NATIONAL AGRICULTURE DEVELOPMENT PROGRAMME (NADP)

DISTRICT AGRICULTURE PLAN

DINDIGUL

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

NATIONAL AGRICULTURE DEVELOPMENT PROGRAMME (NADP / RKVY)

DISTRICT AGRICULTURE PLAN

DINDIGUL DISTRICT

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TAMIL NADU AGRICULTURAL UNIVERSITY
COIMBATORE - 641 003

2017

CONTENTS

LIST OF TABLES

LIST OF FIGURES

Executive summary

Dindigul District is located between 10°05’ and 1°09’ North Latitude and 77°30’ and 78°20’ East Longitude. It is bound by Erode, Karur and Trichirapalli districts on the North, Madurai district on the East and South and Coimbatore district and Kerala State on the West. The headquarters of the district Dindigul is located 65 km away from Madurai, lying on the South-West direction. Dindigul district is endowed with varied agro climatic conditions from semi-arid to sub-tropical, supporting varied agro eco systems, conducive for the cultivation of wide range of agricultural and horticultural crops. Dindigul District is characterized by an undulating plains covered mostly by red soil (85 %). The upper plains have thick layer of black earth over yellow clay. Most of the blocks excluding Kodaikanal are tropical and ideal for tropical crops. Kodaikanal being a hilly terrain with temperate climate, offers scope for more hill vegetables, fruits and plantations.

Red soil and Black soil are found to spread across the district followed by red sandy soil. Dindigul district comes under medium rainfall region. Dindigul district depends mainly on North- East monsoon rains, which are brought by the low pressure established in South Bay of Bengal between October and December. The average rainfall during 2010-11 in Dindigul district was 1013.18 mm. The important rivers flowing in Dindigul district are Kodaganaru, Palar, Kuthiraiyar, Porandalar, Varadhamanathi, Manjalar and Maruthanathi, which drains into Vaigai and Cauvery rive ₹ Wells are the major source of irrigation accounting for 88.12 per cent of the gross irrigated area followed by tanks and canals. This indicates the dominance of wells and tanks in the production of crops in Dindigul district.

Maize, Coconut, Cholam, Paddy, Mango and Groundnut are the major crops grown in the district. Dindigul district is blessed with good forest cover, which accounted for nearly 22.17 per cent of total geographical area. The total cropped area was 247627 ha, which accounted for 39.51 per cent of the total geographical area. However, increasing area under current fallow, other fallow lands and land put to non-agricultural uses affect the net sown area and gross cropped area in the district. At the same time, it is important to note that area sown more than once is slowly declining during the recent yea ₹

In most part of the districts, livestock formed major source of income. Converting the vast tracts of land available in the district into fodder crop fields by introducing emerging technologies is a real challenge for the Veterinarians, dairy professionals and agricultural experts. Such interventions would ensure a hefty increase in milk production in Dindigul district. Current status of 90 per cent deficit of green fodder should be given priority and hence village fodder nurseries, cultivation of green fodder, tree fodder, chaff cutter usage to enhance digestibility and to prevent wastage of feed is proposed. Sericulture is one of the income generating enterprises and it needs technological and policy interventions for attaining growth momentum. Dindigul being an inland district, fishing is restricted to inland only and the main varieties of fish available are katla, rogu, mirgal and common corp.

Agriculture Department has proposed a budget for ₹ 24013 Lakh for increasing area under major crops *Viz.,* Paddy, Millets, Pulses, Cotton, Groundnut, Coconut, Sunflower and others during the end of the project period and increasing the productivity through various interventions by adopting improved varieties and technologies. Production of paddy and pulses in the district will be increased through provision of high quality seeds, promotion of hybrids, integrated nutrient management, pest management and adoption of SRI method. Maize, sorghum and cumbu are the major millets cultivated in most parts of Dindigul district. Marketing initiatives which aim to provide millet farmers with a higher income share for their produce, like value chain integration, regulated markets, establishment of production cooperatives and various value addition initiatives and entrepreneurs should receive support on a case-by-case basis. Horticulture Department has proposed ₹ 69491.50 lakhs for the improvement in yield, efficient water and fertilizer use, improvement of soil health which ultimately fetches additional income to the farmer. The targeted crops are vegetables like onion, bhendi, chillies, brinjal and tomato, fruit crops like mango and guava and medicinal crop like gloriosa. It also includes the construction of demonstration plot, in which all the latest cultivation aspects will be on display, so that the farmers can have first-hand knowledge and ultimately will try to follow the technologies in their field. Hence it in proposed to have one 10 hectare mega demonstration field.

Department of Agricultural Engineering, proposed projects for popularization and adoption of labour saving package for timely operation through agricultural implements and reducing post harvest losses for improving income and value addition with a total fund requirement of ₹ 6276.30 Lakh. Department of Agri Business and Marketing has proposed a total of ₹ 3230.24 lakhs for the establishment of market intelligence and training centre for value addition and exposure visits. Department of Animal Husbandry has sought for ₹ 10217.00 Lakh for the period 2012-17 to undertake several activities under livestock improvement programme to increase milk production and bring additional income to the farmers through rearing of goats and poultry. Similarly, Fisheries Department has proposed to create additional area of Government fish farms and fish marketing, quality seed production, fingerlings in irrigation tanks, establishment of mini lab facilities and to conduct trainings and exposure visits with a budget requirement of about ₹ 1529 Lakh. The Department of Seed Certification has proposed a budget of ₹ 11.41 Lakh for certifying the better quality of seeds and making it available for the farmers.

Budget Abstract for Dindigul district

(Rs.in Lakh)

Sl. No	Sectors	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Agriculture	5758.86	5154.51	3773.87	4776.39	5130.59	24594.19
2	Agricultural Research (TNAU)	91.00	557.00	16.00	80.00	100.00	844.00
3	Horticulture	13554.79	13649.57	13956.72	14084.19	14207.83	69453.10
4	Agricultural Engineering	1023.00	1354.58	1327.10	1236.95	1334.69	6276.30
5	Agricultural Marketing	491.00	891.00	625.00	573.00	783.00	3363.00
6	Seed Certification & Organic Certification	18.36	13.86	0.50	0.50	0.50	33.72
7	Animal Husbandry	2049.20	2241.45	2109.45	1959.45	1857.45	10217.00
8	Animal Science Research (TANVASU)	0.00	0.00	0.00	0.00	0.00	0.00
9	Dairy Development	477.95	784.95	8987.80	345.00	420.00	11015.70
10	Fisheries	387.00	281.00	349.00	204.00	309.00	1529.83
11	Fisheries Research (TNFU)	77.66	13.16	50.26	0.26	0.26	141.60

Sl. No	Sectors	2017-18	2018-19	2019-20	2020-21	2021-22	Total
12	Water Resource Organization (WRO)	6422.35	1550.00	340.00	160.00	135.00	8607.35
13	Civil Supplies & Co-Operation	796.90	582.03	576.12	455.82	491.40	2902.27
	Total	**31148.07**	**27073.11**	**32111.82**	**23875.56**	**24769.72**	**138978.06**

The total budget requirement for the implementation of various interventions by different departments in Dindigul district is **₹. 138978.06 Lakh.**

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

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

CHAPTER I

INTRODUCTION

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

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

Objectives of RKVY

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

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

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

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

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

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

District and State Agriculture Plans

As per the recent guidelines issued by the Government of India under Remunerative Approaches for Agriculture and Allied sector Rejuvenation

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

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

- The several states have already prepared Comprehensive District and State Agriculture plans for 12th Plan period. These plans have to be revised and updated appropriately for implementing RKVY-RAFTAAR during 14th Finance Commission keeping in view modification proposed for the plan period and emerging needs of the State.

- The District Agriculture Plan (DAP) shall not be however the usual aggregation of existing schemes but would aim at moving towards projecting the requirements for development of Agriculture and allied sectors of the district and for the State a whole.

- These plans would also present the vision for Agriculture and allied sectors within the overall development perspective of the district and further State as a whole.

- The District Agriculture Plans and the State level plan would also present their financial requirements in addition to sources of financing the agriculture development plans in a comprehensive way.

- The District Agriculture Plan will include animal husbandry and fishery development, minor irrigation projects, rural development works, agricultural marketing schemes and etc. keeping in view the natural resources and technological possibilities in each district.

- District level potential linked credit plans (PLP) already prepared by the National Bank for Agriculture and Rural Development (NABARD) and Strategic Research and Extension Plans (SREP) developed under the Agricultural Technology Management Agency (ATMA) etc. may be referred for revision of DAPs.

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

are appropriately incorporated in DAPs.

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

The Process

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

Revision and Updation of DAP and SAP in Tamil Nadu

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

Methodology followed

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

2.1 Dindigul district at a glance

Dindigul District is located between 10°05’ and 1°09’ North Latitude and 77°30’ and 78°20’ East Longitude. It is bound by Erode, Karur and Trichirapalli districts on the North, Madurai district on the East and South and Coimbatore district and Kerala State on the West. The headquarters of the district- Dindigul is located 65 km away from Madurai lying on the South-West direction.

2.2 Area, Location and Geographical features

The district is divided into fourteen Agricultural Divisions *viz*., Dindigul, Sanarpatti, Athoor, Reddiarchatram, Nilakkottai, Batlagundu, Natham, Palani, Thoppampatti, Oddanchatram, Vedasandur, Vadamadurai, Kodaikanal and Gujiliamparai. Dindigul city, an important wholesale market for Onion and Groundnut, has the network of inter-district roads connecting Coimbatore, Erode, Tiruchi, Karur, Madurai and Sivagangai Districts. Kodaikanal, a popular summer resort, located at an altitude of 2,133 meters above MSL in the Western Ghats, is popularly called as “Princess of Hills Stations”. Oddanchatram is a noted market centre for vegetables. It is also famous for the export of butter manufactured in the nearby villages using cream separators. Batlagundu is an important market centre for tomato. Pattiveeranpatti in Batlagundu block is famous for Cardamom and Coffee enterprises.

Tanneries are thickly sprawled around this district. The finished and semi-finished leather and other leather products have a good export market. A large number of Chamber Brick units are functioning in the district. Dindigul locks and iron safes are famous for its quality. Hand loom, rice milling, groundnut and vermicelli are the other types of food based industries functioning in the district. There is much scope for starting the leather based units, lock units, brick units and food processing units in this district. SIPCOT industrial complex, Nilakottai is located in Pallapatti village and the area is about 380 acres (including land area of 100 acres allotted to Nilakottai Food Park Ltd.. Maagrita Exports, an Rs 10 crore worth of mango processing unit, is located at the SIPCOT Industrial Estate at Nilakottai in Dindigul district. This project is a joint venture between Maagrita Exports Limited and the Agri Export Zone (AEZ). The AEZ falls under the Agricultural and Processed Foods Export Development Authority (APEDA) of the Ministry of Commerce, Government of India.

Table 2.1 Taluks, Blocks and Number of Villages in the Dindigul District

Name of the Taluks (7)	Town	Name of the CD block	No of villages	Inhabited Villages
Dindigul	10	Athoor	20	20
Natham	1	Nilakottai	26	26
Nilakottai	5	Batlagundu	14	14
Palani	7	Kodaikanal	15	15
Oddanchatram	1	Oddanchatram	38	38
Vedasandur	5	Reddiarchatram	20	20
Kodaikanal	2	Thoppampatti	40	40
		Palani	29	28
		Guziliamparai	18	18
		Vedasandur	22	22
		Dindigul	10	10
		Natham	24	24
		Vadamadurai	17	17
		Sanarpatti	30	30

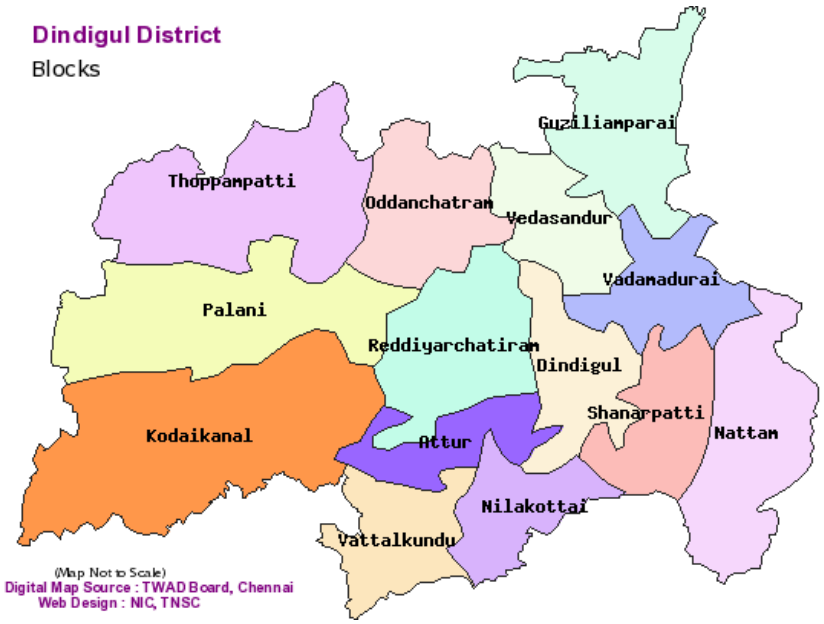
Sources: Directorate of Census Operations, 2011

2.3 Administrative Structure of Dindigul district

There are seven taluks in Dindigul District *viz.,* Dindigul, Natham, Nilakottai, Palani, Oddanchatram, Vedasandur and Kodaikanal, which are depicted in Fig.1. Dindigul district comprises of fourteen blocks viz., Dindigul, Athoor, Reddiarchatram, Sanarpatti, Natham, Nilakotttai, Batlagundu, Palani, Oddanchatram, Thoppampatti, Vedasandur, Vadamadurai, Guziliamparai and Kodaikanal and they are shown in Fig.2.

Fig.1 Taluk Location Map of Dindigul District

Fig.2 Blocks in Dindigul District



2.4 Demographic profile

2.4.1 Population

The distribution of population in Dindigul District (2011 Census) is furnished in Table.2.2. According to 2011 Census, Dindigul district had a population of 2,159,775 of which males constituted 1,080,938(50.06 per cent) and remaining 1,078,837(49.94 per cent) were females. Block wise analysis revealed that Dindigul block had the maximum population of 1,51,204 persons comprising 75,630 males and 75,574 females. Kodaikanal block was found with minimum population of 70,018 persons of them 35,341 were males and 34,677 were females. The male and female population is almost equal in both rural and urban areas.

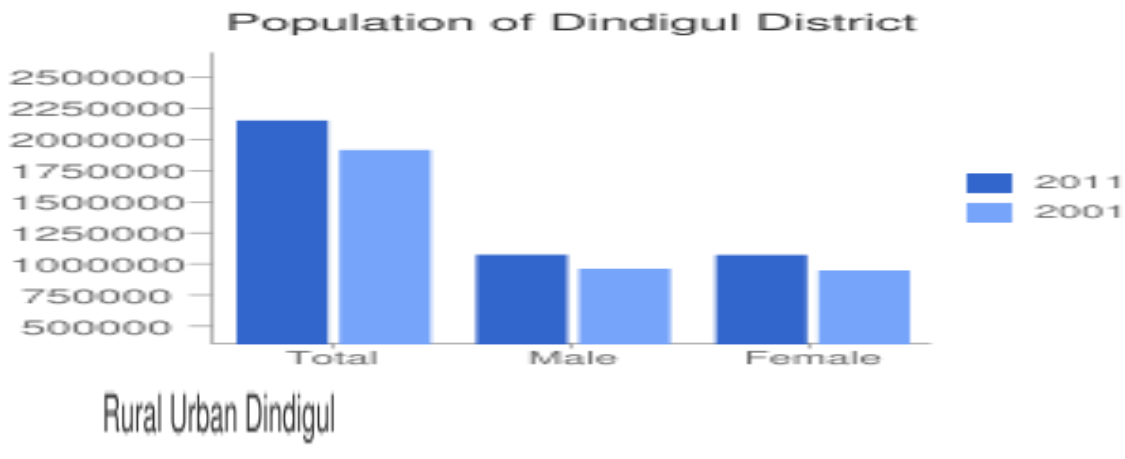
Table 2.2 Block wise total population in Dindigul district

Sl. No	Blocks	Total population		
		Total	Male	Female
1.	Athoor	1,07,752	53,507	54,245
2.	Nilakottai	1,24,478	62,747	61,731
3.	Batlagundu	77,449	39,418	38,031
4.	Kodaikanal	70,018	35,341	34,677
5.	Oddanchatram	1,06,517	53,025	53,492
6.	Reddiarchatram	1,02,682	51,458	51,224
7.	Thoppampatti	1,08,541	54,571	53,970
8.	Palani	99,024	49,551	49,473
9.	Guziliamparai	78,231	39,217	39,014
10.	Vedasandur	96,379	47,848	48,531
11.	Dindigul	1,51,204	75,630	75,574
12.	Natham	1,33,051	67,266	65,785
13.	Vadamadurai	78,859	40,061	38,798
14.	Sanarpatti	1,23,227	61,855	61,372
	Total	**21,59,775 (100)**	**10,80,938 (50.05)**	**10,78,837 (49.95)**
	Rural Population	**1353808 (62.59)**	**678605 (31.04)**	**673130 (31.14)**
	Urban Population	**808040 (37.41)**	**402333 (18.61)**	**405707 (18.77)**

Source: Census of India 2011

Figures in paratheses denote percentage

Fig.3. Population details of the Dindigul district



2.4.2 Literacy level

2.4.2 Literacy

District wise, male and female literacy were 84.23 and 68.33 respectively. Total literate in Dindigul District were 1,481,834 of which male and female were 8,16,180 and 6,65,654 respectively. Dindigul block has more literate population followed by Natham and Nilakottai blocks. Male and female literacy ratio is almost similar in all blocks.

Table 2.3 Literacy Level in Dindigul District

Sl. No.	Blocks	Population (No.)		
		Total	Male	Female
1	Athoor	75,369	41,048	34,321
2	Nilakottai	81,236	45,481	35,755
3	Batlagundu	50,066	28,374	21,692
4	Kodaikanal	46,221	25,950	20,271
5	Oddanchatram	68,990	39,269	29,721
6	Reddiarchatram	66,139	37,442	28,697
7	Thoppampatti	69,073	39,612	29,461
8	Palani	65,515	36,243	29,272
9	Guziliamparai	47,110	27,285	19,825
10	Vedasandur	63,274	35,434	27,840
11	Dindigul	1,09,181	58,752	50,429
12	Natham	82,834	47,814	35,020
13	Vadamadurai	48,771	28,346	20,425
14	Sanarpatti	77,072	43,484	33,588
	Total	**14,81,834 (76.26)**	**8,16,180 (84.23)**	**6,65,654 (68.33)**
	Rural	**8,70,271**	**4,91,736**	**3,78,535**
	Urban	**6,11,563**	**3,24,444**	**2,87,119**

Figures in paratheses denote percentage

2.4.3 House holds

The total households in the district were 5.60 lakhs. The block wise house hold details of the Dindigul district are presented in the Table 2.4. Dindigul block consists of more number of households followed by five blocks exceeding 30000 householders each.

Table 2.4 Block wise household details of Dindigul district

Sl. No	Blocks	Total (No.)
1	Athoor	28,092
2	Nilakottai	31,456
3	Batlagundu	19,977
4	Kodaikanal	18,836
5	Oddanchatram	31,104
6	Reddiarchatram	27,301
7	Thoppampatti	31,967
8	Palani	27,188
9	Guziliamparai	19,365
10	Vedasandur	24,151
11	Dindigul	38,902
12	Natham	31,274
13	Vadamadurai	18,443
14	Sanarpatti	30,433
	Total	**5,60,773**

2.4.4 Working population

The main occupation of the district is agriculture and allied activities. The share of rural worker and urban workers in the main workers in the district constituted 67.54 per cent and 32.46 per cent of the total working population respectively. The detail about working population of the district is furnished in Table 2.5.

Table 2.5 Block wise workers details of the District

Blocks	Total workers	Main workers	Cultivators	Agricultural labourers	Household industry workers	Other workers
Athoor	57,003	48,325	4,864	26,567	1359	15535
Nilakottai	67,549	52,793	9,136	29,789	1146	12722
Batlagundu	42,459	35,648	6,149	22,103	620	6776
Kodaikanal	40,741	36,789	7,564	21,998	533	6674
Oddanchatram	66,135	59,835	21,534	26,577	837	10877
Reddiarchatram	60,834	50,414	10,317	28,144	687	11266
Thoppampatti	66,569	59,970	21,841	24,045	1287	12797
Palani	53,252	46,996	7,488	22,694	943	15871
Guziliamparai	46,301	40,914	9,907	20,621	583	9803
Vedasandur	54,261	44,637	9,461	16,393	1434	17349
Dindigul	68,289	56,524	4,083	10,609	1,482	40,350

Blocks	Total workers	Main workers	Cultivators	Agricultural labourers	Household industry workers	Other workers
Natham	73,499	57,799	11,433	34,467	1066	10833
Vadamadurai	43,987	40,407	7,394	21,595	733	10685
Sanarpatti	67,065	58,475	7,979	29,317	1891	19288
Total	**11,05,155**	**9,63,017**	**1,55,332**	**3,88,725**	**25,253**	**3,93,707**
Urban	**3,42,962**	**3,12,642**	**16,971**	**58,017**	**11,761**	**2,25,893**
Rural	**7,62,193**	**6,50,375**	**1,38,361**	**3,30,708**	**13,492**	**1,67,814**

Natham block has more total working population and agricultural labourers. Kodaikanal recorded the least.

Topography

Dindigul district is endowed with varied agro climatic condition from semi-arid to sub-tropical, supporting varied agro eco systems, conducive for the cultivation of wide range of agricultural and horticultural crops. Dindigul district is characterized by undulating plains covered mostly by Red soil (85%). The upper plains have thick layer of black soil over yellow clay. Most of the blocks excluding Kodaikanal are tropical and ideal for tropical crops. Kodaikanal being a hilly terrain with temperate climate offers scope for more hill vegetable and fruits.

2.5.1 Soil type

Soil type is one of the important factors that determine the pattern of crop. The geographical distribution of different soils in Dindigul district is furnished in Table 2.6.

Table.2.6 Geographical Distribution of Different Soils in Dindigul District

Sl. No	Type of soil	Blocks in the District
1	Red loam	All blocks except in Kodaikanal
2	Laterite Soil	Oddanchatram and Natham
3	Black Soil	Dindigul, Nilakottai, Oddanchatram, Palani and Vedasandur
4	Red Sandy Soil	Dindigul, Nilakottai, Oddanchatram, Palani

Source: Office of the Assistant Director of Statistics.

Red soil and Black soil are found to spread across the district followed by red sandy soil. These soil types support the growth of an array of agricultural crops and horticultural crops. The distribution of soils based on soil series is presented in Table.2.7

Table 2.7 Distribution of Soils based on Soil Series in Dindigul District

Sl. No	Soil Description	Area (ha)	Percentage to total
1	Alfisols	204850.20	37.48
2	Entisols	45175.23	8.26
3	Inceptisols	220324.70	40.31
4	Mollisols	46989.24	8.60
5	Ultisols	9644.57	1.76
6	Vertisols	19635.83	3.59
	Total	546619.80	100.00

Source: *Soil Atlas of Dindigul district*

Nearly 40 per cent of the Dindigul district is covered by the soil series inceptisol (40.31%) followed by alfisols (37.48 %), mollisols (8.60 %), entisols (8.26 %), vertisols (3.59 %) and ultisols with (1.76 %). Soil classification data could not be presented in four blocks. However, the district as a whole, constituted for more red soil (73641 ha) followed by black soil extending to 47774 ha. The block wise soil classification is given in Table 2.8.

Table 2.8 Block wise soil classification in Dindigul District

(Area/ha)

Sl. No.	Type	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	Total
1	Black soil	419	0	0	13327	3671	7272	0	250	10155	12500	0	0	0	180	**47774**
2	Red soil	7000	0	0	3735	5507	11912	0	12098	400	15400	0	0	11129	6460	**73641**
3	Alluvial	0	0	0	2226	0	0	0	0	292	3200	0	0	0	230	**5948**
4	Loamy soil	0	24733	0	0	0	0	0	0	1152	150	0	0	0	3180	**29215**
5	Problem soils	523	0	0	0	0	0	0	0	87.5	55	0	0	0	710	**1376**
	Total	**7942**	**24733**	**0**	**19288**	**9178**	**19184**	**0**	**12348**	**12086.5**	**31305**	**0**	**0**	**11129**	**10760**	**157954**

B1-Batlagundu, B2-Natham, B3-Athoor, B4-Dindigul, B5-Nilakottai, B6- Reddiarchatram, B7-Kodaikanal,B8-Sanarpatti, B9-Gujiliamparai, B10- Oddanchatram, B11-Palani, B12-Thoppampatti,B13-Vadamadurai,B14- Vedasandur

2.6 Climate Condition and Rainfall

The quantum and distribution of rainfall play a significant role in the choice of crops in a district. Dindigul district comes under medium rainfall region. Dindigul district depends mainly on North East monsoon rains, which are brought by the low pressure established in South Bay of Bengal between October and December. The month wise temperature and humidity and annual rainfall distribution of Dindigul district is furnished in Table.2.9 and 2.10.

Table.2.9 Season wise / month wise climatic conditions in Dindigul district

Year: 2011-2012

Months	Mean Maximum		Mean Minimum		Humidity	
	Normal	Actual	Normal	Actual	8.30 hrs.	17.30 hrs.
2011						
June	35.09	34.90	25.21	26.20	90.00	30.00
July	34.63	35.90	25.11	26.60	69.00	35.00
August	33.84	34.70	24.94	25.90	82.00	36.00
September	33.64	35.40	24.39	25.90	82.00	27.00
October	31.66	32.20	23.31	24.20	96.00	34.00
November	29.63	28.80	22.39	22.30	94.00	45.00
December	28.18	29.20	20.85	21.70	93.00	39.00
2012						
January	29.69	29.90	20.19	20.00	92.00	33.00
February	32.94	32.90	20.99	21.10	85.00	21.00
March	35.96	36.40	22.68	24.50	82.00	12.00
April	36.45	37.10	25.24	26.50	85.00	22.00
May	36.10	35.90	25.83	26.60	80.00	35.00

Source: A.E.E. Ground Water, Dindigul

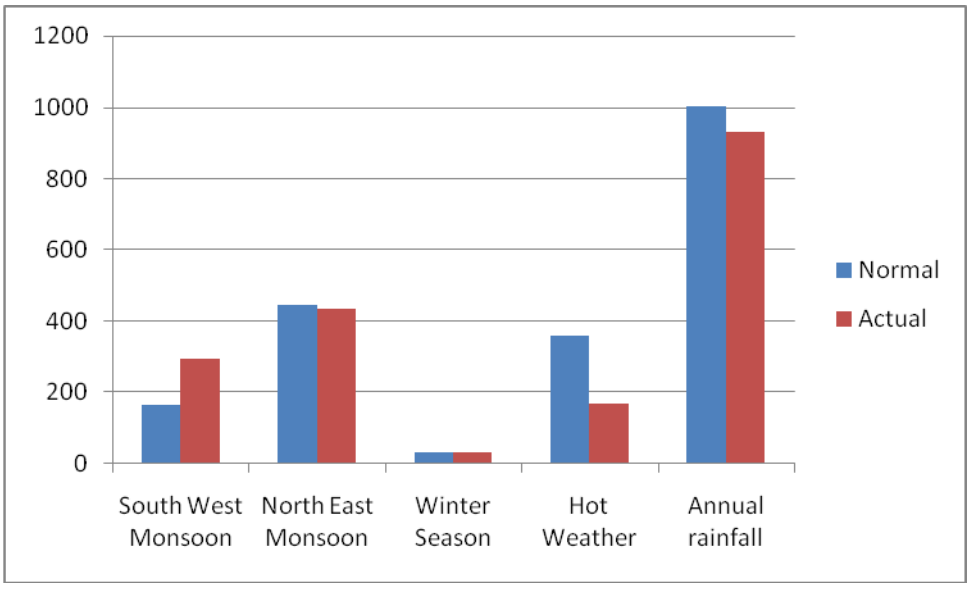
Table 2.10 Annual Rainfall Distribution in Dindigul District (mm)

Season / Month	2012-2013		2014-15	
	Normal	Actual	Normal	Actual
South West Monsoon				
June	41.2	19.8	30.8	41.2
July	55.9	55.9	0	55.9
August	70.5	64.7	132.9	70.5
September	127.8	52.4	12 2.7	127.8
Total	**295.4**	**192.8**	**163.7**	**295.4**
North East Monsoon				
October	188.1	272.5	341.7	188.1

Season / Month	2012-2013		2014-15	
	Normal	Actual	Normal	Actual
November	159	29.2	42.8	159
December	89.3	15.3	61.1	89.3
Total	**436.4**	**317**	**445.6**	**436.4**
Winter Season				
January	19	0	32.6	19
February	11.9	33.9	0.1	11.9
Total	**30.9**	**33.9**	**32.7**	**30.9**
Hot Weather				
March	22.4	34.5	29.2	22.4
April	62.6	31.3	140.4	62.6
May	83	36.9	190.2	83
Total	**168**	**102.7**	**359.8**	**168**
Annual rainfall	**930.7**	**646.4**	**1001.8**	**930.7**

Source: *Source: Season crop report,2014-2015.*

Fig No.4. Average rainfall (2014-2015) in mm



2.7 Land

2.7.1 Land use pattern

The total geographical area of Dindigul district is 6, 26,664 hectares. The net area sown accounted for 36.62 per cent as well as the area under forest accounted for 22.17 per cent. The area under barren and uncultivable wastes covered 5.78 per cent, while the current fallows shared 3.35 per cent. Other fallows occupied 18.11 per cent. The area under non-agricultural use had remained as the same in the last three years, which

accounted for 10.73 per cent. The area sown more than once was very less and it constituted 1.25 per cent. Hence aim should be to increase the land use intensity. The details of land use pattern were given in Table 2.11

Table 2.11 Land Use Pattern (2014-2015)

Sl.No	Particulars	2014-15	%
1	Geographical Area	626664	100
2	Forest	138923	22.17
3	Barren & Unculturable Area	36210	5.78
4	Land Put to Non-agricultural Uses	67218	10.73
5	Permanent Pastures & Other grazing lands	6946	1.11
6	Misc.tree crops & groves not incl. in the net area sown	7809	1.25
7	Current Fallow	20986	3.35
8	Other Fallow	113479	18.11
9	Net area sown	229483	36.62
10	Area sown more than once	7863	1.25
11	Gross area sown	237346	37.87

Source: Season crop report,2014-2015.

2.7.3 Land Holdings Pattern

The holding size and the distribution of holdings influence the efficiency of resource use and agricultural production in any geographical area. The size wise distribution of operational holdings across different blocks in Dindigul district is given in Table.2.12.

