NATIONAL AGRICULTURE DEVELOPMENT PROGRAMME (NADP)

DISTRICT AGRICULTURE PLAN

PUDUKKOTTAI

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

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2017

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EXECUTIVE SUMMARY

Pudukkottai District at a Glance

Pudukkottai district was formed as a separate district, on 14th January 1974 out of Tiruchirapalli and Thanjavur districts. It is one of the smaller districts in Tamil Nadu with an area of 4,663 Sq. km. Pudukkottai district has major area (57.6 per cent) under red sterile soil, followed by river alluvial (32.9 per cent) and saline alluvial in coastal area occurs in 9.4 per cent of the total geographical area of the district.

South Vellar, Ambuliyar, Koraiyar, Kundar and Pambar are the important rivers running through the district. The chief irrigation sources in the district are the tanks followed by tube wells and canals. Cauvery – Mettur project is the major source of irrigation in the eastern part of the district under New Ayacut. Tube wells are more in the district (4847), followed by dug cum bore wells (2649) and Open wells (406). The district, in general, is a drought-prone area. Most of the farmers (80.87 per cent) belong to the marginal farmer category, followed by small farmers (12.26 per cent). The main wet crop of the district is rice. The dry crops include kodo millet (*varagu*), pulses and oil seeds viz.,groundnut and gingelly.

Area, location and geographical features

The district lies between 78º25' and 79º15' of the Eastern Longitude and between 9º50' and 10º40' of the Northern Latitude. It is bounded by Tiruchirapalli district in the North and West, Sivagangai district in the South, Bay of Bengal in the East and Thanjavur district in the North East. Pudukottai District is located in eastern Tamil Nadu and is 265 km in the South from Chennai. It is a district with a coastline in the East. The population of the district is 1618345. The district depends mainly on the monsoons for its water supply.

Administrative Structure of Pudukkottai District

The district is divided into two major divisions, namely, Pudukkottai and Aranthangi. The District is further divided into Municipalities, Revenue Firkas, Town Panchayats, Revenue Villages and Village Panchayats. For agricultural promotion, there are 13 agricultural divisions. Each Taluk is considered as one agricultural division.

Demographic Profile

Population

There are 16,18,345 persons in 13 Blocks of the district, of which, Thiruvarankulam Block has the highest population of 1, 48,695 persons, including 73,400 males and 75,295 females. This is followed by Aranthangi Block which has1, 46,748 persons with 71,128 males and 75,620 females. The least populous Block in the district is Arimalam with 77,164 persons including 38928 females and 38239 males.

Literacy level

Literacy level of the people of a district indicates the development of the district population. The highest literate population of 1, 48,695 persons in the district is in the Thiruvarankulam Block. Totally, 1110545 literate people are present in the district as per 2011 census. Next to Thiruvanankulam, Aranthangi has the second highest literate population of 1, 46,748 person of which 71,128 are males and 75,620 are females. The least number of literate persons are living in Arimalam Block with 77,164 persons, where 38,239 are males and 38,928 are females. Promotion of awareness programme on education has to be planned in the next five year plan in this district.

Soil types

Under broad classification, there are two main types of soils i.e. red and black soils. The former is predominant in the district. These soils are in turn sub-divided and named differently in different localities. The Pudukkottai Gazetteer, describing the soils, says that the productivity of the tract, in general, is low because of the poor irrigational nourishment and soil erosion. The soils of the district can be classified into black, red, ferruginous, lateritic, alluvial and coastal soils. Black soils are found in the western part of the district. Red ferruginous lateritic soils are found on the high grounds, south of Annavasal, west of Illupur, north of Malaipatti around Kulakurichi near Gandarvakottai and West of Arantangi around Arimalam and Alangudi. Alluvial soils consisting of blackish and brownish sandy and silty soils are found along the course of the Vellar, Agniyar and Ambuliyar rivers, whereas the beach sands are seen along the coast of the district.

Sl. No.	Soil Type	Area (sq.km)	Percent
1	Red Sterile Soil	2687	57.62
2	River Alluvial	1536	32.94
3	Saline Coastal alluvial	440	9.44
	Total	**4663**	**100.00**

(Source: Records of the Joint Director Office, Pudukkottai)

In the upland rainfed areas, soil and moisture conservation measures and practices have to be followed to reduce the soil erosion, moisture depletion and loss of plant nutrients from the soils. Further, in the five rivers catchment areas, plenty of gullies have been formed which would accelerate the soil erosion, thereby affecting the soil productivity. Without proper gully control measures, rain water runoff would continue to erode the existing gullies which in turn would get wider and carry away the productive soil through erosion.

i. Strengths of the District

- Good historical background
- Soil and climate are very suitable for Agricultural and Horticultural Crops
- There is high scope for production of Cashew nut by adopting modern agricultural technologies
- A part of the area of the district in the East is covered under new ayacut of the Cauvery Mettur project

ii. Weaknesses

- The district is dependent mainly on Monsoons for water supply and so farming in the district suffers due to vagaries of monsoons often.
- It is a drought – prone district due to failure of monsoons over the years
- Diversified farming is not practiced due to uncertain monsoons leading to mono cropping.
- The rivers passing through the district are not perennial, with seasonal water flow during successful monsoons only.
- Domestic and export marketing knowledge is poor among the farmers resulting in dependence on local traders to market their farm produces.
- Adequate institutional credit and insurance facilities are not available.
- It is not an industrial district and so unemployment among the educated youth is very common.

iii. Opportunities

- Wide scope for small scale industries which could use agricultural produces like groundnut, gingelly etc. and horticultural produces like cashew nut and vegetables like tomato.
- There is wide scope for promotion of drip irrigation
- Sericulture can be effectively promoted

- There is vast scope for value-addition industries for groundnut, cashew nut, coconut, vegetables like tomato and fruits.

iv. Threats

- Dependence of monsoons for water supply for irrigation is the major problem limiting the crop production.
- Most of the farming is under rainfed conditions
- Because of high soil erosion, aided by wind and seasonal rains resulting in loss of fertile top soil, the productivity of the crops is low and limited.
- As adequate marketing facilities are not available, the farmers depend on local traders who usually exploite them.
- The farmers, generally, don't get remunerative prices for their produces from the local traders resulting in low and unprofitable incomes.

Major Interventions Identified

1. Agriculture

- Popularization of System of Rice Intensification (SRI)
- Popularization of Machine Sowing / Transplanting / Harvesting
- Increasing productivity of Maize through improved package of practices
- Adoption of System of Pulses Intensification (SPI) techniques.
- Increasing productivity of groundnut through improved package of practices
- Conversion of waste-lands like eroded soils into cultivable lands
- Reclamation of problem soils
- Establishment of Integrated Farming System
- Establishment of Mobile Crop Health Care Units
- Establishment of Seed processing units

2. Horticulture

- Precision Farming – Drip and Fertigation System
- Imparting IPM training to the horticultural farmers
- Supply of banana bunch sleeves
- Encouraging kitchen garden and roof top garden of vegetable cultivation
- Encouraging pepper cultivation in Coconut and Jack groves
- Popularizing tuberose flower cultivation
- Encouraging tapioca cultivation
- Training farmers in Post - Harvest preservation of vegetables and fruits

3. Agricultural Engineering

- Introduction of innovative agricultural machineries, implements and gender-friendly equipments.
- Augmenting irrigation facilities through erecting bore wells for horticulture development
- Soil and water conservation works
- Awareness creations for mechanization of agriculture and horticulture
- Establishment of farm machineries for custom-hiring
- Promotion of minor irrigation schemes
- Promotion of solar energy

4. Agricultural Marketing

- Construction of drying yards
- Formation of Commodity Groups
- Capacity-building training to Commodity Groups
- Exposure visits for Commodity Group Farmers to acquire value addition technologies
- Construction of storage godowns
- Formation of Farmer Producers Organization (FPO)
- Imparting value addition trainings to Commodity Group Farmers
- Market Intelligence Dissemination
- Strengthening of Market Extension Centres
- Exposure visits of Commodity Group farmers to market centres

5. Seed Certification

- Establishing Seed Processing Unit

6. Animal Husbandry

- Feed and fodder development
- Establishment of Azolla plots
- Establishment of processing facilities
- Establishment of surgical theatre
- Supply of fodder tree saplings
- Improvement of livestock health

7. Fisheries

- Encouraging inland fish culture
- Capacity-building training to farmers
- Increasing fingerling availability by establishing fingerling rearing units
- Training and exposure visits of fish farmers to other States
- Creating marketing facilities to help the fish farmers to sell their fish farm produces at remunerative prices
- Increasing the fishing efficiency of inland fishermen and fish farmers of Tamil Nadu.
- Direct stocking of advanced fingerlings in irrigation tanks and panchayat tanks
- Introduction of short seasonal fish species in existing farm ponds

8. Sericulture

- Construction of Farmers Training Centre with Meeting Hall
- Construction of permanent office building with cocoon market and twisting units
- Construction of building for Pudukkottai Technical Service Centre
- Mobile cocoon transport vehicle to procure cocoons from the farmers

9.Public Works Department – Water Resource Organization

- Strengthening the river and canal bunds
- De-silting the tanks, rivers and canals
- Maintenance of irrigation masionry structures like sluices, shuttering structures and water outlets from main canal to the field channels
- Flood control devices
- Formation of farm roads along the canals and river bunds

Consolidated Budget for Pudukkottai District (Rs.in lakhs)

Sl.No.	Sectors	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Agriculture	5619.06	5232.50	5284.45	4375.49	4362.83	24874.32
2	Agricultural Research (TNAU)	96.00	390.37	226.00	26.00	45.00	7833.37
3	Horticulture	2845.43	3514.29	4226.71	5221.65	6005.78	21813.86
4	Agricultural Engineering	2771.89	2460.21	2488.48	2333.68	2310.93	12365.17
5	Agricultural Marketing	741.85	473.97	283.59	298.29	295.09	2092.79
6	Seed Certification and Organic Certification	18.36	14.76	1.40	1.40	1.40	37.32
7	Animal Husbandry	1630.24	1556.52	1895.49	1035.49	1490.49	7608.25
8	Dairy Development	912.60	1081.60	1153.60	2379.60	669.60	6197.00
9	Fisheries	339.00	377.90	63.56	58.51	44.90	583.87
10	Fisheries Research (TNFU)	453.73	670.53	168.73	123.73	159.73	1576.45
11	Water Resource Organization (PWD)	209.30	350.00	749.50	470.00	250.00	2028.80
12	Civil Supplies & Cooperatives	379.60	249.10	209.90	209.15	155.10	1202.85
	Total	**2294.23**	**2729.13**	**16751.41**	**16532.99**	**15790.85**	**11588.97**

The total budget requirement for the implementation of various interventions by different departments in Pudukkottai district is **₹ 11588.9 lakhs.**

CHAPTER I

INTRODUCTION

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

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

Objectives of RKVY

a. To strengthen the farmers' efforts through creation of required pre and post-harvest agri-infrastructure that increases access to quality inputs, storage, market facilities etc. and enable 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 Pudukkottai district, was done by gathering the secondary data about district and block with respect to rainfall, land use pattern, demography, livestock, machinery, infrastructure so far created etc. In addition, the constraints in production and marketing of agricultural and livestock produce, crop/animal production and gaps between expected and actual yield and the reasons for such gaps were also discussed among the various stakeholders and incorporated in this plan document.

Besides, in consultation with the line department officials and based on the data received from respective districts, a detailed year-wise action plan i.e. from 2017-18 to 2021-22 with physical and financial implications were presented.

CHAPTER II

PROFILE OF THE DISTRICT

In this chapter, details on the following aspects are presented and discussed elaborately.

2.1 District at a glance

2.2 Area, Location and Geographical Features

2.3 Administrative Structure of the District

2.4 Demographic Profile

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2.4.3 Block-wise literacy rate

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2.1 Pudukkottai District at a Glance

Pudukkottai district was formed as a separate district, on 14th January 1974 out of Tiruchirappalli and Thanjavur districts. It is one of the smaller districts in Tamil Nadu with an area of 4,663 Sq. km. The major soil type of Pudukkottai district is red sterile soil. It is found in 57.62 per cent of the total geographical area of 4, 66,329 hectares. Area under forest is 24,103 hectares and cultivable waste is 10,392 hectares. River alluvial type soil is found in 32.94 per cent in the district. Black soils are found in the western part of the district. Thus, Pudukkottai district has major area (57.62 per cent) under red sterile soil, followed by river alluvial (32.94 per cent) and saline alluvial in coastal areas constituted 9.44 per cent of the total geographical area of the district. In general, soils in the district are not fertile enough, compared to certain other districts in the State.

South Vellar, Ambuliyar, Koraiyar, Kundar and Pambar are the important rivers running through the district. The chief irrigation sources in the area are, however, the tanks followed by tube wells and canals. Cauvery – Mettur project is the major source of irrigation in the eastern part of the district under New Ayacut. Tube wells are more in the district (4847 No.), followed by dug cumbore wells (2649 No.) and Open wells (406 No.). The district, in general, is a drought-prone area. Most of the farmers (80.87 per cent) belong to the marginal farmer category, followed by small farmers (12.26 per cent). The main wet crop of the district is rice. The dry crops include kodo millet (*varagu*), pulses and oil seeds in groundnut and gingelly.

2.2 Area, location and geographical features

The district lies between 78º25' and 79º15' of the Eastern Longitude and between 9º50' and 10º40' of the Northern Latitude. It is bounded by Tiruchirappalli district in the North and West, Sivagangai district in the South, Bay of Bengal in the East and Thanjavur district in the North East. Pudukkottai District is located in eastern Tamil Nadu and 265 km in the South from Chennai. It is a district with a coastline in the East. The population of the district is 1618345. The district depends a great deal on the monsoons for its water supply.

2.3 Administrative Structure of Pudukkottai District

The district is divided into major divisions, namely, Pudukkottai and Aranthangi. The District is further divided into Municipalities, Revenue Firkas, Town Panchayats, Revenue Villages and Village Panchayats. For agricultural promotion, there are 13 agricultural divisions. Each Taluk is considered as one agricultural division and the details are furnished in Tables 2.1, 2.2, 2.3 and Fig 1 through 3).

Table 2.1 Administrative Pattern of Pudukkottai District

Sl.No	Descriptions	No
1.	Divisions (Pudukkottai&Aranthangi)	2
2.	No of Taluks	11
3.	No of Blocks	13
4.	No of Panchayat Unions (Annavasal, Arimalam,Gandarvakottai, KunnandarKovil, Ponnamaravathy, Pudukkottai, Thirumayam, Viralimalai, Aranthangi, AvudaiyarKovil, Karambakkudi, Manamelkudi, Thiruvarankulam)	13
5.	Municipalities	2
6.	Revenue Firkas	42
7.	Town Panchayats	8
8.	Revenue Villages	763
9.	Village Panchayats	498

Source: Statistical Handbook of Tamil Nadu, Pudukottai district. (2014-15)

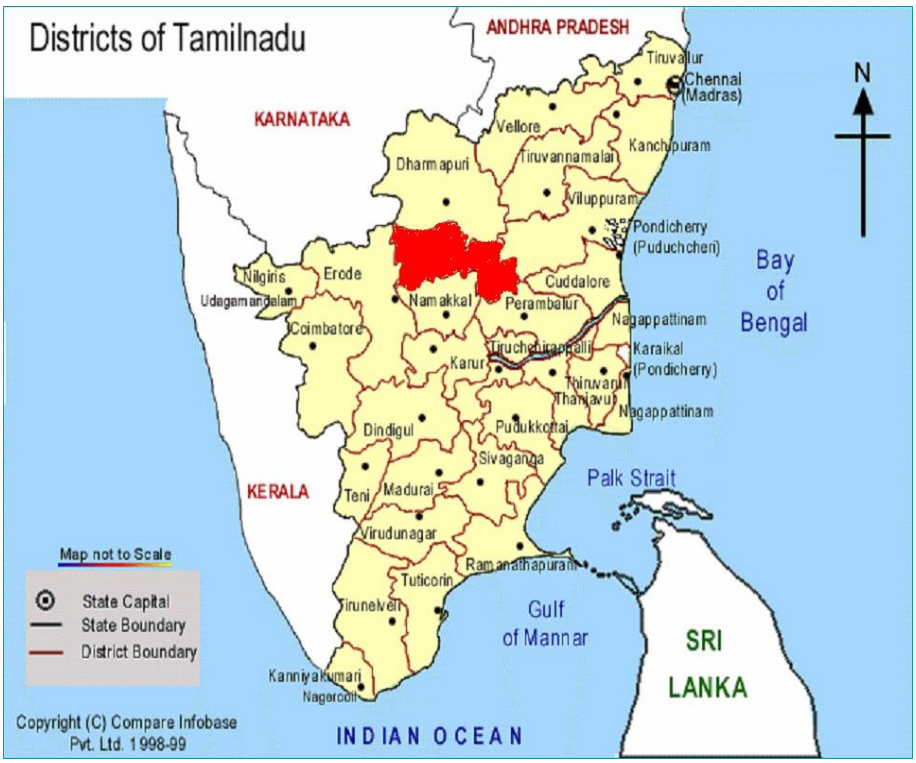

Fig.1. District Map of Pudukkottai District

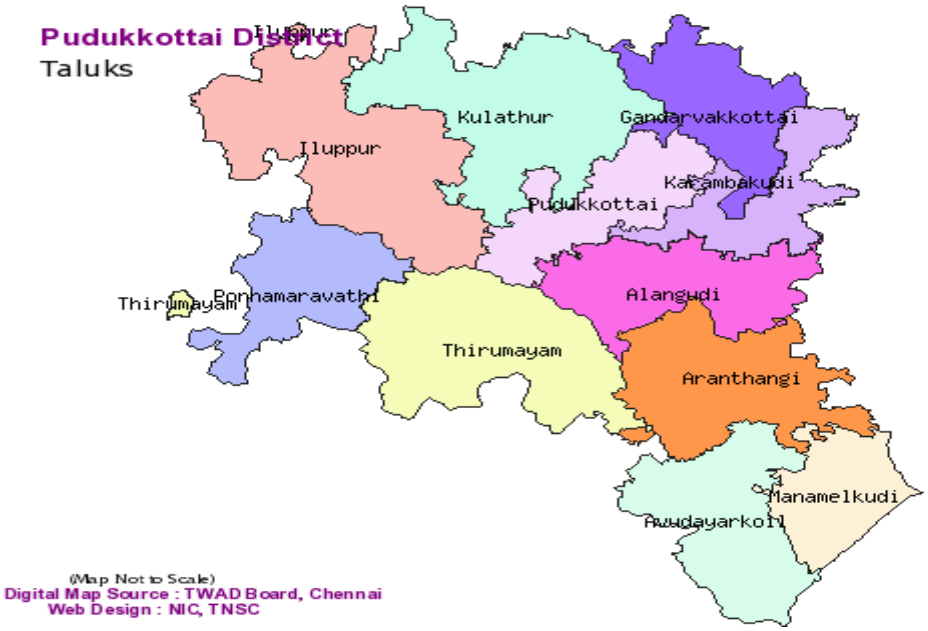

Fig. 2 Taluk Location map of Pudukkottai District

Table 2.2Number of Taluks in Pudukkottai District

Pudukkottai	Aranthangi	Thirumayam
Gandarvakottai	AvudaiyarKovil	Illupur
Alangudi	Manamelkudi	Kulathur
Ponnamaravathi	Karambakkudi	

Source: *Hand book, Department of Agriculture, Pudukkottai District*

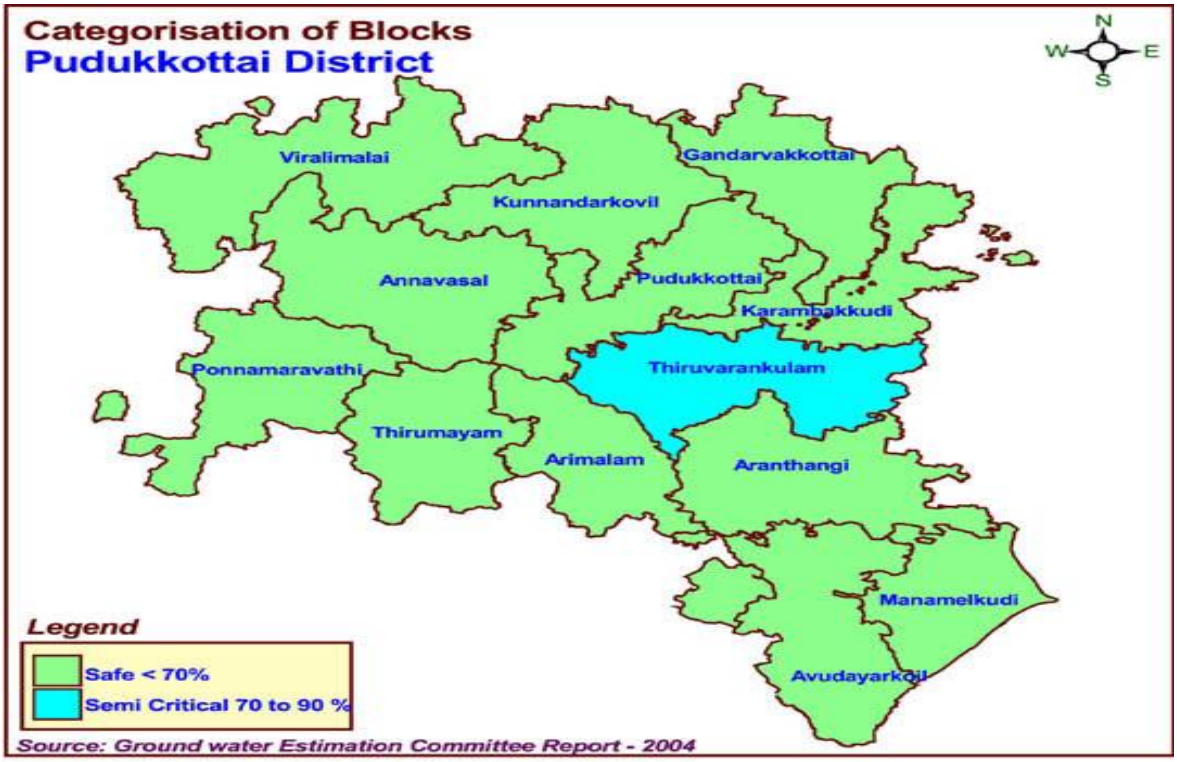

Fig. 3 Blocks in Pudukkottai District

Table 2.3 Number of Blocks in Pudukkottai District

Pudukkottai	AvudaiyarKovil	Annavasal
Ganadarvakottai	Manamelkudi	Viralimalai
Thiruvarankulam	Thirumayam	KunnandarKovil
Karambakkudi	Arimalam	
Ponnamaravathi	Aranthangi	

Source: *Hand book, Department of Agriculture, Pudukkottai District*

2.4 Demographic Profile

2.4.1 Population

The Block-wise population in the district is furnished in the Table 2.4.

Table 2.4 Population details of Pudukkottai District

District	Population		
	Persons	**Males**	**Females**
Pudukottai	**16,18,345**	**8,03,188**	**8,15,157**
Rural Population	**13,01,991**	**6,45,505**	**6,56,486**
Urban Population	**3,16,354**	**1,57,683**	**1,58,671**

Source: Census 2011-12, Directorate of Census Operations, Tamil Nadu

2.4.2Literacy level

Increase of literacy rate in any district indicates the development of the district folk. The total literates in the district are furnished in the Table 2.5.

2.4.3 Block wise literacy rate

Table 2.5 Literacy rate in the district

District	Population		
	Persons	**Males**	**Females**
Pudukottai	**11,10,545**	**6,08,776**	**5,01,769**
Rural Population	**8,59,683**	**4,77,058**	**3,82,625**
Urban Population	**2,50,862**	**1,31,718**	**1,19,144**

Source: Census 2011-12, Directorate of Census Operations, Tamil Nadu

2.4.4 Working population

Table 2.5.1 Working population

Blocks	Population		
	Persons	Males	Females
Total workers	**7,61,693**	**4,71,099**	**2,90,594**
Rural	6,49,404	3,84,292	2,65,112
Urban	1,12,289	86,807	25,482
Main workers	6,40,248	4,16,281	2,23,967
Rural	5,39,884	3,36,227	2,03,657
Urban	1,00,364	80,054	20,310
Cultivators	1,92,462	1,25,267	67,195
Rural	1,88,143	1,22,013	66,130
Urban	4,319	3,254	1,065
Agricultural labourers	2,34,344	1,21,750	1,12,594
Rural	2,26,981	1,17,056	1,09,925
Urban	7,363	4,694	2,669
Household industry workers	10,170	6,026	4,144
Rural	7,533	4,466	3,067
Urban	2,637	1,560	1,077
Other workers	2,03,272	1,63,238	40,034
Rural	1,17,227	92,692	24,535
Urban	86,045	70,546	15,499

Source: Census 2011-12, Directorate of Census Operations, Tamil Nadu

2.5 Topography

The district's topography and agro climatic characters were studied in order to understand the district with reference to its natural resources.

2.6 Soil Classification

Under broad classification, there are two main types of soils i.e. red and black soils. The former is predominant in the district. These soils are in turn sub-divided and named differently in different localities. The Pudukkottai Gazetteer, describing the soils, says that the productivity of the tract, in general, is low because of the poor irrigational nourishment and soil erosion. The soils of the district can be classified into black, red, ferruginous, lateritic, alluvial and coastal soils. Black soils are formed in the western part of the district. Red ferruginous lateritic soils are formed on the high grounds, south of Annavasal, West of Illupur, North of Malaipatti around Kulakurichi near Gandarvakottai, West of Arantangi around Arimalam and Alangudi. Alluvial soils consisting of blackish and brownish sandy and

silty soils are observed along the course of the Vellar, Agniyar and Ambuliyar rivers, whereas the beach sands are seen along the coast of the district. The data with reference to the soil types are presented in Table 2.6.

