18	27.29	99.00	1393.41
	Grand total	**18980.61**	**23553.71**	**16763.24**	**15269.17**	**18149.35**	**91206.38**

The total budget requirement for the implementation of various interventions by different departments in Sivagangai district is **₹. 91206.38 Lakhs.**


KARNATAKA
KERALA
SRI LANKA