Total number of operational holdings in Dindigul district was 244652 with a total operational area of 216178.51 Ha. Marginal and small holdings (below1 ha) constitute 68.34 per cent of the total number of holdings and sharing only 26.28 per cent of the total operational area, followed by semi medium holdings sharing 18.94 per cent of total holdings, sharing 25.06 per cent of the total operational area in Dindigul district. Medium holding falling between 2 to 4 ha constitute 8.90 per cent of the total holdings and sharing 23.38 per cent of the total operational area. Large holding falling between 4-10 ha constitute 3.42 per cent of the total holdings and sharing 18.71 per cent of the total operational area, while large holding falling above 10 ha constitute 0.40 per cent of the total holdings and sharing 6.57 per cent of the total operational area in Dindigul district.

The analysis of block wise distribution holdings revealed that the marginal and small holdings was found high in Natham block, while it was low in Guziliamparai block. Semi-medium holding was found to be high in Thoppampatti block, while it was low in Guziliamparai block. Medium holdings falling between 2 to 4 ha was found high in

Thoppampatti block, while it was low in Batlagundu block. Large holdings falling between 4 to 10 ha and above 10 ha was found Batlagundu block, while it was low in small farmers with lesser holding less than 2 ha, constitute for major operational holdings offering scope more yield increasing technology for this strata.

Table.2.12. Distribution of Operational Holdings based on size across Blocks in Dindigul District

Blocks	Size of Holding in ha											
	Below 1 ha		From 1 to 2 ha		From 2 to 4 ha		From 4 to 10 ha		Above 10 ha		Total	
	Area	No	Area	No	Area	No	Area	No	Area	No	Area	Total holdings
1. Athoor												
2. Nilakottai	3210	5350	2570	1900	1920	640	1015	135	460	17	9175	8042
3.Batlagundu	3275	8189	1412	1130	78	**31**	445	99	112	11	5322	9460
4. Kodaikanal	--	3386	--	22387	--	--	--	9109	--	--	--	34882
5. Oddanchatram	4638	11041	6827	5035	8910	3273	8900	1610	2647	162	31922	21121
6.Reddiarchatram	7850	14916	7087	1696	2400	904	2397	390	415	16	20149	17922
7. Thoppampatti	4307.410	8616	8659.040	6139	13663.790	4940	14199.320	2525	4740.760	297	45570.320	22517
8. Palani	4828.150	9455	6029.090	4429	6958.640	2587	5686.460	995	1951.670	132	25454.010	17598
9. Guziliamparai	2236.85.0	2463	4128.06.0	2936	5218.28.0	1890	5199.20.0	895	1806.51.0	130	18593.89.0	10243
10.Vedasandur	4647	10239	5960	4165	6590	2447	5020	872	1322	97	22217	17820
11.Dindigul	5085.75	6781	3655.5	2437	3405	1362	2452.5	545	941	28	15539.75	11153
12. Natham	11664.95	29362	6737.85	4911	4928.34	1842	2816.85	46	26796.86	36673	26796.86	**36673**
13.Vadamadurai	4820	7053	4204.57	2233	4090	1542	450	350	468.000	50	14032.570	10276
14. Sanarpatti	7747.46.5	20233	6282.52.5	4565	4487.79.5	1652	2583.28.5	457	495.94.5	38	20433.36.5	26945
Total											216178.5	244652

Source*: 2011 Census and the Statistical Hand Books of Different Blocks in Dindigul District (2014-15).*

2.8 Sources of irrigation

The important rivers flowing in Dindigul district are Kodaganaru, Palar, Kuthiraiyar, Porandalar, Varadhamanathi, Manjalar and Maruthanathi, which drains into Vaigai and Cauvery rivers. Different sources of irrigation in Dindigul district are presented in Table 2.13 and 2.14.

Table 2.13 Irrigation by Different Sources in Dindigul District during 2014-15

Sl. No.	Particularls		Numbers	Area (in ha)
1	Canals	Gross	28	2531
		Net		2428
2	Tanks	Gross	3104	4576
		Net		4484
3	Tube wells / Bore wells	Gross	2153	4339
		Net		4283
4	Open wells	Gross		91311
		Net		85900
5	Supplementary wells	Gross		20
		Net		20
6	Other Sources	Gross		1152
		Net		871

Source: Season crop report, 2014-2015

Table 2.14. Source of irrigation (in hectare)

Sl. No.	Particularls		2012-13	2013-14	2014-15	Average
1	Canals	Gross	2931	2092	2531	2518.00
		Net	2345	1959	2428	2244.00
2	Tanks	Gross	7355	4438	4576	5456.33
		Net	6906	4309	4484	5233.00
3	Tube wells / Bore wells	Gross	4062	4184	4339	4195.00
		Net	4056	4175	4283	4171.33
4	Open wells	Gross	98476	89535	91311	93107.33
		Net	97220	88908	85900	90676.00
5	Supplementary wells	Gross	20	20	20	20.00
		Net	20	20	20	20.00
6	Other Sources	Gross	1089	1187	1152	1142.67
		Net	954	948	871	924.33

Source: Season crop report, 2014-2015

Among the major source of irrigation, open wells contributed to 0.90 lakh ha followed by 0.052 lakh ha by tanks and 0.041 lakh ha by tube wells. Among the wells open wells, dominated with pumpsets. These results in decline in the ground water of all the blocks in the district are over exploited and hence water management is more important while planning for agriculture.Blockwise irrigation sources is given in Table 2.15.

Table 2.15 Block wise irrigation sources of Dindigul district

Sl. No	Source	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	Total
1	Canal (Length)	0	13	0	0	1271	0	0	0	0	0	2438	368	0	124	4214
2	Tanks (Public)	1190	12643	600	309	0	4289		1197	1124	0	2913	208	2825	340	27638
3	Tanks (Private)	0	0	270	0	0	0		0	0	0	0	0	0	0	270
4	Open well	6044	6092	7105	4787	6155	5579	0	4134	6150	0	9505	21302	3570	7194	87617
5	Bore well	0	9	2	26	0	1960		0	5175	0	25	5478	4880	160	17715
6	Total	7234	18757	7977	5122	7426	11828	0	5331	12449	0	14881	27356	11275	7818	137454
7	% of Gross Irrigated area to Gross Cropped Area	121.33	75.84	57.43	43.64	80.91	59.38	0	0	116.44	0	63.34	78.02	119.02	79.75	71.05

The dams that have been constructed across the aforesaid rivers are presented in Table 2.16

Table 2.16 List of Dams in Dindigul District

Sl. No	Name of Dam	Purpose
1	Dharmathupatti	Irrigation
2	Kamarajar Dam	Irrigation and drinking water supply to Dindigul
3	Manjalar Dam	Irrigation
4	Marudhanadhi	Irrigation
5	Pannapatti	Irrigation
6	Parapalar Dam	Irrigation
7	Palar –Porandalar Dam	Irrigation and drinking water supply to Palani
8	Varadamanadhi Dam	Irrigation
9	Kuthiraiyar Dam	Irrigation

Source: Office of the Assistant Director of Statistics, Dindigul

2.7 Cropping Pattern

Factors such as fertility of land, monsoon behaviour, rainfall, irrigation, application of fertilizers, climatic conditions, marketing facilities, prices, availability of agricultural labour *etc.,* determine the area, production and productivity of any crop. The area has been increased over the year from 2012-13 to 2014-15 for cholam and ragi but other crops it was reduced. The average area of major cereals and vegetable crops is shown in Table 2.17. and 2.18 respectively. The block wise area, production and productivity of agricultural and horticultural crops are given in Table 2.19 and 2.20.

Table 2.17 Area under major cereals crops (2014-15 and Triennium ending 2014-15)

		Area (Ha)					Production (in tonnes)					Productivity (in kg / ha)				
Sl. No	**Particulars**	**2012-2013**	**2013-2014**	**2014-2015**	**Total**	**Average**	**2012-2013**	**2013-2014**	**2014-2015**	**Total**	**Average**	**2012-2013**	**2013-2014**	**2014-2015**	**Total**	**Average**
1	Paddy	9476	4234	12071	25781	8593.67	30806	25758	70676	127240	42413.33	3251	6084	5855	15190	5063.33
2	Maize	34325	27461	23805	85591	28530.33	119289	171566	180576	471431	157143.67	3475	6248	7586	17309	5769.67
3	Cholam	22603	33498	57504	113605	37868.33	27509	85437	166362	279308	93102.67	1217	2550	2893	6660	2220.00
4	Cumbu	1280	750	951	2981	993.67	1378	1529	3670	6577	2192.33	1077	2039	3859	6975	2325.00
5	Ragi	2	16	50	68	22.67	5	58	158	221	73.67	2670	3582	3171	9423	3141.00
6	Total Cereals	67698	66000	94420	228118	76039.33	179002	284392	421475	884869	294956.33				0	0.00
	Total	**135384**	**131959**	**188801**	**456144**	**152048.00**	**357989**	**568740**	**842917**	**1769646**	**589882.00**	**11690**	**20503**	**23364**	**55557**	**18519.00**

Table 2.18 Area under major Vegetables crops (2014-15 and Triennium ending 2014-15)

			Area (ha)				Production (in tonnes)					Productivity (in kg / ha)				
Sl. No	**Particulars**	**2012-2013**	**2013-2014**	**2014-2015**	**Total**	**Average**	**2012-2013**	**2013-2014**	**2014-2015**	**Total**	**Average**	**2012-2013**	**2013-2014**	**2014-2015**	**Total**	**Average**
1	Onion	2580	2336	2418	7334	2444.67	19224	15530	20133	54887	18295.67	7451	6648	8326	22425	7475.00
2	Brinjal	668	805	715	2188	729.33	2212	1885	6381	10478	3492.67	3312	2342	8924	14578	4859.33
3	Bhendi	555	403	545	1503	501.00	5183	1859	1904	8946	2982.00	9339	4613	3494	17446	5815.33
4	Cabbage	10	50	30	90	30.00	578	2353	1833	4764	1588.00	57784	47065	61095	165944	55314.67
5	Tomato	1898	1544	1521	4963	1654.33	17847	15081	16877	49805	16601.67	9403	9768	11096	30267	10089.00
6	Other Vegetables	13384	12435	12675	38494	12831.33				0	0.00				0	0.00
	Total	**19095**	**17573**	**17904**	**54572**	**18190.67**	**45044**	**36708**	**47128**	**128880**	**42960.00**	**87289**	**70436**	**92935**	**250660**	**83553.33**

Table 2.19 Block wise area, production and productivity of Agricultural crops in Dindigul district

Sl. No	Crops	Dindigul			Sanarpatti			Athoor			Reddiarchatram		
		Area	Produ -ction	Produ -ctivity	Area	Produ -ction	Produ -ctivity	Area	Produ -ction	Produ -ctivity	Area	Produ -ction	Produ -ctivity
1	Paddy	388	2000	5154	292.8	1728	5900	40	229	5736	20	101	5035
2	Cholam	848	2725	3214	1690.5	7100	4200	2992	7103	2374	2194	5647	2574
3	Maize	502	3928	7825	188.8	1605	8500	754	5031	6673	5536	453	8140
4	Cumbu	-	-	2810	340	1530	4500	166	731	4406	1	2	1565
5	Blackgram	198	138	698	177.47	124	700	283	184	650	88	42	474
6	Greengram	679	424	625	2110	1477	700	1067	694	650	3721.25	1544	415
7	Other Pulses	-	-	698	-	-	600	-	-	650	-	-	481
8	Redgram	145	116	798	166.35	266	1600	115	122	1060	154	168	1090
9	Ragi/Samai	166	-	-	3	13	4200	-	-	-	-	-	-
10	Groundnut	140	409.5	2925	257.8	592.94	2300	-	-	-	42	73.5	1750
11	Sunflower	6	6.65	1108	-	-	-	-	-	-	-	-	-
12	Gingelly	-	-	-	-	-	-	-	-	-	8	-	-
13	Sugarcane	37	-	-	12.23	134.53	11000	-	-	-	237	20.52	86.6
14	Cotton	2	-	-	-	-	-	-	-	-	575	2012.5	3500

Contd.,

Sl. No	Crops	Natham			Nilakottai			Batlagundu			Palani		
		Area	Produ -ction	Produ -ctivity	Area	Produ -ction	Produ -ctivity	Area	Produ -ction	Produ -ctivity	Area	Produ -ction	Produ -ctivity
1	Paddy	472	2762	5851	1038	4489	4325	280	1288	4600	1519	9626	6337
2	Cholam	1122	1655	1475	1943	7286	3750	560	1456	2600	1897	6546	3449
3	Maize	18	116	6459	213	109	510	63	293	4650	4543	55697	12260
4	Cumbu	1	2	2429	190	631	3320	58	104	1800	18	14	750
5	Blackgram	275	124	450	56	31	550	9	2	260	1620	1089	672
6	Greengram	734	-	-	303	159	525	186	52	280	929	539	580
7	Other Pulses	0	0	1864	-	-	485	-	-	240	-	-	800
8	Redgram	86	96	1121	187	185	991	26	21	820	-	-	-
9	Ragi/Samai	17	-	-	-	-	-	-	-	-	-	-	-
10	Groundnut	524	-	-	-	-	-	-	-	-	-	-	1450
11	Sunflower	-	-	-	1	0.75	750	1	-	-	-	-	850
12	Gingelly	8	-	-	21	8.295	395	-	-	280	-	-	420
13	Sugarcane	40	-	-	159	8109	51000	44	2992	68000	-	-	92500
14	Cotton	20	-	-	2	5	2500	29	49.3	1700	-	-	1500

Contd.,

Sl. No	Crops	Oddanchatram			Thoppampatti			Vedasandur		
		Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity
1	Paddy	108	92	853	35	222	6337	39	233	5980
2	Cholam	2117	17029	8044	8620	34997	4060	3508	16838	4800
3	Maize	1447	15075	10418	8111	86155	10622	205	1614	7875
4	Cumbu	153	54	352	33	100	3020	8	38	4800
5	Blackgram	332	66	199	3127	1907	610	79	49	625
6	Greengram	142	12	85	2518	1486	590	274	-	-
7	Other Pulses	-	-	71	-	-	450		-	575
8	Redgram	-	-	-	60	39	648	86	74	855
9	Ragi/Samai	-	-	-	-	-	-	-	-	-
10	Groundnut	-	-	-	458	1408.35	3075	884	2501.72	2830
11	Sunflower	-	-	-	172	125.56	730	5	4.75	950
12	Gingelly	-	-	-	69	20.7	300	1	0.81	810
13	Sugarcane	-	-	-	850	84830	99800	-	-	-
14	Cotton	-	-	-	489	506.12	1035	-	-	-

Contd.,

Sl. No	Crops	Vadamadurai			Guziliamparai		
		Area	**Production**	**Productivity**	**Area**	**Production**	**Productivity**
1	Paddy	161	725	4500	214	1316	6150
2	Cholam	2888	5343	1850	2665	6769	2540
3	Maize	611	4766	7800	142	1118	7875
4	Cumbu	7	11	1500	1701	5936	3490
5	Blackgram	216	140	650	117	73	625
6	Greengram	760	456	600	245	-	-
7	Other Pulses	-	-	500	-	-	575
8	Redgram	128	96	750	85	73	855
9	Ragi/Samai	-	-	-	-	-	-
10	Groundnut	369	-	-	-	-	-
11	Sunflower	-	-	-	-	-	-
12	Gingelly	-	-	-	-	-	-
13	Sugarcane	-	-	-	-	-	-
14	Cotton	-	-	-	-	-	-

Table 2.20 Block wise area, production and productivity of vegetable crops in Dindigul district

Sl. No.	Vegetables	Dindigul			Oddanchatram			Palani		
		Area	Production	Productivity	Area	production	Productivity	Area	production	Productivity
1	Potato	-	-	-	-	-	-	-	-	-
2	Tapioca	15.9	629.2	39.5	1.7	67.4	39.0	0.4	-	-
3	Sweet potato	0.7	-	-	-	-	-	-	-	-
4	Carrot	-	-	-	-	-	-	-	-	-
5	Beet root	-	-	-	56.1	1514.0	27.0	0.6	15.6	25.0
6	Karunai	-	-	-	-	-	-	-	-	-
7	Colacassia	-	-	-	7.1	-	-	1.7	10.2	6.0
8	Onion	12.1	90.6	7.5	1333.9	12005.1	9.0	6.3	53.4	8.5
9	Brinjal	18.4	165.8	9.0	95.4	1144.4	12.0	58.3	582.9	10.0
10	Bhendi	19.9	149.1	7.5	119.3	1014.1	8.5	28.6	229.0	8.0
11	Lab Lab	17.8	222.7	12.5	26.4	396.0	15.0	9.2	128.8	14.0
12	Cabbage	1.0	-	-	-	-	-	1.6	87.8	55.0
13	Tomato	33.5	334.7	10.0	184.8	2032.3	11.0	71.1	746.3	10.5
14	Pumpkin	0.4	-	-	15.9	397.2	25.0	3.0	62.1	21.0
15	Snake gourd	2.6	41.4	16.0	11.2	173.8	15.5	0.5	6.8	14.5
16	Ribbed gourd	-	-	-	2.0	23.3	11.5	1.4	-	-
17	Bottle gourd	0.5	6.6	13.5	8.3	121.0	14.5	0.5	6.9	14.0
18	Bitter gourd	5.6	65.8	11.8	15.3	183.1	12.0	1.3	-	-
19	Ash gourd	1.6	-	-	-	-	-	0.2	3.4	18.0
20	Cucumber	0.5	-	-	4.1	31.0	7.5	3.0	-	-

Contd.,

21	Beans	2.8	39.6	14.0	127.6	2105.6	16.5	10.8	140.2	13.0
22	Drum stick	16.3	808.3	49.5	302.7	15586.6	51.5	31.5	1088.5	34.6
23	Cauliflower	1.9	-	-	310.9	6529.5	21.0	24.4	487.2	20.0
24	Radish	0.4	8.1	20.0	-	-	-	0.2	4.0	20.0
25	Greens	0.5	7.4	15.5	-	-	27.0	0.4	-	-
26	Cluster bean	0.4	10.5	26.0	36.2	-	-	3.9	102.2	26.0
27	Butter Beans	-	-	-	-	-	-	-	-	-
28	Turnip	-	-	-	-	-	-	-	-	-
29	Knol Khol	-	-	-	-	-	-	-	-	-
30	Capsicum	-	-	-	-	-	-	0.4	-	-
31	Green peas	-	-	-	1.3	7.8	6.0	1.1	6.9	6.3
32	Chow chow	36.9	589.8	16.0	-	-	-	-	-	-
33	Turnip	-	-	-	-	-	-	1.2	-	-
34	Bellary	-	-	-	-	-	-	-	-	-
35	Karamani	-	-	-	-	-	-	-	-	-
36	Kovaikai	-	-	-	0.8	2.3	2.8	-	-	-
37	Siru Kixhangu	-	-	-	-	-	-	-	-	-

Contd.,

Sl. No	vegetables	Natham			Nilakottai			Vedasandur		
		Area	Production	Productivity	Area	production	Productivity	Area	Production	Productivity
1	Potato	-	-	-	-	-	-	-	-	-
2	Tapioca	-	-	-	16.9	694.1	8.0	17.035	677.14125	39.75
3	Sweet potato	-	-	-	0.1	-	9.5	2.455	39.28	16
4	Carrot	-	-	-	-	-	7.0	-	-	-
5	Beet root	-	-	-	-	-	13.0	0.2	-	-
6	Karunai	2.7	16.1	6.0	7.7	-	-	2.3	-	-
7	Cola cassia	-	-	-	-	-	9.8	2.15	-	-
8	Onion	34.2	256.3	7.5	194.4	1555.3	-	187.6	1594.8	8.5
9	Brinjal	44.4	422.1	9.5	47.3	449.4	15.0	16.98	178.27	10.50
10	Bhendi	71.1	533.1	7.5	9.6	67.5	-	13.69	102.66	7.50
11	Lab Lab	8.9	120.2	13.5	228.9	2975.7	15.0	0.79	11.06	14
12	Cabbage	-	-	-	-	-	13.5	-	-	-
13	Tomato	85.7	814.2	9.5	129.0	1257.6	-	227.41	2387.81	10.5
14	Pumpkin	-	-	-	0.4	-	-	0.3	-	-
15	Snake gourd	2.1	-	-	15.4	231.3	-	0.2	-	-
16	Ribbed gourd	6.0	75.0	12.5	4.3	-	51.5	0.08	0.96	12
17	Bottle gourd	-	-	-	3.3	49.4	-	4.39	-	-
18	Bitter gourd	-	-	-	10.0	134.4	19.5	-	-	-
19	Ash gourd	-	-	-	5.2	-	17.0	-	-	-
20	Cucumber	2.2	15.7	7.3	1.1	-	26.8	2.29	16.60	7.25
21	Beans	11.1	149.9	13.5	39.8	-	-	-	-	-

Contd.,

22	Drum stick	2.1	100.8	49.0	74.7	3847.4	-	81.14	4057	50
23	Cauliflower	-	-	-	0.1	-	-	0.75	14.625	19.5
24	Radish	0.3	-	-	1.2	23.7	-	-	-	-
25	Greens	-	-	-	4.6	78.6	-	0.02	0.31	15.5
26	Cluster bean	-	-	-	0.5	12.6	-	-	-	-
27	Butter Beans	-	-	-	-	-	-	-	-	-
28	Turnip	-	-	-	-	-	-	-	-	-
29	Knol Khol	-	-	-	-	-	-	-	-	-
30	Capsicum	-	-	-	-	-	3.5	-	-	-
31	Green peas	-	-	-	-	-	-	-	-	-
32	Chow chow	-	-	-	-	-	-	-	-	-
33	Turnip	-	-	-	-	-	-	-	-	-
34	Bellary	-	-	-	-	-	-	-	-	-
35	Karamani	-	-	-	-	-	-	-	-	-
36	Kovaikai	-	-	-	4.7	16.6	-	-	-	-
37	Siru Kixhangu	-	-	-	-	-	-	-	-	-

Contd.,

Sl. No	Vegetables	Athoor			Reddiarchatram			Vadamadurai		
		Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity
1	Potato	6.2	-	-	-	-	-	8.41	-	-
2	Tapioca	3.0	119.1	39.5	37.017	1443.7	39.00	77.8	3344.4	43.0
3	Sweet potato	-	-	-	34.902	628.2	18.00	1.7825	30.3025	17
4	Carrot	-	-	-	-	-	-	-	-	-
5	Beet root	-	-	-	71.542	1788.5	25.00	-	-	-
6	Karunai	-	-	-	0.63	-	-	-	-	-
7	Colacassia	-	-	-	-	-	-	-	-	-
8	Onion	138.1	1173.5	8.5	250.41	2128.5	8.50	308.58	2622.95	8.50
9	Brinjal	28.7	287.2	10.0	75.56	868.9	11.50	19.45	243.09	12.50
10	Bhendi	16.2	121.6	7.5	85.39	683.1	8.00	38.95	292.125	7.5
11	Lab Lab	32.2	435.2	13.5	32.26	411.3	12.75	2.688	36.293	13.500
12	Cabbage	0.8	-	-	2.98	172.7	58.00	-	-	-
13	Tomato	50.5	479.5	9.5	178.41	1873.3	10.50	231.1	2542.0	11.0
14	Pumpkin	0.6	-	-	1.508	-	-	1.833	38.50	21.00
15	Snake gourd	0.8	-	-	17.577	259.3	14.750	2.383	35.750	15.00
16	Ribbed gourd	0.1	1.6	11.8	4.078	48.9	12.00	-	-	-
17	Bottle gourd	0.6	8.4	14.5	23.177	324.5	14.00	1.73	23.7875	13.75
18	Bitter gourd	1.7	19.9	12.0	10.793	134.9	12.50	1.495	-	-
19	Ash gourd	0.5	-	-	0.68	-	-	-	-	-
20	Cucumber	0.4	2.5	7.0	1.435	10.0	7	4.23	27.52	6.50
21	Beans	0.9	-	-	29.948	509.1	17.00	-	-	-

Contd.,

22	Drum stick	25.3	1253.6	49.5	85.583	4364.750	51.00	54.86	2770.26	50.50
23	Cauliflower	23.8	-	-	69.29	1385.73	20.00	0.2	-	-
24	Radish	0.6	-	-	1.39	-		7.073	-	-
25	Greens	4.0	-	-	3.305	54.5325	16.5	0.143	2.293	16.00
26	Cluster bean	0.3	6.6	26.5	24.913	697.550	28.00	-	-	-
27	Butter Beans	-	-	-	-	-	-	-	-	-
28	Turnip	-	-	-	-	-	-	-	-	-
29	Knol Khol	-	-	-	-	-	-	-	-	-
30	Capsicum	-	-	-	-	-	-	-	-	-
31	Green peas	4.9	31.8	6.5	10.96	-	-	-	-	-
32	Chow chow	3.3	48.3	14.5	10.22	153.26	15.00	-	-	-
33	Turnip	-	-	-	-	-	-	-	-	-
34	Bellary	-	-	-	-	-	-	-	-	-
35	Karamani	-	-	-	2	-	-	-	-	-
36	Kovaikai	1.0	-	-	2.06	-	-	-	-	-
37	Siru Kizhangu	-	-	-	2.375	-	-	-	-	-

Contd.,

Sl. No	vegetables	Guziliamparai			Batlagundu			Thoppampatti		
		Area	production	Productivity	Area	Production	Productivity	Area	Production	Productivity
1	Potato	52.7	-	-	-	-	-	-	-	-
2	Tapioca	111.4	4679.5	42.0	2.83	-	-	2.08	81.22	39.00
3	Sweet potato	5.2	85.0	16.5	0.95	16.15	17	0.16	-	-
4	Carrot	-	-	-	-	-	-	-	-	-
5	Beet root	-	-	-	-	-	-	0.76	18.62	24.5
6	Karunai	-	-	-	-	-	-	-	-	-
7	Colacassia	-	-	-	-	-	-	-	-	-
8	Onion	399.9	3599.2	9.0	49.805	398.44	8	57.81	462.47	8.00
9	Brinjal	15.9	206.1	13.0	12.405	142.6575	11.5	252.37	3533.18	14
10	Bhendi	3.3	22.5	6.8	12.665	88.655	7	71.39	571.15	8.00
11	Lab Lab	-	-	-	68.142	953.983	14.00	63.64	763.64	12.00
12	Cabbage	-	-	-	-	-	-	-	-	-
13	Tomato	76.2	800.4	10.5	39.02	380.48	9.75	342.27	3936.12	11.50
14	Pumpkin	5.2	125.2	24.0	4.53	104.23	23.00	50.63	1240.48	24.50
15	Snake gourd	1.2	-	-	5.27	81.71	15.50	33.95	543.28	16
16	Ribbed gourd	-	-	-	-	-	-	2.63	34.233	13.00
17	Bottle gourd	-	-	-	0.06	-	-	7.19	100.66	14
18	Bitter gourd	2.2	26.9	12.5	1.15	13.225	11.5	74.28	965.64	13
19	Ash gourd	1.6	-	-	1.225	-	-	-	-	-
20	Cucumber	-	-	-	0.2	-	-	0.8	5.4	6.75
21	Beans	-	-	-	-	-	-	28.68	444.6175	15.5

Contd.,

22	Drum stick	231.7	11817.9	51.0	666.39	33985.72	51.00	385.48	19659.65	51.00
23	Cauliflower	-	-	-	-	-	-	10.185	198.6075	19.5
24	Radish	0.8	-	-	-	-	-	-	-	-
25	Greens	-	-	-	3.302	52.827	16.00	0.55	8.525	15.5
26	Cluster bean	-	-	-	-	-	-	48.93	1418.97	29
27	Butter Beans	-	-	-	-	-	-	-	-	-
28	Turnip	-	-	-	-	-	-	-	-	-
29	Knol Khol	-	-	-	-	-	-	-	-	-
30	Capsicum	-	-	-	-	-	-	-	-	-
31	Green peas	-	-	-	-	-	-	-	-	-
32	Chow chow	-	-	-	-	-	-	-	-	-
33	Turnip	-	-	-	-	-	-	-	-	-
34	Bellary	-	-	-	-	-	-	-	-	-
35	Karamani	-	-	-	-	-	-	-	-	-
36	Kovaikai	-	-	-	-	-	-	0.9	2.7	3
37	Siru Kizhangu	-	-	-	-	-	-	-	-	-

Cond.,

Sl. No	vegetables	Sanarpatti			Kodaikanal		
		Area	Production	Productivity	Area	Production	Productivity
1	Potato	-	-	-	2256	25940	11.5
2	Tapioca	75.08	2984.30	39.75	-	-	-
3	Sweet potato	1.22	20.13	16.5	-	-	-
4	Carrot	-	-	-	700.4	10506	15
5	Beet root	-	-	-	8.443	211	25
6	Karunai	-	-	-	-	-	-
7	Colacassia	-	-	-	-	-	-
8	Onion	7.77	61.7715	7.95	-	-	-
9	Brinjal	39.54	454.73	11.50	-	-	-
10	Bhendi	9.362	65.532	7.000	-	-	-
11	Lab Lab	4.345	65.175	15	7.25	-	-
12	Cabbage	-	-	-	21.25	1211	57
13	Tomato	47.53	427.79	9.00	-	-	-
14	Pumpkin	-	-	-	-	-	-
15	Snake gourd	3.13	45.385	14.5	-	-	-
16	Ribbed gourd	0.04	-	-	-	-	-
17	Bottle gourd	-	-	-	-	-	-
18	Bitter gourd	0.3	3.6	12	-	-	-
19	Ash gourd	-	-	-	-	-	-
20	Cucumber	0.18	-	-	-	-	-
21	Beans	1.18	17.7	15	340	5786	17

Contd.,

22	Drum stick	0.31	15.5	50	-	-	-
23	Cauliflower	-	-	-	0.43	9	20
24	Radish	-	-	-	4.88	102	21
25	Greens	3.125	50	16		-	-
26	Cluster bean	-	-	-	38	-	-
27	Butter Beans	-	-	-		-	-
28	Turnip	-	-	-	0.5	4	7
29	Knol Khol	-	-	-	2.352	16	7
30	Capsicum	-	-	-		-	-
31	Green peas	-	-	-	36.5	-	-
32	Chow chow	-	-	-	73.20	1171	16
33	Turnip	-	-	-	1.3	-	-
34	Bellary	-	-	-	-	-	-
35	Karamani	-	-	-	-	-	-
36	Kovaikai	-	-	-	-	-	-
37	Siru Kizhangu	-	-	-	-	-	-