Table 2.6.Pudukkottai District - Soil Types

(Area in Sqkm)

Sl. No	Soil Type	Area	Percent
1.	Red Sterile Soil	2,687	57.62
2.	River Alluvial	1,536	32.94
3.	Saline Coastal alluvial	440	9.44
	Total	**4,663**	**100.00**

(Source: Records of the Joint Director Office, Pudukkottai)

The major soil type of Pudukkottai district is red sterile soil. It is found in 57.62 per cent of the total geographical area of the district. River alluvial type soil is found in 32.94 per cent in the district. Along the coastal line, the saline coastal alluvial type of soil is found. It constituted 9.44 per cent area of the total geographical area of the distinct. Thus, it could be concluded that the Pudukkottai district has major area of 57.62 per cent under red sterile soil, followed by river alluvial of 32.94 per cent. In general, soil condition in the district is not fertile enough as compared to other districts in the State. The district, in general, is a drought-prone area. Part of the area is hard rock, another part of the area is sedimentary in nature and a small part of the area includes coastal alluvial and river alluvial soils.

In the upland rainfed areas, soil and moisture conservation measures and practices have to be followed to reduce the soil erosion, moisture depletion and loss of plant nutrients from the soils. Further in the five river catchment areas, plenty of gullies exist and they were found accelerating the soil erosion thereby affecting the soil productivity. Without proper gully control measures, rain water run off continues to erode the existing gullies which in turn get wider and carry away the productive soil through erosion.

2.7 Climatic Conditions and Rainfall

The normal annual rainfall recorded in the district was 887.4mm. There is a gradual increase in precipitation from east to southwest over the district. The district experiences a tropical climate. The period from April to June is generally hot and dry. The weather is pleasant during the period from November to January. The mean maximum temperature is around 33.7oC and means minimum temperature is 24^{o}C. The maximum relative humidity in a day varies from 59 per cent to 81 per cent and the minimum relative humidity in a day varies from 38 per cent to 63 per cent.

Table 2.7 Month-wise / season-wise rainfall distribution in Pudukkottai District

Season / Month	2014-2015	
	Actual	**Normal**
South West Monsoon		
June	18.3	44.6
July	18.5	79.3
August	140.4	109
September	74.3	117.7
Total	**251.5 (28.09)**	**350.6**
North East Monsoon		
October	176.3	158
November	119.6	147.1
December	103.6	101.1
Total	**399.5 (44.62)**	**406.2**
Winter Season		
January	2.9	23.2
February	3.23	9.9
Total	**6.13 (0.68)**	**33.1**
Hot Weather		
March	6.1	13.5
April	107.2	34.2
May	125	49.8
Total	**238.3 (26.61)**	**97.5**
Annual rainfall	**895.4**	**887.4**

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

Fundamental characteristic of the terrain of Pudukkottai District is the general flatness; inter-spread with small rocky hills which are numerous in the South-Western parts of the district. Within this general flat terrain, depressions and slopes have created seasonal to rivers and jungle streams and have made it possible to construct tanks across the slopes to irrigate lands under these tanks for many centuries. There are rivers like Vellar, Agniar, Vellar, Ambuliar and Koraiyar that drain the district. The district approximately has about 5000 tanks. On an average, there are 4 tanks per square mile in the district. The climate of the district is hot and dry during most parts of the year. In coastal areas of the district the intensity of the heat is mitigated to some extent by sea breeze in the evenings.

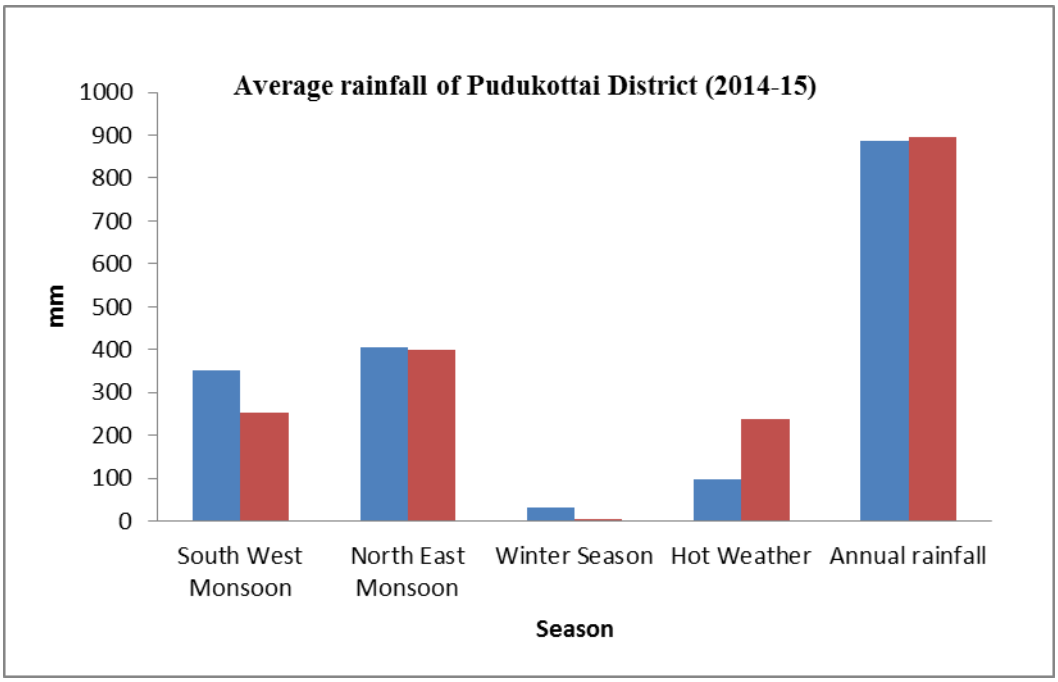

Fig. 4 Season - wise Average Rainfall of 2014-2015

2.8 Land

The land utilization pattern gives a picture on the total area put into different categories of uses like area under forest, agricultural uses and non agricultural uses and the area under different classification of waste land. Through which we can assess the potential on land utilization in the study area. It is observed from the above table; among the land classification the net sown area occupied 24.75 per cent. Land put to non-agricultural uses occupied major portion (29.40 per cent) followed by other fallow land (27.13 per cent).

Table 2.8 Land Use Pattern of Pudukkottai District 2014-2015

Sl.No	Particulars	2014-15	per cent
1	Geographical Area	466329	100.00
2	Forest	23535	5.05
3	Barren & Unculturable Area	9863	2.12
4	Land Put to Non-agricultural Uses	137114	29.40
5	Permanent Pastures & Other grazing lands	3471	0.74
6	Misc.tree crops & groves not incl. in the net area sown	19449	4.17
7	Current Fallow	21195	4.55
8	Other Fallow	126505	27.13
9	Net area sown	115421	24.75
10	Area sown more than once	3253	0.70
11	Gross area sown	118674	25.45
	Total	**1044809**	

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

2.9 Land Holdings Pattern

As seen in the Table 2.10 Marginal Farmers are very high (80.87 percent), followed by small farmers (12.26 per cent). The small medium, medium, and large-size farm holdings were relatively less in the district. The above data indicate that majority of the farmers in the district are marginal farmers.

Table 2.9 Land Holding Details of Pudukkottai District

Sl.No	Classification of Holdings	No of Farmers	Area in (Ha)	Percent
1.	**Marginal**(0.01 – 0.99 Ha)	2,98,864	1,01,207	80.87
2.	**Small**(1.00 – 1.99 Ha)	45,322	62,973	12.26
3.	**Small Medium**(2.00 – 3.99 Ha)	18,024	50,265	4.88
4.	**Medium**(4.00 – 9.99 Ha)	6,319	36,152	1.71
5.	**Large**(10.00 – 20.00 Ha)	1,050	19,010	0.28
	Total	**3,69,759**	**2,89,507**	**100.00**

(Source: Records of the Office of the Joint Director of Agriculture, Pudukkottai)

Table 2.10 Cropping Pattern of Pudukkottai District

Sl. No	Crops	Varieties
1	Paddy	ADT 36, ASD 16, ADT 42, ADT 43, ADT R 45,ADT R 47 CR 1009,BPT 5204
2	Maize	NK 6240, CO H(M) 6
3	Sorghum	CO 28, CO 30
4	Black gram	VBN4, VBN5, VBN6
5	Groundnut	VRI 2, TMV 7 ,TMV 13 and K6
6	Coconut	ECT, VPM 3
7	Gingelly	TMV 3, TMV 6
8	Sugar cane	CO 86032
9	Banana	Poovan

(Source: Records of the Office of the Joint Director of Agriculture, Pudukkottai)

Table 2.11 Area under major crops (2014-15)

Sl.No	Particulars	Area (in ha)	Production (in tonnes)	Productivity (in kg/ha)
1	Paddy	67238	279104.938	4151
2	Maize	5738	45358.89	7905
3	Cholam	419	853.084	2036
4	Cumbu	25.33	76.57259	3023
5	Ragi	40	123.72	3093
6	Total Cereals	73506	29181.882	397
7	Bengal Gram	6	1.122	187
8	Red Gram	665	754.775	1135
9	Black Gram	4323	3895.023	901

Sl.No	Particulars	Area (in ha)	Production (in tonnes)	Productivity (in kg/ha)
10	Green Gram	12	7.968	664
11	Horse Gram	14	10.388	742
12	Groundnut	5869	19625.936	3344
13	Sunflower	0	0	0
14	Gingelly	1557	0	0
15	Castor	6	1.062	177
16	Total Edible & Non-Edible Oilseeds	16873	0	0
17	Cotton	50	26.65	533
18	Coconut	9426	92497.338	9813
19	Sugarcane	5062	541.634	107
21	Onion	23	195.822	8514
22	Brinjal	187.67	1669.51232	8896
23	Bhendi	153	1124.55	7350
24	Tomato	6	86.82	14470
25	Other Vegetables	704	0	0
26	Banana	2255	108837.575	48265
27	Mango	778	5010.32	6440
28	Jack Fruit	159	4884.162	30718
29	Pine Apple	0	0	0
30	Guava	91	514.332	5652
31	Chillies	88	58.168	661
32	Coriander	17	14.977	881
33	Turmeric	15	60.42	4028
34	Tamarind	253	627.187	2479
35	Tapioca	127	4348.226	34238
36	Sweet Potato	3	52.743	17581
37	**Total**	**195689**	**1252410.00**	**200266.00**

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

*lakh nuts

2.11 Sources of Irrigation

Pudukkottai district is a part of the Cauvery Basin and parts of Vellar, Agniar, Ambuliar, Koraiyur, Kundar and Pambar sub-basins. Vellar is the major river, which flows in an East-South-easternly direction and confluences with the Bay of Bengal near Manamelkudi. Agniar, Ambuliyar, Koraiyar, Kundar and Pambar are the other important rivers draining the district. Almost all the rivers are ephemeral in nature causing floods during rainy seasons, which are structurally controlled. The chief irrigation sources in the district are the tanks followed by tube wells and canals of Cauvery – Mettur project. The details of the project with respect to number of canals, system tanks, net area irrigated and gross area irrigated are given below.

Major off-take channels = 16 No. CNM System tanks = 168 No.

Net area irrigated = 11,600 ha. Gross area irrigated = 15,600 ha.

Table 2.12 Types of wells in Pudukkottai District

(in numbers)

Sl. No	Detail of wells	Government	Private	Total
1.	Tube wells	60	4787	4847
2	Bore wells	-	-	-
3	Dug cum Bore wells	-	2,649	2,649
4	Filter point tube wells	-	-	-
5	Artisan wells	-	-	-
6	Open wells	203	203	406
	Total number of wells	**263**	**7,639**	**7,902**

(Source: Records of the Office of the Joint Director of Agriculture, Pudukkottai)

As seen from Table 2.12, tube wells are more in the district (4847 No), followed by dug cum bore wells (2649 No). Open wells are also there (406 No). The area under different source of irrigation is presented in Table 2.13. Tanks were the major source of irrigation, average gross and net irrigated area by tube wells in the district were 58768.67 ha and 58505.67 ha respectively followed by tube wells and open wells. Average gross area irrigated by tube wells and open wells were 32831.67 ha and 5080 ha respectively.

Table 2.13 Irrigation by different sources in Pudukkottai District during 2014-15

Sl.No.	Particulars		2012-13	2013-14	2014-15	Average
1	Canals	Gross	2687	3085	4523	3431.67
		Net	2687	3011	4510	3402.67
2	Tanks	Gross	66897	58269	51140	58768.67
		Net	66765	57852	50900	58505.67
3	Tube wells / Bore wells	Gross	30926	35400	32169	32831.67
		Net	28950	31164	29766	29960.00
4	Open wells	Gross	5612	4498	5130	5080.00
		Net	5224	4388	5048	4886.67

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

Table 2.14 Block-wise and source- wise Net Area Irrigated

Sl. No	Blocks	Net Area (ha) Irrigated by					Total Net Area Irrigated (ha)
		Canals	Tanks	Tube wells	Ordinary wells	Other sources	
1	Pudukkottai	-	2,705	692	1,241	-	4,638
2.	Gandarvakotai	132	2,512	3,287	465	-	6,405
3.	KunnandarKovil	-	6,570	488	743	-	7,801
4.	Annavasal	29	6,409	135	1,230	-	7,803

Sl. No	Blocks	Net Area (ha) Irrigated by					Total Net Area Irrigated (ha)
		Canals	Tanks	Tube wells	Ordinary wells	Other sources	
5.	Viralimalai	-	5,377	162	1,216	-	6,755
6.	Thiruvarankulam	96	4,786	5,006	691	-	10,579
7.	Karambakudi	565	3,295	2,974	760	-	7,594
8.	Thirumayam	-	4,802	460	168	-	5,430
9.	Ponnamaravathi	-	5,146	174	512	-	5,832
10	Arimalam	-	6,164	509	494	-	7,167
11.	Aranthangi	5,815	5,527	4,834	871	-	17,047
12.	AvudaiyarKovil	1,188	12,432	104	91	-	13,815
13	Manamelkudi	2,854	6,030	77	-	-	8,961
	Total	**10,679**	**71,764**	**18,902**	**8,482**	-	**1,09,827**

(Source: Department of Economics & Statistics, Govt. of Tamil Nadu)

2.12 Agricultural Machineries and Implements

The stake holders are mostly very poor in their economic status. Majority of the holdings are with marginal farmers (more than 80 per cent) and small farmers (5 per cent). The agricultural operations and practices are still carried out in the conventional methods even though several State and Central assistance schemes were functioning in the district. The Pudukkottai farmers are aware of modern agricultural techniques to some extent due to launching of new schemes. However, farmers are not affordable to invest in the new agricultural machineries to increase their income. The rain water run-off through gullies should be checked or controlled and stored by way of percolation ponds, irrigation tanks, irrigation check dams, drinking water tanks (*ooranies*), farm ponds, collection pits, contour bunds, compartment bunds, contour trenches, staggered trench or any other useful means which would directly or indirectly help the farmers to save their lands from run-off erosion and leaching away of the fertilizers applied and for soil fertility build-up. The details of common implements used in the district are given in Table 2.15. The table 2.15 revealed that wooden plough and iron plough were the most popular in the district. To operate the water lifting, electric power is widely used. Tractor and Sugarcane crushes are widely used.

Table 2.15 Distribution of Agricultural Implements and Machineries – 2004

Implements	Numbers
Wooden Ploughs	62,262
Iron Ploughs	33,584
Oil Engine Pumps for Irrigation	4,471
Electric Power Pumps for Irrigation	14,768

Implements	Numbers
Tractors	1,851
Power operated Sugarcane Crushers	3
Bullock operated Sugarcane Crushers	1,530

Source (http://www.tn.gov.in)

2.13Agricultural Marketing

2.13.1 Regulated Markets

Regulated markets are functioning in ten places. Twenty four commodities are marketed through the regulated markets situated in Alangudi , Arantangi , Pudukkottai , Gandarvakottai , AvudaiyarKovil , Keeranur , Keeramangalam , Ponnamaravathy , Illuppur and Karambakudi. The major traded commodities in regulated markets are listed in Table 2.16.

Table 2.16 Arrival of commodities along with marketable surplus

Sl. No	Notified commodities	Marketable surplus (%)
1.	Cotton	100
2.	Cashew Nut	95
3.	Chillies	90
4,	Maize, Gingelly and major pulses	70
5.	Groundnut	65
6.	Paddy	60

(Source: Records of the Office of the Joint Director, Pudukkottai)

2.13.2 Storage Facilities

Considering the projected production of paddy and ground nut for the year 2022-23, it is suggested to construct godowns with a storage capacity to store one-third of the estimated annual production of 2 lakh tonnes. The rural godowns facility could be created in Pudukkottai, Annavasal, Thirumayam and Pudukkottai to increase the storage of surplus.Vegetable marketing could be strengthened through the setting up of farm– fresh vegetable outlets in Tiruchirapalli city where the available air cargo facility can cater in upgrading the Agro Export from Pudukkottai district.

2.14. Animal Husbandry, Diary and Poultry Development

2.14.1 Animal Husbandry

The livestock population in Pudukkottai district is presented in table 2.17. Of the total livestock in Pudukkottai district, cattle population was highest (528147) followed by goat (383434) and sheep (217465). Total poultry population was 1001354.

Table 2.17 Live Stock population in Pudukkottai district

(Numbers)

Sl. No.	Particulars	Population
1	Cattle	528147
2	Buffaloes	17656
3	Sheep	217465
4	Goats	383434
5	Horses and ponies	38
6	Donkeys	71
7	Camels	0
8	Pigs	2720
	Total Livestock	**1149531**
9	Elephants	2
10	Dogs	69680
11	Rabbits	789
	Poultry	
12	Bank yard Poultry	937793
13	Farm Poultry	63561
	Total Poultry	**1001354**

Source: 19 th Livestock Census -2012.

The block wise livestock population in Pudukkottai district is presented in table 2.18.

Table 2.18 Live Stock population in Pudukkottai district

Sl. No	Name	B1	B2	B3	B4	B5	B6	B7	B8
1	Cattle	25,825	27,328	20,301	26,900	24,892	50,258	34,490	20,600
2	Buffalo	1712	1,414	137	235	757	1,061	951	234
3	Sheep	12,049	9,292	5,110	-	11,837	18,840	16,991	2851
4	Goat	23,259	24,022	8,512	4,890	29,409	54,774	22,716	5,820
5	Pigs	-	208	62	72	167	-	-	--
6	Poultry	19,366	98,432	22,412	30,668	2,28,897	87,386	91,440	24,622
7	Others	-	3,017	112	-	-	3,012	-	-

Source: 19 th Livestock Census -2012.

B1-Annavasal, B2-Aranthangi, B3-Arimalam, B4-Avudaivarkovil, B5-Gandharavakottai, B6-Karambakudi, B7-Kunnandarkovil, B8-Manamelkudi

Table 2.18 Livestock population in Pudukkottai district (Contd...)

Sl. No	Name	B9	B10	B11	B12	B13	District
1	Cattle	31,200	26,256	38,044	22,635	42,518	1,60,653
2	Buffalo	225	1,341	1,190	15	3,232	6,003
3	Sheep	9,084	19,649	21,067	3,814	41,416	95,030
4	Goat	7,821	33,596	33,047	4,822	41,367	1,20,653

Sl. No	Name	B9	B10	B11	B12	B13	District
5	Pigs	26	150	-	105	234	515
6	Poultry	20,595	49,106	1,29,736	24,227	73,096	2,96,760
7	Others	512	221	-	518	-	1,251

B9-Pounamaravathy, B10-Pudukkottai, B11-Thiruvarnkulam, B12-Thirumayam, B13-Viralimalai

2.14.2 Diary Development

Table 2.19 Milk Yield from the cows and buffalos in the district

Sl. No	Type of Animal	Annavasal			Aranthangi			Arimalam		
		P	A	R	P	A	R	P	A	R
1	**Cows**									
	a. Local	2	1	Fodder shortage	4	1	Low plane of nutrition	2	1	Lack of green fodder
	b.Cross breed	10	8	Low concentrate feeding	8	6	-	5	3	-
2	**Buffalo**									
	a.Local	2	1	Fodder shortage	3	3	-	3	3	-
	b.Cross breed	-	-	Low concentrate feeding	-	-	-	-	-	-

Source: 19 th Livestock Census -2012.

Table 2.19 Milk Yield from the Cows and Buffalos in the District (Contd...)

Sl. No	Type of Animal	Avudaiyarkovil			Gandaravakottai			Karambakudi		
		P	A	R	P	A	R	P	A	R
1	**Cows**									
	a.Local	2	1	Non availability of green fodder	2	1	Non availability of green fodder	2	1	Non availability of green fodder and water scarcity
	b.Cross breed	10	8		10	8		10	8	
2	**Buffalo**									
	a.Local	2	1	Non availability of green fodder	2	1	Non availability of green fodder	4	2	Non availability of green fodder and water scarcity
	b.Cross breed	-	-		-	-		-	-	

Table 2.19 Milk Yield from the Cows and Buffalos in the District (Contd...)

Sl. No	Type of Animal	Kunnandarkovil			Manamelkudi			Ponnamaravathy		
		P	A	R	P	A	R	P	A	R
1	**Cows**									
	a.Local	2	1	Non availability of green fodder	5	2.5	Low plane of nutrition, Non – Availability of green fodder	3	1	Low plane of nutrition
	b.Cross breed	10	8		15	8		10	6	
2	**Buffalo**									
	a.Local	2	1	Non availability of green fodder	4	2	Low plane of nutrition, Non – Availability of green fodder	3	1	Low plane of nutrition
	b.Cross breed	-	-		-	-		4	1	

Table 2.19 Milk Yield from the Cows and Buffalos in the District (Contd...)

Sl. No	Type of Animal	Pudukkottai			Thiruvarnkulam			Thirumayam			Viralimalai		
		P	A	R	P	A	R	P	A	R	P	A	R
1	**Cows**												
	a. Local	2	1	Non – availability of sufficient fodder	2	1	Non – Availability of green fodder	2	1	fodder deficit and low concentrate feed provision	2	1	Non availability of green fodder
	b. Cross breed	10	8		10	8		4	2		10	8	
2	**Buffalo**												
	a. Local	2	1	Non – availability of sufficient fodder	2	1	Non – Availability of green fodder	3	2	fodder deficit and low concentrate feed provision	2	1	Non availability of green fodder
	b. Cross breed	-	-		-	-		-	-		-	-	

Table 2.20 Infrastructure facilities available in the district

Sl. No	Infrastructure	B1	B2	B3	B4	B5	B6	B7	B8
1	Dairy cooperative Society	12	13	6	1	24	1	23	-
2	Veterinary clinics								
	a. Veterinary Hospital	-	1	-	1	-	1	-	1
	b. Veterinary Dispensary	9	9	-	1	-	0	10	6
	c. Sub Centre	7	-	-	-	-	-	6	1
	d. Profile unit	-	-	-	-	-	-	-	-
3	Milk Collection Centre	-	-	-	-	24	-	23	-
	1.Bulk Milk Coolers	-	13	6	1	-	1	-	-
	2.Chilling Centre	-	-	-	1	-	-	-	-

Source: 19 th Livestock Census -2012.

B1-Annavasal,B2-Aranthangi, B3-Arimalam, B4-Avudaivarkovil, B5-Gandharavakottai, B6-Karambakudi, B7-Kunnandarkovil, B8-Manamelkudi

Table 2.20 Infrastructure facilities available in the district (Contd…)

Sl. No	Infrastructure	B9	B10	B11	B12	B13	District
1	Dairy cooperative Society	13	11	22	1	29	76
2	Veterinary clinics						
	a. Veterinary Hospital	1	-	1	-	1	3
	b. Veterinary Dispensary	9	11	12	-	10	42
	c. Sub Centre	-	4	-	-	3	7
	d. Profile unit	-	1	-	-	-	1
3	Milk Collection Centre	13	11	13	1	29	67
	1.Bulk Milk Coolers	-	-	-	-	-	-
	2.Chilling Centre	-	-	-	-	-	-

Source: 19 th Livestock Census -2012.

B9-Pounamaravathy, B10-Pudukkottai, B11-Thiruvarnkulam, B12-Thirumayam,B13-Viralimalai

Table 2.21 Banking and Insurance

Banks	Numbers
State Bank Group	18
Nationalized Banks	99
Other Scheduled Banks	39
Co-operative Banks	33
TIIC	1
Life Insurance Corporation of India	
Branch Offices	4

Banks	Numbers
Policies Issued	31,344
Sum Assured (₹ in Lakhs)	44,868.80
First Premium Income	2,896.75

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

Table 2.22 Co-operation Sector

Co-operation Sector	Numbers
Central Co-op Bank	1
Primary Agrl. Co-op Credit Societies	136
Primary Co-op Agrl. &Rural Dev. Bank	9
Co-op Urban Banks	2
Employees C.T.&Credit Societies	37
Urban Stores	2
Employees Co-op Stores	2
Agricultural. Producers Co-op Mktg. Societies	3
Co-op Printing Press	1

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

For updating, secondary data on district and block profile with respect to rainfall, land use pattern, demography, livestock, machineries, infrastructure created, constraints in production and marketing of agricultural and livestock produce, crop/animal production, gaps between expected and actual yield and reasons for such gaps were collected from the various published sources and also from the respective block level line department officials. A template was developed to collect the details from block level.