Table 2.20 b. Block wise area, production and productivity of fruit crops

Fruits	Dindigul			Oddanchatram			Palani		
	Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity
Banana	788.58	29953.4	58.000	102.20	5519.03	54.00	97.08	5145.06	53
Mango	132.65	27.4	7.000	318.50	1911.01	6.00	1560.90	8584.94	5.5
Jack fruit	129.16	-	19.750	13.12	177.12	13.50	0.95	11.20	11.75
Pine apple	-	2068.1	-	-	-	-	-	-	-
Guava	80.88	1041.3	12.00	33.73	438.51	13.00	868.01	12586.10	14.5
Grapes	19.75	67803.3	21.00		0.00		11.29	203.27	18
Sapota	164.68	6.3	27.50	88.00	1738.07	19.75	95.73	1780.58	18.6
Papaya	12.84	31.6	185.60	23.51	4313.78	183.50	3.58	658.44	183.75
Pomegranate	55.41	-	27.00	0.59	14.04	24.00	0.06	1.54	25
Apple	-	-	-	-	-	-	-	-	-
Plum	-	0.4	-	-	-	-	-	-	-
Naval	0.50	-	37.00	-	-	-	1.16	40.37	34.75
Ber	-	-		-	-	-	-	-	-
Peach	3.15	-	4.00	1.20	6.60	5.50	-	-	-
Strawberry	-	-		1.10	0.00	-	0.50	-	-
Mandarin	2.73	31517.9	11.00	0.57	0.00	-	1.76	-	-
Acid lime	1322.01	2162.9	3.50	202.45	506.12	2.50	55.51	152.66	2.75
Sweet Orange	12.34	0.0	8.00	1.15	9.20	8.00	-	-	-
Citron	-	-	-	-	-	-	-	-	-
Aonla	38.15	0.0	-	147.18	2207.63	15.00	83.52	1211.06	14.5
Water melon	1.22	0.0	32.00	4.96	168.64	34.00	36.53	1168.91	32
Lichi	453.57	0.2	7.00	4.56	0.00	-	-	-	-
Narathai	7.98	3482595.7	11.50	2.77	30.47	11.00	-	-	11.5

Contd.,

Fruits	Natham			Nilakottai			Vedasandur		
	Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity
Banana	14.06	0.04	52.00	178.55	9195.50	51.50	52.63	2721.14	51.70
Mango	6566.84	-	9.00	239.30	1435.81	6.00	136.99	547.97	4.00
Jack fruit	4.09	339.38	11.50	0.14	1.49	10.50	0.01	0.05	10.75
Pine apple	23.26	148.99	-	-	-	-	-	-	-
Guava	175.82	58315.14	10.50	23.01	241.61	10.50	29.93	284.35	9.50
Grapes	-	1.36	-	54.63	983.37	18.00	-	-	-
Sapota	15.03	0.80	19.75	402.73	11477.76	28.50	229.98	5634.51	24.50
Papaya	1.84	-		0.45	80.88	181.75	1.70	307.28	180.75
Pomegranate	4.94	-	24.50	1.41	35.83	25.50	1.28	30.60	24.00
Apple	-	0.03	-	-	-	-	-	-	-
Naval	4.99	-	35.00	0.69	24.38	35.50	0.03	1.04	34.50
Pear	-	-	-	-	-	-	0.67	-	-
Ber	-	-	-	-	-	-	0.16	1.28	8.00
Peach	0.01	0.00	8.00	-	-		2.87	-	-
Strawberry	-	271.14	-	-	-			-	-
Mandarin Orange	-	-	-	-	-		1.00	-	-
Acid lime	5.23	-	2.50	18.08	36.15	2.00	14.88	37.19	2.50
Sweet Orange	-	10935.50	-	68.18	-	-	1.00	-	-
Citron	-	-	-	-	-	-	-	-	15.00
Aonla	27.03	-	14.75	79.18	1128.24	14.25	154.83	2167.57	14.00
Water melon		-	-	-	-		0.92	25.76	28.00
Lichi	-	700059.94	-	-	-	-	-	-	-
Narathai	4.01	0.00	-	0.02	-	-	1.57	-	-

Contd.,

Fruits	Athoor			Reddiarchatram			Vadamadurai		
	Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity
Banana	318.51	19110.30	60.00	824.94	47846.33	58.00	111.67	5807.01	52.00
Mango	922.30	6225.51	6.75	205.90	967.73	4.70	281.63	1182.83	4.20
Jack fruit	44.50	734.25	16.50	26.25	433.07	16.50	0.30	3.75	12.50
Pine apple	0.30	9.30	31.00	8.02	268.73	33.50		0.00	
Guava	13.21	141.97	10.75	11.82	138.83	11.75	19.61	205.92	10.50
Grapes	138.29	3111.41	22.50	0.25	0.00		3.60	70.20	19.50
Sapota	113.19	2801.45	24.75	148.36	3634.74	24.50	139.41	3973.09	28.50
Papaya	0.87	156.43	180.50	3.35	607.42	181.50	1.12	200.14	179.50
Pomegranate	7.52	184.16	24.50	4.73	122.85	26.00	0.48	11.60	24.00
Apple	-	-	-	-	-	-	-	-	-
Plum	-	-	-	-	-	-	-	-	-
Naval	0.19	6.37	33.50	0.29	10.75	37.50	0.08	-	-
Seetha	0.60	-	-	30.30	-	-	-	-	-
Ber	-	-	-	0.31	2.64	8.50	-	-	-
Peach	0.30	1.20	4.00	0.02	-	-	1.05	-	-
Mandarin Orange	26.58	345.51	13.00	26.68	346.84	13.00	0.04	-	-
Acid lime	168.36	420.89	2.50	385.23	1155.68	3.00	45.29	90.57	2.00
Sweet Orange	25.18	-	-	72.03	-	-	-	-	7.00
Citron	-	-	-	1.33	15.90	12.00	-	-	
Aonla	62.99	881.86	14.00	89.16	1270.55	14.25	128.76	1931.45	15.00
Water melon	-	-	-	1.67	46.69	28.00	2.00	-	-
Lichi	-	-	-	0.72	4.86	6.75	-	-	-
Narathai	3.56	42.66	12.00	11.65	163.05	14.00	0.05	0.00	

Contd.,

Fruits	Guziliamparai			Batlagundu			Thoppampatti		
	Area	**Production**	**Productivity**	**Area**	**Production**	**Productivity**	**Area**	**Production**	**Productivity**
Banana	20.81	1061.06	51.00	574.22	30433.57	53.00	16.51	841.76	51.00
Mango	154.19	632.19	4.10	305.40	1679.67	5.50	499.29	2047.08	4.10
Jack fruit	0.02	0.23	11.50	1.06	14.31	13.50	0.02	0.25	12.50
Guava	21.10	242.65	11.50	15.59	163.64	10.50	80.17	921.97	11.50
Grapes	-	-	-	-	-	-	-	-	-
Sapota	34.83	923.08	26.50	125.22	3474.95	27.75	62.12	1646.18	26.50
Papaya	-	-	-	0.02	3.66	182.75	11.87	2160.34	182.00
Pomegranate	0.41	-	-	7.65	204.50	26.75	0.05	1.28	24.00
Apple	-	-	-	-	-	-	-	-	-
Plum	-	-	-	-	-	-	-	-	-
Naval	-	-	-	0.04	1.48	37.00	0.11	4.02	36.00
Ber	-	-	-	-	-	-	-	-	-
Peach	1.55	11.99	7.7	-	-	-	-	-	-
Mandarin Orange	-	-	-	0.88	-	-	-	-	-
Acid lime	1.50	3.00	2.00	24.24	60.60	2.50	20.88	41.76	2.00
Sweet Orange	-	-	-	0.88	6.60	7.50	-	-	-
Citron	-	-	-	-	-	-	-	-	-
Aonla	69.21	1003.52	14.50	165.28	2479.18	15.00	136.55	2014.04	14.75
Water melon	19.48	574.76	29.50	-	-	-	10.01	300.25	30.00
Lichi	-	-	-	-	-	-	-	-	-
Narathai	-	-	-	-	-	-	-	-	-

Contd.,

Fruits	Sanarpatti			Kodaikanal		
	Area	Production	Productivity	Area	Production	Productivity
Banana	131.71	6782.89	51.50	1695.91	95818.60	56.5
Mango	4569.47	34270.99	7.50	51.94	223.35	4.3
Jack fruit	7.11	90.59	12.75	141.75	3047.52	21.5
Pine apple	-	-	-	1.72	63.09	36.75
Guava	47.83	526.08	11.00	26.47	277.92	10.5
Grapes	0.30	-	-	-	-	-
Sapota	68.88	1894.09	27.50	1.50	39.75	26.5
Papaya	0.05	8.13	180.75	7.74	1413.16	182.5
Pomegranate	0.16	3.76	24.00	20.94	544.53	26
Apple	-	-	-	1.28	7.66	6
Plum	-	-	-	405.87	4464.59	11
Naval	0.57	20.35	35.50	0.16	-	-
Seetha	-	-	-	0.38	2.28	6
Pear	-	-	-	786.73	26748.93	34
Peach	-	-	-	34.57	345.70	10
Strawberry	-	-	-	-	-	3
Mandarin Orange	0.11	-	-	549.62	7145.08	13
Acid lime	26.16	65.40	2.50	385.26	1348.41	3.5
Sweet Orange	0.11	0.53	5.00	1045.58	7841.84	7.5
Citron	-	-	-	0.04	-	-
Aonla	14.87	219.28	14.75	-	-	-
Water melon	0.09	-	-	-	-	-
Narathai	0.01	0.13	13.00	14.71	205.92	14

Table 2.20 c Block wise area, production and productivity of flower crops

Sl. No	Name of the crop	Dindigul			Oddanchatram			Palani		
		Area	Productivity	Production	Area	Productivity	Production	Area	Productivity	Production
1	Rose	26.80	7.00	187.59	2.63	7.00	18.43	1.01	7.00	7.06
2	Jasmine	35.85	7.50	268.88	-	-	-	0.65	7.00	4.52
3	Mullai	15.49	-	-	-	-	-	0.08	-	-
4	Jathimalli	14.33	-	-	-	-	-	-	-	-
5	Crossandra	14.36	1.75	25.12	-	-	-	-	-	-
6	Chrysanthemum	8.14	9.00	73.22	-	-	-	1.70	-	-
7	Chrysanthemum	23.70	-	-	-	-	-	1.50	-	-
8	Nerium	31.79	-	-	-	-	-		-	-
9	Cocks comb	54.46	11.00	599.08	-	-	-	0.43	-	-
10	Mary gold	1.05	-	-	-	-	-	0.08	-	-
11	Tube rose	-	-	-	-	-	-	-	-	-
12	Kakada	-	-	-	-	-	-	-	-	-
13	Tuberose	1.00	-	-	0.50	-	-	-	-	-
14	Pitchi	-	-	-	-	-	-	-	-	-
15	Maru	4.96	7.75	38.44	-	-	-	-	-	-
16	Gerbera	-	-	-	-	-	-	-	-	-
17	Marikolunthu	-	-	-	-	-	-	-	-	-
18	Marigold	51.18	-	-	-	-	-	0.06	-	-
19	Gomphrena	6.94	-	-	-	-	-	-	-	-
20	Kumil	0.75	-	-	1.17	-	-	3.12	-	-
21	Hibiscus	-	-	-	-	-	-	-	-	-
22	Gloriosa	-	-	-	-	-	-	-	-	-

Contd.,

Sl. No	Name of the crop	Natham			Nilakottai			Vedasandur		
		Area	Productivity	Production	Area	Productivity	Production	Area	Productivity	Production
1	Rose	2.25	-	-	116.78	7.95	928.41	9.93	7.50	74.48
2	Jasmine	4.23	-	-	647.06	8.00	5176.51	9.93	-	-
3	Mullai	0.08	-	-	343.96	9.00	3095.63	-	-	-
4	Jathimalligai		-	-	29.32	8.75	256.54	-	-	-
5	Crossandra	27.91	-	-	94.13	2.25	211.79	0.25	2.00	0.50
6	Chrysanthemum	72.01	9.00	648.05	88.24	9.25	816.19	11.59	9.00	104.27
7	Chrysanthemum	38.13	-	-	108.78	-	-	13.81		0.00
8	Nerium	8.50	-	-	367.62	8.00	2940.92	-	-	-
9	Cocks comb	-	-	-	5.25	9.70	50.89	-	-	-
10	Mary gold	2.83	-	-	15.99	14.75	235.89	-	-	-
11	Tube rose	10.16	8.75	88.90	74.28	12.60	935.59	-	-	-
12	Kakada	-	-	-	8.42	6.00	50.50	-	-	-
13	Tuberose	-	-	-	155.30	-	-	155.30	-	-
14	Pitchi	-	-	-	221.18	7.00	1548.24	-	-	-
15	Maru	2.83	7.50	21.23	51.12	8.50	434.53	24.10	-	-
16	Gerbera	-	-	-	-	-	-	-	-	-
17	Marikolunthu	-	-	-	-	-	-	-	-	-
18	Marigold	-	-	-	33.12	-	-	-	-	-
19	Vada Malli	-	-	-	5.44	-	-	-	-	-
20	Kumil	-	-	-	2.70	-	-	-	-	-
21	Hibiscus	-	-	-	0.55	-	-	-	-	-
22	Kaanthal	-	-	-	-	-	-	-	-	-

Contd.,

S. No	Name of the crop	Athur			Reddiarchatram			Vadamadurai		
		Area	Productivity	Production	Area	Productivity	Production	Area	Productivity	Production
1	Rose	1.55	7.00	10.85	18.73	7.25	135.77	53.56	7.50	401.70
2	Jasmine	84.09	7.25	609.68	95.06	8.50	808.00	10.18	7.50	76.35
3	Mullai	8.98	8.00	71.80	15.42	8.50	131.07	3.09	8.75	26.99
4	Jathimalli	56.88	9.50	540.31	16.35	8.75	143.09	2.56	-	-
5	Crossandra	26.74	2.50	66.85	14.63	1.75	25.60	0.25	-	-
6	Chrysanthemum	11.54	9.00	103.89	23.67	9.00	213.03	42.83	8.75	374.75
7	Chrysanthemum	-	-	-	30.61	-	-	48.13	-	-
8	Nerium	59.92	7.75	464.38	44.64	8.00	357.08	1.67	7.50	12.53
9	Cocks comb	4.37	9.95	43.48	1.20		0.00	-	-	-
10	Mary gold	11.08	-	-	3.88	15.50	60.14	-	-	-
11	Tube rose	11.87	9.00	106.81	10.86	8.50	92.31	-	-	-
12	Kakada	-	-	-	-	-	-	-	-	-
13	Tuberose	6.22	-	-	1.10	-	-	-	-	-
14	Pitchi	-	-	-	-	-	-	-	-	-
15	Maru	70.60	8.75	617.74	-	-	-	-	-	-
16	Gerbera	-	-	-	-	-	-	-	-	-
17	Marikolunthu	-	-	-	-	-	-	-	-	-
18	Marigold	4.37	-	-	3.57	-	-	-	-	-
19	Gomphrena	-	-	-	-	-	-	-	-	-
20	Kumil	-	-	-	-	-	-	-	-	-
21	Hibiscus	-	-	-	-	-	-	-	-	-
22	Kaanthal	-	-	-	-	-	-	-	-	-

Contd.,

Sl. No	Name of the crop	Guziliamparai			Batlagundu			Thoppampatti		
		Area	Productivity	Production	Area	Productivity	Production	Area	Productivity	Production
1	Rose	-	-	-	8.64	-	-	-	-	-
2	Jasmine	2.5	7.75	19.38	47.55	8	380.36	-	-	-
3	Mullai	1	-	-	3.90	8.75	34.10	-	-	-
4	Jathimalligai	0.5	-	-	2.33	9	20.93	-	-	-
5	Crossandra	0.75	-	-	6.07	1.95	11.83	-	-	-
6	Chrysanthemum	0.25	-	-	42.94	9	386.48	-	-	-
7	Chrysanthemum	0.5	-	-	80.22		0.00	-	-	-
8	Nerium	2.18	7.25	15.78	122.52	8	980.16	-	-	-
9	Cocks comb	1.695	-	-	69.91	10	699.05	-	-	-
10	Mary gold	-	-	-	1.13	-	-	-	-	-
11	Tube rose	-	-	-	11.76	-	-	-	-	-
12	Kakada	-	-	-	-	-	-	-	-	-
13	Tuberose	-	-	-	-	-	-	-	-	-
14	Pitchi	-	-	-	-	-	-	-	-	-
15	Maru	-	-	-	-	-	-	-	-	-
16	Gerbera	-	-	-	-	-	-	-	-	-
17	Marikozhundu	-	-	-	-	-	-	-	-	-
18	Marigold	-	-	-	2.27	-	0	-	-	-
19	Gomphrena	-	-	-	-	-	-	-	-	-
20	Kumil	-	-	-	-	-	-	-	-	-
21	Hibiscus	-	-	-	-	-	-	-	-	-
22	Kaanthal	2	-	-	-	-	-	-	-	-

Contd.,

Sl. No	Name of the crop	Sanarpatti			Kodaikanal		
		Area	Productivity	Production	Area	Productivity	Production
1	Rose	1.71	7.50	12.83	-	-	-
2	Jasmine	6.69	7.50	50.14	-	-	-
3	Mullai	0.79	8.50	6.74	-	-	-
4	Jadhimalligai	0.10	-	-	-	-	-
5	Crossandra	2.34	1.95	4.57	-	-	-
6	Chrysanthemum	20.09	9.00	180.77	-	-	-
7	Chrysanthemum	3.55	-	-	-	-	-
8	Nerium	11.30	8.00	90.39	-	-	-
9	Cocks comb	0.47	-	-	-	-	-
10	Mary gold	0.58	15.00	8.63	-	-	-
11	Tube rose	0.28	8.50	2.38	-	-	-
12	Kakada	0.82		0.00	-	-	-
13	Tuberose	-	-	-	-	-	-
14	Pitchi	-	-	-	-	-	-
15	Maru	-	-	-	-	-	-
16	Gerbera	-	-	-	8.67	10.00	86.73
17	Marikozhundu	-	-	-	-	-	-
18	Marigold	1.08	-	-	-	-	-

Table 2.20 d. Block wise area, production and productivity of plantation crops

Sl. No	Name of the crop	Dindigul			Oddanchatram			Palani		
		Area	Productivity	Production	Area	Productivity	Production	Area	Productivity	Production
1	Coffee	638.88	0.75	479.16	0.58	0.71	0.41	-	-	-
2	Tea	-	-	-	-	-	-	-	-	-
3	Betel vine	2.59	22.00	56.87	-	-	-	2.27	22.00	49.87
4	Cocoa	0.89	1.00	0.89	1.98	1.10	2.18	15.63	1.25	19.54
5	Cashew nut	22.41	0.47	10.53	6.67	0.48	3.20	18.28	28.32	517.60
6	Areca nut	16.41	1.07	17.56	0.17	1.00	0.17	8.74	1.00	8.74
7	Palmyrah	19.48	-	-	5.05	0.90	4.55	5.50	1.10	6.04
8	Vanilla	-	-	-	-	-	-	0.60	-	-

Contd.,

Sl. No	Name of the crop	Natham			Nilakottai			Vedasandur		
		Area	Productivity	Production	Area	Productivity	Production	Area	Productivity	Production
1	Coffee	-	-	-	-	-	-	-	-	-
2	Tea	-	-	-	-	-	-	-	-	-
3	Betel vine	-	-	-	2.93	22.5	65.89	1.21	-	-
4	Cocoa	5	-	-	2.80	0.99	2.77	-	-	-
5	Cashew nut	31.54	0.46	14.51	29.07	0.45	13.08	7.87	0.43	3.38
6	Areca nut	0.84	1.25	1.05	4.99	1.1	5.49	0.01	-	-
7	Palmyrah	15.62	1.1	17.18	3.13	-	-	16.61	-	-
10	Palmrose	-	-	-	0.18	-	-		-	-

Contd.,

Sl. No	Name of the crop	Athur			Reddiarchatram			Vadamadurai		
		Area	Productivity	Production	Area	Productivity	Production	Area	Productivit	Productio
1	Coffee	1251.65	0.77	963.77	2026.67	0.78	1580.80	-	-	-
2	Tea	0.67	-	-	3.48	-	-	-	-	-
3	Betel vine	24.90	23.00	572.64	9.88	-	-	9.50	-	-
4	Cocoa	13.01	0.98	12.68	5.14	0.98	5.04	17.99	0.90	16.19
5	Cashew nut	56.44	0.43	24.27	3.54	1.01	3.57	5.74	0.45	2.58
6	Areca nut	18.10	1.30	23.53	4.60	-	-	0.53	1.00	0.53
7	Palmyrah	-	-	-	-	-	-	1.87	0.95	1.78
8	Koina	2.59	1.00	2.59	-	-	-	-	-	-
9	Vanilla	0.20	5.00	1.00	-	-	-	-	-	-
10	Palmrose	-	-	-	-	-	-	8.93	-	-

Contd.,

Sl. No	Name of the crop	Guziliamparai			Batlagundu			Thoppampatti		
		Area	Productivity	Productio	Area	Productivity	Production	Area	Productivit	Productio
1	Coffee	-	-	-	-	-	-	3.3	-	-
2	Tea	-	-	-	-	-	-	-	-	-
3	Betel vine	-	-	-	3.77	21.75	82.03	0.48	-	-
4	Cocoa	-	-	-	2.105	1	2.105	-	-	-
5	Cashew nut	3.39	0.45	1.53	51.25	0.45	23.06	105.36	0.475	50.05
6	Areca nut	3.6	-	-	-	-	-	0.02	-	-
7	Palmyrah	2.38	0.97	2.31	0.795	1	0.80	7.835	1	7.84
8	Koina	-	-	-	2.34	-	-	862.09	-	-
9	Palmrose	-	-	-	4.84	1	4.84	-	-	-

Contd.,

Sl. No	Name of the crop	Sanarpatti			Kodaikanal		
		Area	Productivity	Production	Area	Productivity	Production
1	Coffee	-	-	-	4691.26	0.80	3753
2	Tea	-	-	-	3.2	3.30	10.56
3	Betel vine	9.90	22.00	217.69	-	-	-
4	Cocoa	3.07	1.00	3.07	72.68	1.00	72.68
5	Cashew nut	160.34	0.50	80.17	-	-	-
6	Areca nut	0.31	1.00	0.31	-	-	-
7	Palmyrah	1.97	1.10	2.16	-	-	-
8	Palmrose	1.60	-	-	-	-	-

Table 2.20 e. Block wise area, production and productivity of spices and condiments

Sl. No	Name of the crop	Dindigul			Oddanchatram			Palani		
		Area	Productivity	Production	Area	Productivity	Production	Area	Productivity	Production
1	Cardamom	22.29	1.67	0.08	579.93	-	-	0.10	0.01	0.10
2	Chillies	5.34	5.07	0.95	1.63	1.71	1.05	100.09	100.09	1.00
3	Garlic	-	-	-	2.51	15.06	6.00	-	-	-
4	Ginger	-	-	-	2.81	53.39	19.00	-	-	-
5	Pepper	67.78	20.33	0.30	0.31	-	-	-	-	-
6	Nutmeg	-	-	-	-	-	-	12.49	12.49	1.00
7	Clove	1.53	1.84	1.20	5.18	-	-	-	-	-
8	Curry leaf	5.97	1253.70	210.00	0.15	30.75	205.00	1.16	232.38	199.75
9	Mint	-	-	-	0.49	10.05	20.50	0.10	2.00	20.00
10	Coriander	1.94	0.58	0.30	7.80	-	-	0.31	-	-
11	Turmeric	18.23	102.09	5.60	79.80	-	-	2.34	11.93	5.10
12	Tamarind	73.75	221.97	3.01	680.61	2109.90	3.10	59.80	191.37	3.20
Total		**196.82**	**1607.26**	**221.44**	**1361.22**	**2220.85**	**254.65**	**176.39**	**550.26**	**230.15**

Contd.,

Sl. No	Name of the crop	Natham			NilaKottai			Vedasandur		
		Area	Productivity	Production	Area	Productivity	Production	Area	Productivity	Production
1	Cardamom	-	-	-	-	-	-	189.5	-	-
2	Chillies	61.98	61.67	1.00	3.70	3.52	1.00	38.6	-	-
3	Garlic	-	-	-	-	-	-	-	-	-
4	Ginger	-	-	-	-	-	-	-	-	-
5	Pepper	-	-	-	-	-	-	-	-	-
6	Nutmeg	-	-	-	-	-	-	-	-	-
7	Clove	-	-	-	0.01	-	-	-	-	-
8	Curry leaf	4	-	-	2.41	474.44	197.0	0.20	-	-
9	Mint	-	-	-	0.93	-	-	-	-	-
10	Coriander	-	-	-	0.45	0.14	0.3	-	-	-
11	Turmeric	-	-	-	7.23	39.78	5.5	1.60	-	-
12	Tamarind	1771.46	5491.51	3.10	42.53	127.58	3.0	72.4	-	-
Total		**1837.43**	**5553.18**	**4.10**	**57.25**	**645.45**	**206.80**	**302.4**	**-**	**-**

Contd.,

Sl. No	Name of the crop	Athur			Reddiarchatram			Vadamadurai		
		Area	Productivity	Production	Area	Productivity	Production	Area	Productivity	Production
1	Cardamom	3.63	0.36	0.10	66.17	6.62	0.10	-	-	-
2	Chillies	12.16	12.16	1.00	78.91	98.64	1.25	39.19	38.79	0.99
3	Garlic	-	-	-	6.25	-	-	-	-	-
4	Ginger	-	-	-	-	-	-	-	-	-
5	Pepper	140.75	49.26	0.35	297.97	119.19	0.40	-	-	-
6	Nutmeg	-	-	-	-	-	-	-	-	-
7	Clove	1.69	1.69	1.00	0.16	-	-	-	-	-
8	Curry leaf	0.17	34.58	199.50	0.58	113.10	195.00	1.15	223.60	195.00
9	Mint	2.32	-	-	-	-	-	-	-	-
10	Coriander	1.95	0.63	0.32	20.49	7.17	0.35	-	-	-
11	Turmeric	9.62	60.09	6.25	3.57	21.80	6.10	0.54	2.84	5.25
12	Tamarind	80.63	241.90	3.00	79.38	238.14	3.00	155.68	482.62	3.10
Total		**252.92**	**400.67**	**211.52**	**553.46**	**604.64**	**206.20**	**196.56**	**747.85**	**204.34**

Contd.,

Sl. No	Name of the crop	Guziliamparai			Batlagundu			Thoppampatti		
		Area	Productivity	Production	Area	Productivity	Production	Area	Productivity	Production
1	Cardamom									
2	Chillies	168.24	210.3	1.25	7.39	7.356	0.995	148.95	148.95	1
3	Garlic	0.3	-	-	-	-	-	-	-	-
4	Ginger	-	-	-	-	-	-	-	-	-
5	Pepper	-	-	-	-	-	-	-	-	-
6	Nutmeg	-	-	-	-	-	-	-	-	-
7	Clove	-	-	-	-		-	-	-	-
8	Curry leaf	-	-	-	1.805	355.59	197	2.52	505.52	201
9	Mint	-	-	-	-	-	-	8.04	-	-
10	Coriander	11.94	-	-	-	-	-	3.05	1.129	0.37
11	Turmeric	7.58	44.70	5.9	3	18	6	1.72	10.148	5.9
12	Tamarind	13.17	38.18	2.9	3	8.55	2.85	85.138	255.415	3
Total		**201.22**	**293.18**	**10.05**	**15.19**	**389.49**	**206.85**	**249.41**	**921.15**	**211.27**

Contd.,

Sl. No	Name of the crop	Sanarpatti			Kodaikanal		
		Area	Productivity	Production	Area	Productivity	Production
1	Cardamom	-	-	-	195.40	29.31	0.15
2	Chillies	15.92	15.12	0.95	-	-	-
3	Garlic	-	-	-	263.94	1636.42	6.2
4	Ginger	-	-	-	1.30	-	-
5	Pepper	0.2	-	-	359.52	143.81	0.4
6	Nutmeg	-	-	-	-	-	-
7	Clove	-	-	-	-	-	-
8	Curry leaf	1.29	263.43	205	-	-	-
9	Mint	-	-	-	-	-	-
10	Coriander	-	-	-	-	-	-
11	Turmeric	1.91	11.269	5.9	-	-	-
12	Tamarind	1144.79	3434.37	3	1.303	3.845	2.95
Total		**232.82**	**3724.18**	**214.85**	**821.46**	**1813.38**	**9.70**

Table 2.20 f. Area, production and productivity of Major crops in Dindigul.

Sl.No	Particulars	Area (in ha)	Production (in tonnes)	Productivity (in kg/ha)
1	Paddy	8593.67	42413.33	5063.33
2	Maize	28530.33	157143.67	5769.67
3	Cholam	37868.33	93102.67	2220.00
4	Cumbu	993.67	2192.33	2325.00
5	Ragi	22.67	73.67	3141.00
7	Bengal Gram	344.33	186.00	551.33
8	Red Gram	1703.00	1749.67	878.00
9	Black Gram	6232.00	3132.33	498.00
10	Green Gram	2616.00	1271.67	470.00
11	Horse Gram	2436.33	647.00	219.33
12	Groundnut	6509.00	20557.00	2268.67
13	Sunflower	869.33	1191.00	946.33
14	Gingelly	690.33	348.33	348.33
15	Castor	59.67	16.67	246.00
17	Cotton	2370.00	11532.67	425.00
18	Coconut	30838.67	2903.00	4770.33
19	Sugarcane	3680.00	255638.67	56.00
20	Tobacco	1134.33	1707.33	998.33
21	Onion	2444.67	18295.67	7475.00
22	Brinjal	729.33	3492.67	4859.33
23	Bhendi	501.00	2982.00	5815.33
24	Cabbage	30.00	1588.00	55314.67
25	Tomato	1654.33	16601.67	10089.00
27	Banana	4273.00	198295.67	49708.67
28	Mango	16145.67	173812.67	10843.00
29	Jack Fruit	358.67	3446.33	9644.00
30	Pine Apple	12.00	431.00	30717.67
31	Guava	1555.33	19177.33	11907.00
32	Grapes	232.00	2975.00	12824.33
33	Orange	1676.67	4340.00	2575.00
34	Chillies	1116.33	847.00	763.00
35	Garlic	283.33	1168.67	6098.00
37	Pepper	860.00	311.33	362.00
38	Cloves & Cinnamon	2.67	2.67	1080.00
39	Coriander	2249.33	16.67	439.67
40	Turmeric	25.67	97.67	3829.33
41	Tamarind	3583.67	10801.33	3014.00
45	Potato	2167.67	28027.67	12928.67
46	Tapioca	175.33	5718.33	32180.00
47	Sweet Potato	40.33	937.00	23399.67
	Total	**175608.67**	**1089173.33**	**327062.00**

2.10 Consumption and Distribution of Chemical Fertilizers and Pesticides

The Department of Agriculture shoulders the responsibility to closely monitor the demand and supply of the fertilizers to ensure timely availability to the farmers. To monitor the fertilizer supply, Facilitation centres were opened in all the districts from 8.00 A.M to 8.00 P.M. and the Department ensured timely availability of fertilizer at correct price. The consumption of fertilizers and pesticides during 2011-2012 is given in Table 2.21. From the table it could be observed that the nitrogenous fertilizer consumption was high (23843 MT) followed by phosphatic fertilizer (19642 MT) in the district. Pesticide used in the form of dust was 45086 kg and potassium was (13640 MT).The Distribution of Nitrogen, Phosphorus and Potash during 2011-2012 is given in Table 2.22.