The list of schemes along with the financial allocation from various sources since 2012-13 was obtained for both district level and block level. The block level details were then consolidated across the line departments to examine the implementation of the schemes and the potentials for further scaling up.

These plans were finalized by holding stakeholders meetings at different stages starting from the village to the district level. These district level plans were finally consolidated to prepare State Agricultural Plan.

One TNAU Scientist has been identified for each district as District Level Coordinator and for each Block also one Scientist has been identified as Block - Level Scientist. These TNAU Scientists assisted in conducting the stake-holders meetings, liaising with the line-department officials and finalization of the plans at various levels.

CHAPTER III

DEVELOPMENT OF AGRICULTURAL AND ALLIED SECTORS

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

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

ii. Yield gap analysis for the major crops

3.1 Trends in area, production and productivity of major crops

The past trends in area, production and productivity of major crops need to be analyzed to plan for future agricultural development. Compound Growth Rate (CGR) tool is used to measure the annual rate of growth in area, production and productivity of major crops cultivated in the district and it is expressed in percentage. The compound growth rate has been estimated using 15 year time series data from 1999-2000 to 2014-15.The equation used to estimate the annual compound growth rate is: $Y_t = ab^te$

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

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

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

where, Y_t = Area or Production or Yield

a = Intercept

b = Regression coefficient of t

t = Time variable

r = Compound Growth Rate

Average of area, production and productivity of major crops in the district is presented in Table 3.1.

Table 3.1 Area, Production and yield of major crops in Pudukkottai district

(Triennium average ending 2014-2015)

Sl.No.	Crops	Area (ha)	%	Production	Yield (kg /ha)
1	Paddy	74492	65.67	213138	2892
2	Cholam	352	0.31	41199	1316
3	Maize	6141	5.41	500	6673
4	Blackgram	3632	3.20	2987	746
5	Sugarcane	7004	6.17	603607	88
6	Banana	2354	2.08	98318	41959
7	Groundnut	8879	7.83	20341	2448
8	Gingelly	1458	1.29	678	488
9	Coconut	9114	8.04	N.A	N.A
	Total	**113426**	**100.00**		

N.A. denotes Not Available

The Compound growth rates are shown in Table 3.2

The CGR of area, production and productivity yield of major crops grown in Pudukkottai district are given in Tables 3.2

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

Sl.No.	Crops	CGR during CGR during 2005-2006 to 2014-2015 (%)		
		Area	Production	Productivity
1	Paddy	-3.22	-0.23	3.09
2	Cholam	-0.27	35.01	7.92
3	Maize	21.26	7.59	11.34
4	Blackgram	25.94	40.27	11.38
5	Sugarcane	-4.51	-8.86	-4.69
6	Banana	-6.09	-8.71	-2.79
7	Groundnut	-13.58	-8.24	6.13
8	Gingelly	5.01	8.35	0.36
9	Coconut	5.33	N.A	N.A

N.A. denotes Not Available

3.1.1. Projection on area, production and yield

The main occupation of the district is agriculture and allied activities and major work force is engaged in the agricultural sector. In general, soil condition in the district is not fertile enough as compared to other districts in the State. The district, in general, is a drought-prone area. Part of the area is hard rock and part of area is sedimentary area and a small part of the area is coastal alluvial and river alluvial soils. In the upland rainfed areas, soil and moisture conservation measures and practices have to be followed to reduce soil erosion, moisture depletion and loss of nutrients from the soil. Further in the five river catchment areas, plenty of gullies exist and they were found accelerating the soil erosion thereby affecting the soil productivity. Without gully control measures rain water runoff erodes the existing gullies which in turn gets wider and carry away the productive soil through of field land slide and erosion in the district, major agriculture crop grown is paddy. In the total area under production, paddy occupied more than 50 per cent of the area. Among pulses, red gram is grown predominantly. Other than food grains, sugarcane is grown in significant area. The crop-wise irrigated areas were also identified. The data are presented in Table 3.3

The predominant crops grown are Paddy (I), Groundnut (II), Maize (III), Sugarcane (IV) and Fruits & Vegetables (V). Approximately 80 % the area occupied by Paddy and Groundnut .Maize and Fruits & Vegetables area increasing due to better price realization by farmers. Therefore, Paddy and Groundnut crops were focused as potential crops for Pudukkottai and the scope for further expansion of their potentiality in terms of production has been explored in the present study. To begin with, for the identified potential crops in

Pudukkottai district, area, production and yield were projected using CGR for the years 2015 - 16 and the results are presented in Table 3.4.

Table 3.3 Area of major crops under irrigated condition in Pudukkottai District (2014-15)

Name of the Crop	Area (in ha)	Percent	Rank
Paddy	62287	65.10	I
Groundnut	5689	5.95	IV
Maize	5738	6.00	III
Sugarcane	5062	5.29	V
Fruits & Vegetables	3976	4.16	VII
Black gram	4323	4.52	VI
Coconut	6911	7.22	II
Gingelly	303	0.32	VIII
Cowpea	132	0.14	IX
Flowers	433	0.45	X
Sorghum	83	0.09	XI
Redgram	256	0.27	XII
Casuarina	234	0.24	XIII
Other crops	0	0.00	XIV
Chillies	88	0.09	XV
Cotton	47	0.05	XVI
Finger millet	32	0.03	XVII
Horsegram	4	0.00	XVIII
Pearl millet	1	0.00	XIX
Teak	73	0.08	XX
Kodo millet	0	0.00	XXI
Greengram	5	0.01	XXII

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

Description	Paddy			Maize			Sorghum		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
Compound Growth Rate %	1.05026	0.23136	-0.8117	39.0381	62.9673	17.2123	-7.7971	-6.3502	1.6959
Triennium Average ending	93,598	2,43,862	2,612	3,569	26,586	7418	341	357	992
2012-13	96,395	2,21,165	2,294	8,418	84,346	10,021	227	205	905
2013-14	97,407	2,21,676	2,275	11,705	1,37,456	11,746	209	192	920
2014-15	98,430	2,22,189	2,257	16,274	2,24,008	13,768	193	180	936
2015-16	99,464	2,22,703	2,239	22,627	3,65,060	16,138	178	168	952

Description	Blackgram			Groundnut			Coconut		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
Compound Growth Rate %	1.09672	2.70294	1.57722	-3.5783	-1.4132	2.24674	5.68326	17.311*	10.637*
Triennium Average ending	1,761	1,107	532	17,744	32,268	1,816	8,029	1,082	13,334
2012-13	1,073	489	455	17,327	30,295	1,748	8,876	1,633	18,139
2013-14	1,085	502	463	16,707	29,867	1,788	9,380	1,916	20,068
2014-15	1,097	516	470	16,109	29,445	1,828	9,913	2,248	22,203
2015-16	1,109	530	477	15,533	29,029	1,869	10,477	2,637	24,565

Description	Gingelly			Sugarcane			Banana		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
Compound Growth Rate %	0.59644	2.24383	1.63413	4.88297	5.04302	0.16442	-1.0716	1.01679	2.11098
Triennium Average ending	1,035	605	588	8,078	9,31,406	114	3,168	1,95,646	61,548
2012-13	932	508	548	9,941	11,68,999	118	3,237	1,98,381	61,286
2013-14	938	519	557	10,426	12,27,951	118	3,202	2,00,398	62,580
2014-15	944	531	566	10,935	12,89,877	118	3,168	2,02,435	63,901
2015-16	949	543	575	11,469	13,54,926	118	3,134	2,04,494	65,250

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

3.1.2 Yield gap analysis

In order to raise the productivities of the selected crops, information regarding ruling varieties, their average yields, potential yields, progressive farmer's yield level etc were collected from the office of the Joint Director of Agriculture, Pudukkottai and National Pulses Research Centre, Pudukkottai. From this information, yield gaps were analyzed and it is given in Table 3.5 and 3.6. Yield Gap is the difference between the progressive farmer's yield and average farm yield which explains the gap due to inadequacies in soil and climatic factors, technologies adopted, availability of farm inputs like suitable varieties, fertilizers, plant protection chemicals, irrigation water, availability of labour, cultivation practices followed etc.

Table 3.5 Yield Gap Analysis of Paddy & Groundnut in Pudukkottai District

Paddy(kg/ha)				**Average (yield gap 2)**	
Max yield	**High yield (C)**	**Average yield**	**Productivity (D)**	**(Yield gap II)**	**C-D (Yield gap I)**
8,288	6,656	5,457	1,553	3,904	**5,103**
Groundnut					
Max yield	**High yield (C)**	**Average yield**	**Productivity (D)**		**C-D**
3,300	2,150	2,135	1877	258	**273**

Table 3.6 Yield Gaps of Major Varieties cultivated in Pudukkottai District

Ruling Varieties	**ADT 36**	**ASD 16**	**ADT 42**	**ADT 43**	**ADTR 45**	**ADTR 47**	**CR 1009**	**BPT 5204**
Potential Yield (kg /ha)	4,000	5,600	5,600	5,900	5,400	6,200	5,300	5,400
Progressive farmer yield(kg/ha)	3,650	5,200	5,500	5,100	5,350	5,600	5,200	5,100
Average Yield (kg/ha)	3,100	4,000	3,600	4,100	4,650	5,550	4,320	4,250
Overall Yield Gap(kg/ha)	900	1,600	2,000	1,800	750	650	980	1,150
Required Growth Rates	29.03	40.00	55.56	43.90	16.13	11.71	22.69	27.06
Annual Growth Rate	2.64	3.64	5.05	3.99	1.47	1.06	2.06	2.46

3.1.3 Projected Yield and Production of selected Crops

3.1.3.1 Paddy

Table 3.7 Production Projection of major potential paddy varieties in Pudukkottai District

Details	ADT 36	ASD 16	ADT 42	ADT 43	ADT R 45	Total
Proportion of varieties	0.8	0.05	0.05	0.05	0.05	1.00
Triennium average (2010-11) Area(ha)	80,000	5,000	5,000	5,000	5,000	1,00,000
Triennium average (2010-11)Production(tonnes)	75,890	4,744	4,743	4,742	4,744	94,863
2012-13	2,54,547	20,728	18,909	21,318	23,592	3,39,094
2013-14	2,61,267	21,482	19,864	22,169	23,939	3,48,721
2014-15	2,68,165	22,264	20,867	23,053	24,290	3,58,639
2015-16	2,75,244	23,075	21,921	23,973	24,648	3,68,861
2016-17	2,82,511	23,915	23,028	24,929	25,010	3,79,393
2017-18	2,89,969	24,785	24,191	25,924	25,378	3,90,247
2018-19	2,97,624	25,687	25,412	26,958	25,751	4,01,432
2019-20	3,05,481	26,623	26,696	28,034	26,129	4,12,963
2020-21	3,13,546	27,592	28,044	29,153	26,513	4,24,848
2021-22	3,21,824	28,596	29,460	30,316	26,903	4,37,099
2022-23	3,30,320	29,637	30,948	31,525	27,298	4,49,728

3.1.3.2 Groundnut

Table 3.8 Production projection of major potential groundnut varieties in Pudukkottai District

Details	VRI 2	TMV 7	TMV 13	K6	Total
Proportion of varieties	0.8	0.1	0.05	0.05	1.00
Triennium average (2010-11) Area(ha)	14,654	1,832	916	915	18,317
Triennium average(2010-11) Production(tonnes)	22,208	2,776	1,389	1,388	27,761
2012-13	22,874	2,859	1,430	1,430	28,593
2013-14	23,514	2,939	1,470	1,470	29,393
2014-15	24,178	3,022	1,511	1,511	30,223
2015-16	24,818	3,102	1,552	1,551	31,023
2016-17	25,482	3,185	1,593	1,593	31,853
2017-18	26,122	3,265	1,633	1,633	32,653
2018-19	26,786	3,348	1,675	1,675	33,483
2019-20	27,426	3,428	1,715	1,714	34,283
2020-21	28,066	3,508	1,755	1,755	35,083
2021-22	28,706	3,588	1,795	1,794	35,883
2022-23	29,370	3,671	1,836	1,836	36,713

Table 3.9 Technological interventions and strategies to reduce the yield gaps

Sl.No	Crop	Identified Problem	Title of OFT	Title of FLD	Title of Training	Title of training for extension personnel	Others
1	Paddy	Scarcity in irrigation water.		Demonstrations Direct paddy seeder	Use of Direct paddy seeder Use Row maker in SRI	Demonstration of direct paddy seeder	Crop diversification Trainings, demonstration, leaflet
		Due to unpredictable rainfall timely sowing is difficult in direct sowing		Demonstrations of upland paddy seeder	use of Aerobic Rice seeder		
		Single crop cultivation of paddy during samba cannot benefit the farming community		Farm mechanization Drudgery reduction in paddy transplanting	Preparation of supplementary foods, weaning food preparation		
2	Groundnut	Demand of seeds during sowing season					Training, Demonstration Printing of leaflets and pamphlets
		Due to unpredictable rainfall, timely sowing is difficult in direct sowing.					
		Labour problem during harvest					
		Improper insecticide application	Evaluation of insecticide application time and method for the management of pod borer in ground nut		Plant protection techniques in ground nut		

Sl. No	Crop	Identified Problem	Title of OFT	Title of FLD	Title of Training	Title of training for extension personnel	Others
	Groundnut	Poor flower yield due to inadequate and improper nutrient management by the farmers in the area	Fertilizer dose of 60:0:120: 120 g ofNPK/plant+ foliar spray (DAP 2%+MOP 100 g+ferroussulphate 50 g+boric acid30 g+planofix 10 ml in 10 lit of water – 7 times)				
		In ground nut pod bug, termites, leaf caterpillars aremajor problems	1. Application of dust formulation of chemical at 40th day (as recommended) was not followed to control the subterranean pest, as the pod bug damage started during pod development and pod maturity stage. 2. Applying chemicals to the soil after pod formation,i.e. after 60-70 days is difficult due to the dense foliage coverage in the plots.				
		In ground nut, after harvest 20 percent of the matured pods areobserved as damaged due to thepests,like pod borer.	1.Application of dust formulation prior to sowing 2.Application of wettable powder formulation (WP) during 60th and 80th day @ 2.5kg/ha3.Application of wettable powder formulation (WP) in the mouth (opening for irrigation)of each plot (regular plot size3 x 3 m or 4 x 4 m) during last2 irrigation For 3 x 3 plot size – 2.2 g perplot with 1110 plots/ha4.For 4 x4 plot size – 4 g perplot with 625plots/ha				

Sl. No	Crop	Identified Problem	Title of OFT	Title of FLD	Title of Training	Title of training for extension personnel	Others
3	Sunflower	Unaware of importance of sunflower cultivation		Introduction of new improved variety in Sunflower (CO 4) and maximizing the yield by new technologies	Cultivation techniques of Sunflower		Training, Demonstration Printing of leaflets and pamphlets.
4	Gingelly	Problem due to pest and diseases			Plant protection techniques in sesame		Trainings, demonstration, leaflet
		Use of Local varieties		Introduction of new variety of Sesame TMV.6	Cultivation of Sesame – An alternative crop for water scarcity		Trainings, demonstration, leaflet distribution
5	Banana	1. Poor quality planting materials 2.Low yield and quality. 3.Unrenumerative price 4.Loss due to natural calamities	1.Demonstration on management of Banana Pseudo stem weevil by Pseudo stem injection		1.Pest and disease management in banana 2.Cultivation practices of banana		Demonstration of Tissue culture Banana under drip and fertigation system in KVK demonstration unit
		Testing of TC banana Grand Naine variety with existing Poovan cultivar robusta cultivar	1.TC,Grand Naine with normal planting (5x7) 2.Drip irrigate ion and fertigation 3.Bunch covering and precision farming				

Sl. No	Crop	Identified Problem	Title of OFT	Title of FLD	Title of Training	Title of training for extension personnel	Others
6	Brinjal	1.Nursery diseases and poor germination 2.Use of local varieties 3.Poor availability of hybrid seeds 4.Incidence of pest and diseases		1.Demonstration on Use of Pheromone trap for the management of shoot and fruit borer pests in brinjal	1.Management of Pests and diseases in brinjal		Training Demonstration Printing of leaflets and pamphlets
7	Jasmine	1.Poor nutrient management and poor yield 2.Micronutrient deficiency 3.Poor marketing facilities	1.Study on foliar nutrition in Jasmine Fertilizer dose of 60:0:120: 120 g NPK/plant + foliar spray (DAP 2%, MOP 100 g, Ferrous sulphate 50 g, boric acid 30 g, planofix 10 ml in 10 lit of water – 7 times)		1.Nutrient management in jasmine		Trainings, demonstration, leaflets
8	Casuarina	1.Low productivity 2.Poor quality seedlings	1.Saucer planting of Casuarina		1.Saucer planting of Casuarina		Trainings, demonstration, leaflets

CHAPTER IV

DISTRICT PLAN

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

4.1. Agriculture

The development of agriculture sector has been aimed at by mainly pushing up the productivity levels of the major crops *viz.,* Rice, Millets, Pulses, Oilseed, Oil palm, Cotton, Sugarcane, Coconut and others interventions like training, infrastructure development, soil health management, rainfed area development, 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 Pudukkottai District

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

Project components

- ✓ Promotion of SRI
- ✓ Distribution of biocontrol agents/ biopesticides to all blocks except Aavudayarkoil and Manamelkudi
- ✓ Distribution of direct sown paddy with seed drill sowing to all blocks except Annavasal, Kunrandarkovil and viralimali blocks
- ✓ Distribution of MN mixture, biofertilizer, zinc sulphate, herbicides and protrays
- ✓ Distribution of certified seeds and Polyvinyl coated tarpaulin
- ✓ Certified seed production and incentives for paddy machine planting

Budget

The budget requirement for fulfilling the various interventions is **₹. 4626.02 Lakhs**.

Expected outcome

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

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.1. Budget Requirement for Paddy Production

(Rs.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	Promotion of SRI	Ha	15000	All blocks	1365	204.75	1390	208.50	1440	216.00	1465	219.75	1465	219.75	7125	1068.75
2	Distribution of High Yielding Varieties	MT	35000	All blocks	493	172.55	493	172.55	493	172.55	493	172.55	493	172.55	2465	862.75
3	Distribution of Foundation	MT	40000	All blocks	55	22.00	64	25.60	64	25.60	64	25.60	64	25.60	311	124.40
4	seed production - Foundation	MT	32000	All blocks	55	17.60	64	20.48	64	20.48	64	20.48	64	20.48	311	99.52
5	seed production - Certified class	MT	26000	All blocks	492	127.92	492	127.92	492	127.92	492	127.92	492	127.92	2460	639.60
6	Incentives for paddy machine planting	Ha	10000	All blocks	854	85.40	854	85.40	854	85.40	854	85.40	854	85.40	4270	427.00
7	Distribution of MN mixture/ Copper Sulphate	Ha	1000	All blocks	4454	44.54	4504	45.04	4504	45.04	4504	45.04	4504	45.04	22470	224.70
8	Distribution of biofertilizer / PPFM / bioinputs / plant nutrient mobilizing bacteria	Ha	300	All blocks	4208	12.62	4258	12.77	4258	12.77	4258	12.77	4258	12.77	21240	63.72
9	Distribution of Zinc sulphate (Soil application & foliar)	Ha.	1000	All blocks	3451	34.51	3501	35.01	3501	35.01	3501	35.01	3301	33.01	17255	172.55
10	Distribution of biocontrol agents/biopesticides	Ha..	1000	All blocks except B1,B8	1279	12.79	1279	12.79	1279	12.79	1279	12.79	1279	12.79	6395	63.95
11	Gypsum application	Ha.	1500	All blocks except B1,B2,B8	701	10.52	1001	15.02	1001	15.02	1001	15.02	1001	15.02	4705	70.58
12	Distribution of herbicides	Ha.	1000	All blocks	2208	22.08	2508	25.08	2508	25.08	2508	25.08	2508	25.08	12240	122.40
13	Polyvinyl coated Tarpaulin (6m x 5m)	No.	2000	All blocks	1304	26.08	1304	26.08	1304	26.08	1304	26.08	1304	26.08	6520	130.40
14	Direct sown paddy with seed drill sowing	Ha	7000	All blocks except B2,B7,B13	1168	81.76	1233	86.31	1293	90.51	1363	95.41	1453	101.71	6510	455.70
15	Demonstration of drip irrigation	ha	100000	All Blocks	20	20.00	20	20.00	20	20.00	20	20.00	20	20.00	100	100.00
	Grand total					**895.12**		**918.55**		**930.25**		**938.90**		**943.20**		**4626.02**

B1- Aavudayarkovil, B2- Annavasal, B3- Aranthagi, B4- Arimalam, B5- Gantharvakottai, B6- Karambakudi, B7- Kunrandarkovil, B8- Manamelkudi, B9- Ponnamaravathi, B10- Pudukottai, B11- Thirumayam, B12- Thiruvarankulam, B13- Viralimali

4.1.2. Enhancing the millets productivity in Pudukkottai District

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

Project components

- ✓ Demonstration (supply of seed, seed treatment & MN mixture)
- ✓ Distribution of bio fertilizers Liquid / Carrier
- ✓ Distribution of maize maxim to all blocks except Arimalam block
- ✓ Drip irrigation for maize to all blocks except Arimalam block
- ✓ Distribution seeds and hybrids to all blocks except Arimalam block

Budget

The total cost of the project for five years works to **₹. 216.07 Lakhs**.

Expected outcome

There is a scope to increase the area under millets in Pudukkottai 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.

Total 4.2. Budget Requirement Enhancing Millets Production

(Rs.in lakhs)

Sl. No	Components	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Maize															
1	Demonstration (Supply of seed, seed treatment & MN mixture, organic package)	Ha	0.05	B2,B5,B6,B7, B10,B12,B13	117	5.85	126	6.30	132	6.60	141	7.05	153	7.65	669	33.45
2	Distribution of biofertilizers Liquid / Carrier	Ha	0.003	B2,B5,B6,B7, B10,B12,B13	567	1.70	632	1.90	705	2.12	749	2.25	785	2.36	3438	10.31
3	Distribution of Maize maxim (15 kg/ha)	Ha	0.045	B4	5	0.23	10	0.45	15	0.68	15	0.68	15	0.68	60	2.70
4	Drip irrigation for maize	Ha	1	B4	2	2.00	2	2.00	2	2.00	2	2.00	2	2.00	10	10.00
5	Seed Distribution	MT	0.4	B4	5	2.00	10	4.00	15	6.00	15	6.00	15	6.00	60	24.00
6	Seed Distribution Hybrid seeds for maize	MT	1.8	B4	5	9.00	10	18.00	15	27.00	15	27.00	15	27.00	60	108.00
	Cumbu															
7	Distribution of biofertilizers Liquid / Carrier	Ha	0.003	B2,B5,B6,B7, B10,B12,B13	712	2.14	712	2.14	712	2.14	312	0.94	312	0.94	2760	8.28
8	Distribution of MN mixture (12.5kg/ha)	Ha	0.007	B2,B5,B6,B7, B10,B12,B13	712	4.98	712	4.98	712	4.98	312	2.18	312	2.18	2760	19.32
	Total					**27.90**		**39.77**		**51.51**		**48.09**		**48.80**		**216.07**

B1- Aavudayarkovil, B2- Annavasal, B3- Aranthagi, B4- Arimalam, B5- Gantharvakottai, B6- Karambakudi, B7- Kunrandarkovil, B8- Manamelkudi, B9- Ponnamaravathi, B10- Pudukottai, B11- Thirumayam, B12- Thiruvarankulam, B13- Viralimali

4.1.3. Enhancing the pulses productivity in Pudukkottai District

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

Project components

- ✓ Production of foundation/certified pulses seeds
- ✓ Distribution of yellow sticky trap/ pheromone trap to all blocks except Aavudayarkoil, Manamelkudi and Thirumayam blocks
- ✓ Distribution of certified seeds, micro nutrients, weedicide and DAP Spray
- ✓ Distribution of biofertilizer (Rhizobium + Phosphobacteria) - liquid / carrier to all blocks except Thirumayam
- ✓ Cropping system based demonstration for black gram and greengram,
- ✓ Pure crop demonstration
- ✓ DAP spray to all blocks except Thirumayam

Budget

The total budget for the proposed intervention is **₹. 1375.81 Lakhs**.