Table 2.21 Consumption of chemical fertilizers and pesticides in the district (2012-13)

Fertilizers (in '000' Tonne)				Pesticides		Urea ('000' Tonne)
Nitrogenous (N)	Phosphates (P_2 0_5)	Potassic (K_2 0)	Total (NPK)	Dust (Kgs.)	Liquid (Lit.)	
23843	19642	13640	57125	45086	2916	20116

(Source: Joint Director of Agriculture Office, Dindigul)

Table 2.22 Distribution of Nitrogen, Phosphorus and Potash in the district

Fertilizers (in '000' Tons)			
Nitrogenous	Phosphatic	Potassic	Total
(N)	(P2 05)	(K2 0)	(NPK)
0.23	0.10	0.09	0.42

(Source: Department of agriculture, Chennai)

2.11 Agricultural Engineering - Machineries and Implements

The agricultural implements and machineries available in Dindigul district is presented in Table.2.23.

Electric motor is the prime machinery found in the district (78075), followed by wooden ploughs (51926), oil engines (18658), iron ploughs (15727), tractors (1003), sugarcane crushers (60) and oil-engines(7).

Block wise distribution of agricultural implements and machineries revealed that Sanarpatti block was found to have the highest number of agricultural implements, followed by Oddanchartam, Nilakottai, Guziliamparai, Thoppampatti, Athoor, Vedasandur, Palani, Vadamadurai and Dindigul.

Kodaikanal block has lesser number of tools and implements (114), presently indurating the hilly erosion nature of the block. Scope exists for this block and more power tillers and smaller tractors can be put into use. Small tractors and power tillers may be provided for the entire district, covering all the blocks.

Table 2.23 Distribution of Agricultural Implements and Machinery across blocks in Dindigul District (2010-11)

Particular	Athoor	Nila kottai	Batla gundu	Kodai kannal	Oddan chatram	Reddiar chatram	Thoppam patti	Palani	Guziliam parai	Veda sandur	Dindigul	Natham	Vadamad urai	Sanar patti	Total
1. **Ploughs**															
a. Wooden	2639	5072	1175	98	5978	1582	768	6035	7559	1615	817	1437	3011	14140	51926
b. Iron	734	1971	508		3857	446	2012	265	1016	1518	225	240	1415	1520	15727
c. Total	**3373**	**7043**	**1683**	**98**	**9835**	**2028**	**2780**	**6300**	**8575**	**3133**	**1142**	**1677**	**4426**	**15660**	**67753**
2. **Pump sets**	-														
a. Oil Engines	-	2128	402	-	1144	284	492	6619	140	998	2913	1083	1460	995	18658
b Electric motor	8415	5469	4328	-	9314	8019	8766	4389	5334	7536	5532	2646	3941	4386	78075
c. Total	**8415**	**7587**	**4730**	**-**	**10458**	**4342**	**9258**	**5050**	**5474**	**8534**	**8445**	**3729**	**5401**	**5381**	**86804**
3. **Tractors**															
a. Government	-	-	-	6	-	-	-	4	-	17	-	-	-	-	27
b. Private	122	86	106	10	58	57	77	240	27	71	55	28	9	30	976
c. Total	**122**	**86**	**106**	**16**	**58**	**57**	**77**	**244**	**27**	**88**	**55**	**28**	**9**	**30**	**1003**
4. **Sugarcane Crushers**															
a. Power Operated	-	-	5	-	15	-	16	24	-	-	-	-	-	-	60
b. By Bullocks	-	-							-	-	-	-	-	-	0
c. Total	-	-	**5**		**15**		**16**	**24**	-	-	-	-	-	-	**60**
5. **Oil Ghanis**															
a) 4 Kg. & above.	-	-	-	-	-	-	-	-	-	-	3	-	-	-	3
b) Less than 5 Kg.	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4
c) Total											3			4	7
Total	**11910** (7.65)	**14716** (9.46)	**6524** (4.19)	**114** (0.07)	**20366** (13.09)	**6427** (4.13)	**12131** (7.80)	**11618** (7.47)	**14076** (9.04)	**11755** (7.55)	**9645** (6.20)	**5434** (3.49)	**9836** (6.32)	**21075** (13.54)	**155627** (100)

2.12 Agricultural Marketing and Regulated Markets

Regulated Markets provides facilities such as correct measurement by using electronic weigh bridges and weighing balances, godown facilities, bank facility, immediate payment, daily price information, rest sheds, drinking water facility, cattle sheds, free medical aid to farmers, input shops, phone and fax facilities etc. Location of regulated markets in Dindigul district are presented in table 2.24.

Table 2.24 Regulated markets in Dindigul district

Location Regulated Market	Quantity Arrivals (in M.T.)	Receipts (Rs. in Lakhs) (Product wise)
Dindigul	7195.959	83.916
Oddanchatram	6329.475	14.411
Palani	10657.614	37.1501
Gopalpatti	3451.160	40.145
Natham	2949.3541	4.871
Batlagundu	1210.545	10.963
Vedasandur	0.000	119.895
Vadamadurai	-	48.355
Total	31794.107	359.706

Source: Market Committee, Dindigul

2.13 Storage Facilities

The different types of storage go-downs available in different blocks of Dindigul district is presented in Table.2.25.

The total number of godowns in Dindigul district is 239 with a capacity of 38974 tonnes, of which the agricultural go-downs maintained by co-operatives in Dindigul district is 123 with a capacity of 5603 tonnes, while the go-down maintained by agricultural marketing department are 43 with a capacity of 1204 tonnes. The Food Corporation go-downs were six with a capacity of 9503 tonnes and Civil Supplies go-downs are 23 with a storage capacity of 11033 tonnes. Panchayat union go-downs were about 33 in number with a storage capacity of 12736 tonnes. The block wise distribution of go-downs across Dindigul district revealed that Reddiarchatram block has the highest storage capacity with 9040 tonnes, followed by Natham, Palani, Batagundu, Vedasandur and Oddanchatram. The block with least storage capacity is Athoor block with 240 tonnes. The cold storage facilities available in Dindigul district is furnished in Table 2.26.

Table 2.25 Distribution of Go-downs across Blocks in Dindigul District

Block	Agricultural marketing		Food Corporation / Regulated market		Co-op. Society		Civil Supplies		Panchayat Union/		Total	
	No	Capacity*	No	Capacity	No	Capacity	No	Capacity	No	Capacity	No	Capacity
1. Athoor	3	100	-	-	-	-	-	-	2	140	**5**	**240**
2. Nilakottai	3	55	-	-	3	450	-	-	1	750	7	1250
3.Batlagundu	2	30	1	2000	8	300	1	3000	2	350	28	5680
4. Kodaikanal	8	66	--	--	2	18	12	163	1	16	23	263
5. Oddanchatram	3	60	2 R	1500	18	900	-	-	2	40	25	2500
6.Reddiarchatram	2	40	-	-	-	-	-	-	4	9000	**6**	**9040**
7. Thoppampatti	3	68			20	400	-	-	2	400	25	868
8. Palani	9	180	1 R	3	2	1625	2	3850	1	30	15	5688
9.Guziliamparai	2	40	-	-	13	280	-	-	4	400	19	720
10.Vedasandur	1	20	-	-	13	260	1	2400	3	450	15	3130
11.Dindigul	2	80	1	1000	14	180	6	120	2	40	25	420
12. Natham	3	300	1 R	5000	1	10	1	1500	3	450	**9**	**7160**
13.Vadamadurai	1	15	-	-	13	840	-	-	2	120	16	975
14. Sanarpatti	1	150	-	-	16	340	-	-	4	550	21	1040
Total	43	1204	6	9503	123	5603	23	11033	33	12736	239	38974

* in tonnes R- Regulated market godowns

Source: Statistical Hand Books of Different Blocks in Dindigul District (2010-11)

Table 2.26 Existing Infrastructural Facilities – Cold Storage in Dindigul District

Sl. No	Name and Address of the Cold Storage
1	Aavin cold Storage, Dindigul and Palani
2	Kamadhenu Dairy, Sempatti
3	Balaji Dairy, Vedasandur
4	A.K.R, Milk dairy, Dindigul
5	Saravana Cold Storage, Sanarpatti
6.	Vegetable market yard, Oddanchatram

Source: *Office of Assistant Director of Statistics, Dindigul District.*

There are about seven cold storage plants in Dindigul district, of which, six are meant for milk storage, while one is for storing vegetables and other perishable commodities. Scope exists for more could storage plants @ ODC for storage of vegetables, flowers and milk products.

2.14 Sericulture

Area, production and value of mulberry production in the district were given in the Table 2.27. The total area under Mulberry in the district was 2769 ha during 2011-12. Of which 785.40 ha of the area is located in Palani block and followed by Oddanchatram block which covered 419.10 ha. The blocks like Thoppampatti, Sanarpatti and Reddiarchatram holds 399.00, 256.10 and 245.15 hectares respectively. The district produced 815.94 kg of Cocoons in an area of 2769 hectare for the worth of 1826.20 lakhs.

Table 2.27 Sericulture production in the district (2011-12)

Sl. No	Name of the block	Area under Mulberry (in ha)	Production of Cocoons (kgs)	Value in Rs. (lakhs)
1	Dindigul	115.50	14.36	32.89
2	Vedasandur	105.00	22.43	43.95
3	Vadamadurai	141.65	27.72	58.23
4	Sanarpatti	256.10	65.34	16.99
5	Natham	61.70	17.28	43.22
6	Reddiarchatram	245.15	44.98	112.43
7	Oddanchatram	419.10	121.22	301.15
8	Palani	785.40	288.00	697.68
9	Thoppampatti	399.00	186.26	458.72
10	Batlagundu	70.50	6.91	13.82
11	Athoor	62.65	10.90	26.04
12	Nilakottai	107.25	10.54	21.08
13	Kodaikanal	-	-	-
14	Guziliamparai	-	-	-
	Total	2769.00	815.94	1826.20

2.15. Animal Husbandry and Dairy Development

2.15.1 Livestock population

The total livestock population in the district was 202587 numbers. Among which, 54453 numbers of the population thrives under Goats and 73528 numbers under Cattle. Other than cattle and goats, the farmers were rearing sheeps buffaloes, dogs, horses and ponies, mules and pigs. The detail on total livestock population in the district is presented in the Table 2.28.

Table 2.28 Livestock population

(Numbers)

Sl. No.	Particulars	Population
1	Cattle	73528
2	Buffaloes	16291
3	Sheep	56534
4	Goats	54453
5	Horses and ponies	164
6	Donkeys	152
7	Camels	2
8	Pigs	1463
	Total Livestock	**202587**
9	Elephants	1
10	Dogs	13840
11	Rabbits	14
	Poultry	
12	Bank yard Poultry	91208
13	Farm Poultry	2138419
	Total Poultry	**2229627**

Source: 19th Livestock Census

2.15.2 Veterinary institutions and hospitals

The different blocks in the district holds veterinary hospitals and dispensaries. There are about 5 Government hospitals and 57 dispensaries, one clinical centre, one animal investigation unit, one sub centre and 1 mobile units. The blocks such as Palani and Reddiarchatram hold more than 6 dispensaries for the welfare of the livestock. More than 715848 animals were treated in all these veterinary hospitals and institutions through which the farming community gets benefitted in several blocks. About 28629 castrations were performed during the year 2011-12. The details on veterinary institutions, hospitals and animals treated block wise are presented in the Table 2.29.

2.28 a.Livestock population in blocks

Sl. No		B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
1	Cattle	16598	15632	23088	6356	30904	26677	19757	16952	3736	20360
2	Buffalo	767	4340	11557	545	36	151	5910	6637	653	498
3	Sheep	8502	10925	25387	619	3844	17780	15452	16549	2259	7135
4	Goat	8424	18147	25786	7620	38806	29320	17741	16019	2234	17958
5	Pigs	3222	2345	664	245	346	455	1256	-	256	457
6	Poultry	35628	33608	62411	14191	195282	156925	527481	649148	5595	42518
7	Others	3292	5282	3542	7726	5261	5298	4493	2869	528	4438

2.28 .Livestock population in blocks contd….

Sl. No		B11	B12	B13	B14	B15
1	Cattle	31663	19516	12264	18569	262072
2	Buffalo	3674	1335	133	7252	43488
3	Sheep	25721	7618	9307	18036	169134
4	Goat	19280	26388	14982	s17018	259723
5	Pigs	-	1543	789	267	11845
6	Poultry	882854	87746	81657	40897	2815941
7	Others	6084	4713	3145	4835	61506

B-1 Athoor, B-2 Dindigul, B-3 Guziliamparai, B-4 Kodaikanal, B-5 Natham, B-6 Nilakkottai, B-7 Oddanchatram, B-8 Palani, B-9 Reddiarchatram, B-10 Sanarpatti, B-11 Thoppampatti, B-12 Vadamadurai, B-13 Vathalagundu B-14 Vedasanthu

2.28. b. Animal Husbandry Infrastructures

Sl. No		B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	District
1	Dairy co-operative Society	15	11	10	11	10	10	13	9	8	7	8	13	18	15	158
2	Veterinary clinics	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	a.Veterinary Hospital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
	veterinary Dispensary	4	5	3	3	5	4	3	7	6	4	3	3	4	4	58
	c. Sub Centre	2	5	4	8	5	3	6	7	9	4	9	2	4	7	75
	d. Profile unit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
	e. RVD	3	1	2	1	2	-	3	4	1	1	1	2	1	1	23
3	Milk Collection Centre	-	-	1	-	3	-	2	-	-	-	-	-	-	-	6
	a. Bulk Milk Cool	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0

B-1 Athoor, B-2 Dindigul, B-3 Guziliampari, B-4 Kodaikanal, B-5 Natham, B-6 Nilakkottai, B-7 Oddanchatram, B-8 Palani, B-9 Reddiarchatram, B-10 Sanarpatti, B-11 Thoppampatti, B-12 Vadamadurai, B-13 Vathalagundu B-14 Vedasanthur

Table 2.29.Block wise Veterinary institutions, hospitals and animals treated in Dindigul district (2011-12)

Name of the block	Veterinary institutions					Sub-centres	Other units		Animals treated	Castration performed
	Rural VD	PEC	Hospital	Dispensaries	Clinical centres		Animal disease investigation unit	Mobile units		
Dindigul	1	-	-	3	1	7	1	1	54462	2283
Athoor	3	1	-	4	-	2	-	-	55856	2111
Reddiarchatram	1	-	-	6	-	8	-	-	53951	2273
Sanarpatti	2	-	-	5	-	4	-	-	57224	2312
Nilakottai	1	-	2	3	-	3	-	-	47520	1302
Batlagundu	1	-		4	-	5	-	-	50235	1320
Natham	2	-		5	-	5	-	-	48742	1848
Palani	4	-		7	-	7	-	-	40124	1254
Oddanchatram	3	-	2	3	-	6	-	-	55290	3416
Thoppampatti	1	-	-	4	-	13	-	-	66352	3453
Vedasandur	1	-	-	4	-	7	-	-	55200	2176
Vadamadurai	2	-	-	3	-	1	-	-	54322	1847
Guziliamparai	2	-	-	3	-	4	-	-	48761	2029
Kodaikanal	1	1	1	3	-	7	-	1	27809	1002
Total	**25**	**2**	**5**	**57**	**1**	**79**	**1**	**1**	**715848**	**28629**

2.15.3 Dairy development

The dairy development in the district is given in the Table 2.30. The district produces 147.35 lakh litres of milk on an average.

Table 2.30 Dairy development in the district (2011-12)

No. of Milk Societies functioning in this District	Quantity of milk produced (In Lakhs Litre)	Value of milk produced (In Lakhs)
243	147.35 (Litres)	2615.60

Source: Statistical Hand Books of Dindigul District (2011-12)

2.15.4 Poultry development

The district possess 392 poultry farms. Of which, 5 farms are government farms and 387 farms are privates. The details on poultry production are given in the Table 2.31.

Table 2.31 Poultry development in the blocks (2011-12)

Sl. No	Name of the block	Broiler (No's)	Layer (No's)
1	Dindigul	14000	-
2	Athoor	6000	-
3	Reddiarchatram	20000	-
4	Sanarpatti	10500	-
5	Nilakottai	-	-
6	Batlagundu	-	-
7	Natham	12000	-
8	Palani	650000	107100
9	Oddanchatram	450000	-
10	Thoppampatti	1500000	300000
11	Vedasandur	40000	26000
12	Vadamadurai	-	20000
13	Guziliamparai	10000	-
14	Kodaikanal	-	-
	Total	2712500	453100

2.16 Fisheries

Dindigul being an inland district, fishing is restricted to inland only. Main varieties of fish available are katla, rogu, mirgal and common corp.

The district possesses 6 inland fishing centres with capacity of 108.397 tonnes fish catchment. In total, 463 fishermen were engaged in inland fishing. Palani Taluk has the highest capacity of fish catchment (24.64tonnes) with112 fishermen. The details of inland fishing in various centres are presented in the Table 2.32.

Table 2.32 Fisheries development and production in the district (2011-12)

Name and Address of Fishing centres	Inland fish catch (Tonne)	Marine fish Catch (Tonne)	Number of Fisherman engaged
A. Reservoirs	-	-	-
Nangayaru	8.936	-	14
Maruthanathi	7.754	-	16
Kudiraiyar	1.324	-	4
Periyakombai	2.153	-	6
Parapplar	9.969	-	14

Name and Address of Fishing centres	Inland fish catch (Tonne)	Marine fish Catch (Tonne)	Number of Fisherman engaged
Kudaganar	14.350		26
B. Tanks			
Fisherman Development Agency Tanks			-
Palani Taluk	24.643	-	112
Oddanchatram Taluk	To be leased out	-	-
Dindigul Taluk	To be leased out	-	-
Nilakottai Taluk	To be leased out	-	-
Natham Taluk	7.327	-	15
B-Tanks		-	
Palani Taluk	15.020	-	186
Oddanchatram Taluk	1.167	-	14
Dindigul Taluk	-	-	-
Nilakottai Taluk	6.327	-	26
Natham Taluk	-	-	-
Aathur Taluk	9.427	-	30

2.16 Banking and Insurance

The different agricultural finance institutions present in Dindigul district is furnished in Table 2.33.

Table 2.33 Existing Infrastructural Facilities – Agricultural Financial Institutions in Dindigul District

Sl. No	Particulars	Number	Percentage to total
1.	District Central Co-operative Banks (including Branches)	31	6.81
2.	Urban Cooperative Banks including Branches	6	1.32
3.	Primary Agricultural Co-operative Bank (PACB)	197	43.30
4	Co-operative Stores	9	1.97
5	Co-operative Marketing Societies	3	0.66
6	Other Co-operative Societies	14	3.08
7	Commercial Banks	195	42.86
	Total	**455**	**100.00**

Source: Office of Assistant Director of Statistics, Dindigul District (2010-11)

A co-operative credit institution is the prime source of finance for the farmers. These together constitutes 57.14 per cent of the agricultural financial institutions present in Dindigul district, of which Primary Agricultural Co -operative societies shares 43.30 per cent and the other co-operative institutions found to share the rest (57.14 per cent). Commercial bank is the next big institution sharing 42.86 per cent of the total financial institutions operating in the district.

Crop Insurance Scheme

The details of crops, Premium Collected, Number of Beneficiaries and Amount Sum insured are presented in the Table 2.34.

Table 2.34 Crop insurance schemes in Dindigul district (2011-12)

Name of the Crop	Premium Collected (Rs)	No. of Beneficiaries	Amount Sum insured (Lakhs)
NAIS – KHARIF			
a. Potato	2138	10	2.19
b. Banana	230773	157	67.11
c. Paddy	101771	135	25.47
(Loanee farmers *Kharif*)			
a. Maize	50970	65	17.25
(Non Loanee farmers) *kharif*			
a. Sugarcane	767867	735	482.73
b. Flowers	84960	1137	14.16

2.17 Co-operation

The different types of co-operative institutions including credit co-operatives and marketing co-operative society's functioning in Dindigul district during 2014-15 are given in Table 2.35.

Table 2.35 Co-operative Institutions Functioning in Dindigul District during (2014-15)

Sl. No	Co-operative society	Number
1	Primary Agri & Rural Development Banks	6
2	Co-operative Apex Banks (TNSC)	--
3	District Central Co-operative Banks (including Branches)	31
4	Urban Banks including Branches	6
5	Primary Agri Co-operative Bank (PACB)	197
6	Housing co-operative Societies	28
7	Employees Co-operative Societies	54
8	Lift Irrigation Societies	--
9	Weavers Co-operative Societies	--
10	Industrial Co-operative Societies --	--
11	Khadhi & Village Industries Societies	--
12	Co-operative Stores	5
13	Co-operative Marketing Societies	3
14	Other Co-operative Societies	1

Source: Statistical Hand Books of Different Blocks in Dindigul District (2014-15)

CHAPTER III

DEVELOPMENT OF AGRICULTURAL AND ALLIED SECTOR

Before suggesting an action plan for development of agriculture and allied sectors, a brief analysis (at district level) 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 analysed 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 was estimated using 12 years time series data from 2000-2001 to 2011-12. The equation used to estimate the annual compound growth rate is:

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:

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

where, Y_t = Area or Production or Yield

a = Intercept

b = Regression coefficient of t

t = Time variable

r = Compound Growth Rate

Average of area, production and productivity of major crops in the district is presented in Table 3.1. It could be seen from the Table 3.1 that, maize, coconut, cholam and mango are the major crops grown in the district. On an average (triennium average ending 2014 -15) the district showed a paddy output of 42413 tonnes in an area of about 8594 ha. Maize is a major food crop grown in 20207 ha with the production of 1.57 lakh tonnes. The coconut is grown in an area of about 30839 ha and annually about 2903 lakh nuts are harvested in the district. Cholam another major food crop is grown in 32468 ha and yearly about 93103 tonnes are harvested. Mango is a high value crops are grown in many pockets of the district and every year around 1.73 lakh tonnes of mango are produced. Groundnut is grown in an area of 6509 ha and the estimated yield was 3103 kg/ha.

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

Sl.No	Crop	Area (Ha)	%	Production	Yield (Kg/ ha)
1	Paddy	8594	6.76	42413	5063
2	Cholam	32468	25.56	93103	2220
3	Maize	20207	15.91	157144	5770
4	Banana	4273	3.36	198296	49709
5	Mango	16146	12.71	173813	10843
6	Guava	1555	1.22	19177	10263
7	Potato	2168	1.71	N.A	N.A
8	Tapioca	175	0.14	5718	32180
9	Onion	2445	1.92	18296	7475
10	Tomato	1654	1.30	16602	10946
11	Groundnut	6509	5.12	20557	3103
12	Coconut	30839	24.28	N.A	N.A
	Total	**127032**	**100.00**		

***** *N.A denotes Not Available*

The Compound Growth Rates are shown in the Table 3.2

The results of the compound growth rate in area, production and productivity of major agricultural crops in Dindigul district is presented in Table 3.2.

Table 3.2 Compound Growth Rate of Area, Production and Productivity under major crops in Dindigul District

Sl.No	Crop	CGR during 2005-2006 to 2014-2015 (%)		
		Area	Production	Productivity
1	Paddy	-11.11	-6.97	5.06
2	Cholam	-3.80	10.80	10.86
3	Maize	-7.67	7.19	11.61
4	Banana	-0.33	8.21	-1.66
5	Mango	1.70	6.94	5.12
6	Guava	6.62	4.19	-5.24
7	Potato	-2.70	N.A	N.A
8	Tapioca	-5.02	-7.63	-2.74
9	Onion	-2.68	-4.97	-1.78

Sl.No	Crop	CGR during 2005-2006 to 2014-2015 (%)		
		Area	Production	Productivity
10	Tomato	-4.12	-4.03	1.08
11	Groundnut	-10.67	-7.28	8.80
12	Coconut	6.10	N.A	N.A

** N.A denotes Not Available*

Barring a few crops like paddy, maize, coconut, banana and mango, the area under other crops has been declining. The production of major crops (except cholam and tobacco) benefited from increasing trend in production. Subsequently the trend in productivity of all the crops in this district has shown an increasing trend.

3.2 Projection on area, production and yield of Selected Crops

The results of the projected area, production and yield of major crops for the year 2023 in Dindigul district are given.

The area under maize is expected to increase by 1.4 times that of the area under 2010-11 in Dindigul district, while there is a drastic decrease in the area of paddy, sorghum and ground nut. Area under coconut is expected to increase by 0.85 times mango by 0.62 times, banana by 0.57 times, potato by 0.96 times, drum stick by 0.42 times and by tamarind 0.09 times when compared to 2010-11 area. A decrease in the area is anticipated in the case of coffee, onion, lime and tomato as per the production.

Improvement in the productivity of maize, ground nut, coconut, banana, tamarind, onion, lime and tomato is expected while decrease in productivity is anticipated in the case of paddy, sorghum and mango as per the projected productivity for the year 2023. In the case of potato, productivity is expected to be maintained.

Production is expected to increase in the case of maize, coconut, mango, banana, and potato, where as it is expected to decrease in the case of paddy, groundnut, sorghum and onion as per the projected production using the estimated exponential trend equation.

Table 3.3 Projected Area, Production and Yield Based for the Major Potential Crops Identified

Description	Paddy			Cholam			Maize			Coconut		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
Compound Growth Rate (%)	0.568	3.003	2.423	-5.407	-4.018	1.472	5.688	21.297	14.770	2.406	4.572*	1.871*
Triennium Average ending 2011-12	18051	93426	5159	28142	40378	1420	39935	239050	5984	28292	5375	19008
2012-13	18729	89167	4761	26000	34023	1309	49385	379498	7685	29313	5892	19966
2013-14	18836	91845	4877	24595	32656	1328	52194	460321	8820	30018	6161	20340
2014-15	18943	94603	4995	23265	31344	1347	55163	558357	10123	30740	6443	20720
2015-16	19050	97445	5116	22007	30085	1367	58301	677273	11618	31480	6737	21108

Description	Groundnut			Banana			Mango			Guava		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
Compound Growth Rate (%)	-2.180	0.473	2.786	5.009	5.731	0.687	2.182	17.242	14.740	-3.642	4.884	8.848
Triennium Average ending 2011-12	10771	32831	2988	4961	166440	33902	15121	128391	8488	1156	13378	11652
2012-13	11143	33559	3021	5536	211737	38251	16006	160844	10050	914	14181	15514
2013-14	10900	33718	3105	5813	223872	38514	16355	188576	11531	881	14874	16887
2014-15	10663	33878	3192	6104	236703	38778	16712	221090	13231	849	15600	18381
2015-16	10430	34038	3281	6410	250268	39045	17077	259210	15181	818	16362	20007

Description	Onion			Tomato			Potato			Tobacco		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
Compound Growth Rate (%)	-1.215	0.238	1.471	-2.581	4.919	7.698	-0.069	2.230	2.432	-3.462	-1.635	0.125
Triennium Average ending 2011-12	3242	29533	9181	2027	24166	11730	2571	37713	14688	1497	2449	1449
2012-13	2932	27656	9434	1809	25383	14030	2539	36600	14443	1160	1968	1458
2013-14	2896	27722	9572	1762	26631	15110	2538	37416	14794	1120	1936	1460
2014-15	2861	27788	9713	1717	27941	16273	2536	38251	15154	1081	1904	1462
2015-16	2826	27855	9856	1673	29315	17526	2534	39103	15523	1043	1873	1463

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

3.3 Yield gap analysis

In order to raise the production of the selected crops, information regarding ruling varieties, their average yield, potential yield, progressive farmer's yield etc were collected from the office of the Joint Director of Agriculture, Dindigul. From this information, yield gaps were analysed and it is given in subsequent Tables. Yield Gap is the difference between the progressive farmer's yield and average farm yield which explains the gap due to soil and climatic factors, technologies adopted, availability of farm inputs like suitable varieties, fertilizers, plant protection chemicals, irrigation water, labour and cultivation practices followed.

a. Paddy

Table 3.4 Yield Gap in Paddy (Kg/ Ha)

Variety	Yield GAP- I	Yield GAP- II	Overall Yield Gap
ADT 36	350	550	900
ADT 39	700	1481	2181
ASD16	520	1480	2000
ASD19	1550	540	2090
TRY 1	155	2048	2203
ADT (R) 45	50	562	612
CO-43	400	1702	2012

Source: Office of the Joint Director of Agriculture, Dindigul

Table 3.5 Required Annual Growth Rate to cover Yield Gap in Paddy

Ruling Varieties	ADT 36	ADT3 9	ASD 16	ASD 19	TRY 1	ADT(R) 45	CO-43
Potential Yield	4000	5000	5600	5800	5255	5400	5200
Progressive farmer yield	3650	4300	5080	4250	5100	5350	4800
Average Yield	3100	2819	3600	3710	3052	4788	3098
Overall Yield Gap	900	2181	2000	2090	2203	612	2102
Required Growth Rates	29.03	77.37	55.56	56.33	72.18	12.78	67.85
Annual Growth Rate	2.42	6.45	4.63	4.69	6.02	1.07	5.65

Source: Office of the Joint Director of Agriculture, Dindigul

Table 3.6 Projected Yield of Paddy (Kg/ Ha)

Sl. No	Year	ADT 36	ADT39	ASD 16	ASD-19	TRY 1	ADT (R) 45	CO-43
1	2010-11	3100	2819	3600	3710	3052	4788	3098
2	2011-12	3175	3001	3767	3884	3236	4839	3273
3	2012-13	3252	3194	3941	4067	3430	4891	3458
4	2013-14	3330	3400	4124	4257	3637	4943	3654
5	2014-15	3411	3619	4314	4457	3855	4995	3860
6	2015-16	3494	3853	4514	4667	4087	5048	4079
7	2016-17	3578	4101	4723	4886	4333	5102	4309
8	2017-18	3665	4366	4942	5115	4594	5157	4553
9	2018-19	3753	4647	5171	5355	4870	5212	4810
10	2019-20	3844	4947	5410	5606	5163	5267	5082
11	2020-21	3937	5266	5660	5870	5474	5323	5370
12	2021-22	4032	5605	5922	6145	5803	5380	5673
13	2022-23	4130	5966	6197	6434	6152	5437	5994

Table 3.7 Required Productivity for Doubling Production in Paddy

Area under Paddy	14848	Hectare
Production	78053	Tones
Yield	5.26	Tones
Doubling the production	**156106**	Tones
Yield	10.51	Tones

Table 3.8 Projected Production of Paddy (in Tonnes)

Particulars/ Variety	ADT 36	ADT 39	ASD 16	ASD 19	TRY 1	ADT(R) 45	CO 43	Total
Proportion of varieties	0.031	0.31	0.031	0.031	0.13	0.35	0.117	1
Area	460.28	4602.88	460.28	460.28	1930.2	5196.8	1737.2	14848
2011-12	1461	13812	1734	1788	6245	25147	5686	55873
2012-13	1497	14703	1814	1872	6621	25415	6008	57930
2013-14	1533	15651	1898	1960	7019	25686	6347	60094
2014-15	1570	16660	1986	2052	7442	25959	6706	62375
2015-16	1608	17734	2078	2148	7889	26236	7085	64778
2016-17	1647	18877	2174	2249	8364	26515	7486	67312
2017-18	1687	20094	2275	2354	8867	26798	7909	69984
2018-19	1728	21390	2380	2465	9400	27083	8357	72803
2019-20	1769	22769	2490	2581	9966	27372	8829	75776
2020-21	1812	24237	2605	2702	10565	27663	9328	78912
2021-22	1856	25799	2726	2829	11201	27958	9856	82225
2022-23	1901	27463	2852	2961	11874	28256	10413	85720

The paddy varieties grown in Dindigul district are ADT 36, ADT 39, ASD 16, ASD-19, TRY 1, ADT (R) 45 and CO-43 with the proportion of area 0.031, 0.31, 0.031, 0.031, 0.13, 0.35 and 0.117, respectively. The yield gap per hectare of paddy in Dindigul district varied from 900 kg in ADT-36 to 2023 kg in Try-1 variety. The required annual growth rate in productivity to bridge the existing overall yield gap in paddy ranged from 1.07 in the case of ADT (R) 45, while it was found high in the case of ADT 39.

Doubling the paddy production in the district may require an increase in the productivity from the existing average yield of 5.26 tonnes / ha in 2010-11 to 10.57 tonnes/ ha in 2022-23. The projected production in the year 2022-23 by bridging the yield gap of existing paddy varieties is 85720 tonnes, which falls short of doubling the production target (156106 tonnes) by 70386 tonnes. Thus, it is inferred that doubling the production of paddy in Dindigul district could not be fully achieved, even after bridging the existing yield gap in different varieties with the existing allocation of area under paddy.

b. Maize

Table 3.9 Yield Gap in Maize (Kg/ Ha)

Variety	Yield GAP I	Yield GAP II	Overall Yield Gap
Pioneer -30V92	845	385	1230
CP- 808	1420	1310	2730
NK-6240	679	951	1630
Rasi- 818	471	542	1013
COH(M) 5	344	562	906

Source: Office of the Joint Director of Agriculture, Dindigul

Table 3.10 Required Annual Growth Rate to cover Yield Gap in Maize

Ruling Varieties	Pioneer 30V92	CP 818	NK6240	Rasi 818	COH(M)5
Potential Yield	7600	6500	8000	4800	5694
Progressive farmer yield	6755	5080	7321	4329	5350
Average Yield	6370	3770	6370	3787	4788
Overall Yield Gap	1230	2730	1630	1013	906
Required Growth Rates	19.31	72.41	25.59	26.75	18.92
Annual Growth Rate	1.61	6.03	2.13	2.23	1.58

Source: Office of the Joint Director of Agriculture, Dindigul

Table 3.11 Projected Yield of Maize (Kg/ Ha)

Sl. No	Year	Pioneer 30V92	CP 818	NK 6240	Rasi 818	COH(M)5
1	2010-11	6370	3770	6370	3787	4788
2	2011-12	6473	3998	6506	3871	4864
3	2012-13	6577	4239	6645	3958	4940
4	2013-14	6682	4495	6786	4046	5018
5	2014-15	6790	4766	6931	4136	5097
6	2015-16	6899	5053	7079	4228	5178
7	2016-17	7010	5358	7230	4323	5259
8	2017-18	7123	5682	7384	4419	5342
9	2018-19	7238	6024	7541	4517	5426
10	2019-20	7354	6388	7702	4618	5512
11	2020-21	7472	6773	7866	4721	5599
12	2021-22	7593	7182	8034	4826	5687
13	2022-23	7715	7616	8205	4934	5777

Table 3.12 Required Productivity for Doubling Production in Maize

Area under Maize	39629	Ha
Production	216794	Tones
Yield	5.47	Tones
Doubling the production	**433588**	Tones
Required Yield	10.94	Tones

Table 3.13 Projected Production of Maize (in Tonnes)

Year/ Variety	Pioneer 30V92	CP 818	NK6240	Rasi 818	COH(M)5	Total
Proportion of varieties	0.33	0.083	0.33	0.083	0.174	1
Area	13077.57	3289.20	13077.57	3289.20	6895.44	39629
2011-12	84645	13149	85080	50629	33536	267039
2012-13	86007	13942	86895	51757	34065	272666
2013-14	87391	14783	88748	52911	34602	278435
2014-15	88797	15675	90640	54090	35148	284350
2015-16	90226	16621	92573	55296	35702	290418
2016-17	91677	17624	94547	56529	36265	296642
2017-18	93153	18688	96563	57789	36837	303030
2018-19	94651	19816	98622	59077	37417	309583
2019-20	96175	21011	100725	60394	38008	316313
2020-21	97722	22279	102873	61740	38607	323221
2021-22	99295	23624	105067	63117	39216	330319
2022-23	100892	25049	107307	64523	39834	337605

The maize varieties grown in Dindigul district are Pioneer 30V92, CP 818, NK6240, Rasi 818 and COH(M)5 with the proportion of area of 0.33,0.083,0.33,0.083 and 0.174, respectively. The yield gap per hectare of maize in Dindigul district varied from 906 kg in COH (M)-5 to 2730 kg in CP-808 variety. The required annual growth rate in productivity to bridge the existing overall yield gap in maize ranged from 1.58 in the case of COH (M) 5, while it was found high in the case of CP-808 with 6.03.

Doubling the maize production in the district may require an increase in the productivity from the existing average yield of 5.47 tonnes/ha in 2010-11 to 10.94 tonnes/ ha in 2022-23. The projected production in the year 2022-23 by bridging the yield gap of existing maize varieties is 337605 tonnes, which falls short of doubling the yield target (433588 tonnes) by 98953 tonnes.

Thus, it is inferred that doubling the production in maize in Dindigul district could not be fully achieved, even after bridging the existing yield gap in different varieties with the existing allocation of area under maize.

c. Coconut

Table 3.14 Yield Gap in Coconut (No of Nuts / Ha)

Variety	Yield GAP I	Yield GAP II	Overall Yield Gap
West coast Tall	5700	3800	9500
T x D Hybrid	7600	3800	11400

Source: Office of the Deputy Director of Horticulture, Dindigul

Table 3.15 Required Annual Growth Rate to cover Yield Gap in Coconut

Ruling Varieties	West Coast Tall	T x D hybrid
Potential Yield	28500	34200
Progressive farmer yield	22800	26600
Average Yield	19000	22800
Overall Yield Gap	9500	11400
Required Growth Rates	50.00	50.00
Annual Growth Rate	4.17	4.17

Source: Office of the Deputy Director of Horticulture, Dindigul

Table 3.16 Projected Yield of Coconut (No of Nuts / Ha)

Year	West Coast Tall	TxD hybrid
2010-11	19000	22800
2011-12	19792	23750
2012-13	20616	24740
2013-14	21475	25770
2014-15	22370	26844
2015-16	23302	27963
2016-17	24273	29128
2017-18	25285	30341
2018-19	26338	31606
2019-20	27435	32923
2020-21	28579	34294
2021-22	29769	35723
2022-23	31010	37212

Table 3.17 Required Productivity for Doubling Production in Coconut

Area under Coconut	28284	Ha
Production	490200000	in nuts
Yield	17331.35	in nuts
Doubling the production	**980400000**	in nuts
Required Yield	34662.71	in nuts

Source: Office of the Deputy Director of Horticulture, Dindigul

Table 3.18 Projected Production of Coconut (No of Nuts)

Year/ Variety	West Coast Tall	T x D hybrid	Total
Proportion of varieties	0.7	0.3	1
Area	19798.8	8485.2	28284
2011-12	391851250	470221500	862072750
2012-13	408178385	489814063	897992448
2013-14	425185818	510222982	935408800
2014-15	442901894	531482273	974384167
2015-16	461356139	553627367	1014983506
2016-17	480579312	576695174	1057274486
2017-18	500603450	600724140	1101327590
2018-19	521461927	625754312	1147216239
2019-20	543189507	651827409	1195016916
2020-21	565822403	678986884	1244809287
2021-22	589398337	707278004	1296676341
2022-23	613956601	736747921	1350704522

The coconut varieties grown in Dindigul district are West Coast Tall and T x D Hybrid with the proportion of area of 0.70 and 0.30 respectively. The yield gap per hectare of coconut in Dindigul district was 9500 nuts in West Coast Tall and 11400 nuts in

T x D Hybrid. The required annual growth rate in productivity to meet the existing overall yield gap in the above said coconut varieties was 4.17 per cent.

Doubling the coconut production in the district may require an increase in the productivity from the existing yield of 17331 nuts/ ha in 2010-11 to 34663 nuts / ha in 2022-23. The projected production in the year 2022-23 by bridging the yield gap of existing coconut varieties is 1350704522 nuts, which is in excess of doubling the production target (980400000 nuts) by 370304522 nuts. Thus, it is inferred that doubling the production of coconut in Dindigul district could be over achieved by bridging the existing yield gap in different varieties and with the present allocation of area under Coconut varieties.

d. Groundnut

Table 3.19 Yield Gap in Groundnut (Kg/ Ha)

Variety	Yield GAP I	Yield GAP II	Overall Yield Gap
TMV 7 (Rainfed)	366	48	414
VRI 2 (Rainfed)	140	135	275
TMV 7 (irrigated)	497	94	591
VRI 2 (irrigated)	634	626	1260

Source: Office of the Joint Director of Agriculture, Dindigul

Table 3.20 Required Annual Growth Rate to cover Yield Gap in Groundnut

Ruling Varieties	TMV7- R	VRI 2- R	TMV 7-I	VRI 2-I
Potential Yield	1400	2060	2800	3400
Progressive farmer yield	1034	1920	2303	2766
Average Yield	986	1785	2209	2140
Overall Yield Gap	414	275	591	1260
Required Growth Rates	41.99	15.41	26.75	58.88
Annual Growth Rate	3.50	1.28	2.23	4.91

Source: Office of the Joint Director of Agriculture, Dindigul

Table 3.21 Projected Yield of Groundnut (Kg/ Ha)

Year	TMV7- R	VRI 2- R	TMV 7-I	VRI 2-I
2010-11	986	1785	2209	2140
2011-12	1021	1808	2258	2245
2012-13	1056	1831	2309	2355
2013-14	1093	1855	2360	2471
2014-15	1131	1878	2413	2592
2015-16	1171	1903	2466	2719
2016-17	1212	1927	2521	2853
2017-18	1254	1952	2578	2992
2018-19	1298	1977	2635	3139
2019-20	1344	2002	2694	3293
2020-21	1391	2028	2754	3455
2021-22	1439	2054	2815	3624
2022-23	1490	2080	2878	3802

Table 3.22 Required Productivity for Doubling Production in Groundnut

Area under Ground nut	11173	Ha
Production	31948	tonnes
Yield	2.86	tonnes
Doubling the production	**63896**	tonnes
Required Yield	5.72	tonnes

Table 3.23 Projected Production of Groundnut (in Tonnes)

Year/ Variety	TMV7- R	VRI 2- R	TMV 7-I	VRI 2-I	Total
Proportion of varieties	0.2	0.05	0.3	0.45	1
Area	2234.6	558.65	3351.9	5027.85	11173
2011-12	2280	1010	7569	11288	22147
2012-13	2360	1023	7738	11841	22962
2013-14	2443	1036	7911	12422	23812
2014-15	2528	1049	8087	13032	24696
2015-16	2617	1063	8267	13671	25618
2016-17	2708	1077	8452	14342	26579
2017-18	2803	1090	8640	15046	27579
2018-19	2901	1104	8833	15784	28622
2019-20	3003	1119	9030	16558	29710
2020-21	3108	1133	9231	17371	30843
2021-22	3216	1147	9437	18223	32023
2022-23	3329	1162	9647	19117	33255

The major Groundnut varieties grown in Dindigul district are TMV7, VRI 2 under irrigated and rain-fed conditions with the proportion of area of 0.2, 0.05, 0.3, and 0.45, respectively. The yield gap per hectare of groundnut in Dindigul district varied from 275 kg in VRI-2 (rainfed) to 1260 kg in VRI-2(irrigated) variety. The required annual growth rate in productivity to meet the existing overall yield gap in groundnut ranged from 1.28

per cent in the case of VRI-2 (rainfed), while it was found high in the case of VRI-2 (irrigated) with 4.91 per cent.

Doubling the groundnut production in the district may require an increase in the productivity from the existing yield of 2.86 tonnes/ha in 2010-11 to 5.72 tonnes/ ha in 2022-23. The projected production in the year 2022-23 by bridging the yield gap of existing groundnut varieties is 33255 tonnes, which falls short of doubling the production target (63896 tonnes) by 30641 tonnes. Thus, it is inferred that doubling the production of groundnut in Dindigul district could not be fully achieved, even after bridging the existing yield gap in different varieties with the existing allocation of area under groundnut.

e. Banana

Table 3.24 Yield Gap in Banana (Kg/ Ha)

Variety	Yield GAP I	Yield GAP II	Overall Yield Gap
Hill Banana	2500	3500	6000
Poovan	700	1481	10000
Monthan	520	1480	9500
Red banana	1550	540	10000
Rasthali	155	2048	15000
G-9	50	562	20000

Source: Office of the Deputy Director of Horticulture, Dindigul

Table 3.25 Required Annual Growth Rate to cover Yield Gap in Banana

Ruling Varieties	Hill Banana	Poovan	Monthan	Red Banana	Rasthali	G-9
Potential Yield	18000	30000	40000	40000	40000	50000
Progressive farmer yield	15500	26000	34500	35000	35000	40000
Average Yield	12000	20000	30500	30000	25000	30000
Overall Yield Gap	6000	10000	9500	10000	15000	20000
Required Growth Rates	50.00	50.00	31.15	33.33	60.00	66.67
Annual Growth Rate	4.17	4.17	2.60	2.78	5.00	5.56

Source: Office of the Deputy Director of Horticulture, Dindigul

Table 3.26 Projected Yield of Banana (Kg/ Ha)

Year	Hill Banana	Poovan	Monthan	Red Banana	Rasthali	G-9
2010-11	12000	20000	30500	30000	25000	30000
2011-12	12500	20833	31292	30833	26250	31667
2012-13	13021	21701	32104	31690	27563	33426
2013-14	13563	22606	32937	32570	28941	35283
2014-15	14129	23548	33792	33475	30388	37243
2015-16	14717	24529	34669	34405	31907	39312
2016-17	15330	25551	35569	35360	33502	41496
2017-18	15969	26615	36492	36343	35178	43801
2018-19	16635	27724	37440	37352	36936	46235

Year	Hill Banana	Poovan	Monthan	Red Banana	Rasthali	G-9
2019-20	17328	28879	38411	38390	38783	48804
2020-21	18050	30083	39408	39456	40722	51515
2021-22	18802	31336	40431	40552	42758	54377
2022-23	19585	32642	41481	41678	44896	57398

Source: Office of the Deputy Director of Horticulture, Dindigul

Table 3.27 Required Productivity for Doubling Production in Banana

Area under Banana	4897	Ha
Production	177554	tonnes
Yield	36.26	tonnes
Doubling the production	**355108**	tonnes
Required Yield	72.52	tonnes

Table 3.28 Projected Production of Banana (in Tonnes)

Year/ Variety	Hill Banana	Poovan	Monthan	Red Banan	Rasthali	G-9	Total
Proportion of varieties	0.4	0.15	0.2	0.1	0.1	0.05	1
Area	1958.8	734.55	979.4	489.7	489.7	244.85	4897
2011-12	24485	15303	30647	30198	12855	7754	121242
2012-13	25505	15941	31443	31037	13497	8184	125607
2013-14	26568	16605	32259	31899	14172	8639	130142
2014-15	27675	17297	33096	32785	14881	9119	134853
2015-16	28828	18018	33955	33696	15625	9626	139748
2016-17	30029	18768	34836	34632	16406	10160	144831
2017-18	31280	19550	35741	35594	17226	10725	150116
2018-19	32584	20365	36668	36583	18088	11321	155609
2019-20	33941	21213	37620	37599	18992	11950	161315
2020-21	35356	22097	38597	38643	19942	12613	167248
2021-22	36829	23018	39598	39717	20939	13314	173415
2022-23	38363	23977	40626	40820	21986	14054	179826

The banana varieties grown in Dindigul district are hill banana, poovan, monthan, red banana, rasthali and G-9 with the proportion of area 0.4, 0.15, 0.2, 0.1, 0.1 and 0.05 respectively. The yield gap per hectare of banana in Dindigul district ranged from 6000 kg in hill banana to 20000 kg in Grand naine (G9) variety. The required annual growth rate in productivity to bridge the existing overall yield gap in banana is 2.60 in the case of Monthan, while it was found high in the case of G-9 with 5.56 per cent. Doubling banana production in the district may require an increase in the productivity from the existing average yield of 36.26 tonnes /ha in 2010-11 to 72.52 tonnes / ha in 2022-23. The projected production in the year 2022-23 by bridging the yield gap of existing banana varieties is 179826 tonnes, which falls short of doubling the production target (355108 tonnes) by 175282 tonnes. Thus, it is inferred that doubling the production of banana in Dindigul district could not fully be achieved, even after bridging the existing yield gap in different varieties with the existing allocation of area under banana.

f. Mango

Table 3.29 Yield Gap in Mango (Kg/ Ha)

Variety	Yield GAP I	Yield GAP II	Overall Yield Gap
Neelam	5000	3000	8000
Bangalora	5000	6000	11000
Alponsa	2800	3200	6000
Imampasand	1800	2200	4000
Banganapalli	2500	3500	6000

Source: Office of the Deputy Director of Horticulture, Dindigul

Table 3.30 Required Annual Growth Rate to cover Yield Gap in Mango

Ruling Varieties	Neelam	Bangalora	Alponsa	Imampasand	Banganapalli
Potential Yield	15000	20000	10000	7000	10000
Progressive farmer yield	10000	15000	7200	5200	7500
Average Yield	7000	9000	4000	3000	4000
Overall Yield Gap	8000	11000	6000	4000	6000
Required Growth Rates	114.29	122.22	150.00	133.33	150.00
Annual Growth Rate	9.52	10.19	12.50	11.11	12.50

Source: Office of the Deputy Director of Horticulture, Dindigul

Table.3.31 Projected Yield of Mango (Kg/ Ha)

Year	Neelam	Bangalora	Alponsa	Imampasand	Banganapalli
2010-11	7000	9000	4000	3000	4000
2011-12	7667	9917	4500	3333	4500
2012-13	8397	10927	5063	3704	5063
2013-14	9197	12040	5695	4115	5695
2014-15	10072	13266	6407	4572	6407
2015-16	11032	14617	7208	5081	7208
2016-17	12082	16106	8109	5645	8109
2017-18	13233	17746	9123	6272	9123
2018-19	14493	19554	10263	6969	10263
2019-20	15874	21545	11546	7744	11546
2020-21	17385	23740	12989	8604	12989
2021-22	19041	26158	14613	9560	14613
2022-23	20855	28822	16440	10622	16440

Table 3.32 Required Productivity for Doubling Production in Mango

Area under Mango	14992	Ha
Production	198413	tonnes
Yield	13.23	tonnes
Doubling the production	**396826**	tonnes
Required Yield	26.47	tonnes

Table 3.33 Projected Production of Mango (in Tonnes)

Year/ Variety	Neelam	Bangalora	Alponsa	Imampasand	Banganapalli	Total
Proportion of varieties	0.4	0.3	0.1	0.1	0.1	1
Area	5996.8	4497.6	1499.2	1499.2	1499.2	14992
2011-12	45975	44601	6746	4997	6746	109065
2012-13	50354	49144	7590	5553	7590	120231
2013-14	55150	54149	8538	6170	8538	132545
2014-15	60402	59665	9606	6855	9606	146134
2015-16	66155	65741	10806	7617	10806	161125
2016-17	72455	72437	12157	8463	12157	177669
2017-18	79356	79815	13677	9403	13677	195928
2018-19	86913	87945	15386	10448	15386	216078
2019-20	95191	96902	17310	11609	17310	238322
2020-21	104256	106772	19474	12899	19474	262875
2021-22	114186	117646	21908	14332	21908	289980
2022-23	125060	129629	24646	15925	24646	319906

The mango varieties grown in Dindigul district are Neelam, Bangalora, Alponsa, Imampasand and Banganapalli with the proportion of area of 0.4, 0.3, 0.1, 0.1, and 0.1 respectively. The yield gap per hectare of mango in Dindigul district varied from 4000 kg in Imampasand to 11000 kg in Bangalora variety. The required annual growth rate in productivity to bridge the existing overall yield gap in mango ranged from 9.52 per cent in the case of Neelam, while it was found high in the case of Banganapalli with 12.50 per cent. Doubling the Mango production in the district may require an increase in the productivity from the existing average yield of 13.23 tonnes/ha in 2010-11 to 26.47 tonnes/ ha in 2022-23. The projected production in the year 2022- 23 by bridging the yield gap of existing Mango varieties is 319906 tonnes, which falls short of doubling the production target (396826 tonnes) by 76920 tonnes. Thus, it is inferred that doubling the production of mango in Dindigul district could not be fully achieved, even after bridging the existing yield gap in different varieties with the existing allocation of area under mango.

g. Onion

Table 3.34 Yield Gap in Onion (Kg/ Ha)

Variety	Yield GAP I	Yield GAP II	Overall Yield Gap
Small onion- CO-4	350	550	900
Small onion- CO-5	700	1481	2181
Small onion-Agri found red	520	1480	2000
Bellary- Agrifound dark red	1550	540	2090

Source: Office of the Deputy Director of Horticulture, Dindigul

Table 3.35 Required Annual Growth Rate to cover Yield Gap in Onion

Ruling Varieties	CO 4	CO-5	Agrifound red	Agrifound darkred
Potential Yield	15000	18000	18000	20000
Progressive farmer yield	12000	15000	15500	17000
Average Yield	8500	12000	12500	12000
Overall Yield Gap	6500	6000	5500	8000
Required Growth Rates	76.47	50.00	44.00	66.67
Annual Growth Rate	6.37	4.17	3.67	5.56

Source: Office of the Deputy Director of Horticulture, Dindigul

Table 3.36 Projected Yield of Onion (Kg/ Ha)

Year	CO 4	CO-5	Agrifound red	Agrifound darkred
2010-11	8500	12000	12500	12000
2011-12	9042	12500	12958	12667
2012-13	9618	13021	13433	13370
2013-14	10231	13563	13926	14113
2014-15	10883	14129	14437	14897
2015-16	11576	14717	14966	15725
2016-17	12314	15330	15515	16598
2017-18	13099	15969	16084	17521
2018-19	13933	16635	16673	18494
2019-20	14821	17328	17285	19521
2020-21	15766	18050	17918	20606
2021-22	16770	18802	18575	21751
2022-23	17839	19585	19257	22959

Table 3.37 Required Productivity for Doubling Production in Onion

Area under Onion	2881	Ha
Production	29596	tonnes
Yield	10.27	tonnes
Doubling the production	**59192**	tonnes
Yield	20.55	tonnes

Table 3.38 Projected Production of Onion (in Tonnes)

Year/ Variety	S. onion-CO 4	S. onion-CO-5	S. O- Agri found red	B-Agri found dark red	Total
Proportion of varieties	0.63	0.18	0.09	0.1	1
Area	1815.03	518.58	259.29	288.1	2881
2011-12	16411	6482	3360	3284	29537
2012-13	17457	6752	3483	3467	31159
2013-14	18569	7034	3611	3659	32873
2014-15	19752	7327	3743	3863	34685
2015-16	21011	7632	3881	4077	36601
2016-17	22350	7950	4023	4304	38627
2017-18	23774	8281	4170	4543	40768
2018-19	25289	8626	4323	4795	43033
2019-20	26901	8986	4482	5062	45431
2020-21	28615	9360	4646	5343	47964
2021-22	30439	9750	4816	5640	50645
2022-23	32379	10156	4993	5953	53481

S.O- Small Onion B- Bellary Onion

The onion varieties grown in Dindigul district are CO 4, CO-5, Agri-found red and Agrifound dark red .with the proportion of area of 0.63, 0.18, 0.09 and 0.10, respectively. The yield gap per hectare of onion in Dindigul district ranged from 900 in CO-4 to 2090 kg in Agrifound Dark red variety. The required annual growth rate in productivity to bridge the existing overall yield gap in onion is 3.67 in the case of Agrifound red, while it was found high in the case of Co-4 with 6.37 per cent. Doubling onion production in the district may require an increase in the productivity from the existing average yield of 10.27 tonnes /ha in 2010-11 to 20.55 tonnes / ha in 2022-23. The projected production in the year 2022-23 by bridging the yield gap of existing onion varieties is 53481 tonnes, which falls short of

doubling the production target (59192 tonnes) by 5711 tonnes. Thus, it is inferred that doubling the production of onion in Dindigul district could not fully be achieved, even after bridging the existing yield gap in different varieties with the existing allocation of area under onion.

h. Tomato

Table 3.39 Yield Gap in Tomato (Kg/ Ha)

Variety	Yield GAP I	Yield GAP II	Overall Yield Gap
F1 Hybrid-Laxmi-555	4000	7000	11000
F1 Hybrid-Red Ruby	5000	8000	13000
F1 Hybrid- US-800	3000	9000	11000

Source: Office of the Deputy Director of Horticulture, Dindigul

Table 3.40 Required Annual Growth Rate to cover Yield Gap in Tomato

Ruling Varieties	Laxmi-555	Red Ruby	US-800
Potential Yield	35000	35000	35000
Progressive farmer yield	31000	30000	32000
Average Yield	24000	22000	24000
Overall Yield Gap	11000	13000	11000
Required Growth Rates	45.83	59.09	45.83
Annual Growth Rate	3.82	4.92	3.82

Source: Office of the Deputy Director of Horticulture, Dindigul

Table 3.41 Projected Yield of Tomato (Kg/ Ha)

Year	Laxmi-555	Red Ruby	US-800
2010-11	24000	22000	24000
2011-12	24917	23083	24917
2012-13	25868	24220	25868
2013-14	26856	25413	26856
2014-15	27882	26664	27882
2015-16	28947	27977	28947
2016-17	30053	29355	30053
2017-18	31201	30800	31201
2018-19	32392	32317	32392
2019-20	33629	33908	33629
2020-21	34914	35578	34914
2021-22	36247	37330	36247
2022-23	37632	39168	37632

Table 3.42 Required Productivity for Doubling Production in Tomato

Area under Tomato	1969	ha
Production	27493	tonnes
Yield	13.96	tonnes
Doubling the production	**54986**	tonnes
Required Yield	27.93	tonnes

Table 3.43 Projected Production of Tomato (in tonnes)

Year/ Variety	Laxmi-555	Red Ruby	US-800	Total
Proportion of varieties	0.6	0.2	0.2	1
Area	1181.4	393.8	393.8	1969
2011-12	29437	9090	9812	48339
2012-13	30561	9538	10187	50286
2013-14	31728	10008	10576	52312
2014-15	32940	10500	10980	54420
2015-16	34198	11017	11399	56614
2016-17	35504	11560	11835	58899
2017-18	36860	12129	12287	61276
2018-19	38268	12726	12756	63750
2019-20	39730	13353	13243	66326
2020-21	41247	14011	13749	69007
2021-22	42823	14701	14274	71798
2022-23	44458	15424	14819	74701

The tomato varieties grown in Dindigul district are Laxmi-555, Red Ruby and US-800 with the proportion of area of 0.60, 0.20 and 0.20, respectively. The yield gap per hectare of tomato in Dindigul district was 11000 kg in Laxmi-555, 13000 kg in Red Ruby and 11000 kg in US-800 variety. The required annual growth rate in productivity to bridge the existing overall yield gap in tomato is 3.82 per cent in the case of laxmi-555 and US-800 and 4.92 per cent in Ruby Red variety.. Doubling tomato production in the district may require an increase in the productivity from the existing average yield of 13.96 tonnes /ha in 2010-11 to 26.93 tonnes / ha in 2022-23. The projected production in the year 2022-23 by bridging the yield gap of existing tomato varieties is 74701 tonnes, which is excess over doubling the production target (54986 tonnes) by 19715 tonnes. Thus, it is inferred that doubling the production of tomato in Dindigul district could be over achieved by bridging the existing yield gap in different varieties with the existing allocation of area under tomato.

i. Potato

Table 3.44 Yield Gap in Potato (Kg/ Ha)

Variety	Yield Gap I	Yield Gap II	Overall Yield Gap
Kufri Jothi	4000	7200	11200

Source: Office of the Deputy Director of Horticulture, Dindigul

Table 3.45 Required Annual Growth Rate to cover Yield Gap in Potato

Ruling Varieties	Kufri Jothi
Potential Yield	24000
Progressive farmer yield	20000
Average Yield	12800
Overall Yield Gap	11200
Required Growth Rates	87.50
Annual Growth Rate	7.29

Source: Office of the Deputy Director of Horticulture, Dindigul

Table 3.46 Projected Yield of Potato (Kg/ Ha)

Year	Kufri Jothi
2010-11	12800
2011-12	13733
2012-13	14735
2013-14	15809
2014-15	16962
2015-16	18199
2016-17	19526
2017-18	20949
2018-19	22477
2019-20	24116
2020-21	25874
2021-22	27761
2022-23	29785

Table 3.47 Required Productivity for Doubling Production in Potato

Area under Potato	2596	Ha
Production	36136	tonnes
Yield	13.92	tonnes
Doubling the production	**72272**	tonnes
Required Yield	27.84	tonnes

Table 3.48 Projected Production of Potato (in Tonnes)

Year/ Variety	**KufriJothi**
Proportion of varieties	1
Area	2596
2011-12	35652
2012-13	38251
2013-14	41040
2014-15	44033
2015-16	47244
2016-17	50689
2017-18	54385
2018-19	58350
2019-20	62605
2020-21	67170
2021-22	72068
2022-23	77323

The potato variety grown in Dindigul district is Kufri jothi alone which is covering 100 per cent of potato area cultivated. The yield gap per hectare of potato in Dindigul district is 11200kg/ha. The required annual growth rate in productivity to bridge the existing overall yield gap in potato is 7.29 per cent.

Doubling onion potato in the district may require an increase in the productivity from the existing average yield of 13.92 tonnes /ha in 2010-11 to 27.84 tonnes / ha in 2022-23. The projected production in the year 2022-23 by bridging the yield gap of existing potato variety is 77323 tonnes, which is in excess of doubling the production target (72272 tonnes) by 5051tonnes.