Expected outcome

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

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.3. Budget Requirement for Pulses Production

(Rs.in lakhs)

Sl. No.	Interventions	Unit	Unit cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Production of Foundation/ Certified pulses seeds	MT	86000	All blocks except B1,B8,B11	52	44.72	55.5	47.73	55.5	47.73	56	48.16	57	49.02	276	237.36
2	Distribution of Certified Seeds	MT	100000	All blocks	54	54.00	57.5	57.50	57.5	57.50	58	58.00	59	59.00	286	286.00
3	Distribution of Biofertilizer/ Organic packages (Rhizobium + Phosphobacteria) - Liquid / Carrier	Ha	600	B11	2000	12.00	2045	12.27	2140	12.84	2170	13.02	2200	13.20	10555	63.33
4	Distribution of Micro Nutrients(5 kgs/ Ha)	Ha	350	All blocks	2000	7.00	2045	7.16	2060	7.21	2090	7.32	2120	7.42	10315	36.10
5	DAP Spray	Ha	700	B11	2000	14.00	2045	14.32	2060	14.42	2090	14.63	2120	14.84	10315	72.21
6	Bund Cropping	Ha	300	All blocks except B1,B8,B11	895	2.69	950	2.85	960	2.88	991	2.97	1000	3.00	4796	14.39
7	Distribution of Yellow sticky trap /pheromone trap	ha	1000	All blocks except B1,B8,B11	59	0.59	114	1.14	114	1.14	114	1.14	114	1.14	515	5.15
8	Cropping system based demonstration	Ha	12500	All blocks except B1,B8,B11	0	0.00	220	27.50	220	27.50	220	27.50	220	27.50	880	110.00
9	Seed treatment and soil application with Trichodermaviridi	Ha	700	All blocks except B1,B8,B11	0	0.00	110	0.77	110	0.77	110	0.77	110	0.77	440	3.08
10	Pure crop demonstration - Black gram and green gram	Ha	6300	All blocks except B1,B8,B11	900	56.70	1060	66.78	1070	67.41	1080	68.04	1100	69.30	5210	328.23
11	Demonstration on intercropping of pulses with other crops	Ha	8300	All blocks except B1,B8,B11	500	41.50	525	43.58	525	43.58	550	45.65	550	45.65	2650	219.95
	Total					**233.20**		**281.59**		**282.98**		**287.20**		**290.84**		**1375.81**

B1- Aavudayarkovil, B2- Annavasal, B3- Aranthagi, B4- Arimalam, B5- Gantharvakottai, B6- Karambakudi, B7- Kunrandarkovil, B8- Manamelkudi, B9- Ponnamaravathi, B10- Pudukottai, B11- Thirumayam, B12- Thiruvarankulam, B13- Viralimali

4.1.4. Enhancing the oilseeds productivity in Pudukkottai District

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

Project components

- ✓ Production of foundation and certified seeds
- ✓ Distribution of certified seeds to all blocks except Aavudayarkoil and Manamelkudi
- ✓ Distribution of MN mixture, Manganese sulphate, Zinc sulphate and liquid bio-fertilizer
- ✓ Application of gypsum to groundnut crop
- ✓ Distribution of seed treatment chemicals and bio agents to all blocks except Aavudayarkoil and Manamelkudi blocks
- ✓ Extablishment of combined nutrient spray to all blocks except Aavudayarkoil and Manamelkudi blocks
- ✓ CBD- Groundnut, Castor and Sunflower
- ✓ Bund cropping- castor

Budget

The total cost of the project for five years works to **₹. 2194.82 lakhs**.

Expected outcome

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

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.4. Budget Requirement for Oilseeds Production

(Rs.in lakhs)

Sl. No.	Components	Unit	Unit Cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
I	**OILSEEDS**															
1	Compact Block Demonstration - Groundnut	Ha	0	All blocks except B1, B8	305	61.00	325	65.00	360	72.00	365	73.00	385	77.00	1740	348.00
2	Compact Block Demonstration - Gingelly / Castor	Ha	0	B5,B6	6	0.36	6	0.36	7	0.42	7	0.42	8	0.48	34	2.04
3	Compact Block Demonstration - Sunflower	Ha	0	B4, B9, B10, B11, B12	22	1.76	24	1.92	26	2.08	28	2.24	30	2.40	130	10.40
4	Microirrigation (Raingun / Microsprinkler)	Ha	1	All Blocks	50	27.50	45	24.75	55	30.25	50	27.50	45	24.75	245	134.75
5	Distribution of IPM kit	No	0	All Blocks	1000	100.00	1000	100.00	5000	500.00	500	50.00	500	50.00	8000	800.00
6	Growth regulator / DAP	Ha	0	All Blocks	100	0.50	100	0.50	150	0.75	150	0.75	150	0.75	650	3.25
	GROUNDNUT															
7	Strengthening seed chain by foundation seed production	Mt	1	All blocks except B1, B8	13	9.58	12	9.35	15	11.10	16	11.78	20	15.12	75	56.92
8	Strengthening seed chain by certified seed production	Mt	1	All blocks except B1, B8	67	48.91	70	50.74	75	54.39	75	54.39	81	58.77	366	267.18
9	Distribution of Certified seeds	Mt	1	All blocks except B1, B8	80	66.86	82	68.71	67	55.94	91	76.02	104	87.28	422	354.82
10	Distribution of Seed Treatment	Kg	0	All blocks except B1,	750	1.13	790	1.19	830	1.25	870	1.31	950	1.43	4190	6.29

Sl. No.	Components	Unit	Unit Cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Chemicals and Bioagents (T.Viridi)			B8												
11	Application of Gypsum to Groundnut Crop	Ha	0	All blocks except B1, B8	775	12.40	815	13.04	855	13.68	895	14.32	975	15.60	4315	69.04
12	Distribution of Micro Nutrient Mixture	Ha	0	All blocks except B1, B8	775	11.63	815	12.23	855	12.83	895	13.43	975	14.63	4315	64.73
13	Distribution of Biofertilizer	Ha	0	All blocks except B1, B8	775	4.65	815	4.89	855	5.13	895	5.37	975	5.85	4315	25.89
14	Distribution of Liquid Biofertilizer	Ha	0	All blocks except B1, B8	775	4.65	815	4.89	855	5.13	895	5.37	975	5.85	4315	25.89
15	Castor as Bund crop	Ha	0	All blocks except B1, B8	100	0.60	105	0.63	45	0.27	45	0.27	50	0.30	345	2.07
16	Combined Nutrient Spray	Ha	0	All blocks except B1, B8	58	0.87	63	0.95	68	1.02	73	1.10	78	1.17	340	5.10
	GINGELLY															
17	Distribution of certified seeds	Mt	1	All blocks except B1, B4, B8, B9	2	3.00	2	3.00	2	3.00	2	3.00	2	3.00	12	15.00
18	Distribution of Micro nutrients (Manganese sulphate/ Zinc sulphate)	Ha	0	All blocks except B1, B4, B8, B9	65	0.26	200	0.80	200	0.80	200	0.80	200	0.80	865	3.46
	Total					**355.65**		**362.93**		**770.03**		**341.05**		**365.17**		**2194.82**

B1- Aavudayarkovil, B2- Annavasal, B3- Aranthagi, B4- Arimalam, B5- Gantharvakottai, B6- Karambakudi, B7- Kunrandarkovil, B8- Manamelkudi, B9- Ponnamaravathi, B10- Pudukottai, B11- Thirumayam, B12- Thiruvarankulam, B13- Viralimali

4.1.5. Enhancing the oil palm productivity in Pudukkottai 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 in Annavasal, Aranthangi, Arimalam, Gantharvakottai, Karamadai, Karambakudi, Ponnamaravathi, Pudukottai, Thirumayam and Viralimalai blocks
- ✓ Distribution of inputs for intercropping
- ✓ Cultivation maintenance in all blocks except Aavudayarkoil, Kundrankudi and Manamelkudi

Budget

It is proposed to incur **₹. 21.00 Lakhs** over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

The expected outcome of the project will result in an increase in the production of 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 Production

(Rs.in lakhs)

Sl. No	Components	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Neem/ Pungam Area Expansion Programme	Ha	0.2	B2,B3,B4,B5,B6,B9, B10,B11,B12,B13	30.00	6.00	10.00	2.00	10.00	2.00	10.00	2.00	10.00	2.00	70.00	14.00
2	Cultivation maintenance	Ha	0.05	B2,B3,B4,B5,B6,B9, B10,B11,B12,B13	30.00	1.50	10.00	0.50	10.00	0.50	10.00	0.50	10.00	0.50	70.00	3.50
3	Inputs for Intercropping	Ha	0.05	B2,B3,B4,B5,B6,B9, B10,B11,B12,B13	30.00	1.50	10.00	0.50	10.00	0.50	10.00	0.50	10.00	0.50	70.00	3.50
	Total					**9.00**		**3.00**		**3.00**		**3.00**		**3.00**		**21.00**

B1- Aavudayarkovil, B2- Annavasal, B3- Aranthagi, B4- Arimalam, B5- Gantharvakottai, B6- Karambakudi, B7- Kunrandarkovil, B8- Manamelkudi, B9- Ponnamaravathi, B10- Pudukottai, B11- Thirumayam, B12- Thiruvarankulam, B13- Viralimali

4.1.6. Enhancing the sugarcane productivity in Pudukkottai District

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

Project components

- ✓ Establishment of Sustainable Sugarcane Initiative (Shade net establishment and distribution of single bud seedling) in all blocks except Aavudayarkoil, Manamelkudi and Ponnamaravathi blocks
- ✓ Distribution of micro nutrient mixture, biofertilizer, weedicide, chip cutter, water soluble fertilizer to all blocks except Aavudayarkoil, Manamelkudi and Ponnamaravathi blocks
- ✓ Micro-irrigation – drip
- ✓ Demonstration on intercropping in Sugarcane
- ✓ Trash mulching in Arimalam and Thirumayam blocks
- ✓ Distribution portray to all blocks except Aavudayarkoil, Arimalam, Manamelkudi, Ponnamaravathi and Thirumayam blocks

Budget

The total cost of the project for five years works to **₹. 2028.52 Lakhs**. The details of budget requirement for each intervention across the blocks are shown in Table 4.6.

Expected outcome

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

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.6. Budget Requirement for Sugarcane Production in the Pudukottai District

(Rs.in lakhs)

Sl. No	components	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Distribution of bio fertilizer (Ha)	Ha	0.006	B4,B11	50	0.30	90	0.54	100	0.60	110	0.66	120	0.72	470	2.82
2	Distribution. of weedicide (Ha)	Ha	0.01	All blocks except B1,B8,B9	206	2.06	251	2.51	261	2.61	275	2.75	287	2.87	1280	12.80
3	Distribution of Chip Cutter	Nos	0.05	All blocks except B1,B8,B9	48	2.40	50	2.50	52	2.60	52	2.60	54	2.70	256	12.80
4	Distribution of Protray (2500 nos/ha)	Nos	0.0008	B2,B3,B5,B6,B7 ,B10,B12,B13	161	0.13	181	0.14	171	0.14	175	0.14	177	0.14	865	0.69
5	Distribution of Water Soluble Fertilizers	ha	0.25	All blocks except B1,B8,B9	189	47.25	216	54.00	213	53.25	217	54.25	221	55.25	1056	264.00
6	Micro irrigation - Drip (1.2x0.6)	ha	1.24	All blocks except B1,B8,B9	189	234.36	206	255.44	213	264.12	217	269.08	221	274.04	1046	1297.04
	Sustainable Sugarcane Initiative (SSI)				189	0.00	206	0.00	213	0.00	217	0.00	207	0.00	1032	0.00
7	A. Establishment of Shadenet	Nos	1.5	All blocks except B1,B8,B9	26	39.00	27	40.50	27	40.50	28	42.00	29	43.50	137	205.50
8	B. Distribution of Single Bud Seedling	Ha	0.225	All blocks except B1,B8,B9	184	41.40	196	44.10	203	45.68	207	46.58	211	47.48	1001	225.23
9	Trash Mulching	Ha	0.04	B4,B11	28	1.12	35	1.40	42	1.68	42	1.68	44	1.76	191	7.64
	Grand Total					**368.02**		**401.13**		**411.17**		**419.74**		**428.46**		**2028.52**

B1- Aavudayarkovil, B2- Annavasal, B3- Aranthagi, B4- Arimalam, B5- Gantharvakottai, B6- Karambakudi, B7- Kunrandarkovil, B8- Manamelkudi, B9- Ponnamaravathi, B10- Pudukottai, B11- Thirumayam, B12- Thiruvarankulam, B13- Viralimali

4.1.7. Enhancing the coconut productivity in Pudukkottai District

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

Project components

- ✓ Distribution of T × D hybrid seedlings and tall seedlings
- ✓ Distribution of boom sprayer, power operated sprayer and rocker sprayer to all blocks
- ✓ Distribution of coconut seedlings to school children
- ✓ Distribution of MN mixture and coconut tonic to all blocks
- ✓ Distribution of pheromone traps for red palm weevil, Rhinoceros beetle to Annavasal, Aranthagi, Arimalam, Ponnamaravathi, Pudukottai, Thirumayam, Thiruvarankulam and Viralimalai blocks

Budget

The total cost of the project for five years works to **₹. 1816.08 Lakhs**. The details of budget requirement for each intervention across the blocks are shown in Table 4.7.

Expected outcome

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

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.7. Budget requirement for Coconut

(Rs.in lakhs)

Sl. No	Coconut	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Distribution of Tall Seedlings	No	0.0004	All blocks	2235	1.34	2235	1.34	2235	1.34	2235	1.34	2235	1.34	11175	6.71
2	Boom sprayer	No	0.2000	All blocks	4235	1.69	4235	1.69	4235	1.69	4235	1.69	4235	1.69	21175	8.47
3	Distribution of D xT hybrid Seedlings	No	0.0015	All blocks	12	2.40	12	2.40	12	2.40	12	2.40	12	2.40	60	12.00
4	Distribution of Pheromone traps for Red palm weevil/ Rhinocerous beetle	Ha	0.0160	B2,B3,B4,B9 ,B10,B11, B12,B13	500	50.00	500	50.00	500	50.00	500	50.00	500	50.00	2500	250.00
5	Distribution of power operated rocker sprayer	No	0.1000	All blocks	120	1.92	90	1.44	90	1.44	90	0	90	1.44	480	7.68
6	Thanjavur wilt management (root feeding /soil application)	Ha	0.0300	All blocks	290	130.50	290	130.50	290	130.50	290	130.50	290	130.50	1450	652.50
7	Distribution of coconut seedlings to school children	No	0.0004	All blocks	114	85.50	114	85.50	114	85.50	114	85.50	114	85.50	570	427.50
8	Control of Eriophid mite	No. of tree	0.0002	All blocks	600	0.24	600	0.24	600	0.24	600	0.24	600	0.24	3000	1.20
9	Distribution of MN mixture/ Coconut tonic	Ha		All blocks	90	450.00	0	0.00	0	0.00	0	0.00	0	0.00	90	450.00
	Grand Total					**723.60**		**273.12**		**273.12**		**273.12**		**273.12**		**1816.08**

B1- Aavudayarkovil, B2- Annavasal, B3- Aranthagi, B4- Arimalam, B5- Gantharvakottai, B6- Karambakudi, B7- Kunrandarkovil, B8- Manamelkudi, B9- Ponnamaravathi, B10- Pudukottai, B11- Thirumayam, B12- Thiruvarankulam, B13- Viralimali

4.1.8. Enhancing the livelihood of farmers through training in Pudukkottai 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

- ✓ State level trainings to Extension officials
- ✓ State level and interstate level training programmes to farmers
- ✓ Training of framers at district level in all blocks
- ✓ Training of framers with in the district for groundnut, pulses and value addition
- ✓ Exposure visit for rodent pest management
- ✓ Organization of kisan gothies on soil test based nutrient application to all blocks

Budget

It is proposed to incur **₹. 252.30 Lakhs** over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing agency

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

Table 4.8. Budget requirement for Training

(Rs.in lakhs)

Sl. No	Cafeteria of Activities	Unit	Unit Cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	District Level															
	Training of Farmers															
1	Inter State Training of Farmers	Nos.	1.25	All blocks	13	16.25	13	16.25	13	16.25	13	16.25	13	16.25	65	81.25
2	Training of Farmers under Mission Soil Health Card	Nos.	0.15	All blocks	13	1.95	13	1.95	13	1.95	13	1.95	13	1.95	65	9.75
3	With in the district training of Farmers	Nos.	0.1	All blocks	13	1.30	13	1.30	13	1.30	13	1.30	13	1.30	65	6.50
4	With in the State training of Farmers	Nos.	1.2	All blocks	13	15.60	13	15.60	13	15.60	13	15.60	13	15.60	65	78.00
	Training of Farmers With in the district															
5	Groundnut	Nos.	0.1	B2,B13	2	0.20	2	0.20	2	0.20	2	0.20	2	0.20	10	1.00
6	Paddy	Nos.	0.1	All blocks	13	1.30	13	1.30	13	1.30	13	1.30	13	1.30	65	6.50
7	Pulses	Nos.	0.1	B3,B12	2	0.20	2	0.20	2	0.20	2	0.20	2	0.20	10	1.00
8	Value addition training	Nos.	0.1	B2,B3,B12,B13	4	0.40	4	0.40	4	0.40	4	0.40	4	0.40	20	2.00
	Exposure visit of Farmers		0.4													
9	Rodent Pest Management Demonstration	Nos.	0.04	All blocks	130	5.20	130	5.20	130	5.20	130	5.20	130	5.20	650	26.00
10	With in State Exposure visit	Nos.	0.4	All blocks	10.4	4.16	10.4	4.16	10.4	4.16	10.4	4.16	10.4	4.16	52	20.80
11	Organization of Kisangosthies on Soil test based nutrient application (Campaign)	Nos.	0.15	All blocks	13	1.95	13	1.95	13	1.95	13	1.95	13	1.95	65	9.75
12	With in the district exposure visit	Nos.	0.15	All blocks	13	1.95	13	1.95	13	1.95	13	1.95	13	1.95	65	9.75
	TOTAL					**50.46**		**50.46**		**50.46**		**50.46**		**50.46**		**252.30**

B1- Aavudayarkovil, B2- Annavasal, B3- Aranthagi, B4- Arimalam, B5- Gantharvakottai, B6- Karambakudi, B7- Kunrandarkovil, B8- Manamelkudi, B9- Ponnamaravathi, B10- Pudukottai, B11- Thirumayam, B12- Thiruvarankulam, B13- Viralimali

4.1.9. Infrastructure Development in Pudukkottai 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

- ✓ Strengthening of CCL in Annavasal block
- ✓ Establishment of seed godown in Annavasal, Gantharvakottai and Karambakudi blocks
- ✓ Distribution of seed processing unit machineries to Annavasal block
- ✓ Strengthening of FCL in Aranthagi, gantharvakottai and Karambakudi blocks
- ✓ Distribution of seed rack and tarpaulin to all blocks
- ✓ Office furnishings and other amenities to all blocks except Arimalam block

Budget

It is proposed to incur **₹. 1115.20 Lakhs** over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing agency

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

Table 4.9. Budget requirement for Infrastructure

(Rs.in lakhs)

Sl. No.	Components	Unit	Unit Cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Seed Godown (300 MT)	Nos.	2500000		0	0.00	3	75.00	0	0.00	0	0.00	0	0.00	3	75.00
2	Seed Processing Unit Machineries	Nos.	2650000		0	0.00	1	26.50	0	0.00	0	0.00	0	0.00	1	26.50
3	Strengthening of Fertilizer Control Lab	Nos.	6000000	B2,B5,B6	2	120.00	1	60.00	0	0.00	0	0.00	0	0.00	3	180.00
4	Construction of Lignite Storage/ Liquid bio fertilizer storage godown	Nos.	5000000		0	0.00	1	50.00	0	0.00	0	0.00	0	0.00	1	50.00
5	Establishment of Threshing floor/drying yard	Nos.	500000	All blocks	0	0.00	13	65.00	0	0.00	0	0.00	0	0.00	13	65.00
6	Dunnage	Nos.	7500	All blocks	130	9.75	130	9.75	130	9.75	130	9.75	130	9.75	650	48.75
7	Moisture meter	Nos.	25000	All blocks	13	3.25	0	0.00	0	0.00	0	0.00	13	3.25	26	6.50
8	Bag closure	Nos.	10000	All blocks	13	1.30	0	0.00	0	0.00	0	0.00	13	1.30	26	2.60
9	Electronic platform balance	Nos.	150000	All blocks	13	19.50	0	0.00	0	0.00	0	0.00	13	19.50	26	39.00
10	Seed rack	Nos.	30000	All blocks	13	3.90	1	0.30	0	0.00	0	0.00	13	3.90	27	8.10
11	Tarpaulin	Nos.	25000	All blocks	15	3.75	3	0.75	3	0.75	3	0.75	15	3.75	39	9.75

Sl. No.	Components	Unit	Unit Cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
12	Office Furnishings and other amenities	Nos.	200000	All blocks except B4	12	24.00	0	0.00	0	0.00	0	0.00	0	0.00	12	24.00
13	Strengthening of Central Control Lab	Nos.	3000000	B2	1	30.00	0	0.00	0	0.00	0	0.00	0	0.00	1	30.00
14	Strengthening of training institute / nursery / FTC / KVK	Nos.	50000000	All Blocks	0	0.00	0	0.00	1	500.00	0	0.00	0	0.00	1	500.00
15	Infrastructure for empowerment of coconut nurseries	Nos.	5000000	All Blocks	0	0.00	0	0.00	0	0.00	1	50.00	0	0.00	1	50.00
	Total					**215.45**		**287.30**		**510.50**		**60.50**		**41.45**		**1115.20**

B1- Aavudayarkovil, B2- Annavasal, B3- Aranthagi, B4- Arimalam, B5- Gantharvakottai, B6- Karambakudi, B7- Kunrandarkovil, B8- Manamelkudi, B9- Ponnamaravathi, B10- Pudukottai, B11- Thirumayam, B12- Thiruvarankulam, B13- Viralimali

4.1.10. Soil Health Management in Pudukkottai 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 preparation.

Project component

- ✓ Reclamation of acid and alkali soil
- ✓ Adoption of PGS certification to all blocks except Aavudayarkoil and Manamelkudi blocks
- ✓ Green manuring to all blocks
- ✓ Establishment of permanent and HDPE vermicompost units to all blocks
- ✓ Distribution of soil health card to all blocks
- ✓ Establishment of model organic villages to all blocks except Aavudayarkoil and Manamelkudi blocks

Budget

Enhancing soil health by distributing enriched farm yard manure, micro-nutrient mixture, gypsum, bio-fertilizers, *etc.* is essential to maximize profitability. The overall budget to undertake the various interventions in Pudukkottai district is **₹. 2289.25 Lakhs**

Expected outcome

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

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.10. Budget requirement for Soil Health Management

(Rs.in lakhs)

Sl. No	Components	Unit	Unit Cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Permanent Vermi compost units	Cluster Nos.	50000	All blocks	60	30.00	60	30.00	60	30.00	60	30.00	60	30.00	300	150.00
2	HDPE Vermi compost units	Kit Nos	12000	All blocks	60	7.20	60	7.20	60	7.20	60	7.20	60	7.20	300	36.00
3	Reclamation of Alkali Soil	MT	50000	All blocks	52	26.00	52	26.00	52	26.00	52	26.00	52	26.00	260	130.00
4	Reclamation of Acid Soil	L. No.	6000	All blocks	120	7.20	120	7.20	120	7.20	120	7.20	120	7.20	600	36.00
5	Green Manuring	Nos	4000	All blocks	480	19.20	480	19.20	480	19.20	480	19.20	480	19.20	2400	96.00
6	Establishment of Model organic villages	Ha	1000000	All blocks except B1,B8	0	0.00	11	110.00	0	0.00	0	0.00	0	0.00	11	110.00
7	Adoption of PGS certification through cluster approach	Nos	1495000	All blocks except B1,B8	0	0.00	11	164.45	11	164.45	11	164.45	11	164.45	44	657.80
8	Production of Enriched FYM	MT	2500	All blocks	600	15.00	600	15.00	600	15.00	600	15.00	600	15.00	3000	75.00
9	Distribution of Soil Health Card	Ha	300	All blocks	174593	523.78	158223	474.67	0	0.00	0	0.00	0	0.00	332816	998.45
	Total					**628.38**		**853.72**		**269.05**		**269.05**		**269.05**		**2289.25**

B1- Aavudayarkovil, B2- Annavasal, B3- Aranthagi, B4- Arimalam, B5- Gantharvakottai, B6- Karambakudi, B7- Kunrandarkovil, B8- Manamelkudi, B9- Ponnamaravathi, B10- Pudukottai, B11- Thirumayam, B12- Thiruvarankulam, B13- Viralimali

4.1.11. Rainfed Area Development in Pudukkottai 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*.
- ✓ Stress management in crops by the application of pink pigmented facultative methylotrophs (PPFM spray) KCL to all blocks except Aavudayarkoil, Aranthgi, Manamelkudi and Pudukottai
- ✓ Creation of farm pond to all blocks except Aavudayarkoil, Aranthgi, Manamelkudi and Pudukottai

Budget

It is proposed to incur **₹. 2724.15 Lakhs** over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing agency

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

Table 4.11. Budget requirement for Rainfed Area Development

(Rs.in lakhs)

Sl. No	components	Unit	Unit cost	Block covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Stress Management in crops by the Application of Pink Pigmented Facultative Methylotrophs (PPFM spray)/ Kcl Spray	Ha	0.004	All blocks except B1,B3,B 8,B10	2300	9.2	2700	10.8	3750	15	5200	20.8	6150	24.6	20100	80.4
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	All blocks except B1,B3,B 8,B10	900	495	900	495	900	495	900	495	900	495	4500	2475
3	Creation of Farm pond	Nos.	0.75	All blocks except B1,B3,B 8,B10	45	33.75	45	33.75	45	33.75	45	33.75	45	33.75	225	168.75
	Grand Total					**537.95**		**539.55**		**543.75**		**549.55**		**553.35**		**2724.15**

B1- Aavudayarkovil, B2- Annavasal, B3- Aranthagi, B4- Arimalam, B5- Gantharvakottai, B6- Karambakudi, B7- Kunrandarkovil, B8- Manamelkudi, B9- Ponnamaravathi, B10- Pudukottai, B11- Thirumayam, B12- Thiruvarankulam, B13- Viralimali

4.1.12 Integrated Pest Management (IPM)

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

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

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

Interventions

1. Establishment of Farmers Field Schools (FFS) to all blocks of Pudukottai district
2. IPM School

Budget

It is proposed to incur **₹. 39.00 Lakhs** over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

The projects will provide better knowledge to improve their plant protection methods which will improve the yield of the crops.

Implementing Agency

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

Table 4.12. Budget requirement for Integrated Pest Management (IPM)

(Rs.in lakhs)

Sl. No	Components	Unit	Unit Cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Farmers Field Schools (FFS)	Nos.	20000	All blocks	13	2.60	13	2.60	13	2.60	13	2.60	13	2.60	65	13.00
2	IPM School	Nos	40000	All blocks	13	5.20	13	5.20	13	5.20	13	5.20	13	5.20	65	26.00
	Total					**7.80**		**7.80**		**7.80**		**7.80**		**7.80**		**39.00**

B1- Aavudayarkovil, B2- Annavasal, B3- Aranthagi, B4- Arimalam, B5- Gantharvakottai, B6- Karambakudi, B7- Kunrandarkovil, B8- Manamelkudi, B9- Ponnamaravathi, B10- Pudukottai, B11- Thirumayam, B12- Thiruvarankulam, B13- Viralimali

4.1.13. Farm Mechanization in Pudukkottai 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 Pudukkottai district.

Project component

- ✓ Distribution of solar light traps to all blocks
- ✓ Distribution of power operated sprayer, hand operated sprayer to all blocks
- ✓ Distribution of combine harvester, cono weeder, laser leveller, mobile sprinklers, multi crop thresher to all blocks except Aavudayarkoil, Arimalam, Manamelkudi, Ponnamaravathi and Thirumayam blocks
- ✓ Distribution of power tillers, pumpset, raingun, rotavator, tractor to all blocks

Budget

Agricultural mechanization programs are proposed to implement in a big way to increase the agricultural production and to popularize the agricultural machinery among the farmers of this district with a budget of **₹. 4568.55 Lakhs.**

Expected outcome

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

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.13 Farm Mechanization

(Rs.in lakhs)

Sl. No	Components	Unit	Unit Cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Solar light trap	No.	4000	All blocks	0	0.00	65	2.60	130	5.20	195	7.80	260	10.40	650	26.00
2	Power operated sprayer	Nos.	8000	All blocks	365	29.20	560	44.80	560	44.80	960	76.80	960	76.80	3405	272.40
3	Hand operated sprayer	Nos.	1500	All blocks	690	10.35	690	10.35	330	4.95	690	10.35	690	10.35	3090	46.35
4	Distribution of combine harvester	Nos	1700000	All blocks	13	221.00	13	221.00	13	221.00	13	221.00	13	221.00	65	1105.00
5	Distribution of cono weeder	Nos	2000	All blocks	0	0.00	925	15.00	1275	17.50	1850	23.00	2450	33.50	6500	89.00
6	Distribution of Laser leveller	Nos	380000	All blocks except B1,B4,B8,B9,B11	8	30.40	8	30.40	8	30.40	8	30.40	8	30.40	40	152.00
7	Distribution of Mobile Sprinklers	Ha	30000	All blocks except B1,B8	55	16.50	55	16.50	55	16.50	55	16.50	55	16.50	275	82.50
8	Distribution of multicrop thrasher	Nos	400000	All blocks except B1,B4,B8,B9,B11	8	32.00	8	32.00	8	32.00	8	32.00	8	32.00	40	160.00
9	Distribution of Power tiller	Nos	150000	All blocks	65	97.50	65	97.50	65	97.50	65	97.50	65	97.50	325	487.50
10	Distribution of Pumpset	Nos	30000	All blocks	260	78.00	260	78.00	260	78.00	260	78.00	260	78.00	1300	390.00
11	Distribution of Rain guns	Ha	40000	All blocks except B1,B8	95	38.00	95	38.00	95	38.00	95	38.00	95	38.00	475	190.00
12	Distribution of Rotavator	Nos	80000	All blocks	65	52.00	65	52.00	65	52.00	65	52.00	65	52.00	325	260.00
13	Distribution of Tarpaulins	Nos	8000	All blocks	525	42.00	525	42.00	535	42.80	535	42.80	535	42.80	2655	212.40
14	Distribution of Tractor	Nos	600000	All blocks	13	78.00	13	78.00	13	78.00	13	78.00	13	78.00	65	390.00
15	Distribution of Tractor Drawn Seed cum Fertilizer Drill	Nos	70000	All blocks	18	12.60	21	14.70	21	14.70	21	14.70	21	14.70	102	71.40
16	PVC Pipes to carry Irrigation water from source to field	Unit	40000	All blocks	315	126.00	315	126.00	315	126.00	315	126.00	325	130.00	1585	634.00
	Total					**863.55**		**898.85**		**899.35**		**944.85**		**961.95**		**4568.55**

B1- Aavudayarkovil, B2- Annavasal, B3- Aranthagi, B4- Arimalam, B5- Gantharvakottai, B6- Karambakudi, B7- Kunrandarkovil, B8- Manamelkudi, B9- Ponnamaravathi, B10- Pudukottai, B11- Thirumayam, B12- Thiruvarankulam, B13- Viralimali

4.1.14 Strengthening of State Seed Farm

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

Project components

- Soil Fertility Improvement and Land development works for SSF in Annavasal, Gantharvakottai and Thiruvarankulam blocks
- Provision of Irrigation facilities viz., Solar pump sets, Deepening of bore wellLaying of pipelines, Rain gun, Mobile sprinkler, Laying of drip, New bore well with EB connection, Deepening of open well and Farm Pond to Annavasal, Gantharvakottai and Thiruvarankulam blocks
- Supply of machineries viz., dunnage, seed grading machine, tractor, generator and rotavator
- Infrastructure development for seed production viz., new threshing floor, seed go down and culvert

- Farm office renovation and establishment of farm connectivity in Annavasal, Gantharvakottai and Thiruvarankulam blocks

Budget

It is proposed to incur ₹.1477.55 lakhs over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing Agency

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

Table 4.14. Budget requirement for State Seed Farm (SSF)

(Rs.in lakhs)

Sl. No	Components	unit	unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
I	**Soil Fertility Improvement and Land development works in SSF**	ac	2	B2,B5,B12	35	70.00	30	60.00	30	60.00	32	64.00	22	44.00	149	298.00
II	**Irrigation Component**															
1	Solar pumpsets	nos	6	B2	3	18.00	2	12.00	2	12.00	1	6.00	1	6.00	9	54.00
2	Laying of pipelines	mt	0.05	B2,B5,B12	1200	60.00	1175	58.75	1100	55.00	1150	57.50	1000	50.00	5625	281.25
3	Rain gun	nos	0.4	B12	4	1.60	2	0.80	0	0.00	0	0.00	0	0.00	6	2.40
4	Mobile sprinkler	nos	0.3		32	9.60	25	7.50	26	7.80	25	7.50	15	4.50	123	36.90
5	Laying of drip	nos	2	B2,B5,B12	21	42.00	11	22.00	11	22.00	11	22.00	0	0.00	54	108.00
6	New bore well with EB connection	nos	8	B5,B12	8	64.00	8	64.00	10	80.00	0	0.00	0	0.00	26	208.00
7	Farm Pond	nos	1	B2,B5,B12	12	12.00	11	11.00	10	10.00	10	10.00	10	10.00	53	53.00
III	**Machineries**															
8	Dunnage (Poly Pallets)	nos	0.075	B2,B5,B12	300	22.50	50	3.75	50	3.75	50	3.75	50	3.75	500	37.50
9	Seed grading machine	nos	20	B5,B12	2	40.00	0	0.00	0	0.00	0	0.00	0	0.00	2	40.00
10	Rotavator	nos	1	B5,B12	2	2.00	0	0.00	0	0.00	0	0.00	0	0.00	2	2.00
11	Tractor and accessories	nos	10	B5,B12	2	20.00	0	0.00	0	0.00	0	0.00	0	0.00	2	20.00
12	Tarpaulin	nos	0.1	B2,B5,B12	30	3.00	10	1.00	20	2.00	5	0.50	0	0.00	65	6.50

Sl. No	Components	unit	unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
13	Generator	nos	7	B2,B12	3	21.00	0	0.00	0	0.00	0	0.00	0	0.00	3	21.00
IV	**Civil Works**															
14	New Threshing floor	nos	5	B5,B12	4	20.00	4	20.00	0	0.00	0	0.00	0	0.00	8	40.00
15	seed godown	nos	25	B2,B5,B12	4	100.00	1	25.00	0	0.00	0	0.00	0	0.00	5	125.00
16	culvert	nos	6		5	30.00	0	0.00	0	0.00	0	0.00	0	0.00	5	30.00
17	Farm office renovation	nos	3	B2,B5,B12	3	9.00	2	6.00	2	6.00	1	3.00	0	0.00	8	24.00
18	Farm connectivity	Meter	0.015	B2,B5,B12	4000	60.00	1000	15.00	1000	15.00	0	0.00	0	0.00	6000	90.00
	Total					**604.70**		**306.8**		**273.55**		**174.25**		**118.25**		**1477.55**

B1- Aavudayarkovil, B2- Annavasal, B3- Aranthagi, B4- Arimalam, B5- Gantharvakottai, B6- Karambakudi, B7- Kunrandarkovil, B8- Manamelkudi, B9- Ponnamaravathi, B10- Pudukottai, B11- Thirumayam, B12- Thiruvarankulam, B13- Viralimali

4.1.15. Agricultural Information Technology in Pudukkottai 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 must evolve with the times and adjust to meet the needs of modern people. By adapting and making use of IT to help improve agricultural progress, everyone benefits from the union of these sectors.

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

Components include input devices, output devices, processors, storage devices, software, networking devices, transmission media and other accessories.

Budget

It is proposed to incur **₹. 130.00 Lakhs** over a period of five years with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing Agency

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

Table 4.15. Budget requirement for Information Technology

(Rs.in lakhs)

Sl. No	Components	Unit	Unit Cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Procurement of Hardware for replacement of old hardware	Nos	50000	All blocks	13	6.50	13	6.50	13	6.50	13	6.50	13	6.50	65	32.50
2	Connectivity Charges	Nos	11000	All blocks	13	1.43	13	1.43	13	1.43	13	1.43	13	1.43	65	7.15
3	Printer cum Scanner	Nos	20000	All blocks	13	2.60	0	0.00	0	0.00	0	0.00	0	0.00	13	2.60
4	UPS and Electrical Accessories	Nos	35000	All blocks	13	4.55	0	0.00	0	0.00	0	0.00	0	0.00	13	4.55
5	Xerox machine	Nos	75000	All blocks	13	9.75	0	0.00	0	0.00	0	0.00	0	0.00	13	9.75
6	Laptop/Desktop	Nos	50000	All blocks	13	6.50	0	0.00	0	0.00	0	0.00	0	0.00	13	6.50
7	Anti -virus software	Nos	2500	All blocks	13	0.33	0	0.00	0	0.00	0	0.00	0	0.00	13	0.33
8	Television	Nos	100000	All blocks	13	13.00	0	0.00	0	0.00	0	0.00	0	0.00	13	13.00
9	Colour printer	Nos	15000	All blocks	13	1.95	0	0.00	0	0.00	0	0.00	0	0.00	13	1.95
10	4G Internet - Dongle	Nos	2500	All blocks	13	0.33	0	0.00	0	0.00	0	0.00	0	0.00	13	0.33
11	**Equipments for Documentation**															
a	Handycam	Nos	30000	All blocks	13	3.90	0	0.00	0	0.00	0	0.00	0	0.00	13	3.90
b	Camera	Nos	25000	All blocks	13	3.25	0	0.00	0	0.00	0	0.00	0	0.00	13	3.25
c	GPS instrument	Nos	20000	All blocks	13	2.60	0	0.00	0	0.00	0	0.00	0	0.00	13	2.60
d	Android mobile	Nos	15000	All blocks	13	1.95	0	0.00	0	0.00	0	0.00	0	0.00	13	1.95
e	External Hard disk	Nos	5000	All blocks	13	0.65	0	0.00	0	0.00	0	0.00	0	0.00	13	0.65
12	Audio - visual Aids	Nos	150000	All blocks	13	19.50	0	0.00	0	0.00	0	0.00	0	0.00	13	19.50
	LCD projector	Nos	75000	All blocks	13	9.75	0	0.00	0	0.00	0	0.00	0	0.00	13	9.75
	pico Projector	Nos	35000	All blocks	13	4.55	0	0.00	0	0.00	0	0.00	0	0.00	0	4.55
13	Air conditioner for computer room	Nos	40000	All blocks	13	5.20	0	0.00	0	0.00	0	0.00	0	0.00	13	5.20
	Total					**98.28**		**7.93**		**7.93**		**7.93**		**7.93**		**130.00**

B1- Aavudayarkovil, B2- Annavasal, B3- Aranthagi, B4- Arimalam, B5- Gantharvakottai, B6- Karambakudi, B7- Kunrandarkovil, B8- Manamelkudi, B9- Ponnamaravathi, B10- Pudukottai, B11- Thirumayam, B12- Thiruvarankulam, B13- Viralimali

Table 4.16. Consolidated Agriculture Budget for Pudukkottai District

(Rs.in lakhs)

Sl.No.	Components	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Rice	895.12	918.55	930.25	938.90	943.20	4626.02
2	Millets	27.90	39.77	51.51	48.09	48.80	216.07
3	Pulses	233.20	281.59	282.98	287.20	290.84	1375.81
4	Oilseeds	355.65	362.93	770.03	341.05	365.17	2194.82
5	Oilpalm	9.00	3.00	3.00	3.00	3.00	21.00
6	Cotton	0.00	0.00	0.00	0.00	0.00	0.00
7	Sugarcane	368.02	401.13	411.17	419.74	428.46	2028.52
8	Coconut	723.60	273.12	273.12	273.12	273.12	1816.08
9	Trainings	50.46	50.46	50.46	50.46	50.46	252.30
10	Infrastructure	215.45	287.30	510.50	60.50	41.45	1115.20
11	Soil Health Management	628.38	853.72	269.05	269.05	269.05	2289.25
12	Rainfed Area Development	537.95	539.55	543.75	549.55	553.35	2724.15
13	Integrated Pest Management	7.80	7.80	7.80	7.80	7.80	39.00
14	Farm Mechanization	863.55	898.85	899.35	944.85	961.95	4568.55
15	Strengthening of State Seed Farm	604.70	306.80	273.55	174.25	118.25	1477.55
16	Agriculture Information Technology	98.28	7.93	7.93	7.93	7.93	130.00
	Total	**5619.06**	**5232.50**	**5284.45**	**4375.49**	**4362.83**	**24874.32**

The district plan proposes an outlay of **Rs.23286.33** lakhs over a period of five years for Pudukkottai district

4.1.16. Agriculture research infrastructure and development

India is the largest producer of pulses around 14.5 million tons annually. Pulses commonly known as dal in India are an important component of both the vegetarian as well as the non-vegetarian diet in India. Pulses constitute one of the main sources of protein in the Indian diet. There are different varieties of pulses namely Black gram, green gram and Red gram. Of these, Black gram and Red gram are predominantly consumed in Tamil Nadu. The conversion of pulse grains into dal through the process of milling. Wherein dal is split into smaller sizes rendering it convenient for cooking. It is one of the important food processing industries usually in the medium and small-scale sector; some quantity is also processed in the rural sector manually producing inferior quality dal resulting in lesser revenue earning compared to milled dal. There is scope for dhal mill units to be set up at NPRC Vamban.

Grain Quality Evaluation Program is to provide an unbiased assessment of grain quality and end-use value to all sectors of the grain industry. Technology changes very rapidly and therefore, the facilities in every technical Institute become obsolete vary fast. Therefore, it is always necessary to support technical institutes regularly by providing assistance to upgrade infrastructure so as to excel in research and innovations. Training and demonstrations on precision water and nutrient usage, INM, IPM, use of natural plant enemies, cultivation under protected structures etc. imparts confidence with in the farmers in agriculture and make them to adopt to harvest bumper crop and to get triple of the normal oo'income. In this regard setting up of training institute will be off immense use in changing the economic and social status of the farmers, skilled workers, rural women and self-entrepreneurship development among the stake holders.

Jackfruit cultivation is mainly concentrated in Pudukkottai, Cuddalore, Kanyakumari, Dindigul, Ariyalur and Thanjavur districts. It is one of the most drought tolerant, hardy fruit crop and traditionally it is a farmer's house hold fruit. Owing to its various culinary uses and its availability in plenty during monsoon season. The young fruit has great demand as vegetable whereas the ripe fruit is a good source of vitamins and minerals. In Pudukkottai, Jack is planted as one of the border trees in agricultural and horticultural crop lands. As like other crops, research initiatives, management practices and technological advancement is not happening on jack cultivation. Further, farmers are not aware about the commercial cultivation techniques, pest and disease management, harvesting and post harvesting operations namely processing, value addition, by products, keeping quality etc., In addition, farmers seeks technological assistance on storage (cold storage) and marketing strategies.

In this connection, establishment of Jack Cluster is proposed to scout and documentation of native varieties, genotypes, identification of regular and prolific in bearing with high quality fruits, varietal trial and experimentation, cultivation techniques, propagation of elite planting materials, streamlining processing and value addition aspects, formulating marketing strategies and building technology transfer tools and techniques. These problems all necessitate the need for making them aware of good farming practices from research infrastructure which may provide better infrastructure facilities and higher agricultural production by adopting the following research infrastructure facilities so they can be getting a better knowledge on crops for getting higher agricultural production at Pudukkottai district.

Project components

- Establishment of Dhal mill for pulses at Vamban
- Establishment of advanced grain quality analysis laboratory in Thiruvarankulam block
- Establishment of Department laboratories in Annavasal block
- Establishment of Post-Harvest Technology Centre in Annavasal block
- Establishment of Jack Cluster in Annavasal block
- Establishment of nursery with sales out let in Annavasal block
- Establishment of automated nematode extraction units and seed storage and processing godown in Annavasal block
- Establishment of glass house, animal clinic, cattle shed and polyhouse in Annavasal block
- Integrated Farming System Model for Dry lands – Establishment and Evaluation in Annavasal block

Budget

The budget requirement for the above research and development activities is estimated at Rs.**663.37** lakhs over a period of five years.

Expected outcome

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

Implementing agency

Tamil Nadu Agricultural University will be implementing the project.

Table 4.17. Budget for Agricultural Research infrastructure & Development in Pudukkottai District

(Rs.in lakhs)

Sl. No.	Interventions	Blocks Covered	Unit Cost	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
				Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
A	**Research Infrastructure**														
1	Establishment of Dhal mill for pulses at Vamban	Thiruvarankulam	100	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	1	100.00
2	Establishment of advanced grain quality analysis laboratory	Thiruvarankulam	50	1	50.00	0	0.00	0	0.00	0	0.00	0	0.00	1	50.00
3	Establishment of Department laboratories	Annavasal	10	2	20.00	2	20.00	2	20.00	2	20.00	2	20.00	10	100.00
4	Establishment of Post Harvest Technology Centre	Annavasal	50	0	0.00	1	50.00	0	0.00	0	0.00	0	0.00	1	50.00
5	Establishment of Jack Cluster	Annavasal	100	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	1	100.00
6	Establishment of nursery with sales out let	Annavasal	25	0	0.00	0	0.00	0	0.00	0	0.00	1	25.00	1	25.00
7	Establishment of automated nematode extraction units and seed storage and processing godown	Annavasal	10	2	20.00	0	0.00	0	0.00	0	0.00	0	0.00	2	20.00
8	Establishment of glass house, animal clinic, catte shed and polyhouse	Annavasal	6	1	6.00	1	6.00	1	6.00	1	6.00	0	0.00	4	24.00
B	**Production and Growth**														
9	Farmers Field School on Termite Management	Annavasal	36.46	0	0.00	1	36.45	0	0.00	0	0.00	0	0.00	1	36.45
10	Establishment of Jack Cluster	Annavasal	87.76	0	0.00	1	87.76	0	0.00	0	0.00	0	0.00	1	87.76
	Integrated Farming System Model for Dry lands – Establishment and Evaluation	Annavasal	70.16	0	0.00	1	70.16	0	0.00	0	0.00	0	0.00	1	70.16
11	Organic rice production	Annavasal	120	0	0.00	1	120	0	0	0	0	0	0	**1**	**120.00**
	Grand Total				**96.00**		**390.70**		**226.00**		**26.00**		**45.00**		**783.37**

4.2. Horticulture

Enhancing the productivity of horticultural crops

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

Area expansion of Horticultural crops

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 friends 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.

Budget

The budget requirement for fulfilling the various interventions is **₹. 21813.86**. 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 Horticulture.

Table 4.18. Budget Requirement for Horticulture in Pudukkottai District **(Rs in lakhs)**

Sl. No.	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
A	**Production Growth**															
I	**Area expansion of fruit crops**															
2	TC Banana & TC Pineapple	Ha	1.25	B2,B5,B6,B7 ,B9,B10,B11, B12	60	75.00	99	123.75	143	178.75	198	247.50	238	297.50	738	922.50
3	UHDP in Papaya, Mango, Guava, Pomegranate, Acidlime	Ha	1.25	All Blocks except B3,B4,B8	23	28.75	25	31.25	34	42.50	48	60.00	57	71.25	187	233.75
4	HDP in Mango, Guava, Litchi, Pomegranate	Ha	1	All Blocks except B2,B4,B8,	204	204.00	265	265.00	318	318.00	364	364.00	395	395.00	1546	1546.00
5	Area expansion fruits with traditional varieties	Ha	0.6	B10	3	1.80	5	3.00	7	4.20	9	5.40	10	6.00	34	20.40
6	Normal Planting in lime / lemons	Ha	0.6	All Blocks except B4,B8	46	27.60	61	36.60	81	48.60	106	63.60	131	78.60	425	255.00
7	Normal Planting in Mango	Ha	0.6	B5	2	1.20	4	2.40	5	3.00	7	4.20	10	6.00	28	16.80
8	Normal planting in Papaya	Ha	0.6	B1,B2,B5,B6 ,B9,B10,B12	8	4.80	10	6.00	12	7.20	15	9.00	15	9.00	60	36.00
II	**Area expansion of vegetable crops**															
9	Brinjal	Ha	0.5	All Blocks except B4,B8	42	21.00	59	29.50	76	38.00	95	47.50	119	59.50	391	195.50
10	Bhendi	Ha	0.5	All Blocks except B4,B8	44	22.00	58.5	29.25	76	38.00	94.5	47.25	113	56.50	386	193.00

Sl. No.	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
11	Green Chillies	Ha	0.5	All Blocks except B4,B8	147	73.50	195	97.50	231	115.50	254.5	127.25	306	153.00	1133.5	566.75
12	Gourds including pumpkin and tinda	Ha	0.5	All Blocks except B4, B8,B11	14	7.00	20	10.00	68	34.00	40	20.00	48	24.00	190	95.00
13	Annual Moringa	Ha	0.5	B1,B2,B3,B5, B9,B10,B12, B13	18	9.00	23	11.50	35	17.50	40	20.00	50	25.00	166	83.00
14	Cucumber/ gherkin	Ha	0.5	B3,B9,B10,B 11,B12	15	7.50	24	12.00	43	21.50	65	32.50	92	46.00	239	119.50
15	Melons	Ha	0.5	B3,B5,B7,B9 ,B10,B12	24	12.00	40	20.00	52	26.00	66	33.00	78	39.00	260	130.00
16	Tapioca	Ha	0.5	B5,B10	12	6.00	17	8.50	25	12.50	55	27.50	65	32.50	174	87.00
17	Commercial production of location specific traditional vegetables (Athalakkai, PaluPavakkai, Mullukathiri, Poiyurkathiri, Kottapattikathiri etc.,)	Ha	0.5	All Blocks except B4,B8,B11	31	15.50	53	26.50	73	36.50	93	46.50	118	59.00	368	184.00
III	**Area expansion of Medicinal and Aromatic plants**															
18	Amla	Ha	0.7771	All Blocks except B2,B4,B8,B9, B13	9.5	7.38	15.5	12.05	20.5	15.93	31	24.09	37	28.75	113.5	88.20
IV	**Area expansion of Spices crops**															
19	Seed and Rhizomatic	Ha	0.3	B2,B5,B6,B10	120	36.00	150	45.00	180	54.00	238	71.40	271	81.30	959	287.70

Sl. No.	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
	spices (Coriander, Turmeric, Ginger, Dry Chilly, Cumin, Fennel, Fenugreek, Dil, Cardamom etc.,)															
20	Perennial spices (Pepper, Curry leaf, All spice, Cinnamon, Clove, Tamarind, Nut meg etc.,)	Ha	0.5	B1,B2,B3,B5 ,B6,B9,B10, B11,B12	84	42.00	126	63.00	179	89.50	216	108.00	260	130.00	865	432.50
V	**Area expansion of Flower crops**															
21	Loose flowers - Jasminumsp, Crossandra, Marigold, Rose, Chrysanthemum, Nerium, Torenia	Ha	0.4	All Blocks except B4,B8	130	52.00	157	62.80	188	75.20	221	88.40	260	104.00	956	382.40
22	Bulbous flowers - Tube rose, Gladioli, Dahlia, Bird of paradise, Heliconia, Tulip	Ha	1.5	All Blocks except B4,B8	39	58.50	66	99.00	92	138.00	227	340.50	295	442.50	719	1078.50
VI	**Area expansion /Gap filling of Plantation crops**															
23	Cashew	Ha	0.5	B2,B3,B5,B6 ,B10,B12	103	51.50	135	67.50	167	83.50	199	99.50	235	117.50	839	419.50
VII	**Rejuvenation/INM-IPM /Mulching /Anti bird net**															