Thus, it is inferred that doubling the production of potato in Dindigul district could fully be achieved by bridging the existing yield gap in potato variety with the existing allocation of area under potato.

j. Sorghum

Table 3.49 Yield Gap in Sorghum (Kg/ Ha)

Variety	Yield GAP I	Yield GAP II	Overall YG
Amarnath- 2000	500	900	1400
NS- 1027	400	1000	1400
KJH-6363	500	940	1440
PAC- 501	600	1000	1600
Local sorghum	700	400	1100

Source: Office of the Joint Director of Agriculture, Dindigul

Table 3.50 Required Annual Growth Rate to cover Yield Gap in Sorghum

Ruling Varieties	Amarnath 2000	NS1027	KJH-6363	PAC 501	Local sorghum
Potential Yield	5200	5000	5000	5200	2600
Progressive farmer yield	4700	4600	4500	4600	1900
Average Yield	3800	3600	3560	3600	1500
Overall Yield Gap	1400	1400	1440	1600	1100
Required Growth Rates	36.84	38.89	40.45	44.44	73.33
Annual Growth Rate	3.07	3.24	3.37	3.70	6.11

Source: Office of the Joint Director of Agriculture, Dindigul

Table.3.51 Projected Yield of Sorghum (Kg/ Ha)

Year	Amarnath-2000	NS-1027	KJH-6363	PAC- 501	Local sorghum
2010-11	3800	3600	3560	3600	1500
2011-12	3917	3717	3680	3733	1592
2012-13	4037	3837	3804	3872	1689
2013-14	4161	3961	3932	4015	1792
2014-15	4289	4090	4065	4164	1902
2015-16	4420	4222	4202	4318	2018
2016-17	4556	4359	4343	4478	2141
2017-18	4696	4500	4490	4644	2272
2018-19	4840	4646	4641	4816	2411
2019-20	4989	4797	4798	4994	2558
2020-21	5142	4952	4959	5179	2715
2021-22	5300	5113	5127	5371	2880
2022-23	5462	5279	5299	5570	3056

Table 3.52 Required Productivity for Doubling Production in Sorghum

Area under Sorghum	18349	Ha
Production	46017	tonnes
Yield	2.51	tonnes
Doubling the production	**92034**	tonnes
Required Yield	5.02	tonnes

Table 3.53 Projected Production of Sorghum (in Tonnes)

Year/ Variety	Amarnath 2000	NS-1027	KJH-6363	PAC-501	Local sorghum	Total
Proportion of varieties	0.05	0.03	0.01	0.01	0.9	1
Area	917.45	550.47	183.49	183.49	16514.1	18349
2011-12	3593	2046	675	685	26285	33284
2012-13	3704	2112	698	710	27891	35115
2013-14	3817	2181	722	737	29596	37053
2014-15	3935	2251	746	764	31404	39100
2015-16	4055	2324	771	792	33323	41265
2016-17	4180	2400	797	822	35360	43559
2017-18	4308	2477	824	852	37521	45982
2018-19	4440	2558	852	884	39814	48548
2019-20	4577	2641	880	916	42247	51261
2020-21	4717	2726	910	950	44829	54132
2021-22	4862	2814	941	985	47568	57170
2022-23	5011	2906	972	1022	50475	60386

The major sorghum varieties grown in Dindigul district were Amarnath-2000, NS-1027, KJH-6363, PAC-501 and local sorghum with the proportion of area of 0.05, 0.03, 0.01, 0.01, and 0.90, respectively. The yield gap per hectare of sorghum in Dindigul district varied from 1100kg in local sorghum to 1440 kg in KJH-6363 variety. The required annual growth rate in productivity to meet the existing overall yield gap in sorghum ranged from 3.07 in the case of Amarnath 2000, while it was found high in the case of local sorghum with 6.11. Doubling the sorghum production in the district may require an increase in the productivity from the existing yield of 2.51 tonnes/ha in 2010-11 to 5.02 tonnes/ ha in 2022-23. The projected production in the year 2022-23 by bridging the yield gap of existing sorghum varieties is 60386 tonnes, which falls short of doubling the production target (92034 tonnes) by 31648 tonnes. Thus, it is inferred that doubling the production of sorghum in Dindigul district could not be fully achieved, even after bridging

the existing yield gap in different varieties with the existing allocation of area under sorghum.

k. Coffee

Table 3.54 Yield Gap in Coffee (Kg of coffee rice/ Ha)

Variety	Yield GAP I	Yield GAP II	Overall Yield Gap
Arabica-S-5	300	380	680
Arabica-S-9	250	400	650
Arabica- Cauvery	350	450	800
Arabica- Chandragiri	500	450	950
Robusta- S-274	280	320	600
Old Robusta	250	350	600

Source: Office of the Deputy Director of Horticulture, Dindigul

Table 3.55 Required Annual Growth Rate to cover Yield Gap in Coffee

Ruling Varieties	Arabica - S-5	Arabica - S-9	Arabica-Cauvery	Arabica-Chandragiri	Robusta-S-274	Old - Robusta
Potential yield in Kg	1300	1250	1800	2000	1300	1200
Progressive farmer yield	1000	1000	1450	1500	1020	950
Average Yield	620	600	1000	1050	700	600
Overall Yield Gap	680	650	800	950	600	600
Required Growth Rates	109.68	108.33	80.00	90.48	85.71	100.00
Annual Growth Rate	9.14	9.03	6.67	7.54	7.14	8.33

Source: Office of the Deputy Director of Horticulture, Dindigul

Table 3.56 Projected Yield of Coffee (Kg/ Ha)

Year	Arabica-S-5	Arabica-S-9	Arabica-Cauvery	Arabica-Chandragiri	Robusta-S-274	Old Robusta
2010-11	620	600	1000	1050	700	600
2011-12	677	654	1067	1129	750	650
2012-13	739	713	1138	1214	804	704
2013-14	806	778	1214	1306	861	763
2014-15	880	848	1295	1404	922	826
2015-16	960	924	1381	1510	988	895
2016-17	1048	1008	1473	1624	1059	970
2017-18	1144	1099	1571	1747	1135	1051
2018-19	1248	1198	1676	1878	1216	1138

Year	Arabica-S-5	Arabica-S-9	Arabica-Cauvery	Arabica-Chandragiri	Robusta-S-274	Old Robusta
2019-20	1362	1306	1788	2020	1302	1233
2020-21	1487	1424	1907	2172	1396	1336
2021-22	1623	1553	2034	2336	1495	1447
2022-23	1771	1693	2169	2512	1602	1568

Table 3.57 Required Productivity for Doubling Production in Coffee

Area under Coffee	10579	ha
Production of coffee rice	3950	tonnes
Yield of coffee rice	0.37	tonnes
Doubling the production	**7900**	tonnes
Required Yield	0.75	tonnes

Table 3.58 Projected Production of Coffee (in Tonnes)

Variety	Arabica- S-5	Arabica- S-9	Arabica-Cauvery	Arabica-Chandragiri	Robusta-S-274	Old Robusta	Total
Proportion of varieties	0.16	0.16	0.24	0.24	0.02	0.18	1
Area	1692.64	1692.64	2538.96	2538.96	211.58	1904.22	10579
2011-12	1145	1107	2708	2867	159	1238	9224
2012-13	1250	1207	2889	3083	170	1341	9940
2013-14	1364	1316	3081	3316	182	1453	10712
2014-15	1489	1435	3287	3565	195	1574	11545
2015-16	1625	1565	3506	3834	209	1705	12444
2016-17	1774	1706	3740	4123	224	1847	13414
2017-18	1936	1860	3989	4434	240	2001	14460
2018-19	2113	2028	4255	4769	257	2168	15590
2019-20	2306	2211	4539	5128	276	2348	16808
2020-21	2516	2410	4841	5515	295	2544	18121
2021-22	2746	2628	5164	5931	316	2756	19541
2022-23	2997	2865	5508	6378	339	2985	21072

The coffee varieties grown in Dindigul district are Arabica- S-5, Arabica- S-9, Arabica- Cauvery, Arabica- Chandragiri, Robusta-S-274 and old Robusta with the proportion of area 0.16, 0.16, 0.24, 0.24, 0.02 and 0.18 respectively. The yield gap per hectare of coffee in Dindigul district ranged from 600 kg in Robusta-S-274 and old Robusta to 950 kg in Arabica- Chandragiri variety. The required annual growth rate in productivity to bridge the existing overall yield gap in coffee is 6.67 per cent in the case of Arabica- Cauvery, while it was found high in the case of Arabica- S-5 with 9.14 per cent. Doubling coffee production in the district may require an increase in the productivity from

the existing average yield of 0 .37 tonnes/ha in 2010-11 to 0.75 tonnes / ha in 2022-23. The projected production in the year 2022-23 by bridging the yield gap of existing coffee varieties is 21072 tonnes, which exceeds doubling the production target (7900tonnes) by 13172 tonnes. Thus, it is inferred that doubling the production of coffee in Dindigul district could be over achieved by bridging the existing yield gap in different varieties and with the existing allocation of area under coffee.

I. Tamarind

Table 3.59 Yield Gap in Tamarind (Kg/ Ha)

Variety	Yield Gap I	Yield Gap II	Overall Yield Gap
Local variety	2000	2000	8000
Urigam	2500	3500	2181

Source: Office of the Deputy Director of Horticulture, Dindigul

Table 3.60 Required Annual Growth Rate to cover Yield Gap in Tamarind

Ruling Varieties	local variety	Urigam
Potential Yield	10000	15000
Progressive farmer yield	8000	12500
Average Yield	6000	9000
Overall Yield Gap	4000	6000
Required Growth Rates	66.67	66.67
Annual Growth Rate	5.56	5.56

Source: Office of the Deputy Director of Horticulture, Dindigul

Table 3.61 Projected Yield of Tamarind (Kg/ Ha)

Year	local variety	Urigam
2010-11	6000	9000
2011-12	6333	9500
2012-13	6685	10028
2013-14	7057	10585
2014-15	7449	11173
2015-16	7862	11794
2016-17	8299	12449
2017-18	8760	13140
2018-19	9247	13870
2019-20	9761	14641
2020-21	10303	15454
2021-22	10875	16313
2022-23	11480	17219

Table 3.62 Required Productivity for Doubling Production in Tamarind

Area under Tamarind	4001	Ha
Production	12059	tonnes
Yield	3.01	tonnes
Doubling the production	24118	tonnes
Yield	6.03	tonnes

Table 3.63 Projected Production of Tamarind (in Tonnes)

Year/ Variety	local variety	Urigam	Total
Proportion of varieties	0.95	0.05	1
Area	3800.95	200.05	4001
2011-12	24073	1900	25973
2012-13	25410	2006	27416
2013-14	26822	2118	28940
2014-15	28312	2235	30547
2015-16	29885	2359	32244
2016-17	31545	2490	34035
2017-18	33297	2629	35926
2018-19	35147	2775	37922
2019-20	37100	2929	40029
2020-21	39161	3092	42253
2021-22	41337	3263	44600
2022-23	43633	3445	47078

The tamarind varieties grown in Dindigul district are local variety and urigam with the proportion of area of 0.95 and 0.05, respectively. The yield gap per hectare of tamarind in Dindigul district was 8000 kg in local variety and 2181 kg in urigam variety. The required annual growth rate in productivity to bridge the existing overall yield gap in tamarind is 5.56 per cent in the case of local variety and urigam as well. Doubling tamarind production in the district may require an increase in the productivity from the existing average yield of 3.01 tonnes /ha in 2010-11 to 6.03 tonnes / ha in 2022-23. The projected production in the year 2022-23 by bridging the yield gap of existing tamarind varieties is 47078 tonnes, which is in excess of doubling the production target (24118 tonnes) by 22960 tonnes. Thus, it is inferred that doubling the production of tamarind in Dindigul district could be over achieved by bridging the existing yield gap in different varieties with the existing allocation of area under tamarind.

M. Acid Lime

Table 3.64 Yield Gap in Acid lime (Kg/ Ha)

Variety	Yield GAP I	Yield GAP II	Overall Yield Gap
Local Variety	2000	3000	5000
PKM-1	4000	6000	10000

Source: Office of the Deputy Director of Horticulture, Dindigul

Table 3.65 Required Annual Growth Rate to cover Yield Gap in Acid lime

Ruling Varieties	Local Variety	PKM-I
Potential Yield	15000	25000
Progressive farmer yield	12000	21000
Average Yield	9000	16000
Overall Yield Gap	6000	9000
Required Growth Rates	66.67	56.25
Annual Growth Rate	5.56	4.69

Source: Office of the Deputy Director of Horticulture, Dindigul

Table 3.66 Projected Yield of Acid-lime (Kg/ Ha)

Year	Local Variety	PKM-I
2010-11	9000	16000
2011-12	9500	16750
2012-13	10028	17535
2013-14	10585	18357
2014-15	11173	19218
2015-16	11794	20118
2016-17	12449	21061
2017-18	13140	22049
2018-19	13870	23082
2019-20	14641	24164
2020-21	15454	25297
2021-22	16313	26483
2022-23	17219	27724

Table 3.67 Required Productivity for Doubling Production in Acid lime

Area under Acid lime	2351	ha
Production	13338	tonnes
Yield	5.67	tonnes
Doubling the production	26676	tonnes
Yield	11.35	tonnes

Table 3.68 Projected Production of Acid lime (in Tonnes)

Year/ Variety	Local Variety	PKM-I	Total
Proportion of varieties	0.8	0.2	1
Area	1880.8	470.2	2351
2011-12	17868	7876	25744
2012-13	18860	8245	27105
2013-14	19908	8632	28540
2014-15	21014	9036	30050
2015-16	22181	9460	31641
2016-17	23414	9903	33317
2017-18	24715	10367	35082
2018-19	26088	10853	36941
2019-20	27537	11362	38899
2020-21	29067	11895	40962

Year/ Variety	Local Variety	PKM-I	Total
2021-22	30682	12452	43134
2022-23	32386	13036	45422

The acid lime varieties grown in Dindigul district are local variety and PKM-1 with the proportion of area of 0.80 and 0.20, respectively. The yield gap per hectare of acid lime in Dindigul district was 5000 kg in local variety and 10000 kg in PKM-1 variety. The required annual growth rate in productivity to bridge the existing overall yield gap in acid lime is 5.56 per cent in the case of local variety and 4.69 per cent in PKM-1 variety.

Doubling acid lime production in the district may require an increase in the productivity from the existing average yield of 5.67 tonnes /ha in 2010-11 to 11.35 tonnes / ha in 2022-23. The projected production in the year 2022-23 by bridging the yield gap of existing acid lime varieties is 45422 tonnes, which is excess over doubling the production target (26676 tonnes) by 18746 tonnes. Thus, it is inferred that doubling the production of acid lime in Dindigul district could be over achieved by bridging the existing yield gap in different varieties with the existing allocation of area under acid lime.

N. Drum Stick

Table 3.69 Yield Gap in Drumstick (Kg/ Ha)

Variety	Yield GAP I	Yield GAP II	Overall Yield Gap
Annual moringa-PKM-1	4000	6000	10000
Tree Moringa- Local Variety	5000	5000	10000

Source: Office of the Deputy Director of Horticulture, Dindigul

Table 3.70 Required Annual Growth Rate to cover Yield Gap in Drumstick

Ruling Varieties	PKM-1	local variety
Potential Yield	50000	40000
Progressive farmer yield	46000	35000
Average Yield	40000	30000
Overall Yield Gap	10000	10000
Required Growth Rates	25.00	33.33
Annual Growth Rate	2.08	2.78

Source: Office of the Deputy Director of Horticulture, Dindigul.

Table 3.71 Projected Yield of Drum-stick (Kg/ Ha)

Year	PKM-1	local variety
2010-11	40000	30000
2011-12	40833	30833
2012-13	41684	31690
2013-14	42552	32570
2014-15	43439	33475
2015-16	44344	34405
2016-17	45268	35360
2017-18	46211	36343

Year	PKM-1	local variety
2018-19	47174	37352
2019-20	48156	38390
2020-21	49160	39456
2021-22	50184	40552
2022-23	51229	41678

Table 3.72 Required Productivity for Doubling Production in Drumstick

Area under Moringa	1841	ha
Production	58912	tonnes
Yield	32.00	tonnes
Doubling the production	117824	tonnes
Yield	64.00	tonnes

Table 3.73 Projected Production of Drumstick (in Tonnes)

Year/ Variety	PKM-1	local variety	Total
Proportion of varieties	0.8	0.2	1
Area	1472.8	368.2	1841
2011-12	60139	11353	71492
2012-13	61392	11668	73060
2013-14	62671	11992	74663
2014-15	63977	12325	76302
2015-16	65310	12668	77978
2016-17	66670	13020	79690
2017-18	68059	13381	81440
2018-19	69477	13753	83230
2019-20	70925	14135	85060
2020-21	72402	14528	86930
2021-22	73911	14931	88842
2022-23	75450	15346	90796

The drum stick varieties grown in Dindigul district are PKM-1 and local variety with the proportion of area of 0.80 and 0.20, respectively. The yield gap per hectare of drumstick in Dindigul district is 10000 kg/ ha both in the case of PKM-1 and local variety. The required annual growth rate in productivity to bridge the existing overall yield gap in drumstick is 2.08 in the case of PKM-1 and 2.78 per cent in the case of local variety.

Doubling drumstick production in the district may require an increase in the productivity from the existing average yield of 32 tonnes /ha in 2010-11 to 64 tonnes / ha in 2022-23. The projected production in the year 2022-23 by bridging the yield gap of existing drumstick varieties is 90796 tonnes, which falls short of doubling the production target (117824tonnes) by 27028 1tonnes. Thus, it is inferred that doubling the production of drumstick in Dindigul district could not fully be achieved, even after bridging the existing yield gap in different varieties with the existing area allocated under different drumstick varieties.

CHAPTER IV
BLOCK AND DISTRICT LEVEL PLAN

The interventions proposed, the associated outlays, the physical targets, budgetary requirements, time frame for achievements in the agricultural (field crops) sector, horticultural sector, agricultural engineering sector, agricultural marketing and animal husbandry sector, fisheries sector and PWD sector are discussed in this chapter. This would comprehend the activities and the achievements to be made in the next five years period (2017-2022) under NADP.

4.1. Agriculture Sector

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

4.1.1 Paddy

4.1.1.1.Enhancing rice productivity

Rice is one of the most important food grain crops of the state. However, the area under rice is declining due to failure of monsoon. Hence the requirement of rice for feeding the people is to be met only by increasing the productivity of paddy. System of Rice Intensification is one of the new technology which need awareness creation and adoption for improving the productivity of the crop. Encouraging SRI techniques apart from traditional techniques will improve the production and productivity of rice in Dindigul district. The agricultural technologies are being developed day to day and disseminated to the farming community for adoption and increased agricultural production. The System of Rice Intensification (SRI) is an innovative method comprising uncomplicated management practices that allow rice growers to attain higher productivity. The supply of quality inputs to farmers may be ensured by the availability of quality seeds in time to farmers for increasing productivity, training to farmers on seed production to ensure availability of required quantity of quality seeds of paddy. Thus the overall goal is to increase the yield and production of the rice grown in Dindigul district through the use of high yielding varieties along the adoption of the SRI techniques.

4.1.1.2. Project Components

- Distribution of certified seeds and its production have to be implemented in Natham, Nilakkottai, Athoor, Dindugal and Shanarpatti blocks.
- Promotion of SRI cultivation has to be implemented inPalani block.

- Distribution of MN mixture, Biofertilizer, Zinc sulphate and Polyvinyl coated Tarpaulin to be implemented in Athoor, Dindugal, Natham, Nilakkottai, Plalani and Shanarpatti
- Incentives for machine planting have to be implemented in Palani block.
- Distribution of herbicides to be implemented in palani block.

4.1.1.3. Budget

The budget requirement for various interventions is ₹ **223.29**Lakh for five years as shown in Table 4.1.

4.1.1.4. Expected outcome

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

4.1.1.5. Implementing agency

The projects will be implemented by the Department of Agriculture.

Table.4.1. Budget requirement for paddy

(₹ in Lakh)

Sl. No	Interventions	Unit	Unit Cost (in Rs.)	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Promotion of SRI	Ha	15000	B8	50	7.50	53	7.95	58	8.70	67	10.05	80	12.00	308	46.20
2	Distribution of High Yielding Varieties	MT	35000	B5,B8,B6,B3 ,B1,B10	21	7.35	22	7.70	23	8.05	25	8.75	29	10.15	120	42.00
3	Seed production - Certified class	MT	26000	B5,B8,B6,B3 ,B1,B10	21	5.46	22	5.72	23	5.98	25	6.50	29	7.54	120	31.20
4	Incentives for paddy machine planting	Ha	10000	B8	25	2.50	26	2.60	29	2.90	33	3.30	40	4.00	153	15.30
5	Distribution of Protray	No	80		0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
6	Distribution of MN mixture/ Copper Sulphate	Ha	1000	B5,B8,B6,B3 ,B1,B10	210	2.10	221	2.21	243	2.43	277	2.77	332	3.32	1283	12.83
7	Distribution of biofertilizer / PPFM / bioinputs / plant nutrient mobilizing bacteria	Ha	300	B5,B8,B6,B3 ,B1,B10	210	0.63	221	0.66	243	0.73	277	0.83	332	1.00	1283	3.85
8	Distribution of Zinc sulphate (Soil application & foliar)	Ha	1000	B5,B8,B6,B3 ,B1,B10	525	5.25	554	5.54	608	6.08	700	7.00	838	8.38	3225	32.25
9	Distribution of herbicides	Ha	1000	B8	100	1.00	105	1.05	116	1.16	133	1.33	160	1.60	614	6.14
10	Polyvinyl coated Tarpaulin (6m x 5m)	No	2000	B5,B8,B6,B3 ,B1,B10	110	2.20	117	2.34	128	2.56	146	2.92	175	3.50	676	13.52
11	Demonstration of drip irrigation	ha	100000	All Blocks	20	4.00	20	4.00	20	4.00	20	4.00	20	4.00	100	20.00
	Total					**37.99**		**39.77**		**42.59**		**47.45**		**55.49**		**223.29**

Athoor-B1, Batlagundu-B2, Dindigul-B3, Gujiliyamparai-B4, Natham-B5, Nilakkottai-B6, Oddanchahthiram-B7, Palani-B8, Reddiyarchahthiram-B9, Shanarpatti-B10, Thoppamppatti-B11, Vadamadurai-B12, Vedasandur-B13

4.1.2. Millets

4.1.2.1. Enhancing Millet Production

Millets being culturally stigmatized as ‘poor man’s crop is grown mainly under rainfed conditions in India. Maize, sorghum and cumbu are the major millets cultivated in most parts of Dindigul district of Tamil Nadu. In the recent years, concern for millets has been on the rise within India, however a steep fall in consumption can be presumed. The overall fall in demand is often attributed to factors like changing food habits, growing urbanization, increased incomes, and competition from other crops. While there has been a decline in area of all the millets, there is significant increase in area under maize, followed by sorghum and cumbu. This is mainly due to the strong industrial demand and the consequent stable attractive prices but this phenomenon has eroded out consumption in the area of production.

4.1.2.2. Project Component:

1. Production and distribution of quality seed material of minor millet, maize, sorghum and Cumbu have to be implemented in all blocks.
2. Distribution of MN mixture and Biofertilizer for Millets, Sorghum, Maize and Cumbu covering all blocks.
3. Distribution of herbicide for maize covering all blocks.
4. Drip irrigation for maize have to be implemented in all blocks.
5. Maize hybrid seed distribution in all blocks
6. Cumbu hybrid seed distribution have to be implement in Reddyarchattiram and Vadamadurai blocks.
7. Demonstration have to be implemented in all blocks.

4.1.2.3. Budget:

To enhance the production of millets in this district, a budget of ₹.5625.58 Lakh is proposed as given in Table 4.2.

4.1.2.4. Expected Outcome:

It is expected that the millet production would increase from 15 to 20 per cent from the exiting area under millet cultivation.

4.1.2.5. Implementing Agency:

The projects will be implemented by the Department of Agriculture.

Table 4.2. Budget requirement for Millets

(₹. in Lakh)

Sl. No	Components	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total Amount	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Millets															
1	Distribution on biofertilizer - Liquid / Carrier	Ha	0.003	All Blocks	15000	45.00	15752	47.26	17329	51.99	19929	59.79	23915	71.75	91925	275.78
2	Expansion of area under Minor Millets (Demo - supply of seed, seed treatment, MN mixture & Organic package)	Ha	0.05	All Blocks	3000	150.00	3152	157.60	3469	173.45	3989	199.45	4787	239.35	18397	919.85
	Sorghum															
3	Demonstration (supply of seed, seed treatment & MN mixture)	Ha	0.05	All Blocks	2850	142.50	2994	149.70	3296	164.80	3790	189.50	4548	227.40	17478	873.90
4	Distribution of biofertilizers Liquid / Carrier	Ha	0.003	All Blocks	2850	8.55	2994	8.98	3296	9.89	3790	11.37	4548	13.64	17478	52.43
5	Distribution of MN mixture (12.5kg/ha)	Ha	0.007	All Blocks	2850	19.95	2994	20.96	3296	23.07	3790	26.53	4548	31.84	17478	122.35
6	Seed distribution	MT	0.7	All Blocks	76.5	53.55	80	56.00	89	62.30	101	70.70	122	85.40	468.5	327.95
	Maize															
7	Demonstration (Supply of seed, seed treatment & MN mixture, organic package)	Ha	0.05	All Blocks	3050	152.50	3204	160.20	3527	176.35	4056	202.80	4867	243.35	18704	935.20
8	Distribution of biofertilizers Liquid / Carrier	Ha	0.003	All Blocks	3050	9.15	3204	9.61	3527	10.58	4056	12.17	4867	14.60	18704	56.11
9	Distribution of herbicides	Ha	0.008	All Blocks	3050	24.40	3204	25.63	3527	28.22	4056	32.45	4867	38.94	18704	149.63

Sl. No	Components	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total Amount	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
10	Drip irrigation for maize	Ha	1	All Blocks	160.5	160.50	169	169.00	188	188.00	215	215.00	256	256.00	988.5	988.50
11	Seed Distribution	MT	0.4	B11	2	0.80	2	0.80	2	0.80	2	0.80	2	0.80	10	4.00
12	Seed Distribution Hybrid seeds for maize	MT	1.8	All Blocks	9.5	17.10	11	19.80	11	19.80	11	19.80	11	19.80	53.5	96.30
	Cumbu															
13	Demonstration (Supply of seed, seed treatment & MN mixture, organic package)	Ha	0.05	All Blocks	275	13.75	291	14.55	321	16.05	369	18.45	443	22.15	1699	84.95
14	Distribution of biofertilizers Liquid / Carrier	Ha	0.003	B9,B11	45	0.14	47	0.14	52	0.16	59	0.18	71	0.21	274	0.82
15	Distribution of cumbu hybrid seed	MT	2.6	B9,B11	45	117.00	47	122.20	52	135.20	59	153.40	71	184.60	274	712.40
16	Distribution of MN mixture (12.5kg/ha)	Ha	0.007	All Blocks	275	1.93	291	2.04	321	2.25	369	2.58	443	3.10	1699	11.89
17	Seed Distribution	MT	0.53	All Blocks	5.5	2.92	5	2.65	5	2.65	5	2.65	5	2.65	25.5	13.52
	Total					**919.73**		**967.12**		**1065.55**		**1217.61**		**1455.58**		**5625.58**

Athoor-B1, Batlagundu-B2, Dindigul-B3, Gujiliyamparai-B4, Natham-B5, Nilakkottai-B6, Oddanchahthiram-B7, Palani-B8, Reddiyarchahthiram-B9, Shanarpatti-B10, Thoppamppatti-B11, Vadamadurai-B12, Vedasandur-B13

4.1.3. Pulses

4.1.3.1. Enhancing Pulses Production

Pulse crops have been an important component of agriculture since ancient times. Red gram, black gram, green gram, Bengal gram, horse gram, lentil, peas and beans, soya beans and cowpea are some of the important pulse crops grown in many parts of the country. The increase in area and production is attributed to the development of high yielding and MYMV resistant varieties suitable for cultivation in rabi season in rice fallows. Pigeon pea is yet another important source of vegetable protein, used either as dhal or as green vegetable which is largely grown in Dindigul district of Tamil Nadu. Pulses fit well under different cropping systems and thus have enormous potential for the future which needs to be capitalized. A horizontal expansion area under pulses could be possible in the district under new approaches of cultivation and improved package of practices.

4.1.3.2. Project Component:

1. Production and distribution of foundation/ Certified seeds covering all blocks
2. Distribution of Gypsum and Yellow sticky trap have to be implemented in palani block
3. Distribution of biofertilizer, MN mixture, DAPS, Pulse wonder, Weedicide, Plant protection chemicals covering all blocks.
4. Promotion of bund cropping, line sowing, seed treatment and soil application with *Trichoderma viridi* have to be implemented in blocks
5. Demonstration on cropping system has to be implemented in Palani and thoppampatti block.
6. Demonstration on pure crop and inter cropping of pulses with other crops has to be implemented in all blocks.

4.1.3.3. Budget:

To enhance the production of pulses in this district, a budget of ₹.3382.24 Lakh is proposed as shown in Table 4.3.

4.1.3.4. Expected Outcome:

It is expected that the pulses production would increase from 15 to 20 per cent from the existing area under pulses cultivation.

4.1.3.5. Implementing Agency:

The projects will be implemented by the Department of Agriculture.