Sl. No.	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
24	Mango/Cashew - Rejuvenation	Ha	0.4	All Blocks except B4,B8, B13	47	18.80	67	26.80	95	38.00	115.5	46.20	139	55.60	463.5	185.40
25	INM/IPM for Horticultural crops	Ha	0.04	All Blocks except B4,B8	100	4.00	160	6.40	215	8.60	270	10.80	325	13.00	1070	42.80
26	Mulching	Ha	0.32	All Blocks except B4,B8	100	32.00	150	48.00	205	65.60	260	83.20	315	100.80	1030	329.60
VIII	**Pollination Support through Bee Keeping**															
27	Bee hive & Colony	No	0.04	All Blocks except B4,B8	545	21.80	715	28.60	945	37.80	1205	48.20	1495	59.80	4905	196.20
28	Honey Extractor	No	0.2	All Blocks except B4,B8	54	10.80	72	14.40	94	18.80	120	24.00	150	30.00	490	98.00
IX	**Organic Farming**															
29	Organic farming and PGS certification in 50 acre cluster	1 cluster	14.95	B10,B12	0	0.00	1	14.95	0	0.00	0	0.00	1	14.95	2	29.90
30	HDPE Vermibed	No	0.16	All Blocks except B4,B8	290	46.40	385	61.60	480	76.80	540	86.40	615	98.40	2310	369.60
X	**Rainfed Area development**															
31	Integrated farming system - Horticulture Based farming	Ha	0.5	B2,B5,B6,B9,B10,B12,B13	135	67.50	157	78.50	186	93.00	205	102.50	240	120.00	923	461.50
32	Green manuring	Ha	0.04													
33	Moisture stress management -	Ha	0.1	All Blocks except	500	50.00	609	60.90	710	71.00	811	81.10	890	89.00	3520	352.00

Sl. No.	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
	Minimum irrigation gurantee by PUSA hydrogel			B4,B8												
B	**Infra structures and Assets creation**															
1	Poly Green House	1000 Sq.m	9.35	All Blocks except B4,B8	14	130.90	18	168.30	22	205.70	27	252.45	33	308.55	114	1065.90
2	Shadenet	1000 Sq.m	7.1	All Blocks except B4,B8	12	85.20	15	106.50	20.5	145.55	23	163.30	29	205.90	99.5	706.45
II	**Mushroom production**															
3	Spawn Production	1 No.	15													
4	Cottage mushroom unit	1 No.	1	B1	0	0.00	1	1.00	1	1.00	1	1.00	0	0.00	3	3.00
III	**Vermicompost unit**															
5	Permanent Vermicompost Unit	600 cu.ft	1	All Blocks except B4,B8	20	20.00	47	47.00	58	58.00	61	61.00	78	78.00	264	264.00
IV	**Supporting structures for Horticulture crop production**															
6	Staking/ Trellies/ Propping	Ha	1	B2,B5,B6,B7 ,B9,B10,B12, B13	34	34.00	123	123.00	162	162.00	207	207.00	256	256.00	782	782.00
7	Permanent Pandhal structure	Ha	4	All Blocks exceptB4,B8	17	68.00	23	92.00	27	108.00	32	128.00	38	152.00	137	548.00

Sl. No.	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
V	**District Horticulture information and training centre**															
VI	**Community seed bank**															
C	**Special interventions**															
1	Farm deficiency correction	Ha	0.04	All Blocks	1500	60.00	1820	72.80	2100	84.00	2450	98.00	2750	110.00	10620	424.80
2	Promotion of Roof top Garden/ Potager garden Kit	No	0.005	All Blocks except B4	1155	5.78	1455	7.28	1715	8.58	2120	10.60	2515	12.58	8960	44.80
3	Promotion of Roof top Garden/ Potager garden Kit with shadenet	No	0.0735	All Blocks except B4,B8	115	8.45	208	15.29	307	22.56	381	28.00	445	32.71	1456	107.02
4	Banana Bunch Sleeve	Ha	0.25	B1	50	12.50	50	12.50	0	0.00	0	0.00	0	0.00	100	25.00
5	AESA based IPM in fruits and vegetables Pheramone trap	Ha	0.04	All Blocks except B4,B8	500	20.00	605	24.20	730	29.20	915	36.60	1070	42.80	3820	152.80
6	AESA Based IPM in fruits and vegetables Yellow sticky trap	Ha	0.04	All Blocks except B4,B8	500	20.00	605	24.20	730	29.20	915	36.60	1070	42.80	3820	152.80
7	AESA Based IPM in fruits and vegetables Light trap	Ha	0.08	All Blocks except B4,B8	500	40.00	605	48.40	730	58.40	915	73.20	1070	85.60	3820	305.60
8	Coastal area development programme – Public	Per village	1	B4	0	0.00	1	1.00	1	1.00	1	1.00	1	1.00	4	4.00

Sl. No.	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
D	**Post Harvest Management**															
1	Pack house (9m X 6m)	1 No	4	B7,B9,B10,B12	0	0.00	1	4.00	1	4.00	1	4.00	1	4.00	4	16.00
2	Drying yard	1 No	5	B5	0	0.00	1	5.00	0	0.00	1	5.00	0	0.00	2	10.00
3	Pre cooling unit 6 mt	1 No	25	B12	0	0.00	0	0.00	0	0.00	0	0.00	1	25.00	1	25.00
E	**Development of Farms, Nurseries and Parks**															
1	Developmental activities in new/ existing state Horticultural farm, Keelapalur	No	25	B1,B2,B12	4	100.00	0	0.00	0	0.00	4	100.00	0	0.00	8	200.00
F	**Mechanization - Machineries, Equipments & Tools**															
1	Power tiller/Tractor/Mini tractor	Nos	1	All Blocks except B4,B8	22	22.00	29	29.00	36	36.00	41	41.00	50	50.00	178	178.00
2	Power operated sprayer	Nos	0.05	All Blocks except B4,B8	12	0.60	14	0.70	19	0.95	19	0.95	24	1.20	88	4.40
3	Plastic crates for vegetable & fruits handling	No of sets containing 10crates	0.075	All Blocks except B4,B8	185	13.88	257	19.28	327	24.53	394	29.55	465	34.88	1628	122.10
4	Pepper Spike Threasher Stripper, Pepper	No	0.15	B2,B5,B6,B9, B10,B11,B12	5	0.75	33	4.95	47	7.05	78	11.70	113	16.95	276	41.40

Sl. No.	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
	peeler cum Washer															
5	5 layered Polythene spread sheets for drying horticulture produce	No	0.16	B2,B5,B6,B9, B10,B11,B12	48	7.68	58	9.28	99	15.84	149	23.84	212	33.92	566	90.56
6	Aluminium Ladders for Harvesting	No	0.2	B2,B5,B6,B9, B10,B11,B12	3	0.60	8	1.60	12	2.40	14	2.80	19	3.80	56	11.20
G	**Water / Irrigation Management**															
1	Micro Irrigation - Drip	Ha	1.12	All Blocks except B4,B8	802	898.24	885	991.20	970.5	1086.96	1066.4	1194.37	1176.4	1317.57	4900.3	5488.34
2	Rain gun	Ha	0.34	All Blocks except B4,B8	57	19.38	61.6	20.94	85.1	28.93	103	35.02	121.6	41.34	428.3	145.62
3	Sprinkler	No	0.195	All Blocks except B4,B8	123.6	24.10	136.8	26.68	137	26.72	139.5	27.20	148.6	28.98	685.5	133.67
H	**Capacity Building**															
1	Training to farmers within the State. 2 days Rs.1000/farmer/ day	No	0.02	All Blocks except B4,B8	950	19.00	950	19.00	950	19.00	950	19.00	950	19.00	4750	95.00
2	Training to farmers outside the state. 30 farmers/Batch	No	0.105	All Blocks except B4,B8	30	3.15	30	3.15	30	3.15	30	3.15	30	3.15	150	15.75
3	Exposure visit to farmers for 5 days.	No	0.05	All Blocks except B4,B8	30	1.50	30	1.50	30	1.50	30	1.50	30	1.50	150	7.50

Sl. No.	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
	Rs.1000/farmer/ day															
4	Training to farmers at HTC	No	0.0025	All Blocks except B4,B8	950	2.38	950	2.38	950	2.38	950	2.38	950	2.38	4750	11.88
5	Exposure visit of farmers outside India	No	4	B2,B5,B10,B12,B13	1	4.00	2	8.00	1	4.00	1	4.00	1	4.00	6	24.00
6	Training to staff outside the state / Batch of 5 members	No	0.04	All Blocks except B4,B8	10	0.40	9	0.36	10	0.40	9	0.36	11	0.44	49	1.96
7	Training to staff outside India	No	6	B5,B10,B12, B13	1	6.00	0	0.00	1	6.00	1	6.00	1	6.00	4	24.00
8	HRD for supervisors and enterpreuners	No	20	B1	0	0.00	1	20.00	0	0.00	1	20.00	0	0.00	2	40.00
9	HRD for gardeners	No	15	B1	1	15.00	0	0.00	1	15.00	0	0.00	1	15.00	3	45.00
10	District level seminar	No	2	All Blocks except B3,B4,B8,B11	4	8.00	4	8.00	5	10.00	5	10.00	5	10.00	23	46.00
11	Computerization & governance	No	1	All Blocks	13	13.00	11	11.00	12	12.00	10	10.00	14	14.00	60	60.00
12	Publicity and Documentation	No	0.5	All Blocks except B4	12	6.00	12	6.00	13	6.50	12	6.00	12	6.00	61	30.50
I	**Crop Insurance and Risk Mitigating schemes**															
1	Crop Insurance	Ha	0.025	B1,B2,B5,B6,B10,B11,B12,B13	6384.	159.62	7062.8	176.57	7709.6	192.74	7903.6	197.59	7812	195.30	36872.8	921.82
	Grand Total					**2845.43**		**3514.29**		**4226.71**		**5221.65**		**6005.78**		**21813.86**

B1- Aavudayarkovil, B2- Annavasal, B3- Aranthagi, B4- Arimalam, B5- Gantharvakottai, B6- Karambakudi, B7- Kunrandarkovil, B8- Manamelkudi, B9- Ponnamaravathi, B10- Pudukottai, B11- Thirumayam, B12- Thiruvarankulam, B13- Viralimali

4.3. Agricultural Engineering

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

Strategies:

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

photovoltaic water pumping system provides better sustainable alternative option to fulfill irrigation requirement of agriculture.

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

Expected outcome

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

Budget

The overall budget requirement for implementation of above interventions is **₹. 12365.17 Lakhs**. The details of budget requirement for each intervention across the blocks are shown in Table 4.19.

Implementing agency

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

Table 4.19. Budget Requirement for Agricultural Engineering in Pudukkottai District

(Rs.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**	26.00	1.04	26.00	1.04	26.00	1.04	26.00	1.04	26.00	1.04	130.00	5.20
2	Training of farmers	All Blocks	No's/Ha	**0.04**	60.00	2.40	60.00	2.40	60.00	2.40	60.00	2.40	60.00	2.40	300.00	12.00
3	Training of Rural Youth in workshops	All Blocks	No's/Ha	**0.04**	10.00	0.40	7.00	0.28	7.00	0.28	7.00	0.28	7.00	0.28	38.00	1.52
4	Demonstration of Post Harvest Technologies	All Blocks	No's/Ha	**0.04**	26.00	1.04	26.00	1.04	26.00	1.04	26.00	1.04	26.00	1.04	130.00	5.20
5	Financial assistance for Post Harvest Equipment	All Blocks	No's/Ha	**4.00**	4.00	16.00	0.00	0.00	4.00	16.00	4.00	16.00	4.00	16.00	16.00	64.00
6	Financial assistance for Procurement of Agricultural Machinery and Equipment															
	Tractors															
7	Tractor (15-20 PTO HP)	All Blocks	No's/Ha	**4.00**	10.00	40.00	10.00	40.00	10.00	40.00	10.00	40.00	10.00	40.00	50.00	200.00
8	Tractor (Above 20-40 PTO HP)	All Blocks	No's/Ha	**6.00**	34.00	204.00	34.00	204.00	34.00	204.00	34.00	204.00	34.00	204.00	170.00	1020.00
9	Tractor (40-70 PTO HP)	All Blocks	No's/Ha	**8.50**	30.00	255.00	30.00	255.00	31.00	263.50	30.00	255.00	29.00	246.50	150.00	1275.00
	Power Tillers															
10	Power Tiller (8 BHP & above)	All Blocks	No's/Ha	**1.75**	89.00	155.75	89.00	155.75	89.00	155.75	89.00	155.75	84.00	147.00	440.00	770.00

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
	Rice Transplanter															
11	Self Propelled Rice Transplanter (Above 4-8 rows)	All Blocks	No's/Ha	**16.00**	2.00	32.00	2.00	32.00	2.00	32.00	2.00	32.00	2.00	32.00	10.00	160.00
	Self Propelled Machinery															
12	Reaper cum Binder	All Blocks	No's/Ha	**3.00**	5.00	15.00	5.00	15.00	5.00	15.00	5.00	15.00	5.00	15.00	25.00	75.00
	Specialized Self Propelled Machinery															
13	Reaper	All Blocks	No's/Ha	**1.10**	14.00	15.40	14.00	15.40	14.00	15.40	14.00	15.40	14.00	15.40	70.00	77.00
14	Post Hole Digger / Augur	All Blocks	No's/Ha	**0.63**	4.00	2.52	4.00	2.52	4.00	2.52	4.00	2.52	4.00	2.52	20.00	12.60
	Tractor/Power Tiller (below 20 BHP) driven equipments															
15	Cultivator	All Blocks	No's/Ha	**0.20**	10.00	2.00	10.00	2.00	10.00	2.00	10.00	2.00	10.00	2.00	50.00	10.00
16	Rotavator	All Blocks	No's/Ha	**0.35**	10.00	3.50	10.00	3.50	10.00	3.50	10.00	3.50	10.00	3.50	50.00	17.50
	e. Harvesting and Threshing equipments															
17	Brush Cutter	All Blocks	No's/Ha	**0.25**	20.00	5.00	20.00	5.00	20.00	5.00	20.00	5.00	20.00	5.00	100.00	25.00
	a. Land Development, tillage and seed bed preparation equipments															
18	Disc Plow	All Blocks	No's/Ha	**0.40**	20.00	8.00	20.00	8.00	20.00	8.00	20.00	8.00	20.00	8.00	100.00	40.00
19	Cultivator	All Blocks	No's/Ha	**0.25**	20.00	5.00	20.00	5.00	20.00	5.00	20.00	5.00	20.00	5.00	100.00	25.00
20	Rotavator	All Blocks	No's/Ha	**0.80**	20.00	16.00	20.00	16.00	20.00	16.00	20.00	16.00	20.00	16.00	100.00	80.00

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
	b. Sowing, Planting, Reaping and Digging Equipments															
21	Seed drill	All Blocks	No's/Ha	**0.50**	10.00	5.00	10.00	5.00	10.00	5.00	10.00	5.00	10.00	5.00	50.00	25.00
	e.Harvesting& Threshing Equipments															
22	MB Plow	All Blocks	No's/Ha	**1.00**	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
23	Disc Plow	All Blocks	No's/Ha	**0.60**	27.00	16.20	27.00	16.20	22.00	13.20	22.00	13.20	22.00	13.20	120.00	72.00
24	Cultivator	All Blocks	No's/Ha	**0.30**	27.00	8.10	27.00	8.10	22.00	6.60	22.00	6.60	22.00	6.60	120.00	36.00
25	Leveler Blade	All Blocks	No's/Ha	**0.30**	2.00	0.60	2.00	0.60	2.00	0.60	2.00	0.60	2.00	0.60	10.00	3.00
26	Rotavator	All Blocks	No's/Ha	**0.95**	47.00	44.65	47.00	44.65	42.00	39.90	42.00	39.90	42.00	39.90	220.00	209.00
	b. Sowing Planting, Reaping and Digging Equipments:															
27	Zero till seed cum fertilizer drill	All Blocks	No's/Ha	**0.70**	5.00	3.50	5.00	3.50	5.00	3.50	5.00	3.50	5.00	3.50	25.00	17.50
28	Automatic Rice Nursery Sowing Machine	All Blocks	No's/Ha	**2.50**	2.00	5.00	2.00	5.00	2.00	5.00	2.00	5.00	2.00	5.00	10.00	25.00
	d.Harvesting& Threshing Equipments															
29	Thresher/Multi Crop threshers	All Blocks	No's/Ha	**4.00**	12.00	48.00	12.00	48.00	12.00	48.00	12.00	48.00	12.00	48.00	60.00	240.00
	e. Equipments for Residue management/ Hay and Forage Equipments															

Sl. No	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
30	Balers (Round)	All Blocks	No's/Ha	**3.50**	9.00	31.50	9.00	31.50	9.00	31.50	9.00	31.50	9.00	31.50	45.00	157.50
31	Sugarcane ratoon manager	All Blocks	No's/Ha	**1.00**	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	5.00	5.00
	All Manual/animal drawn equipment/implements / Tools															
33	Drum Seeder (Below 4 Row)	All Blocks	No's/Ha	**0.100**	5.00	0.50	5.00	0.50	5.00	0.50	5.00	0.50	5.00	0.50	25.00	2.50
34	Drum Seeder (Above 4 Row)	All Blocks	No's/Ha	**0.150**	10.00	1.50	10.00	1.50	10.00	1.50	10.00	1.50	10.00	1.50	50.00	7.50
35	Tree climber	All Blocks	No's/Ha	**0.07**	2.00	0.14	2.00	0.14	2.00	0.14	2.00	0.14	2.00	0.14	10.00	0.70
	Plant protection equipments															
36	Manual sprayer: Knapsack/foot operated sprayer	All Blocks	No's/Ha	**0.015**	25.00	0.38	25.00	0.38	25.00	0.38	25.00	0.38	25.00	0.38	125.00	1.88
37	Powered Knapsack Sprayer/Power operated Taiwan sprayer (capacity 8-12 lts)	All Blocks	No's/Ha	**0.060**	15.00	0.90	15.00	0.90	15.00	0.90	15.00	0.90	15.00	0.90	75.00	4.50
38	Powered Knapsack Sprayer/Power operated Taiwan sprayer (capacity above 12-16 lts)	All Blocks	No's/Ha	**0.080**	12.00	0.96	12.00	0.96	12.00	0.96	12.00	0.96	12.00	0.96	60.00	4.80
39	Powered Knapsack Sprayer/Power operated Taiwan sprayer (capacity above 16 lts)	All Blocks	No's/Ha	**0.10**	12.00	1.20	12.00	1.20	12.00	1.20	12.00	1.20	12.00	1.20	60.00	6.00
	Establishment of Farm Machinery	All Blocks	No's/Ha	**28.00**	7.00	196.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.00	196.00

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
	Banks for Custom Hiring															
40	Promotion of Farm Mechanization in Selected Villages	All Blocks	No's/Ha	**11.50**	1.00	11.50	1.00	11.50	1.00	11.50	1.00	11.50	1.00	11.50	5.00	57.50
41	Financial assistance for promotion of Mechanized Farming operations	All Blocks	No's/Ha	**0.04**	6.00	0.24	6.00	0.24	6.00	0.24	6.00	0.24	6.00	0.24	30.00	1.20
	Tractor Hiring Scheme															
42	Purchase of Tractors for AED	All Blocks	No's/Ha	**8.00**	2.00	16.00	2.00	16.00	2.00	16.00	1.00	8.00	1.00	8.00	8.00	64.00
43	Purchase of Tractor drawn implements for AED	All Blocks	No's/Ha	**0.50**	3.00	1.50	3.00	1.50	3.00	1.50	2.00	1.00	2.00	1.00	13.00	6.50
44	Purchase of Bull Dozers for AED	All Blocks	No's/Ha	**80.00**	2.00	160.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	160.00
	Purchase of Paddy combine Harvester for AED	All Blocks	No's/Ha	**17.00**	1.00	17.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	17.00
45	Purchase of Balers for AED	All Blocks	No's/Ha	**4.50**	1.00	4.50	1.00	4.50	1.00	4.50	0.00	0.00	0.00	0.00	3.00	13.50
	Minor Irrigation Scheme															
46	Purchase of Rotary Drill for AED	All Blocks	No's/Ha	**72.00**	2.00	144.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	144.00
47	Purchase of ResitivityMetres for AED	All Blocks	No's/Ha	**3.00**	1.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	3.00
48	Purchase of Electrical Loggers for AED	All Blocks	No's/Ha	**7.50**	1.00	7.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	7.50
	Solar Energy															

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
49	5 hp	All Blocks	No's/Ha	**3.75**	19.00	71.25	19.00	71.25	19.00	71.25	19.00	71.25	19.00	71.25	95.00	356.25
50	7.5 hp	All Blocks	No's/Ha	**5.30**	20.00	106.00	20.00	106.00	20.00	106.00	20.00	106.00	20.00	106.00	100.00	530.00
51	10 hp	All Blocks	No's/Ha	**6.75**	10.00	67.50	10.00	67.50	10.00	67.50	10.00	67.50	10.00	67.50	50.00	337.50
52	upto 400sq.ft	All Blocks	No's/Ha	**4.25**	2.00	8.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	8.50
	Any other innovative schemes of AED with Components & its unit cost															
53	Compartmental Bund Formation	All Blocks	No's/Ha	**0.05**	600.00	30.00	600.00	30.00	600.00	30.00	600.00	30.00	600.00	30.00	3000.00	150.00
54	Farm Ponds (NEW)	All Blocks	No's/Ha	**0.75**	130.00	97.50	130.00	97.50	130.00	97.50	120.00	90.00	120.00	90.00	630.00	472.50
55	Community Bore wells	All Blocks	No's/Ha	**5.00**	10.00	50.00	10.00	50.00	10.00	50.00	9.00	45.00	8.00	40.00	47.00	235.00
56	Deepening of Open Wells	All Blocks	No's/Ha	**5.00**	60.00	300.00	60.00	300.00	60.00	300.00	60.00	300.00	52.00	260.00	292.00	1460.00
57	Renovation of MI Tanks	All Blocks	No's/Ha	**4.00**	60.00	240.00	60.00	240.00	60.00	240.00	60.00	240.00	60.00	240.00	300.00	1200.00
58	Check Dam	All Blocks	No's/Ha	**1.8**	12.00	21.60	12.00	21.60	12.00	21.60	12.00	21.60	12.00	21.60	60.00	108.00
59	Percolation Pond	All Blocks	No's/Ha	**5.00**	1.00	5.00	1.00	5.00	1.00	5.00	1.00	5.00	1.00	5.00	5.00	25.00
60	Recharge Shaft	All Blocks	No's/Ha	**1.70**	40.00	68.00	40.00	68.00	40.00	68.00	40.00	68.00	40.00	68.00	200.00	340.00
61	Summer Ploughing	All Blocks	No's/Ha	**0.0136**	1000.00	13.60	1000.00	13.60	1000	13.60	1000	13.60	1000	13.60	5000	68.00
	Information Technology (IT) related items															
62	Computer & its accessories	All Blocks	No's/Ha	0.80	0.00	0.00	3.00	2.40	3.00	2.40	3.00	2.40	3.00	2.40	12.00	9.60
63	Tablet (Tab)	All Blocks	No's/Ha	0.25	4.00	1.00	6.00	1.50	6.00	1.50	6.00	1.50	4.00	1.00	26.00	6.50

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
64	Xerox machine	All Blocks	No's/Ha	1.50	0.00	0.00	3.00	4.50	1.00	1.50	0.00	0.00	0.00	0.00	4.00	6.00
	Sugarcane Infielder	All Blocks	No's/Ha	7.00	0.00	0.00	1.00	7.00	1.00	7.00	1.00	7.00	1.00	7.00	4.00	28.00
65	**Bird Scarer**	All Blocks	No's/Ha	0.40	0.00	0.00	50.00	20.00	50.00	20.00	50.00	20.00	50.00	20.00	200.00	80.00
	Mecanized row crop cultivation-Pilot mechanization Demonstration	All Blocks	No's/Ha	0.04	13.00	0.52	13.00	0.52	26.00	1.04	26.00	1.04	26.00	1.04	104.00	4.16
	Post Harvest Technology and Management machinery (PHTM)															
	Chain saw/ Wheel barrow/ Mango grader/ planter and other suitable self propelled machineries and equipments for horticulture Crops	All Blocks	No's/Ha	1.00	0.00	0.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	52.00	52.00
	Manual Horticultural Equipments															
66	Aluminium Ladder/ Ladder	All Blocks	No's/Ha	0.20	0.00	0.00	13.00	2.60	13.00	2.60	13.00	2.60	13.00	2.60	52.00	10.40
67	Aluminium pole	All Blocks	No's/Ha	0.03	0.00	0.00	13.00	0.39	13.00	0.39	13.00	0.39	13.00	0.39	52.00	1.56
68	Plucker	All Blocks	No's/Ha	0.02	0.00	0.00	13.00	0.26	13.00	0.26	13.00	0.26	13.00	0.26	52.00	1.04
	Post Harvest Equipments for food grains, oil seeds and Horticultural Equipments															