Table 4.3. Budget requirement for Pulses

(₹. in Lakh)

Sl. No.	Interventions	Unit	Unit cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Production of Foundation/ Certified pulses seeds	MT	86000	All Blocks	73	62.78	76	65.36	83	71.38	94	80.84	111	95.46	437	375.82
2	Distribution of Certified Seeds	MT	100000	All Blocks	73	73.00	76	76.00	83	83.00	94	94.00	111	111.00	437	437.00
3	Distribution of Gypsum	ha	400	B8	28	0.11	29	0.12	32	0.13	37	0.15	44	0.18	170	0.68
4	Distribution of Biofertilizer/ Organic packages (Rhizobium + Phosphobacteria) - Liquid / Carrier	Ha	600	All Blocks	4825	28.95	5070	30.42	5580	33.48	6416	38.50	7700	46.20	29591	177.55
5	Distribution of Micro Nutrients(5 kgs/ Ha)	Ha	350	All Blocks	4825	16.89	5070	17.75	5580	19.53	6416	22.46	7700	26.95	29591	103.57
6	DAP Spray	Ha	700	All Blocks	4825	33.78	5070	35.49	5580	39.06	6416	44.91	7700	53.90	29591	207.14
7	Pulse wonder - 5 kg/ha	Ha	1000	All Blocks	4150	41.50	4361	43.61	4800	48.00	5519	55.19	6624	66.24	25454	254.54
8	Bund Cropping	Ha	300	All Blocks	3825	11.48	4020	12.06	4425	13.28	5088	15.26	6106	18.32	23464	70.39
9	Line sowing	Ha	2250	All Blocks	3825	86.06	4020	90.45	4425	99.56	5088	114.48	6106	137.39	23464	527.94
10	Distribution of Yellow sticky trap /pheromone trap	ha	1000	B8	77	0.77	81	0.81	89	0.89	102	1.02	122	1.22	471	4.71
11	Cropping system based demonstration	Ha	12500	B8,B11	184	23.00	193	24.13	213	26.63	245	30.63	294	36.75	1129	141.13
12	Distribution of weedicide	Ha	1000	All Blocks	3725	37.25	3911	39.11	4307	43.07	4952	49.52	5945	59.45	22840	228.40
13	Plant Protection Chemicals	Ha	1000	All Blocks	3725	37.25	3911	39.11	4307	43.07	4952	49.52	5945	59.45	22840	228.40

Sl. No.	Interventions	Unit	Unit cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
14	Seed treatment and soil application with Trichoderma viridi	Ha	700	All Blocks	5275	36.93	5540	38.78	6094	42.66	7009	49.06	8411	58.88	32329	226.30
15	Pure crop demonstration - Black gram and green gram	Ha	6300	All Blocks	410	25.83	435	27.41	480	30.24	554	34.90	664	41.83	2543	160.21
16	Demonstration on intercropping of pulses with other crops	Ha	8300	All Blocks	355	29.47	376	31.21	414	34.36	476	39.51	573	47.56	2194	182.10
17	Seed treatment with chemicals	Ha	250	All Blocks	3675	9.19	3863	9.66	4252	10.63	4889	12.22	5867	14.67	22546	56.37
	Total					**554.22**		**581.46**		**638.96**		**732.17**		**875.43**		**3382.24**

Athoor-B1, Batlagundu-B2, Dindigul-B3, Gujiliyamparai-B4, Natham-B5, Nilakkottai-B6, Oddanchahthiram-B7, Palani-B8, Reddiyarchahthiram-B9, Shanarpatti-B10, Thoppamppatti-B11, Vadamadurai-B12, Vedasandur-B13

4.1.4. Oilseeds

4.1.4.1. Enhancing the productivity of oilseeds

Oilseed is an important crop and a horizontal expansion area under could be possible in the country, under new niches of cultivation and improved package of practices. With a decreasing area under cultivation, the possibility to improve the production of oilseeds is only through increasing the productivity of oilseeds by the adoption of high yielding varieties and improved packages of practices.

4.1.4.2. Project components

- Production and distribution of certified seeds for different oil seeds covering all blocks
- Distribution of herbicide, biopesticide/ fungicide, seed treatment chemicals, bioagents, MNmixture, biofertilizer and liquid biofertilizer covering all blocks
- Application of Gypsum to groundnut crop have to be implemented in all crops except Batlagundu, Natham and Nilakkottai blocks.
- Distribution of Rhizobium/ PSB culture have to be implemented in all blocks except Bathlagundu, Natham and Nilakkottai.
- Combined nutrient spray and castor as bund crop have to be implemented in all blocks except Batlagundu, Natham and Nilakkottai.
- Seed drill sowing/ line sowing of groundnut with pulses as intercrop have to be implemented in all blocks except Batlagundu, Natham and Nilakkottai.

4.1.4.3. Budget

It is proposed to incur Rs.**223.18** Lakh over a period of five years with the finance facilities under the NADP and other sources as shown in table 4.4.

4.1.4.4. Expected outcome

The implementation of the above programme will result in an increase in the production of groundnut for major supply of quality raw material to the oilseed industry which will improve the income of the farmers

4.1.4.5. Implementing Agency

Department of Agriculture will implement the project

Table. 4.4. Budget requirement for Oilseeds

(₹. In Lakh)

Sl. No	Components	Unit	Unit Cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
I	**OILSEEDS**															
1	Herbicide	Ha	0.01	All Blocks Except B2,B5,B6	185	1.85	204	2.04	223	2.23	256	2.56	308	3.08	1176	11.76
2	Bio pesticide/ fungicide	Ha	0.01	All Blocks Except B2,B5,B6	185	1.85	204	2.04	223	2.23	256	2.56	308	3.08	1176	11.76
3	Compact Block Demonstration - Groundnut	Ha	0.2	All Blocks Except B2,B5,B6	87	17.40	94	18.80	108	21.60	126	25.20	148	29.60	563	112.60
4	Strengthening seed chain by certified seed production	Mt	0.73	All Blocks Except B2,B5,B6	2	1.68	0	0.00	0	0.00	0	0.00	0	0.00	2.3	1.68
5	Distribution of Certified seeds	Mt	0.84	All Blocks Except B2,B5,B6	2	1.93	0	0.00	0	0.00	0	0.00	0	0.00	2.3	1.93
6	Distribution of Seed Treatment Chemicals and Bioagents (T.Viridi)	Kg	0	All Blocks Except B2,B5,B6	19	0.03	19	0.03	19	0.03	19	0.03	23	0.03	98.5	0.15
7	Application of Gypsum to Groundnut Crop	Ha	0.02	All Blocks Except B2,B5,B6	185	2.96	204	3.26	223	3.57	256	4.10	308	4.93	1176	18.82
8	Distribution of Micro Nutrient Mixture	Ha	0.02	All Blocks Except B2,B5,B6	185	2.78	204	3.06	223	3.35	256	3.84	308	4.62	1176	17.64
9	Distribution of Biofertilizer	Ha	0.01	All Blocks Except B2,B5,B6	185	1.11	204	1.22	223	1.34	256	1.54	308	1.85	1176	7.06

Sl. No	Components	Unit	Unit Cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
10	Distribution of Liquid Biofertilizer	Ha	0.01	All Blocks Except B2,B5,B6	185	1.11	204	1.22	223	1.34	256	1.54	308	1.85	1176	7.06
11	Distribution of Rhizobium/ PSB Culture	Ha	0.01	All Blocks Except B2,B5,B6	185	1.11	204	1.22	223	1.34	256	1.54	308	1.85	1176	7.06
12	Castor as Bund crop	Ha	0.01	All Blocks Except B2,B5,B6	38	0.23	38	0.23	42	0.25	47	0.28	56	0.34	221	1.33
13	Combined Nutrient Spray	Ha	0.02	All Blocks Except B2,B5,B6	93	1.40	100	1.50	114	1.71	133	2.00	157	2.36	597	8.96
14	Seed Drill Sowing / Line sowing of Groundnut with Pulses as intercrop(hiring charges only)	Ha	0.03	All Blocks Except B2,B5,B6	37	1.11	38	1.14	42	1.26	47	1.41	56	1.68	220	6.60
15	Seeddrill Sowing of Groundnut with Redgram as Intercrop	Ha	0.04	All Blocks Except B2,B5,B6	37	1.48	38	1.52	42	1.68	47	1.88	56	2.24	220	8.80
	Total					**38.02**		**37.29**		**41.92**		**48.46**		**57.50**		**223.18**

Athoor-B1, Batlagundu-B2, Dindigul-B3, Gujiliyamparai-B4, Natham-B5, Nilakkottai-B6, Oddanchahthiram-B7, Palani-B8, Reddiyarchahthiram-B9, Shanarpatti-B10, Thoppamppatti-B11, Vadamadurai-B12, Vedasandur-B13

4.1.5. Cotton

4.1.5.1. Enhancing Cotton Production

Cotton is one of the principal crops of India and plays a vital role in the country's economic growth by providing substantial employment and making significant contributions to export earnings. The growth and modernization of the spinning industry has led to a substantial growth in cotton consumption. Cotton is another major crop cultivated by the farmers of Dindigul district. However, adoption of improved package of practices by the farmers with the use of quality seeds, water management, marketing infrastructure and processing is the utmost concern for improvement of cotton yield.

4.1.5.2. Project Component:

1. Distribution of certified and hybrid seed covering Palani, Reddyarchathiram and Thoppampatti blocks.
2. Distribution of biofertilizer, biopesticide/ bio agents, TNAU cotton plus, MN mixture, Cotton picking machine, PP chemicals, Yellow sticky trap and Weedicide covering Palani, Reddyarchatiram and Thoppampatti blocks.
3. Intercropping with pulses and Trails on high density planting system in cotton have to be implemented in Palani, Reddyarchatiram and Thoppampatti blocks.
4. Frontline Demonstration on ICM, Desi and ELS cotton have to be implemented in Palani, Reddyarchatiram and Thoppampatti blocks.
5. Distribution of cotton and summer plough have to be implemented in Palani, Reddyarchatiram and Thoppampatti blocks.

4.1.5.3. Budget:

To enhance the production of cotton in this district, a budget of **₹.1644.84** Lakh is proposed as shown in table 4.5.

4.1.5.4. Expected Outcome:

The implementation of the above intervention will result in an increase in the production of cotton as well as supply of quality raw material to the textile industry which will improve the income of the farmers.

4.1.5.5. Implementing Agency:

The projects will be implemented by the Department of Agriculture.

Table. 4.5. Budget requirement for Cotton

(₹. in Lakh)

Sl. No	Components	Unit	Unit Cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Cotton seed treatment	Ha	300	B8,B9,B11	300	0.90	315	0.95	347	1.04	399	1.20	479	1.44	1840	5.52
2	Distribution of biofertilizer	Ha	300	B8,B9,B11	700	2.10	735	2.21	809	2.43	931	2.79	1117	3.35	4292	12.88
3	Distribution of biopesticides / Bio agents	Ha	1000	B8,B9,B11	700	7.00	735	7.35	809	8.09	931	9.31	1117	11.17	4292	42.92
4	Distribution of cotton picking machine	No	5000	B8,B9,B11	8	0.40	8	0.40	8	0.40	9	0.45	10	0.50	43	2.15
5	Distribution of MN Mixture	Ha	1000	B8,B9,B11	700	7.00	735	7.35	809	8.09	931	9.31	1117	11.17	4292	42.92
6	Distribution of PP chemicals	Ha	1000	B8,B9,B11	700	7.00	735	7.35	809	8.09	931	9.31	1117	11.17	4292	42.92
7	Distribution of Yellow Sticky trap	No	3000	B8,B9,B11	20	0.60	21	0.63	24	0.72	28	0.84	33	0.99	126	3.78
8	Exposure visits	No	40000	B8,B9,B11	7	2.80	7	2.80	7	2.80	7	2.80	8	3.20	36	14.40
9	Farmers training	No	20000	B8,B9,B11	7	1.40	7	1.40	7	1.40	7	1.40	8	1.60	36	7.20
10	Intercropping with pulses	Ha	10000	B8,B9,B11	100	10.00	105	10.50	116	11.60	133	13.30	160	16.00	614	61.40
11	TNAU Cotton plus distribution (6 Kg./ Ha)	Ha	1200	B8,B9,B11	100	1.20	105	1.26	116	1.39	133	1.60	160	1.92	614	7.37
12	Frontline demo on ICM in cotton	Ha	7000	B8,B9,B11	12	0.84	12	0.84	13	0.91	14	0.98	18	1.26	69	4.83
13	Frontline Demo on Desi and ELS cotton seed production	Ha	8000	B8,B9,B11	4	0.32	4	0.32	4	0.32	4	0.32	4	0.32	20	1.60
14	Trials on High Density Planting system in cotton	Ha	9000	B8,B9,B11	4	0.36	4	0.36	4	0.36	4	0.36	4	0.36	20	1.80

Sl. No	Components	Unit	Unit Cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
15	Application of weedicide	Ha	3000	B8,B9,B11	700	21.00	735	22.05	809	24.27	931	27.93	1117	33.51	4292	128.76
16	Topping of cotton	Ha	1000	B8,B9,B11	700	7.00	735	7.35	809	8.09	931	9.31	1117	11.17	4292	42.92
17	Summer ploughing	Ha	7500	B8,B9,B11	2350	176.25	2469	185.18	2716	203.70	3123	234.23	3747	281.03	14405	1080.38
18	Distribution of Certified seed	MT	115000	B8,B9,B11	2	2.30	3	3.45	3	3.45	3	3.45	3	3.45	14	16.10
19	Distribution of Hybrid seed	MT	2500000	B8,B9,B11	1	25.00	1	25.00	1	25.00	1	25.00	1	25.00	5	125.00
	Total					**273.47**		**286.74**		**312.15**		**353.88**		**418.60**		**1644.84**

Athoor-B1, Batlagundu-B2, Dindigul-B3, Gujiliyamparai-B4, Natham-B5, Nilakkottai-B6, Oddanchahthiram-B7, Palani-B8, Reddiyarchahthiram-B9, Shanarpatti-B10, Thoppamppatti-B11, Vadamadurai-B12, Vedasandur-B13

4.1.6. Sugarcane

4.1.6.1. Enhancing Sugarcane Production

There is scope for increasing the production and productivity of sugarcane through scientific precision farming method which have been already successfully demonstrated in this district. Inclusion of water soluble fertilizers and drip method could save the water, cost of cultivation and lead to increase of productivity in sugarcane

4.1.6.2. Project Component:

- Sustainable Sugarcane Initiative (SSI) through establishment of Shadenet in Palani block and distribution of single bud seedling in Palani, Nilakkottai and Thomppampatti blocks.
- Distribution of biofertilizer, Weedicide, Chip cutter, MN mixture, Parasite Trichogramma, Sugarcane booster, and Drip irrigation have to be implemented in Palani, Nilakkottai and Thomppampatti blocks.
- Trash Mulching have to be implemented in Palani, Nilakkottai and Thomppampatti blocks.
- Demonstration on intercropping in Sugarcane have to be implemented in Nilakkottai and Palani blocks.

4.1.6.3. Budget:

To enhance the production of sugarcane in this district, a budget of **₹703.23** Lakh is proposed as shown in table 4.6.

4.1.6.4. Expected Outcome:

Minimum of 5 to 10 tonnes increase in cane production per hectare could be achieved.

4.1.6.5. Implementing Agency:

The projects will be implemented by the Department of Agriculture.

Table .4.6. Budget requirement for Sugarcane

(₹. in Lakh)

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Distri. of biofertilizer (Ha)	Ha	0.006	B6,B8,B11	135	0.81	142	0.85	157	0.94	180	1.08	217	1.30	831	4.99
2	Distri. of weedicide (Ha)	Ha	0.01	B6,B8,B11	135	1.35	142	1.42	157	1.57	180	1.80	217	2.17	831	8.31
3	Distribution of Chip Cutter	Nos	0.05	B6,B8,B11	6	0.30	6	0.30	6	0.30	7	0.35	8	0.40	33	1.65
4	Distribution of Micro Nutrient Mixture	Ha	0.02	B6,B8,B11	340	6.80	358	7.16	393	7.86	451	9.02	541	10.82	2083	41.66
5	Distribution of Parasite Trichogramma	Ha	0.001 25	B6,B8,B11	340	0.43	358	0.45	393	0.49	451	0.56	541	0.68	2083	2.60
6	Distribution of Sugarcane Booster (10 Kg/Ha)	Ha	0.035	B6,B8,B11	135	4.73	142	4.97	157	5.50	180	6.30	217	7.60	831	29.09
7	Microirrigation - Drip (1.2x0.6)	ha	1.24	B6,B8,B11	65	80.60	69	85.56	76	94.24	88	109.12	105	130.20	403	499.72
	Sustainable Sugarcane Initiative (SSI)															
8	A. Establishment of Shadenet	Nos	1.5	B8	1	1.50	1	1.50	1	1.50	1	1.50	1	1.50	5	7.50
9	B.Distribution of Single Bud Seedling	Ha	0.225	B6,B8,B11	13	2.93	14	3.15	15	3.38	17	3.83	21	4.73	80	18.00
10	Trash Mulching	Ha	0.04	B6,B8,B11	340	13.60	358	14.32	393	15.72	451	18.04	541	21.64	2083	83.32
11	Demonstration on intercropping in Sugarcane	Ha	0.08	B6,B8	13	1.04	14	1.12	15	1.20	17	1.36	21	1.68	80	6.40
	Grand Total					**114.08**		**120.80**		**132.69**		**152.96**		**182.71**		**703.23**

Athoor-B1, Batlagundu-B2, Dindigul-B3, Gujiliyamparai-B4, Natham-B5, Nilakkottai-B6, Oddanchahthiram-B7, Palani-B8, Reddiyarchahthiram-B9, Shanarpatti-B10, Thoppamppatti-B11, Vadamadurai-B12, Vedasandur-B13

4.1.7. Coconut

4.1.7.1. Enhancing Coconut Cultivation

The coconut being called as the *"Kalpavriksha"* is a benevolent crop and a perfect gift to mankind. The demand for coconuts in the country is mainly for the purpose for which they are utilized in the various form for consumption. The processing and related activities centered on the crop generate employment opportunities for over two million people in India. Coconut is one among the important crop in Dindigul district is cultivated in an area of about 28292 ha and the yield is around 19008 nuts/ ha. To make the coconut cultivation more viable, integrated farming system under the coconut plantations should be promoted through issuing of subsidy to the potential farmers and plantations. Distribution of micro nutrient mixture and bio fertilizers to increase the yield and quality of coconut can be made in the district. Though there was significant improvement in area expansion and coconut production, the improvement in productivity was not satisfactory. Thus increasing the productivity, reducing the cost of production, integrated farming, farm level processing, proper value addition, product diversification and byproduct utilization coupled with effective marketing strategies and market promotional activities can definitely make the coconut industry more competitive and sustainable in the state of Tamil Nadu.

4.1.7.2. Project components

- Distribution of seedlings Tall, T X D and D X T hybrid covering all blocks.
- Distribution of micro nutrient mixture or coconut tonic, Boom sprayer, Power operated coconut leaf shredder, Rocker sprayer and Pheromone traps have to be implemented in all blocks
- Distribution of tree climbers and drip irrigation have to be implemented in all blocks
- Intercropping with green manure, Replanting and Rejunvation of coconut garden have to be implemented in all blocks
- Management of black headed caterpillar and Thanjavur wilt management practices have to be implemented in all blocks.
- Demonstration on Integrated fertilizer management have to be implemented in all blocks
- Distribution of Coconut seedlings to school childrens covering all blocks
- Corpus fund release for FPG (2000 No's) have to be implemented in all blocks.
- Control of Eriophid mite and Slug caterpillar in all blocks.

4.1.7.3. Budget

The total cost of the project for five years works to ₹ **6806.29** Lakh for five years period as shown in table 4.7.

4.1.7.4. 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.

4.1.7.5. Implementing agency

The projects will be implemented by the Department of Agriculture.

Table.4.7 Budget requirement for Coconut

(₹. In Lakh)

Sl. No	Interventions	Unit	Unit cost	Blocks coverd	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Distribution of T x D hybrid seedlings	No	0.0006	All Blocks	48500	29.10	50925	30.56	56021	33.61	64422	38.65	77304	46.38	297172	178.30
2	Distribution of Tall Seedlings	No	0.0004	All Blocks	48500	19.40	50925	20.37	56021	22.41	64422	25.77	77304	30.92	297172	118.87
3	Boom sprayer	No	0.2	All Blocks	32	6.40	32	6.40	32	6.40	38	7.60	44	8.80	178	35.60
4	Distribution of D xT hybrid Seedlings	No	0.0015	All Blocks	875	1.31	920	1.38	1015	1.52	1165	1.75	1400	2.10	5375	8.06
5	Distribution of power operated coconut leaf shredder	No	0.6	All Blocks	19	11.40	19	11.40	19	11.40	19	11.40	19	11.40	95	57.00
6	Distribution of MN mixture	Ha	0.1	All Blocks	940	94.00	991	99.10	1091	109.10	1253	125.30	1504	150.40	5779	577.90
7	Distribution of Pheromone traps for Red palm weevil/ Rhinocerous beetle	Ha	0.016	All Blocks	180	2.88	190	3.04	210	3.36	240	3.84	287	4.59	1107	17.71
8	Distribution of power operated rocker sprayer	No	0.1	All Blocks	16	1.60	16	1.60	16	1.60	16	1.60	16	1.60	80	8.00
9	Distribution of tree climbers	No	0.15	All Blocks	39	5.85	39	5.85	40	6.00	46	6.90	52	7.80	216	32.40
10	Drip irrigation	Ha	0.35	All Blocks	830	290.50	875	306.25	964	337.40	1108	387.80	1331	465.85	5108	1787.80
11	Intercropping with green manures	Ha	0.03	All Blocks	96	2.88	102	3.06	113	3.39	130	3.90	154	4.62	595	17.85
12	Management of Black headed caterpillar	Ha	0.05	All Blocks	830	41.50	875	43.75	964	48.20	1108	55.40	1331	66.55	5108	255.40
13	Replanting and Rejunation of coconut gardens	Ha	0.45	All Blocks	890	400.50	938	422.10	1033	464.85	1186	533.70	1424	640.80	5471	2461.95

Sl. No	Interventions	Unit	Unit cost	Blocks coverd	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
14	Thanjavur wilt management (root feeding /soil application)	Ha	0.03	All Blocks	125	3.75	134	4.02	149	4.47	173	5.19	208	6.24	789	23.67
15	Demonstration on Integrated fertiliser management	Ha	0.75	All Blocks	220	165.00	233	174.75	255	191.25	290	217.50	347	260.25	1345	1008.75
16	Distribution of coconut seedlings to school children	No	0.0004	All Blocks	1900	0.76	1995	0.80	2198	0.88	2527	1.01	3034	1.21	11654	4.66
17	Control of Eriophid mite	No. of tree	0.0002	All Blocks	4030	0.81	4235	0.85	4660	0.93	5360	1.07	6431	1.29	24716	4.94
18	Control of slug caterpillar	No. of tree	0.0003	All Blocks	4030	1.21	4235	1.27	4660	1.40	5360	1.61	6431	1.93	24716	7.41
19	corpus fund release for FPG (2000 nos.)	No	5	All Blocks	40	200.00	0	0.00	0	0.00	0	0.00	0	0.00	40	200.00
	Grand Total					**1278.85**		**1136.54**		**1248.17**		**1429.99**		**1712.74**		**6806.29**

Athoor-B1, Batlagundu-B2, Dindigul-B3, Gujiliyamparai-B4, Natham-B5, Nilakkottai-B6, Oddanchahthiram-B7, Palani-B8, Reddiyarchahthiram-B9, Shanarpatti-B10, Thoppamppatti-B11, Vadamadurai-B12, Vedasandur-B13

4.1.8. Training to farmers

4.1.8.1. Enhancing the livelihood of farmers through training

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

4.1.8.2. Project components

- Training to farmers within the district have to be implemented in all blocks.
- Awareness campaign have to be organised in all blocks
- Training on minor and major millets and pulses have to be implemented in all blocks
- Training on paddy have to implement in Nilakkottai and Sugarcane in Palani blocks
- Rodent pest management have to be implemented in all blocks.
- Exposure visist within district and state have to be implemented in all blocks.

4.1.8.3. Budget

It is proposed to incur **₹.82.25** Lakh over a period of five years with the finance facilities under the NADP and other sources as shown in Table 4.8.

4.1.8.4. Expected outcome

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

4.1.8.5. Implementing Agency

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

Table. 4.8 Budget requirement for training

(₹. In Lakh)

Sl. No	Interventions	Unit	Unit Cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Training of Farmers															
1	With in the district training of Farmers	Nos.	0.1	All Blocks	16	1.60	16	1.60	16	1.60	16	1.60	16	1.60	80	8.00
	Training of Farmers With in the district															
2	Awareness campaigns	Nos.	0.1	All Blocks	24	2.40	24	2.40	24	2.40	24	2.40	24	2.40	120	12.00
3	Major & Minor Millets	Nos.	0.1	All Blocks	17	1.70	17	1.70	17	1.70	17	1.70	17	1.70	85	8.50
4	Paddy	Nos.	0.1	B6	1	0.10	1	0.10	1	0.10	1	0.10	1	0.10	5	0.50
5	Pulses	Nos.	0.1	All Blocks	17	1.70	17	1.70	17	1.70	17	1.70	17	1.70	85	8.50
6	Sugarcane	Nos.	0.1	B8	1	0.10	1	0.10	1	0.10	1	0.10	1	0.10	5	0.50
	Exposure visit of Farmers															
7	Rodent Pest Management Demonstration	Nos.	0.04	All Blocks	15	0.60	15	0.60	15	0.60	15	0.60	15	0.60	75	3.00
8	With in State Exposure visit	Nos.	0.4	All Blocks	15	6.00	15	6.00	15	6.00	15	6.00	15	6.00	75	30.00
9	With in the district exposure visit	Nos.	0.15	All Blocks	15	2.25	15	2.25	15	2.25	15	2.25	15	2.25	75	11.25
	TOTAL					**16.45**		**16.45**		**16.45**		**16.45**		**16.45**		**82.25**

Athoor-B1, Batlagundu-B2, Dindigul-B3, Gujiliyamparai-B4, Natham-B5, Nilakkottai-B6, Oddanchahthiram-B7, Palani-B8, Reddiyarchahthiram-B9, Shanarpatti-B10, Thoppamppatti-B11, Vadamadurai-B12, Vedasandur-B13

4.1.9. Infrastructure

4.1.9.1. Facilities for Seed production

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

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

4.1.9.2. Establishment of Laboratories

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

The Agricultural Research - NABL Accreditation lab, Organic Fertilizer Testing laboratory, Bio-Fertilizer Quality Control Laboratory, Pesticide Residual Laboratory and laboratory for leaf analysis for selective nutrient application, Soil Testing Laboratory and Fertilizer Control Laboratory, Strengthening of Mobile Soil Testing Laboratory for Ensuring Soil Health were proposed with a budget outlay of ₹. **707.75** Lakh as shown in table 4.9.

4.1.9.3. The major interventions are

1. Construction of Seed godown in Reddiyarchathiram block.
2. Distribution of Dunnage, Moisture meter, Bag closure, Electronic Platform balance, Seed rack, Tarpaulin, Office furnishing and other amenities covering all blocks.

Table. 4.9. Budget requirement for Infrastructure

(₹. In Lakh)

Sl. No	Components	Unit	Unit Cost (in Rs.)	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Seed Godown (300 MT)	Nos.	2500000	B9	0	0.00	0	0.00	1	25.00	0	0.00	0	0.00	1	25.00
2	Dunnage	Nos.	7500	All Blocks	0	0.00	175	13.13	0	0.00	45	3.38	54	4.05	274	20.55
3	Moisture meter	Nos.	25000	All Blocks	0	0.00	16	4.00	0	0.00	0	0.00	0	0.00	16	4.00
4	Bag closure	Nos.	10000	All Blocks	0	0.00	16	1.60	0	0.00	0	0.00	0	0.00	16	1.60
5	Electronic platform balance	Nos.	150000	All Blocks	0	0.00	16	24.00	0	0.00	0	0.00	0	0.00	16	24.00
6	Seed rack	Nos.	30000	All Blocks	0	0.00	92	27.60	0	0.00	0	0.00	0	0.00	92	27.60
7	Tarpaulin	Nos.	25000	All Blocks	0	0.00	92	23.00	0	0.00	0	0.00	0	0.00	92	23.00
8	Office Furnishings and other amenities	Nos.	200000	All Blocks	0	0.00	16	32.00	0	0.00	0	0.00	0	0.00	16	32.00
9	Strengthening of training institute / nursery / FTC / KVK	Nos.	50000000	All Blocks	0	0.00	0	0.00	0	0.00	1	500.00	0	0.00	1	500.00
10	Infrastructure for empowerment of coconut nurseries	Nos.	5000000	All Blocks	0	0.00	0	0.00	0	0.00	0	0.00	1	50.00	1	50.00
	Grand total					**0.00**		**125.33**		**25.00**		**503.38**		**54.05**		**707.75**

Athoor-B1, Batlagundu-B2, Dindigul-B3, Gujiliyamparai-B4, Natham-B5, Nilakkottai-B6, Oddanchahthiram-B7, Palani-B8, Reddiyarchahthiram-B9, Shanarpatti-B10, Thoppamppatti-B11, Vadamadurai-B12, Vedasandur-B13

4.1.10. Soil Health Management

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.

4.1.10.1. Project Component:

1. Establishment of permanent and HDPE vericompost unit have to be implemented in all blocks.
2. Production of enriched FYM and composting of farm waste through *Pluerotus* have to be implemented in all blocks.
3. Promotion of green manuring in all blocks.
4. Procurement and distribution of blue green algae have to be implemented in all blocks
5. Distribution of enriched press mud have to be implemented in all blocks.

4.1.10.2. Budget:

Enhancing soil health by distributing enriched farm yard manure, micro-nutrient mixture, gypsum, bio-fertilizers, *etc.* is essential to maximize profitability. The overall budget to undertake the various interventions in Dindigul district is **₹. 208.96** Lakh as shown in Table in 4.10.

Expected Outcome:

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

4.1.10.3. Implementing Agency:

The projects will be implemented by the Department of Agriculture.

Table. 4.10. Budget requirement for Soil Health Management

(₹. In Lakh)

Sl. No	Components	Unit	Unit Cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Soil Health Management															
1	Permanent Vermi compost units	Cluster Nos.	50000	All Blocks	15	7.50	15	7.50	15	7.50	15	7.50	15	7.50	75	37.50
2	HDPE Vermi compost units	Kit Nos	12000	All Blocks	15	1.80	15	1.80	15	1.80	15	1.80	15	1.80	75	9.00
3	Green Manuring	Nos	4000	All Blocks	625	25.00	662	26.48	725	29.00	837	33.48	1000	40.00	3849	153.96
4	Procurement and Distribution of Blue Green Algae	Nos	2500	All Blocks	25	0.63	25	0.63	25	0.63	25	0.63	25	0.63	125	3.13
5	Production of Enriched FYM	MT	2500	All Blocks	25	0.63	25	0.63	25	0.63	25	0.63	25	0.63	125	3.13
6	Composting of Farm Waste Through Pluerotus (Production and Distribution of Kits)	MT	200	All Blocks	125	0.25	137	0.27	150	0.30	175	0.35	212	0.42	799	1.60
7	Distribution of Enriched Pressmud (37.5 Mt/ha)	units	1000	All Blocks	13	0.13	13	0.13	13	0.13	13	0.13	13	0.13	65	0.65
	Total					**35.93**		**37.43**		**39.98**		**44.51**		**51.10**		**208.96**

Athoor-B1, Batlagundu-B2, Dindigul-B3, Gujiliyamparai-B4, Natham-B5, Nilakkottai-B6, Oddanchahthiram-B7, Palani-B8, Reddiyarchahthiram-B9, Shanarpatti-B10, Thoppamppatti-B11, Vadamadurai-B12, Vedasandur-B13

4.1.11 Rainfed Area Development

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

4.1.11.1. Project components

- Stress management in crops by the Application of Pink Pigmented Facultative Methylotrophs (PPFM spray)/ Kcl Spray have to be implemented in all blocks.
- Small ruminant (9+1) + 1 ha cropping system with inter crop & border plantation like castor/sesbania etc. have to be implemented in all blocks.
- Creation of farm pond and organic mulching have to be implemented in all blocks
- Soil moisture conservation strategies (contour bunding/dust mulching/polythene mulch etc.,) covering all blocks.
- Promotion of Farmers club for sustainable dryland agriculture covering all blocks.