Sl. No	Interventions	Blocks Covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
69	Mini Rice Mill	All Blocks	No's/Ha	1.50	0.00	0.00	10.00	15.00	10.00	15.00	13.00	19.50	13.00	19.50	46.00	69.00
70	Mini Dal Mill	All Blocks	No's/Ha	1.70	0.00	0.00	10.00	17.00	10.00	17.00	13.00	22.10	13.00	22.10	46.00	78.20
71	Millet Mill	All Blocks	No's/Ha	1.50	0.00	0.00	10.00	15.00	10.00	15.00	13.00	19.50	13.00	19.50	46.00	69.00
72	Oil mill with filter press (for all type of Horticulture / Food grain / Oil seeds crop)	All Blocks	No's/Ha	1.20	0.00	0.00	10.00	12.00	10.00	12.00	13.00	15.60	13.00	15.60	46.00	55.20
73	Extractor (for all type of Horticulture / Food grain / Oil seeds crop)	All Blocks	No's/Ha	1.00	0.00	0.00	13.00	13.00	10.00	10.00	13.00	13.00	13.00	13.00	49.00	49.00
74	Pomegranate Aril Extractor	All Blocks	No's/Ha	1.50	0.00	0.00	1.00	1.50	1.00	1.50	1.00	1.50	1.00	1.50	4.00	6.00
	Custard Apple Pulper (for all type of Horticulture / Food grain / Oil seeds crop)	All Blocks	No's/Ha	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	4.00
75	Dehydration unit/ Pricking Machine/ Humidifier (for all type of Horticulture / Food grain / Oil seeds crop)	All Blocks	No's/Ha	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	4.00
76	Packing Machines (for all types of Horticulture / Food grain / Oil seeds crop)	All Blocks	No's/Ha	3.00	0.00	0.00	13.00	39.00	13.00	39.00	13.00	39.00	13.00	39.00	52.00	156.00
77	All types of Power driven Dehusker/ sheller/ Threshers/	All Blocks	No's/Ha	1.20	0.00	0.00	13.00	15.60	13.00	15.60	13.00	15.60	13.00	15.60	52.00	62.40

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
	Harvesters/ De-spiking/ Deconing Machine/ Peeler/ Splitter/ Stripper (for all type of Horticulture / Food grain / Oil seeds crop)															
78	All types of Boiler/ Steamer/ Dryer solar (for all type of Horticulture / Food grain / Oil seeds crop)	All Blocks	No's/Ha	2.00	0.00	0.00	13.00	26.00	13.00	26.00	13.00	26.00	13.00	26.00	52.00	104.00
79	All types of Washing Machines (for all type of Horticulture / Food grain / Oil seed crop)	All Blocks	No's/Ha	1.50	0.00	0.00	0.00	0.00	13.00	19.50	13.00	19.50	13.00	19.50	39.00	58.50
80	All types of Grinder/ Pulveriser/ Polisher (for all type of Horticulture / Food grain / Oil seed crop)	All Blocks	No's/Ha	0.30	0.00	0.00	13.00	3.90	13.00	3.90	13.00	3.90	13.00	3.90	52.00	15.60
81	All types of Cleaner cum grader/ Gradient separator/ Specific gravity separator (for all types of Horticulture / Food grain / Oil seed crop)	All Blocks	No's/Ha	0.75	0.00	0.00	13.00	9.75	13.00	9.75	13.00	9.75	13.00	9.75	52.00	39.00

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
82	**Construction of Agricultural Engineering Extension centres (AEECs)**	All Blocks	No's/Ha	75.00	0.00	0.00	2.00	150.00	2.00	150.00	0.00	0.00	0.00	0.00	4.00	300.00
83	**Training of AED Engineers on " Agricultural Processing" and " Bio- Energy"**	All Blocks	No's/Ha	0.04	0.00	0.00	1.00	0.04	1.00	0.04	1.00	0.04	1.00	0.04	4.00	0.16
84	Farm Pond	All Blocks	No's/Ha	1.00	0.00	0.00	50.00	50.00	50.00	50.00	60.00	60.00	100.00	100.00	260.00	260.00
85	Weir/ Bed Dam	All Blocks	No's/Ha	30.00	6.00	180.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00	180.00
	Total					**2771.89**		**2460.21**		**2488.48**		**2333.68**		**2310.93**		**12365.17**

B1- Aavudayarkovil, B2- Annavasal, B3- Aranthagi, B4- Arimalam, B5- Gantharvakottai, B6- Karambakudi, B7- Kunrandarkovil, B8- Manamelkudi, B9- Ponnamaravathi, B10- Pudukottai, B11- Thirumayam, B12- Thiruvarankulam, B13- Viralimali

4.4. Agricultural Marketing

The Government is taking every effort to attain sustainable agricultural development by transforming agriculture into a commercial venture, by switching over to new scientific methods of cultivation so as to increase the productivity manifold. Besides, through value addition, processing and utilization of the marketing opportunities, the incremental output can be ensured. To further improve the marketing opportunities and to reduce the loss of agricultural produces, several measures have to be taken up by way of interventions like promotion of commodity groups and market information, strengthening of Uzhavar shandies and regulated markets, construction of storage godown, provision of market access and market activities, supply chain and post-harvest management, infrastructure and assets, and capacity building of farmers.

The core problem however in Agribusiness development is the general failure in coordinating the decisions of the private 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

- ✓ Promotion of commodity groups and market information – e learning centre in pudukottai
- ✓ Construction of Storage godown for commodity groups in all blocks
- ✓ Construction of drying yards in all blocks
- ✓ Upgradation of rural shandies and uzhavar shandies in Pudukottai, Viralimalai, Arantagi, Gandarvakottai, Karambakudi and Thiruvarakulam blocks
- ✓ Formation of Farmer Producer Organizations (FPO) in Aavudayarkoil and Manamelkudi
- ✓ Supply chain and post-harvest management
- ✓ Distribution of solar drier to Arantagi and Manamelkudi blocks
- ✓ Establishment of coconut powder production unit in Arantagi block
- ✓ Establishment of sugarcane crushing machineries for jiggery production in Kunnandarkoil, Gantharvakottai, Karambakudi and Thiruvarankulam blocks
- ✓ Imparting value addition trainings to commodity group farmers
- ✓ Exposure visit (within state & outside state) for commodity group farmers to acquire value addition technologies

Budget

The district plan proposes an outlay of **₹. 2092.79 Lakhs** over a period of five years for Pudukkottai district. The details of budget requirement for each intervention across the blocks are shown in Table 4.20.

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 4.20. Budget for Strengthening of Agricultural Marketing and Agri-Business in Pudukkottai District

(Rs. 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
A	**Promotion of Commodity Groups and Market Information**															
1	e-learning Centre	Nos.	81.55	B5	1	81.55	0	0.00	0	0.00	0	0.00	0	0.00	1	81.55
B	**Strengthening of UzhavarSandhai and Regulated Market[p**															
1	Drying Yard	Nos.	6.6	All Blocks	20	132.00	18	118.80	17	112.20	19	125.40	17	112.20	91	600.60
2	Storage godown	Nos.	10	All Blocks	11	110.00	9	90.00	1	10.00	2	20.00	3	30.00	26	260.00
3	Upgradation of UzhavarShadhais	Nos.	10	B5, B7, B8, B10, B11, B13	6	60.00	0	0.00	0	0.00	0	0.00	0	0.00	6	60.00
C	**Formation of FPO / Strengthening of Existing Commodity Groups**															
1	FPO	Nos.	50	B9, B12	2	100.00	0	0.00	0	0.00	0	0.00	0	0.00	2	100.00
D	**Provision of Market Access and Market Activities**															
1	Aluminium tray	Nos.	0.002	All Blocks	130	0.26	130	0.26	130	0.26	130	0.26	130	0.26	650	1.30
2	Distribution of crowbars	Nos.	0.0045	All Blocks	130	0.59	130	0.59	130	0.59	130	0.59	130	0.59	650	2.93
3	Distribution of Multilayered low density polyethylene sheet at 75% subsidy Silpaulin) to commodity group farmers – 18'x30'	Nos.	0.0225	All Blocks	1300	29.25	1200	27.00	1300	29.25	1300	29.25	1300	29.25	6400	144.00

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
	size (120GSM) full cost Rs.3000/No subsidy Rs.3000/No															
4	Distribution of Mumbatty (Spade)	Nos.	0.0015	All Blocks	130	0.20	130	0.20	130	0.20	130	0.20	130	0.20	650	0.98
5	Controlled atmosphere with conventional bin storage (300 Kg/bin)	Nos.	0.05	All Blocks	130	6.50	130	6.50	130	6.50	130	6.50	130	6.50	650	32.50
6	Wheing balance(300Kg)	Nos.	20	B8	1	20.00	0	0.00	0	0.00	0	0.00	0	0.00	1	20.00
7	Plastic crates	Nos.	0.003	All Blocks	650	1.95	650	1.95	650	1.95	650	1.95	650	1.95	3250	9.75
	Post Harvest Infrastructure and Machinaries															
1	Coconut Ladder	Nos.	0.04	B8, B10, B11, B12, B13	40	1.60	40	1.60	25	1.00	0	0.00	0	0.00	105	4.20
2	Dhal processing Unit	Nos.	2.5	B1, B5	2	5.00	0	0.00	0	0.00	0	0.00	0	0.00	2	5.00
3	Establishment of Coconut Powder Production unit in Coconut market complex, Rajendrapuram	Nos.	15	B8	1	15.00	0	0.00	0	0.00	0	0.00	0	0.00	1	15.00
4	Establishment of Coconut Sugar Production unit in Coconut market complex	Nos.	15	B8	0	0.00	1	15.00	0	0.00	0	0.00	0	0.00	1	15.00
5	Establishment of pulp industry	Nos.	75	B8	0	0.00	1	75.00	0	0.00	0	0.00	0	0.00	1	75.00
6	Portable rice milling machine for individual farmers	Nos.	2	B1, B9,B12	6	12.00	4	8.00	0	0.00	0	0.00	0	0.00	10	20.00
7	Provision of Neera tapping box to	Nos.	0.015	B8	200	3.00	200	3.00	200	3.00	200	3.00	200	3.00	1000	15.00

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
	Pudukkottai Coconut Farmers Producer Company Ltd															
8	Seed Processing Unit to individual farmers @ Rs. 22.50 lakhs/Unit (75% subsidy)	Nos.	16.88	B3	1	16.88	0	0.00	0	0.00	0	0.00	0	0.00	1	16.88
9	Solar Dryer	Nos.	5	B8, B12	4	20.00	0	0.00	0	0.00	0	0.00	0	0.00	4	20.00
10	Sugar Cane crushing Machinaries for Jaggery Preparation	Nos.	2.5	B3, B10, B11, B13	4	10.00	4	10.00	3	7.50	0	0.00	0	0.00	11	27.50
11	country chekku (Power)	Nos.	2.5	B1, B3, B5, B8, B10	7	17.50	7	17.50	5	12.50	5	12.50	5	12.50	29	72.50
	Capacity building Programme															
1	Exposure Visits - within state	Nos.	1	All Blocks	46	46.00	46	46.00	46	46.00	46	46.00	46	46.00	230	230.00
2	Exposure Visits - outside state - 3 days	Nos.	2	All Blocks	23	46.00	23	46.00	23	46.00	23	46.00	23	46.00	115	230.00
3	Training on Market led Extension, Agmark grading& Food safety, post harvest technology, Supply Chain Management, Grading-sorting-packing, Market linkages & Exports, Food processing and value addition at district level	Nos.	0.07	All Blocks	94	6.58	94	6.58	95	6.65	95	6.65	95	6.65	473	33.11
	Total					**741.85**		**473.97**		**283.59**		**298.29**		**295.09**		**2092.79**

B1-Annavasal, B2-Arimalam, B3-Kunnandarkoil, B4- Ponnamaravathi, B5- Pudukkottai, B6- Thirumayam, B7-Viralimalai,B8-Arantangi, B9-Avudayarkoil, B10-Gandarvakottai, B11-Karambakkudi, B12-Manamelkudi, B13- Thiruvarankulam

4.5. Seed and Organic Certification

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

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

Project components

- Strengthening of Seed Testing laboratories

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

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

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 **₹. 37.32 Lakhs**. The details of budget requirement for each intervention across the blocks are shown in Table 4.21.

Implementing agency

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

Table 4.21. Budget for Seed and Organic Certification in Pudukkottai District

(Rs.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	0.50	10	5.00	0	0.00	0	0.00	0	0.00	0	0.00	10	5.00
III	**Capacity Building**															
3	Training to seed grower for quality seed production	All Blocks	No's	0.20	0	0.00	7	1.40	7	1.40	7	1.40	7	1.40	28	5.60
	Total					**18.36**		**14.76**		**1.40**		**1.40**		**1.40**		**37.32**

B1-Annavasal, B2-Arimalam, B3-Kunnandarkoil, B4- Ponnamaravathi, B5- Pudukkottai, B6- Thirumayam, B7-Viralimalai,B8-Arantangi, B9-Avudayarkoil, B10-Gandarvakottai, B11-Karambakkudi, B12-Manamelkudi, B13- Thiruvarankulam

4.6. Animal Husbandry

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

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

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

- ✓ Increasing the availability of fodder through field level interventions
- ✓ Increasing the availability of fodder by strengthening farm infrastructure
- ✓ Livestock breeding management
- ✓ Livestock health
- ✓ Improving the livestock productivity
- ✓ Improving the service delivery at veterinary institutions
- ✓ Enhancing livestock management
- ✓ 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
- ✓ Distribution of Azolla trays
- ✓ Fodder plot development
- ✓ Meikal land development
- ✓ Distribution of seedlings, sprinklers, grass cutter and raingun to the farmers
- ✓ Development of seed production plots

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
- ✓ Construction of silo pit and overhead tanks
- ✓ Establishment of feed mixing units
- ✓ Installation of rain gun and sprinklers
- ✓ Procurement of agri inputs

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
- ✓ Establishment and distribution of sex-sorted semen facility
- ✓ Establishment of IVF lab
- ✓ Establishment of LN2 and embryo transfer lab
- ✓ Oestrous synchronization

Livestock health

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

- ✓ Upgradation of vaccine production facilities for bacteria and virus
- ✓ Procurement of vaccines, medicine, diagnostic kit
- ✓ Animal quarantine facility in govt. farm
- ✓ Animal testing facility

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
- ✓ Establishment of modern poultry, rabbit , piggery, sheep, goat and bull shed
- ✓ Popularizing quail rearing

- ✓ Integrated farming

Improving the service delivery at veterinary institutions

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

- ✓ Deep freezer facility for storage of vaccines and medicines
- ✓ Establishment of infrastructure facilities, disease diagnostic lab, mobile veterinary units, surgical theatres and ambulance facilities.

Enhancing livestock management

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

- ✓ Animal identification and traceability
- ✓ Conservation of indigenous breeds
- ✓ Improvement of livestock shandy
- ✓ Establishment of slaughter house

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

Budget

The major themes proposed in the plan for animal husbandry sector with a total budget out lay of **₹. 7608.25 Lakhs.**

Implementing agency

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

Table 4.22. Budget requirement for Animal Husbandry Sector in Pudukkottai District

(Rs.in lakhs)

Sl. No	Components	Unit	Unit cost	Block covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Increasing the Availability of Fodder through Field level Interventions															
1	Establishment of Vermicomposting unit (single bed)	Nos	0.05	All Blocks	90	4.50	0	0.00	0	0.00	0	0.00	0	0.00	90	4.50
2	Distrbution of Azolla trays	Nos	0.030209	All Blocks	450	13.59	451	13.62	450	13.59	450	13.59	450	13.59	2251	68.00
3	Fodder plot development	acre	0.05	All blocks	400	20.00	400	20.00	400	20.00	200	10.00	200	10.00	1600	80.00
4	Developemnt of Seed Production plots	acre	0.25	All Blocks except B2, B6, B3, B9	18	4.50	0	0.00	0	0.00	0	0.00	0	0.00	18	4.50
5	Distribution of Raingun to Livestock farmers	Nos	8	B5	0	0.00	4	32.00	2	16.00	2	16.00	2	16.00	10	80.00
6	Distribution of sprinkler for fodder production	Nos	0.25	B5	0	0.00	1	0.25	1	0.25	1	0.25	1	0.25	4	1.00
	Increasing the Availability of Fodder by Strengthening Farm Infrastructure															

Sl. No	Components	Unit	Unit cost	Block covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
7	Establishment of Vermicompost unit (10 beds) at Farms	Nos	4	B10	10	40.00	10	40.00	10	40.00	10	40.00	10	40.00	50	200.00
8	Erection of Transformers to improve irrigation facility in Govt.farm	Nos	30	B10	0	0.00	1	30.00	0	0.00	0	0.00	0	0.00	1	30.00
9	Establishment of Farm Protection Cover (Bio-security wall)	km	5	B10	0	0.00	20	100.00	0	0.00	0	0.00	0	0.00	20	100.00
10	Establishment of Feed mixing/ feed block units	Nos	25	B10	0	0.00	1	25.00	0	0.00	0	0.00	0	0.00	1	25.00
11	Construction of silo Pit for livestock farm	Nos	1	B10	5	5.00	4	4.00	4	4.00	4	4.00	4	4.00	21	21.00
12	Construction of Over Head Tanks/ GLR / Pre-fabricated tanks in farm	Nos	20	B10	0	0.00	2	40.00	0	0.00	0	0.00	0	0.00	2	40.00
13	Drip irrigation for livestock farms	acre	0.6	B10	50	30.00	50	30.00	50	30.00	50	30.00	50	30.00	250	150.00
14	Borewell for livestock farms	Nos	8	B10	2	16.00	2	16.00	2	16.00	2	16.00	2	16.00	10	80.00
15	Installation of Raingun in Govt.farm in	acre	0.4	B10	20	8.00	20	8.00	20	8.00	20	8.00	20	8.00	100	40.00

Sl. No	Components	Unit	Unit cost	Block covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	cultivated areas															
16	Installation of Sprinkler system in fodder cultivated areas in Govt.farm	acre	0.4	B10	10	4.00	10	4.00	10	4.00	10	4.00	10	4.00	50	20.00
17	Procurement of Agri inputs for Farms	acre	0.15	B10	80	12.00	80	12.00	80	12.00	80	12.00	80	12.00	400	60.00
18	Procurement of Agricultural implements (tractor, trailers, harvesters, ploughs, chaff cutter, grass cutter etc)	Pack	50	B10	1	50.00	1	50.00	1	50.00	1	50.00	1	50.00	5	250.00
	Livestock Breeding Management															
19	Distribution of sex sorted semen to veterinary institution	Nos	0.015	All Blocks	4410	66.15	4810	72.15	4810	72.15	4810	72.15	4810	72.15	**23650**	354.75
20	Induction of new Genetic Pool	Nos	0.5	B10	50	25.00	50	25.00	50	25.00	50	25.00	50	25.00	250	125.00
	Livestock Health															
21	Animal Quarantine Facility in Govt.farm to prevent disease	Nos	50	B10	1	50.00	0	0.00	0	0.00	0	0.00	0	0.00	1	50.00

Sl. No	Components	Unit	Unit cost	Block covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	outbreak															
	Improving the Livestock Productivity															
22	Distibution of Sheep/Goat units -semi intensive system	Unit	0.6	All Blocks	15	9.00	15	9.00	15	9.00	15	9.00	15	9.00	75	45.00
23	Distribution of Buffalo units(5 Buffaloes)	Unit	4.5	All Blocks	25	112.50	25	112.50	25	112.5	25	112.5	25	112.5	125	562.50
24	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
25	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
26	Establishment of disposal pits for poultry unit	Nos	15	B5	0	0.00	1	15.00	1	15.00	1	15.00	0	0.00	3	45.00
27	Milking Mechine	Nos	0.5	B10	10	5.00	0	0.00	20	10.00	0	0.00	20	10.00	50	25.00
28	Establishment of Modern Hatchery Complex	Nos	300	B10	0	0.00	0	0.00	1	300.00	0	0.00	0	0.00	1	300.00
29	Establishment of Modern Dairy/ Bull Shed	Nos	150	B10	1	150.00	0	0.00	1	150.00	0	0.00	1	150.00	3	450.00
30	Establishment of Modern Piggery	Nos	150	B10	1	150.00	0	0.00	1	150.00	0	0.00	1	150.00	3	450.00

Sl. No	Components	Unit	Unit cost	Block covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Shed															
31	Establishment of Modern Sheep/Goat Shed	Nos	50	B10	1	50.00	0	0.00	1	50.00	0	0.00	2	100.00	4	200.00
	Improving the Service Delivery at Veterinary Institutions															
32	Deep freezer facility for Storage of vaccines and Medicines	Nos	10	All Blocks	0	0.00	0	0.00	13	130.00	0	0.00	0	0.00	13	130.00
33	Establishment of Infrastructure facilities for Veterinary Institutions	Nos	30	All Blocks	13	390.00	13	390.00	13	390.00	13	390.0	13	390.00	65	1950.00
34	Establishment of Mobile Disease Diagnostic Labs	Nos	20	B10	1	20.00	0	0.00	0	0.00	0	0.00	0	0.00	1	20.00
35	Establishment of Mobile Veterinary Units	Nos	20	All Blocks	3	60.00	3	60.00	2	40.00	2	40.00	2	40.00	12	240.00
36	Establishment of surgical theatres at veterinary institution	Nos	30	All Blocks	3	90.00	2	60.00	3	90.00	2	60.00	3	90.00	13	390.00
37	Package of Modern Veterinary Diagnostic Aids to	Nos	30	All Blocks	3	90.00	2	60.00	3	90.00	2	60.00	3	90.00	13	390.00

Sl. No	Components	Unit	Unit cost	Block covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Veterinary Institutions such as Computerised X rays, Ultrasound, Diathermy etc.															
38	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
	Livestock Management															
39	Animal Identification and Traceability	Unit of 1000 animals	0.1	All Blocks	300	30.00	30	3.00	30	3.00	30	3.00	30	3.00	420	42.00
40	Conservation of Indigenous breeds	Pack	10	All Blocks	1	10.00	1	10.00	1	10.00	1	10.00	1	10.00	5	50.00
	Capacity Building															
41	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
	Grand Total					**1630.24**		**1556.52**		**1895.49**		**1035.49**		**1490.49**		**7608.25**

B1- Aavudayarkovil, B2- Annavasal, B3- Aranthagi, B4- Arimalam, B5- Gantharvakottai, B6- Karambakudi, B7- Kunrandarkovil, B8- Manamelkudi, B9- Ponnamaravathi, B10- Pudukottai, B11- Thirumayam, B12- Thiruvarankulam, B13- Viralimali

4.7. Dairy Development

The importance of dairying in a country like India hardly needs emphasize. India has vast resources of livestock, which play an important role in the national economy and also in the socioeconomic development of millions of rural households. India has one of the largest stocks of cattle and buffaloes: more than 50 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.

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.

- ✓ 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.

- ✓ 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

- ✓ 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

- ✓ 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

- ✓ 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

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 **₹. 6197 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 Pudukkottai District

(Rs.in lakhs)

Sl. No	Components	Blocks covered	Unit	Unit Cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Engineering section															
1	Electrical installation like	All blocks	1	25	1	25.00	0	0.00	1	25.00	0	0.00	0	0.00	2	50.00
2	Milk Storage Tanks of various	All blocks	1	15	1	15.00	1	15.00	1	15.00	1	15.00	1	15.00	5	75.00
3	Tub washer, Canwashers,	All blocks	1	10	0	0.00	1	10.00	0	0.00	1	10.00	1	10.00	3	30.00
4	Point of Sale Machines and	All blocks	1	0.25	10	2.50	10	2.50	10	2.50	10	2.50	10	2.50	50	12.50
5	SS pipes and fittings	All blocks	1	5	1	5.00	1	5.00	1	5.00	1	5.00	1	5.00	5	25.00
6	Solar system for water heating	All blocks	1	2	2	4.00	2	4.00	2	4.00	2	4.00	2	4.00	10	20.00
7	Packing Machineries for	All blocks	1	18	1	18.00	1	18.00	0	0.00	0	0.00	0	0.00	2	36.00
8	Plate Heat type Chillers and	All blocks	1	10	1	10.00	1	10.00	0	0.00	1	10.00	0	0.00	3	30.00
9	Milk Pumps of Vaious capacities	All blocks	1	0.5	5	2.50	5	2.50	5	2.50	5	2.50	5	2.50	25	12.50
10	Generator of various capacities	All blocks	1	20	0	0.00	2	40.00	0	0.00	0	0.00	0	0.00	2	40.00
11	Curd processing equipments	All blocks	1	50	0	0.00	1	50.00	0	0.00	0	0.00	0	0.00	1	50.00
12	Cleaning In Place equipments with	All blocks	1	75	0	0.00	0	0.00	1	75.00	0	0.00	0	0.00	1	75.00
	Procurement and Input															
13	Veterinary Medicine	All blocks	1	2	4	8.00	4	8.00	4	8.00	4	8.00	4	8.00	20	40.00

Sl. No	Components	Blocks covered	Unit	Unit Cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
14	Two wheeler for AI technician	All blocks	1	0.5	9	4.50	9	4.50	9	4.50	9	4.50	9	4.50	45	22.50
15	Computer system with accessories	All blocks	1	0.5	5	2.5	5	2.5	5	2.50	5	2.50	5	2.50	25	12.50
16	Fodder seed materials	All blocks	1	0.25	8	2.00	8	2.00	8	2.00	8	2.00	8	2.00	40	10.00
17	Fodder development	All blocks	1	0.2	10	2.00	10	2.00	10	2.00	10	2.00	10	2.00	50	10.00
18	Bulk Milk coolers of Various	All blocks	1	15	5	75.00	5	75.00	5	75.00	5	75.00	5	75.00	25	375.00
19	Milk cans	All blocks	1	0.035	400	14.00	400	14.00	400	14.00	400	14.00	400	14.00	2000	70.00
20	Electronic weighing scales of	All blocks	1	0.3	22	6.60	2	0.60	2	0.60	22	6.60	22	6.60	70	21.00
21	Electronic milk testing equipments	All blocks	1	1.25	10	12.50	10	12.50	10	12.50	10	12.50	10	12.50	50	62.50
22	Milking machine	All blocks	1	0.8	10	8.00	10	8.00	10	8.00	10	8.00	10	8.00	50	40.00
23	Cow shed	All blocks	1	5	10	50.00	10	50.00	10	50.00	10	50.00	10	50.00	50	250.00
24	Society Buildings	All blocks	1	20	10	200.00	10	200.00	10	200.00	10	200.00	10	200.00	50	1000.00
25	Cryogenic containers	All blocks	1	0.35	20	7.00	20	7.00	20	7.00	20	7.00	20	7.00	100	35.00
26	Equipments for Artificial	All blocks	1	0.5	3	1.50	3	1.50	3	1.50	3	1.50	3	1.50	15	7.50
	Capacity building															
27	Training of personnel of	All blocks	1	0.05	200	10.00	200	10.00	200	10.00	200	10.00	200	10.00	1000	50.00
28	Infertility Camps	All blocks	1	0.2	50	10.00	50	10.00	50	10.00	50	10.00	50	10.00	250	50.00
	Marketing															
29	Parlour structures	All blocks	1	5	10	50.00	10	50.00	10	50.00	10	50.00	10	50.00	50	250.00

Sl. No	Components	Blocks covered	Unit	Unit Cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
30	Milk product storage cabinets	All blocks	1	0.3	100	30.00	100	30.00	100	30.00	100	30.00	100	30.00	500	150.00
31	Product Billing systems	All blocks	1	0.3	10	3.00	10	3.00	10	3.00	10	3.00	10	3.00	50	15.00
	Quality control															
32	Adulteration detection	All blocks	1	4	1	4.00	1	4.00	1	4.00	1	4.00	1	4.00	5	20.00
33	Milk testing equipment and	All blocks	1	5	1	5.00	1	5.00	1	5.00	1	5.00	1	5.00	5	25.00
	Processing															
34	Water Treatment Plants. Reverse	All blocks	1	100	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	1	100.00
35	Effluement treatment plant	All blocks	1	100	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	1	100.00
36	Steam raisning plant with	All blocks	1	100	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	1	100.00
37	Fat handling equipments	All blocks	1	200	0	0.00	0	0.00	1	200.00	0	0.00	0	0.00	1	200.00
38	Dairy equipments	All blocks	1	50	1	50.00	1	50.00	1	50.00	1	50.00	1	50.00	5	250.00
	Civil work Infrastructure															
39	Construction of Dairy	All blocks	1	1500	0	0.00	0	0.00	0	0.00	1	1500.00	0	0.00	1	1500.00
40	BMC buildings	All blocks	1	15	5	75.00	5	75.00	5	75.00	5	75.00	5	75.00	25	375.00
41	Ware house for Dairy products	All blocks	1	200	0	0.00	0	0.00	0	0.00	1	200.00	0	0.00	1	200.00
42	Ware house for Dairy	All blocks	1	200	1	200.00	1	200.00	0	0.00	0	0.00	0	0.00	2	400.00
	Grand Total					**912.60**		**1081.60**		**1153.60**		**2379.60**		**669.60**		**6197.00**

B1- Aavudayarkovil, B2- Annavasal, B3- Aranthagi, B4- Arimalam, B5- Gantharvakottai, B6- Karambakudi, B7- Kunrandarkovil, B8- Manamelkudi, B9- Ponnamaravathi, B10- Pudukottai, B11- Thirumayam, B12- Thiruvarankulam, B13- Viralimali

4.8 Fisheries sector

Fisheries sector is one of the important food production sector in the State contributing to the livelihood as well as food security of a large section of the economic all under-privileged population. In recent years, it has assumed greater significance and its contribution towards the State and the National economy in terms of livelihood nd nutritional security, rural employment generation and foreign exchange earnings have been enormous. Fisheries include marine, freshwater and brackish water subsectors. The Fisheries sector over the years has transformed from subsistence-based artisanal activities to modern livelihood activities with the application of science and modern technologies in the field of capture fishing and culture fisheries. It is developing as a major industry with diversifications viz., exploring deep sea resources and eco-friendly aquaculture practices for culture of finfish and shell fish, ornamental fish culture, eco-tourism, fish processing parks, mid sea fish processing units, etc.

I. 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 which also raise costs. Introductions have raised production in many areas of the world at the price of the risk of environmental disruption. Stocking is extremely widespread but has generally been applied uncritically. A variety of models are proposed to serve as a basis for more rigorous evaluation of biological and economic effectiveness of this practice. Fertilization of water bodies is used to raise levels of production further. Elimination of unwanted species then becomes necessary to maximize benefits from the target species. Adjustments to

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

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

The interventions are

1. Biological Control of Aquatic Weeds by Stocking of Grass Carps in Aquatic Weed Infested water bodies
2. Installation of Artificial Reefs in The Inshore Areas of Tamil Nadu Coast (Unit) in Arantangi, Avudayarkoil, Gandarvakottai, Karambakkudi, Manamelkudi, Thiruvarankulam
3. Increasing fish production in Tamil Nadu through production and distribution of genetically improved Tilapia in all Blocks except Arimalam, Kunnandarkoil, Ponnamaravathi
4. Diversification of fishing by promoting squid jigging in Arantangi, Avudayarkoil, Gandarvakottai, Karambakkudi, Pudukkottai, Thiruvarankulam
5. Direct stocking of advancd fingerlings in irrigation tanks and panchayat tanksin all blocks
6. Biological Control of Aquatic Weeds by Stocking of Grass Carps in Aquatic Weed Infested water bodies in all blocks

II. Capacity building program

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.

The interventions are

1. Exposure visit to farmers to other states in Manamelkudi
2. Organization of Fish festival in Arantangi, Gandarvakottai, Karambakkudi, Manamelkudi, Thiruvarankulam
3. Providing Geo tube seawall and training wall to prevent in Coastal areas of Tamil Nadu (Bommaiyarpalayam and Pillaichavady) in Arantangi, Avudayarkoil, Karambakkudi, Manamelkudi, Pudukkottai, Thirumayam, Thiruvarankulam
4. Providing trainers training and exposure visit to Departmental staff to all Blocks except Annavasal

III. Creation of infrastructure facilities

The fisheries sector of India is immensely contributing to the economy of the country. It provides valuable foreign exchange and employment to millions of people. At the same time it is an instrument of livelihood for a large section of economically backward population of the country. More than 7 million fishers in the country depend on capture fisheries and aquaculture for their livelihood .Indian fisheries are an important component of the global fisheries. India being the fourth largest producer of fish in the world and second in Inland fish production. Considering the vast potential of fisheries resources and to achieve the targeted production and productivity, following thrust areas of research and development have been identified which need attention on priority basis.

The interventions are

1. Establishment of fish culture ponds and provision of inputs in Avudayarkoil, Karambakkudi, Pudukkottai
2. Establishment of District Extension and Training centres in Annavasal, Arimalam, Avudayarkoil, Ponnamaravathi, Thirumayam, Thiruvarankulam

Budget

The budget requirement for fulfilling the above interventions is ₹ 583.87 lakhs

Implementing agency

Department of Fisheries will be implementing the project

Table 4.24 Budget Requirement for Fishery in Pudukkottai District **(Rs.in lakhs)**

Sl. No	Fisheries	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	Installation of Artificial Reefs in The Inshore Areas of Tamil Nadu Coast (Unit)	Arantangi, Avudayarkoil, Gandarvakottai, Karambakkudi, Manamelkudi, Thiruvarankulam	No	0.79	0	0.00	3	2.37	2	1.58	2	1.58	0	0.00	7	5.53
2	Increasing fish production in Tamil Nadu through production and distribution of genetically improved Tilapia	All Blocks except Arimalam, Kunnandarkoil, Ponnamaravathi	No	0.15	50	7.50	0	0.00	0	0.00	0	0.00	0	0.00	50	7.50
3	Diversification of fishing by promoting squid jigging	Arantangi, Avudayarkoil, Gandarvakottai, Karambakkudi, Pudukkottai, Thiruvarankulam	No	5.05	0	0.00	2	10.10	0.5	2.53	2.5	12.63	0	0.00	5	25.25
4	Direct stocking of advancd fingerlings in irrigation tanks and panchayat tanks	All Blocks	No	0.04	0	0.00	750	30.00	750	30.00	750	30.00	750	30.00	3000	120.00
5	Biological Control of Aquatic Weeds by Stocking of Grass Carps in Aquatic Weed Infested water bodies	All Blocks	Ha	0.2	150	30.00	50	10.00	50	10.00	50	10.00	50	10.00	350	70.00
	Creation of infrastructure facilities															
6	Establishment of fish culture ponds and provision of inputs	Avudayarkoil, Karambakkudi, Pudukkottai	No	0.15	10	1.50	0.23	0.03	1	0.15	0	0.00	0	0.00	11.23	1.68

Sl. No	Fisheries	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
7	Establishment of District Extension and Training centres	Annavasal, Arimalam, Avudayarkoil, Ponnamaravathi, Thirumayam, Thiruvarankulam	No	5	0	0.00	2	10.00	3	15.00	0	0.00	0	0.00	5	25.00
	Capacity building programme															
8	Exposure visit to farmers to other states	Manamelkudi	No	5.5	0	0.00	2	11.00	0	0.00	0	0.00	0	0.00	2	11.00
9	Organization of Fish festival	Arantangi, Gandarvakottai, Karambakkudi, Manamelkudi, Thiruvarankulam	No	0.06	0	0.00	40	2.40	40	2.40	40	2.40	50	3.00	170	10.20
10	Providing Geo tube seawall and training wall to prevent in Coastal areas of Tamil Nadu (Bommaiyar palayam and Pillaichavady)	Arantangi, Avudayarkoil, Karambakkudi, Manamelkudi, Pudukkottai, Thirumayam, Thiruvarankulam	No	0.1	0	0.00	5	0.50	4	0.40	4	0.40	4	0.40	17	1.70
11	Providing trainers training and exposure visit to Departmental staff	All Blocks except Annavasal	No	0.03	0	0.00	50	1.50	50	1.50	50	1.50	50	1.50	200	6.00
12	Creation of Marine infrastructure facilities for the fisher-folk of coastal towns and villages to enhance Marine fish production, hygienic handling of catch and prevention of Post-harvest losses	All Blocks	NO	300	1	300	1	300	0	0	0	0	0	0	2	600
	Grand Total					**339.00**		**377.90**		**63.56**		**58.51**		**44.90**		**583.87**

4.8.2. Fisheries Research

Fisheries sector occupies a very important place in the socio-economic development of the country. It has been recognized as a powerful income and employment generator as it stimulates growth of a number of subsidiary industries, and is a source of cheap and nutritious food, besides being a foreign exchange earner. Most importantly, it is the source of livelihood for a large section of economically backward population of the country. In India, fisheries have always been playing a vital role in providing gainful employment to people, besides securing their food and nutritional security, especially in rural areas. India is the third largest producer of inland capture fish in the world after China and Myanmar. Inland fish production in the country registered an impressive growth of 8 fold in the last 50 years.

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

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

cutlet and fish burger have been evolved. Quality control wing of fish processing has evolved several rapid techniques for detection of human pathogens. A separate laboratory for quality monitoring will be built to help the industry.

Project component

- Awareness to fishers on hygienic handling of fish
- Creation of awareness among fishers on fish processing technologies
- Capacity building and skill development programmes on fish processing technologies
- Awareness campaign on health beneficial attributes of fish
- Production of short films on nutritive value of fish and screening in theatres and television channels
- supply of preserved ready to eat and ready to cook fish products through public distribution systems
- Supply of fish and fish products in mid-day meal programme
- Supply chain management to promote consumption of farmed freshwater fishes
- installation of waste rendering plant at selected fishing harbors and fish markets
- Development of fish compost for production of organic agricultural and horticultural crops
- Installation of unit for biogas from fish waste
- Development of technologies for effective utilization of shrimp shell waste
- Establishment of trap setting vessel to impart eco-friendly fish trapping technology among the fishermen of Tamil Nadu
- Design and development of e interface gadgets for sustainable aquaculture

Budget

The proposed intervention will be implemented with a budget outlay of. ₹ 1576.45 lakhs.

Project implementing agency

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

Expected outcome

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

Table .4.25. Budget for Fisheries Research

(Rs.in lakhs)

Sl. No	Interventions	Unit cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	**Harvest and Post harvest**														
A	**Reduction of post harvest losses**														
	Awareness to fishers on hygienic handling of fish	0.005	Pudukottai	133	0.67	133	0.67	133	0.67	133	0.67	133	0.67	665	3.33
	Creation of awareness among fishers on fish processing technologies	0.6	Pudukottai	25	15.00	25	15.00	25	15.00	25	15.00	25	15.00	125	75.00
	Capacity building and skill development programmes on fish processing technologies	6.6	Pudukottai	13	85.80	13	85.80	13	85.80	13	85.80	13	85.80	65	429.00
B	**Enhancement of per capita consumption of fish**														
	Awareness campaign on health beneficial attributes of fish	0.005	Pudukottai	52	0.26	52	0.26	52	0.26	52	0.26	52	0.26	260	1.30
	Production of short films on nutritive value of fish and screening in theatres and television channels	50	Pudukottai	0	0.00	0	0.00	1	50.00	0	0.00	0	0.00	1	50.00
C	**Ensuring nutritional security through fish and fishery products**														
	supply of preserved ready to eat and ready to cook fish products through public distribution sytems	12.9	Pudukottai	0	0.00	1	12.90	0	0.00	0	0.00	0	0.00	1	12.90
	Supply of fish and fish products in mid day meal programme	12.9	Pudukottai	0	0.00	1	12.90	0	0.00	0	0.00	0	0.00	1	12.90
	Supply chain management to promote consumption of farmed freshwater fishes	64.5	Pudukottai	0	0.00	1	64.50	0	0.00	0	0.00	0	0.00	1	64.50
D	**Utilization of fish processing waste and by catch**														
	installation of waste rendering plant at selected fishing harbors and fish markets	130	Pudukottai	0	0.00	1	130.00	0	0.00	0	0.00	0	0.00	1	130.00

Sl. No	Interventions	Unit cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Development of fish compost for production of organic agricultural and horticultural crops	65	Pudukottai	0	0.00	1	65.00	0	0.00	0	0.00	0	0.00	1	65.00
	Installation of unit for biogas from fish waste	161.5	Pudukottai	0	0.00	1	161.50	0	0.00	0	0.00	0	0.00	1	161.50
	Development of technologies for effective utilization of shrimp shell waste	100	Pudukottai	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	1	100.00
E	**fishing technology**														
	Establishment of trap setting vessel to impart eco friendly fish trapping technology among the fishermen of Tamil Nadu	300	Pudukottai	1	300.00	0	0.00	0	0.00	0	0.00	0	0.00	1	300.00
F	**Fish resource management and conservation**														
A	State Apex fisheries biodiversity reference centre for reseource conservation	400	Pudukottai	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
G	**Fisheries Engineering**														
H	**Aquacultural engineering**														
a	**Farm implements**														
	Deisgn and development of e interface gadgets for sustainable aquaculture	20	Pudukottai	0	0.00	1	20.00	0	0.00	0	0.00	0	0.00	1	20.00
c	**Renewable energy technologies**		Pudukottai												
	Design and development of renewable energy powered aerators for aquaculture	35	Pudukottai	1	35.00	0	0.00	0	0.00	0	0.00	0	0.00	1	35.00
	Design and development of renewable energy powered feeders for aquaculture	50	Pudukottai	0	0.00	0	0.00	0	0.00	0	0.00	1	50.00	1	50.00
d	**Automation technologies**														
	Developnment of mobile gadgets/apps for remote	15	Pudukottai	0	0.00	0	0.00	1	15.00	0	0.00	0	0.00	1	15.00

Sl. No	Interventions	Unit cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	monitoring system for aquaculture farms														
e	**Navigation and Fisheries Engineering**														
	Development of cost effective gadgets for effective fishing	15	Pudukottai	1	15.00	0	0.00	0	0.00	0	0.00	0	0.00	1	15.00
	Development of mobile apps for effective fishing	8	Pudukottai	0	0.00	0	0.00	0	0.00	0	0.00	1	8.00	1	8.00
I	**Post-harvest fisheries engg**														
a	**Handling, transportation and storage**														
	Design and development of solar powered tricycle for fish vendors	2	Pudukottai	1	2.00	1	2.00	1	2.00	1	2.00	0	0.00	4	8.00
b	**Processing machines**														
	Design and development of gadgets for fish processing	20	Pudukottai	0	0.00	0	0.00	0	0.00	1	20.00	0	0.00	1	20.00
	Grand total				**453.73**		**670.53**		**168.73**		**123.73**		**159.73**		**1576.45**

4.9. Public Works Department

Increasing the ground water level

Groundwater as a dependable source and its proximity to various users has led to indiscriminate extraction of this precious natural resource for agricultural, domestic and industrial uses. The efficacy of the surface water bodies such as tanks, canals as a means of natural recharge to groundwater has drastically reduced simply because the water levels in those areas are too deep. Hence the need of the hour is for 'Artificial Recharge' systems that convey the fresh rainwater into the aquifer. In other words, the basic purpose of artificial recharge of ground water is to restore supplies from the aquifers depleted due to excessive ground water development. The artificial recharge to ground water aims at augmentation of ground water reservoir by modifying the natural movement of surface water utilizing suitable civil construction techniques. The artificial recharge techniques inter-relate and integrate the source water to ground water reservoir. The benefits are rise in water level and consequent increase in storage of the ground water reservoir.

Check dams are constructed across small streams having gentle slope and are feasible both in hard rock as well as alluvial formation. The site selected for check dam should have sufficient thickness of permeable bed or weathered formation to facilitate recharge of stored water within short span of time. The water stored in these structures is mostly confined to stream course and the height is normally around 2 meters.

The quality of groundwater would change as groundwater in these areas was saline. Infiltration of water into the ground would soften the hard water and improve its quality. Farmers who had dry lands would immensely benefit from the dam.

Project components

1. Construction of anicuts across Narasinga Cauvery River to feed Ochakudi Tank in Alaganvayal Village of ManamelkudiTaluk in Pudukkottai district.

2. Construction of Check dam across the surplus vari of GudalurKanmoi in Alanguditaluk of Pudukkottai district.

3. Construction of anicut across the Perambur tank surplus vari to feed Avoor tank and other tanks in Illuppurtaluk of Pudukkottai district.

4. Construction of anicut across Koraiyar river near Thirunallur village of Illuppurtalukof Pudukkottai district.

5. Construction of Dividing dam across AlaivalanthanKanmoi surplus course in Kattaiyandipatti village of Ponnamaravathytaluk in Pudukkottai district.

6. Construction of Anicut across Pambar river in Kattavilagam village of Thiruvadanaitaluk of Ramnad district to feed Melavasanthanur tank and other tanks in Avudaiyarkoiltaluk of Pudukkottai district.

7. Construction of Anicut across Pambarriver in Embal village of Pudukkottai district to feed Sithakkur tank and other four tanks in Pudukkottai district and to feed Naranamangalam tank and other three tanks in Sivaganga district.

Budget

It is proposed to incur ₹.2028.80 Lakhs over a period of five years.

Expected outcome

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

Implementing agency

Department of Public Works will be implementing the project.

Table 4.26. Budget Estimate for PWD works in Pudukkottai district

(Rs.in lakhs)

Sl. No.	Intervention	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Construction of anicuts across Narasinga Cauvery River to feed Ochakudi Tank in Alaganvayal Village of Manamelkudi Taluk in Pudukkottai district.	Manamelkudi	Ha	4.59	26.45	121.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.45	121.50
2	Construction of Check dam across the surplus vari of GudalurKanmoi in Alangudi taluk of Pudukkottai district.	Thiruvarangulam	Ha	1.99	44.02	87.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.02	87.80
3	Construction of anicut across the Perambur tank surplus vari to feed Avoor tank and other tanks in Illuppur taluk of Pudukkottai district.	Viralimalai	No	350.00	0.00	0.00	1.00	350.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	350.00
4	Construction of anicut across Koraiyar river near Thirunallur village of Illuppur taluk of Pudukkottai district.	Viralimali	No	600.00	0.00	0.00	0.00	0.00	1.00	600.00	0.00	0.00	0.00	0.00	1.00	600.00
5	Construction of Dividing dam across AlaivalanthanKanmoi surplus course in Kattaiyandipatti village of	Ponnamara vathy	Ha	0.46	0.00	0.00	0.00	0.00	325.62	149.50	0.00	0.00	0.00	0.00	325.62	149.50

Sl. No.	Intervention	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Ponnamaravathy taluk in Pudukkottai district.															
6	Construction of Anicut across Pambar river in Kattavilagam village of Thiruvadanai taluk of Ramnad district to feed Melavasanthanur tank and other tanks in Avudaiyarkoil taluk of Pudukkottai district.	Avudaiyarkovil	Ha	1.77	0.00	0.00	0.00	0.00	0.00	0.00	265.26	470.00	0.00	0.00	265.26	470.00
7	Construction of Anicut across Pambar river in Embal village of Pudukkottai district to feed Sithakkur tank and other four tanks in Pudukkottai district and to feed Naranamangalam tank and other three tanks in Sivaganga district.	Avudaiyarkovil	Ha	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	520.57	250.00	520.57	250.00
	Total					**209.30**		**350.00**		**749.50**		**470.00**		**250.00**		**2028.80**

4.10. 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.,* plouging, harvesting) to their members. Agricultural marketing cooperatives are often formed to promote specific commodities.

Project components

- ✓ Construction of office building in all blocks except Karambakudi, Arimalam and Manamelkudi blocks
- ✓ Construction of compound wall in all blocks
- ✓ Godown renovation in Pudukottai block
- ✓ Construction of farmers rest room in Aranntangi and Thiruvarankulam blocks
- ✓ Office building renovation in all blocks except Viralimalai, Ponnamaravathi and Manamelkudi blocks
- ✓ Toilet construction in all blocks
- ✓ Vehicle parking shed in Pudukottai, Kunnandarkoil, Gandarvakottai and Aranntangi blocks
- ✓ Establishment of modern counter and printing press machineries

Budget

The budget requirement for fulfilling the above interventions is **₹. 1202.85 Lakhs.**

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 Pudukkottai District **(Rs.in lakhs)**

Sl. No.	Co-operation	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Construction of Compound wall	All blocks	20	60.00	20	60.00	19	58.50	18	57.50	10	37.00	87	273.00
2	Construction of Godown	All blocks except B10 and B12	10	82.00	13	50.00	5	38.00	5	43.00	4	28.00	37	241.00
3	Construction of Office Building	All blocks except B8, B11 and B12	5	80.00	4	60.00	4	60.00	4	60.00	3	45.00	20	305.00
4	Construction of Electronic Weigh bridge	B6, B9 and B13	1	7.00	1	6.00	8	0.00	0	0.00	0	0.00	10	13.00
5	Establishment of Tractor Shed	B6, B10, B11 and B13	2	2.00	2	2.00	2	2.00	1	1.00	1	1.00	8	8.00
6	Renovation of Godown	B1	0	0.00	0	0.00	0	0.00	1	8.75	0	0.00	1	8.75
7	Renovation of Office Building	B1, B2, B3, B4, B6, B7, B8, B9, B11 and B13	16	36.00	13	23.50	7	16.00	6	12.00	6	18.00	48	105.50
8	Shopping complex Construction	B13	1	15.00	0	0.00	0	0.00	0	0.00	0	0.00	1	15.00
9	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,	All Blocks	28	85.60	23	36.60	22	29.90	18	20.90	18	22.40	109	195.40

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
	Hand Billing machine, LED Display for tender process, Purchase of Jewel Carat Meter, Smart Card Printing Machine, Burglary Alarm, Agricultural Equipments, Safety Locker, Purchase of Display racks, Defender Door, Purchase of Paddy drying machine, Automatic Printer machine, Conveyer, E-Tender process, Fork Lifter, Gunny Bag Stitching machine, Jewel tester, Pallets, Tarpaulin, Trolley and Printing Press machineries)													
10	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	15	12.00	14	11.00	13	5.50	13	6.00	10	3.70	65	38.20
	Total			**379.60**		**249.10**		**209.90**		**209.15**		**155.10**		**1202.85**

Pudukkottai-B1, Annavasal-B2, Kunnandarkovil-B3, Gandarvakkottai-B4, Viralimalai-B5, Aranthangi-B6, Avudaiyarkovil-B7,Karambakkudi-B8, Thiruvarangulam-B9, Ponnavarmathi-B10, Arimalam-B11, Manamelkudi-B12, Thirumayam-B13

4.28. Budget Abstract for Pudukottai District

(Rs.in lakhs)

Sl.No.	Sectors	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Agriculture	5619.06	5232.50	5284.45	4375.49	4362.83	24874.32
2	Agricultural Research (TNAU)	96.00	390.37	226.00	26.00	45.00	7833.37
3	Horticulture	2845.43	3514.29	4226.71	5221.65	6005.78	21813.86
4	Agricultural Engineering	2771.89	2460.21	2488.48	2333.68	2310.93	12365.17
5	Agricultural Marketing	741.85	473.97	283.59	298.29	295.09	2092.79
6	Seed Certification and Organic Certification	18.36	14.76	1.40	1.40	1.40	37.32
7	Animal Husbandry	1630.24	1556.52	1895.49	1035.49	1490.49	7608.25
8	Dairy Development	912.60	1081.60	1153.60	2379.60	669.60	6197.00
9	Fisheries	339.00	377.90	63.56	58.51	44.90	583.87
10	Fisheries Research (TNFU)	453.73	670.53	168.73	123.73	159.73	1576.45
11	Water Resource Organization (PWD)	209.30	350.00	749.50	470.00	250.00	2028.80
12	Civil Supplies & Cooperatives	379.60	249.10	209.90	209.15	155.10	1202.85
	Total	**2294.23**	**2729.13**	**16751.41**	**16532.99**	**15790.85**	**11588.97**

The total budget requirement for the implementation of various interventions by different departments in Pudukkottai district is **₹ 11588.97 lakhs.**


KARNATAKA
KERALA
SRI LANKA