4.1.11.2. Budget

It is proposed to incur **₹. 3913.68** Lakh over a period of five years with the finance facilities under the NADP and other sources as shown in table 4.11.

4.1.11.3 . 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

4.1.11.4. 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 Programme

(₹. In Lakh)

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Stress Management in crops by the Application of Pink Pigmented Facultative Methylotrophs (PPFM spray)/ Kcl Spray	Ha	0.004	All Blocks	65	0.26	65	0.26	78	0.31	91	0.36	104	0.42	403	1.61
2	Small ruminant (9+1)+ 1 ha Tree based farming system (Cropping system with inter crop & border plantation like castor/sesbania etc.) @ Rs.23500/ as subsidy per Unit	Ha	0.47	All Blocks	13	6.11	13	6.11	13	6.11	13	6.11	13	6.11	65	30.55
3	Organic Mulching	Ha	0.06	All Blocks	13	0.78	13	0.78	13	0.78	13	0.78	13	0.78	65	3.90
4	Creation of Farm pond	Nos.	0.75	All Blocks	13	9.75	13	9.75	13	9.75	13	9.75	13	9.75	65	48.75
5	Soil Moisture conservation strategies(contour bunding/Dust mulching/Polythene mulch etc.)	Ha.	0.1	All Blocks	13	1.30	13	1.30	13	1.30	13	1.30	13	1.30	65	6.50
6	Promotion of Farmers club for Sustainable Dryland Agriculture	Cluster	84.94 15	All Blocks	26	2208.48	19	1613.89	0	0.00	0	0.00	0	0.00	45	3822.37
	Grand Total					**2226.68**		**1632.09**		**18.25**		**18.30**		**18.36**		**3913.68**

Athoor-B1, Batlagundu-B2, Dindigul-B3, Gujiliyamparai-B4, Natham-B5, Nilakkottai-B6, Oddanchahthiram-B7, Palani-B8, Reddiyarchahthiram-B9, Shanarpatti-B10, Thoppamppatti-B11, Vadamadurai-B12, Vedasandur-B13

4.1.11. Farm Mechanization

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

4.1.12.1. Project Component:

1. Distribution of tractor in Palani, Reddyarchathiram and Thoppampatti blocks.
2. Distribution of Power tiller, Paddy transplanter and power weeder have to be implemented in Palani block.
3. Distribution of battery operated, power operated sprayer, mobile sprinkler, Rotavotor, Rainguns and Tarpaulin have to be implemented in all blocks.
4. Distibution of chaff cutter and pumpset have to be implemented in all blocks except Reddyarchathiram and Thoppampatti blocks.
5. Distribution of Tractor drawn seed cum fertilizer drill in all blocks.
6. Supply of PVC pipes to carry irrigation water from source to field have to be implemented in all blocks.

4.1.12.2.Budget:

Agricultural mechanization programs are proposed to implement in a big way to increase the agricultural production and to popularize the agricultural machinery among the farmers of this district with a budget of **₹. 982.55** Lakh as shown in table 4.12.

4.1.12.3. Expected Outcome:

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

4.1.12.4. Implementing Agency:

The projects will be implemented by the Department of Agriculture.

Table.4.12. Budget requirement for Machineries

(₹. In Lakh)

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
	Farm Mechanization															
1	Battery operated sprayer	Nos.	4000	All Blocks	47	1.88	47	1.88	51	2.04	55	2.20	68	2.72	268	10.72
2	Power operated sprayer	Nos.	8000	All Blocks	47	3.76	47	3.76	51	4.08	55	4.40	68	5.44	268	21.44
3	Distribution of chaff cutter	Nos	25000	All Blocks Except B9,B11	12	3.00	12	3.00	12	3.00	12	3.00	12	3.00	60	15.00
4	Distribution of Mobile Sprinklers	Ha	30000	All Blocks	65	19.50	65	19.50	78	23.40	91	27.30	104	31.20	403	120.90
5	Distribution of Paddy transplanter	Nos	1200000	B8	2	24.00	2	24.00	2	24.00	2	24.00	2	24.00	10	120.00
6	Distribution of Power Weeder	Nos	65000	B8	5	3.25	5	3.25	6	3.90	7	4.55	8	5.20	31	20.15
7	Distribution of Powertiller	Nos	150000	B8	5	7.50	5	7.50	6	9.00	7	10.50	8	12.00	31	46.50
8	Distribution of Pumpset	Nos	30000	All Blocks Except B9,B11	25	7.50	25	7.50	26	7.80	27	8.10	28	8.40	131	39.30
9	Distribution of Rain guns	Ha	40000	All Blocks	65	26.00	65	26.00	78	31.20	91	36.40	104	41.60	403	161.20
10	Distribution of Rotavator	Nos	80000	All Blocks	18	14.40	18	14.40	18	14.40	18	14.40	19	15.20	91	72.80
11	Distribution of Tarpaulins	Nos	8000	All Blocks	65	5.20	65	5.20	78	6.24	91	7.28	104	8.32	403	32.24

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
12	Distribution of Tractor	Nos	600000	B8,B9 ,B11	3	18.00	3	18.00	3	18.00	3	18.00	3	18.00	15	90.00
13	Distribution of Tractor Drawn Seed cum Fertilizer Drill	Nos	70000	All Blocks	13	9.10	13	9.10	13	9.10	13	9.10	13	9.10	65	45.50
14	PVC Pipes to carry Irrigation water from source to field	Unit	40000	All Blocks	75	30.00	76	30.40	90	36.00	105	42.00	121	48.40	467	186.80
	Total					**173.09**		**173.49**		**192.16**		**211.23**		**232.58**		**982.55**

Athoor-B1, Batlagundu-B2, Dindigul-B3, Gujiliyamparai-B4, Natham-B5, Nilakkottai-B6, Oddanchahthiram-B7, Palani-B8, Reddiyarchahthiram-B9, Shanarpatti-B10, Thoppamppatti-B11, Vadamadurai-B12, Vedasandur-B13

4.1.13. Information Technology in Agriculture

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

4.1.13.1. Role of IT in Agriculture

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

Components required are,

1.Supply of Printer cum scanner, UPS, Electrical accessories, Xerox machine, Laptop, Antivirus software, Television, Colour Printer and 4G dongle have to be implemented in all blocks.

2. Equipments for documentation (Handy cam, Camera, GPS instrument, Android mobile, External Hard disk, Audio Visual aids, LCD projector) have to be implemented in all blocks.

3. Air condtion for computer room have to to be implemented in all blocks.

4.1.13.2. Budget

It is proposed to incur **₹. 90.35** Lakh over a period of five years with the finance facilities under the NADP and other sources as shown in Table4.13.

4.1.13.3. 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

4.1.13.4. Implementing Agency

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

Table.4.13. Budget requirement for Information Technology

(₹. In Lakh)

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	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
2	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
3	Xerox machine	Nos	75000	All Blocks	13	9.75	0	0.00	0	0.00	0	0.00	0	0.00	13	9.75
4	Laptop/Desktop	Nos	50000	All Blocks	13	6.50	0	0.00	0	0.00	0	0.00	0	0.00	13	6.50
5	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
6	Television	Nos	100000	All Blocks	13	13.00	0	0.00	0	0.00	0	0.00	0	0.00	13	13.00
7	Colour printer	Nos	15000	All Blocks	13	1.95	0	0.00	0	0.00	0	0.00	0	0.00	13	1.95
8	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
9	**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
10	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
11	LCD projector	Nos	75000	All Blocks	13	9.75	0	0.00	0	0.00	0	0.00	0	0.00	13	9.75
12	pico Projector	Nos	35000	All Blocks	13	4.55	0	0.00	0	0.00	0	0.00	0	0.00	13	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					**90.35**		**0.00**		**0.00**		**0.00**		**0.00**		**90.35**

Athoor-B1, Batlagundu-B2, Dindigul-B3, Gujiliyamparai-B4, Natham-B5, Nilakkottai-B6, Oddanchahthiram-B7, Palani-B8, Reddiyarchahthiram-B9, Shanarpatti-B10, Thoppamppatti-B11, Vadamadurai-B12, Vedasandur-B13

4.1.14. Agriculture research infrastructure and development

Cultivation of field crops, fruits and vegetables are the most preferred crops by the farmers of Dindigul district having areas with moderate drainage, above medium soil depth and moderate quality of irrigation water. Increasing the yield potential of the major crops has contributed very significantly to a rising food supply over the past 50 years, which has until recently more than kept pace with rising global demand. The photosynthesis is a fundamental process in crops and the carbon fixed during this process is the major contributor to the plant growth and development and to the overall yield and performance in a crop context. Based on this back ground, the present research is proposed to establish the facility for photosynthesis improvement in major crops to promote a new agricultural revolution and contribute towards the challenge of meeting global food demands. Improving photosynthesis is the most significant opportunity for raising the yield potential of major crops and addresses the new risks associated with future climate change conditions.

Farmers are mostly unaware of quality planting materials. The causes for low productivity in agriculture are decline in soil organic matter, soil fertility status, land degradation and use of poor quality water apart from lack of awareness on balanced fertilization among farmers and insufficient soil analytical timely advisory services. Soil and water sampling and analysis will help to monitor the changes in soil fertility, water quality and support in planning for crop and location specific balanced fertilization based on soil test value to enhance crop productivity. Protected cultivation is also a booming alternative production system involving hi-tech and intensive cultivation practices mainly for urban and export demands of horticultural crops. This system provides opportunities for increasing the productivity by optimal utilization of resources and protecting the crops from extreme temperatures, high wind, velocity heavy rains, destructive storms, pests and diseases. The most damaging ecological disturbance is injudicious use of pesticides which could lead to high concentration of pesticide residues in food chain including vegetables and other crops.

To produce pesticide free agricultural produce, it is highly necessary to introduce bio control as one of the major tool for pest management in vegetable crops. Training and demonstrations on precision water and nutrient usage, INM,IPM, use of natural 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 the 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 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 Dindigul district.

4.1.15.1. Project components

- Establishment of advanced photosynthetic analytic laboratory have to be implemented in Kodaikanal.
- Establishment of soil science laboratory have to be implemented in Kodaikanal.
- Establishment of nursery with sales outlet have to be implemented in Kodaikanal.
- Establishment of biocontrol laboratory have to be implemented in Kodaikanal.
- Construction of storage godowns have to be implemented in Kodaikanal.
- Construction of Farmers Trainees Hostel have to be implemented in Kodaikanal.
- Establishment of Polyhouse have to be implemented in Kodaikanal.
- Establishment of advanced grain quality analysis laboratory have to be implemented in Kodaikanal.

4.1.15.2. Budget

The budget requirement for the above research and development activities is estimated at Rs.**668.00** Lakh over a period of five years as shown in table 4..14.

4.1.15.3. 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.

4.1.15.4. Implementing agency

Tamil Nadu Agricultural University will be implementing the project.

Table.4.14. Budget for Agricultural Research infrastructure and development

(₹. In Lakh)

Sl. No.	Interventions	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.
I	**Research Infrastructure**														
1	Establishment of advanced photosynthetic analytic laboratory	300	Kodaikanal	0	0.00	1	300.00	0	0.00	0	0.00	0	0.00	1	300.00
2	Establishment of soil science laboratory	5	Kodaikanal	1	5.00	0	0.00	0	0.00	0	0.00	0	0.00	1	5.00
3	Establishment of nursery with sales outlet	25	Kodaikanal	0	0.00	1	25.00	0	0.00	0	0.00		0.00	1	25.00
4	Establishment of biocontrol laboratory	80	Kodaikanal	1	80.00	0	0.00	0	0.00	1	80.00	0	0.00	2	160.00
5	Construction of storage godowns	10	Kodaikanal	0	0.00	0	0.00	1	10.00	0	0.00	0	0.00	1	10.00
6	Construction of Farmers Trainees Hostel	100	Kodaikanal	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	1	100.00
7	Establishment of Polyhouse	6	Kodaikanal	1	6.00	1	6.00	1	6.00	0	0.00	0	0.00	3	18.00
8	Eaatablishment of advanced grain quality analysis laboratory	50	Kodaikanal	0	0.00	1	50.00	0	0.00	0	0.00	0	0.00	1	50.00
9	Nematode management in TamilNadu	Kodaikanal	150	0	0	1	150	0	0	0	0	0	0	1	150.00
10	Organic vegetable production	Kodaikanal	26	0	0	1	26	0	0	0	0	0	0	1	26.00
	Total				**91.00**		**557.00**		**16.00**		**80.00**		**100.00**		**844.00**

Athoor-B1, Batlagundu-B2, Dindigul-B3, Gujiliyamparai-B4, Natham-B5, Nilakkottai-B6, Oddanchahthiram-B7, Palani-B8, Reddiyarchahthiram-B9, Shanarpatti-B10, Thoppamppatti-B11, Vadamadurai-B12, Vedasandur-B13

Table 4.15. Budget requirement for Agriculture Sector

(₹. in Lakh)

Sl. No	Components	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Paddy	37.99	39.77	42.59	47.45	55.49	223.29
2	Millets	919.73	967.12	1065.55	1217.61	1455.58	5625.58
3	Pulses	554.22	581.46	638.96	732.17	875.43	3382.24
4	Oilseeds	38.02	37.29	41.92	48.46	57.50	223.18
5	Oilpalm	0.00	0.00	0.00	0.00	0.00	0.00
6	Cotton	273.47	286.74	312.15	353.88	418.60	1644.84
7	Sugarcane	114.08	120.80	132.69	152.96	182.71	703.23
8	Coconut	1278.85	1136.54	1248.17	1429.99	1712.74	6806.29
9	Training	16.45	16.45	16.45	16.45	16.45	82.25
10	Infrastructure	0.00	125.33	25.00	503.38	54.05	707.75
11	Soil Health Management	35.93	37.43	39.98	44.51	51.10	208.96
12	Rainfed Area Development	2226.68	1632.09	18.25	18.30	18.36	3913.68
13	Integrated Pest Management	0.00	0.00	0.00	0.00	0.00	0.00
14	Farm Mechanization	173.09	173.49	192.16	211.23	232.58	982.55
15	Strengthening of State Seed Farm	0.00	0.00	0.00	0.00	0.00	0.00
16	Agriculture Information Technology	90.35	0.00	0.00	0.00	0.00	90.35
	Total	**5758.86**	**5154.51**	**3773.87**	**4776.39**	**5130.59**	**24594.19**

4.2. Horticulture

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:

4.2.1. Area expansion of Horticultural crops

a. Fruit Crops

The 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. The Major intervention is,

1. Area expansion in Grapes has to be increased in Athoor, Dindugal, and Oddanchatiram.
2. Areaexpansion in TC Banana & TC Pineapple have to be increased in Athoor, DIndugal, Natham, Reddyarchathiram and Shanarppati block.
3. Area expansion of Banana / Hill Banana sucker & Pine apple sucker have to be increased in Athoor, Batlagundu, Dinduhal, Natham, Shanarpatti and Thoppampatti blocks.
4. Area expansion of Banana for leaf production has to be implemented in Batlagundu, Nilakkottai, Palani and Vadamadurai blocks.
5. Area expansion under Palmyrah has to be implemented in Natham, Oddanchathiram and Thoppampatti blocks.
6. Commercial production of choice fruits (Kiwi, Mangoosteen, Rambutan, Fig, Date palm, Durian, Carambola, Dragon fruit, Passion Fruit, Kiwi, Grapes, Strawberry, etc.,) have to be implemented in Kodaikanal and Vadamadurai blocks.
7. Commercial production of Traditional fruits (Woodapple, Manila Tamarind, Jamun, Ber, Karonda, Annona, Egg fruit, etc.,) have to be implemented in Natham, Oddanchathiram, Palani, Shanarpatty and Vedasandur blocks.

b. Vegetable crops

Vegetables are the store houses of most of the vitamins and minerals and also proteins. In order to ensure continuous supply of fresh vegetables to the burgeoning urban markets, it is absolutely necessary to create forward linkages from rural to urban areas. This will also ensure assured income to farmers in the rural areas adjoining the cities. Cultivation of 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. The major interventions are,

1. Area expansion of Brinjal, Bhendi, Green Chillies have to be increaseed in all blocks except Athoor, Bathalagundu, Kodaikanal, Thoppampatty and Vedasandur.
2. Area expansion of Tomato has to be increased in Kodaikanal block.
3. Area expansion of Gourds including pumpkin and tinda have to be increased in Athoor, Dindugal, Natham, Reddiarchathiram, Shanarpatty, Thoppampatty and Vadamadurai blocks.
4. Area expansion of Peas & Beans has to be increased in Kodaikanal block.
5. Area expansion of Small Onion has to be increase in all blocks except Dindugal, Natham and Kodaikanal.
6. Area expansion of Bellary Onion has to be increased in Oddanchathiram block.
7. Area expansion of Cauliflower has to increase in Kodaikanal, Oddanchatiram and Palani blocks.
8. Area expansion of Annual Moringa has to be increased in all blocks except Kodaikannal, Natham, Shanarpatty and Vedsandur.
9. Area expansion of Cabbage, Potato, Caroot have to be increased in Kodaikanal block.
10. Area expansion of Lab Lab have to be increased in Athoor, Bathlagundu, Dindugal, Kodaikanal, Nilakkottai, Shanarpatty and Thoppampatty blocks.
11. Area expansion of Chowchow has to be increased in Athoor, Dindugal and Kodaikanal blocks.
12. Area expansion of Melons have to be increased in Palani and Thoppampatti blocks
13. Area expansion of Coccinea has to be increased in Nilakkottai block.
14. Area expansion of Cluster bean has to be increased in Athoor, Oddanchatiram and Thoppampatty blocks.
15. Area expansion of Beetroot has to be increased in Reddiarchathiram block.
16. Area expansion of Commercial production of choice vegetables (Bread fruit, Brussels sprout, Brocolli, Spring Onion, Knol Khol, Turnip, Winged Bean, Butter Bean, Chinese Cabbage, Lettuce, Leek, Porum, etc., have to be increased in Kodaikanal block.
17. Area expansion of Commercial production of location specific traditional vegetables (Athalakkai, Palu Pavakkai, Mullu kathiri, Poiyur kathiri, Kottapatti kathiri etc.,) has to be increased in Oddanchatram and Reddiarchatram.

18. Area expansion of Cultivation of hybrid Vegetables under protected structures have to be increased in all blocks except Gujiliamparai, Natham, Nilakkottai, Oddanchatram, Palani and Vedasandur blocks.

c. Flower crops

The major flowers grown are Malligai, 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. The major interventions are,

1. Area expansion of loose flowers - Jasmie sp, Crossandra, Marigold, Rose, Chrysanthemum, Nerium, Torenia have to be increased in all blocks except Gujilamparai, Kodaikanal, Oddanchatram, Palani, Reddiarchatram and Thoppampatty block.
2. Area expansion of Bulbous flowers - Tube rose, Gladioli, Dahlia, Bird of paradise, Heliconia, Tulip have to be increased in all blocks except Gujilamparai, Nilakkottai, Oddanchatram, Palani, Shanarpatty and Vedasandur.
3. Area expansion of Cut flowers under open condition - Alstromaria, Golden Rod has to be increased in Kodaikanal block.
4. Area expansion of Cost of planting material & cultivation of Orchid, Eustoma & Anthurium under poly house / Shade net house have to be implemented in Kodaikanal block.
5. Cost of planting material & cultivation of carnation & Gerbera under poly house / Shade net house have to be implemented in Kodaikanal block.

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. The Major interventions are,

1. Area expansion of Seed and Rhizomatic spices (Coriander, Turmeric, Ginger, Dry Chilly, Cumin, Fennel, Fenu greek, Dil, Cardamom etc.,) have to increase in Thoppampatty block.
2. Area expansion of Perennial spices (Pepper, Curry leaf, all spice, Cinnamon, Clove, Tamarind, Nut meg etc.,) have to increase in Athoor, Dindugal, Kodaikanal, Natham and Reddiarchatram block.
3. Area expansion of Bulbous Spices Garlic has to increase in Kodaikanal block.

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. The major inerventions are,

1. Area expansion of Coffee have to be increased in Kodaikanal and Reddiarchatram block.
2. Area expansion of Cocoa have to be increased in Bathlagundu, Kodaikanal, Natham, Nilakkottai, Oddanchthram, Palani, Reddiarchatram, Shanarpatty and Vadamadurai blocks.
3. Area expansion of Cashew has to be increased in Shanarpatty block.

f. **Medicinal and Aromatic plants**

Medicinal and Aromatic plants form a numerically large group of economically important plants which provide basic raw materials for medicines, perfumes, flavors and cosmetics. These plants and their products not only serve as valuable source of income for small holders and entrepreneurs but also help the country to earn valuable foreign exchange by way of export. Therefore, the vast scope for expansion of medicinal and aromatic plants in this district. The major intervention are,

1. Area expansion of Gloriosa has to be increased in Gujiliamparai, Oddanchatram, Palani, Reddiarchatram, Thoppampatty, Vadamadurai and Vedasandur blocks.
2. Area expansion of Vettiver, Lemon grass/ Palmarosa and Rosemarry has to be increased in Kodaikanal block.

4.2.2. 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. The major interventions are,

1. UHDP in Papaya, Mango, Guava, Pomegranate, Acidlime area of cultivation have to be increased in Natham and Palani blocks.
2. HDP in Mango, Guava, Litchi, Pomegranate area of cultivation have to be increased in all blocks except Natham and Shanarpatti.

4.2.3. 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. The major intervention are,

1. Area expansion of normal planting in lime / lemons have to be increased in all blocks except Gujilamparai, Palani and Thoppampatti block.
2. Area expansion of normal planting in Mango have to be increased in all blocks except Athoor, Kodaikkanal and Reddiarchatram.
3. Area expansion of normal planting in Guava have to be increased in Gujilamparai, Kodaikkanal, Thoppampatty and Vadamadurai.
4. Area expansion of normal planting in Amla have to be increased in Oddanchtram, Vadamadurai and Vedasandur blocks.
5. Area expansion in normal planting in Papaya have to be increased in Dindigal, Natham, Oddanchthiram, Plani, Reddiarchatiram, Vadamadurai and Vedasandur blocks.
6. Area expansion in normal planting in Pomegranate has to be increased in Batlagundu, Dindugal and Kodaikanal blocks.
7. Area expansion of normal planting in Avacado have to be increased in Kodaikanal block.

4.2.4. 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 selected districts of the state by providing subsidy. The poly green house facility have to implement in all blocks except Palani. Also Shad net facilities have to implement in all blocks except Bathlagundu, Natham, Palani, Thoppampatty and Vedasandur.

4.2.5. Rejuvenation of Old Orchards – Mango and Cashew

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 cashew trees with subsequent inefficient light utilization is an obvious problem with older orchards, if trees are not well managed. The internal bearing capacity of cashew trees also decreases with time, due to overshadowing of internal bearing wood. The major intervention are,

1. The Mango/Cashew – Rejuvenation have to be increased in Athoor, Natham, Palani, Shanarpatty and Vadamadurai blocks.
2. INM/IPM for Horticultural crops and Mulching have to be increased in all blocks.
3. Anti Bird net have to be increased in Athoor, Dindugal and Nilakkottai blocks.

4.2.6. 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. The Organic farming and PGS certification in 50 acre cluster have to to be implemented in Kodaikanal and Vadamadurai block. Also HDPE vermibed have to be developed in all blocks except Natham, Vadamadurai and Vedasandur blocks.

4.2.7. Post-Harvest Management

In agriculture, post harvest handling is the stage of crop production immediately following harvest, including cooling, cleaning, sorting and packing. Post harvest 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. The establishment of Pack house have to be developed in all blocks. Low cost onion structure 25 m have to be implemented in Athoor, Gujilamparai, Nilakkottai, Oddanchatram, Palani, Vadamadurai and Vedasandur blocks. Drying yard in Kodaikanal, Natham and Vadamadurai blocks. Collection centre have to be implemented in Natham block. Retail outlet have to be implemented in Natham and Palani block. Refer van/collection vehicle have be implemented in Oddanchatram and Reddyarchatram block. Market intervention -Mobile venindg cart have to implement in Dindigul, Natham, Oddanchatram, Palani, Reddyarchatram and Vedasandur blocks.

4.2.8. Capacity building

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. The major interventions are,

1. Training to farmers within the State have be implemented in all blocks.
2. Training to farmers outside the state have be implemented in all blocks except Reddiarchatiram.
3. Exposure visit to farmers for 5 days have be implemented in all blocks except Athoor and Oddanchatram.
4. Training to farmers at HTC have to be conducted in Athor, Bathlagundu, Kodaikanal, Oddanchatram and Thoppampatty.
5. Exposure visit of farmers outside India have to be conducted in Natham, Oddanchatram, Palani and Shanrapatty block.
6. Training to staff outside the state have be implemented in all except Athoor, Bathlagundu and Thoppampatty.
7. Training to staff outside India have to be conducted in Natham, Oddanchatram and Shanarpatty blocks.
8. District level seminar have to be conducted in Dindugal, Kodaikanal, Natham and Oddanchatram blocks.
9. Publicity and Documentation have to be covered all blocks.

4.2.9. Bee Keeping

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

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

4.2.10. Mechanization in cultivation of horticultural crops

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

1. Distibution of Power tiller/Tractor/ Minitractor have be implemented in Athoor, Dindigul, Kodaikanal, Natham, Oddanchatram, Shanarpatty, Thoppampatty, Vadamadurai and Vedasandur blocks.
2. Land development, tillage and seed bed preparation equipments have to be supplied in Dindigul, Natham, Palani, Thoppampatty and Vadamadurai blocks.
3. Manual Sprayer-Knapsack/Foot operated Sprayer have to be supplied in Dindigul, Kodaikanal, Natham, Nilakkottai, Palani, Reddyarchatiram, Shanarpatty and Vadamadurai blocks.
4. Tractor Mounted / Operated Sprayer (Below 20HP) have be implemented in Gujiliamparai, Natham, Nilakkottai, Shanarpatty and Vadamadurai blocks.
5. Tractor Mounted / Operated Sprayer (Above 20HP) have be implemented in Natham, Nilakkottai, Palani and Shanarpaaty blocks.
6. Post Hole Digger/Augur, Pneumatic/ other Planter have be implemented in Natham and Palani blocks.
7. Fruit Plucker, Tree pruners, Fruit Harvester, Fruit Graders, Track Trolley, Nursery Media Filling Machine, Power operated horticulture tools for pruning, budding, grating, shearing etc. have be implemented in Natham, Shanarpatty and Palani blocks
8. Potato planter/Potato harvester / Onion harvester have to be supplied in Kodaikanal block.
9. Mulch laying machine have to be supplied in Palani block.

10. Hand operated sprayer with face mask have to be supplied in Dindigul and Shanarpatty blocks.
11. Nets for safe harvesting of fruits, Headlights for flower picking have to implement in Bathalagundu, Dindugal, Natham and Nilakottai blocks.
12. Power operated sprayer have to supply in all blocks except Bathlagundu, Dindugal and Kodaikanal.
13. Plastic crates for vegetable & fruits handling have be implemented in all blocks except Athoor, Gujiliamparai and Bathlagundu.
14. Pepper Spike Threasher Stripper, Pepper peeler cum Washer have to be supplied in Dindigul, Kodaikanal and Reddyarchatram blocks.
15. Oil engine have be implemented in Kodaikanal block.
16. 5 layered Polythene spread sheets for drying horticulture produce have be implemented in Gujiliamparai, Natham, Nilakkottai, Oddanchatram, Reddiarchatram and Vedasandur blocks.
17. Aluminium Ladders for Harvesting have be implemented in Dindigul, Kodaikanal, Natham, Nilakkottai and Reddyarchatram blocks.
18. Equipments for manure management (Motorized Shredder for cutting biomass for making Vermicomposts and organic mulching) have be implemented in Natham and Oddanchatram blocks.

4.2.11. 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. The major interventions are,

1. Supply of micro irrigation – Drip and Sprinkler have be implemented in all blocks.
2. Distribution of Rain gun have be implemented in Thoppampatty block.

3. Water harvesting system for individuals have be implemented in Dindigul, Kodaikanal, Natham, Nilakkottai, Oddanchatram and Palani blocks.

4.2.12. 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. T would have be implemented in Dindigul block.

4.2.13. 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. Distribution of AESA based IPM in fruits and vegetables Pheramone trap, Yellow Sticky trap and Light trap have be implemented in all blocks except Athoor.

4.2.14. 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. Promotion of Roof top Garden/ Potager garden Kit have to implement in Dindugal, Kodaikanal and Natham and Promotion of Roof top Garden/ Potager garden Kit with shadenet have be implemented in Dindigul block.

4.2.15. 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. It would have be implemented in Kodaikanal and Shanarpatty blocks.

4.2.16. Off-season Moringa Production – Pods and Leaves

Extremes of weather conditions that prevail in Northern States during Kariff as well as Rabi seasons do not favour the cultivation of Moringa. Hence truckloads of drumsticks are being transported from TN, AP and Karnataka to Northern states. Though the moringa pod is demanded throughout the year, the production is meager during winter and rainy seasons owing to the inadequate thermal requirements of the crop. Various systems of cultivation are in vogue to produce moringa round the year production. Commercial cultivation of annual moringa PKM-1 can fit into any crop rotation. Though it is annual, it is amenable for rationing twice. The major intervention are,

1. Offseason moring leaf production have be implemented in Athoor and Gujilamparai blocks.
2. Offseason moring pod production have be implemented in Athoor, Bathlagundu, Gujilamparai, Natham, Oddanchatram, Plalni and Reddiarchatram blocks.
3. Farm deficiency correction have be implemented in Dindigul, Kodaikonal and Natham block.

4.2.17. 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. The major intervention are,

1. Integrated farming system - Horticulture based farming have be implemented in Athoor, Oddanchatram, Palani and Reddyarchatram.
2. Green manuring have to implement in Bathlagundu, Dindigul, Natham, Nilkkottai, Palani, Vadamadurai and Vedasandur blocks.
3. Moisture stress management - Minimum irrigation gurantee by PUSA hydrogel have be implemented in all blocks except Shanarpatty.

4.2.18. 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. The proposed interventions are Mushroom production, compost making and cottage mushroom unit have be implemented in all blocks.

4.2.19. Vermicompost unit

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

4.2.20. 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. It would have to implement in Athoor block.

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. The permanent pandhal structure have be implemented in Bathlagundu, Palani and Thoppampatty blocks.

c. 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. It is aimed to enhance the productivity levels of orchard crops by 30 per cent and increase the production level of planting materials by 25 per cent. The Developmental activities in new/ exsisting state Horticultural farm have be implemented in Batlagundu, Kodaikanal and Reddyarchatram Blocks. Also development of small nurseries private sector have be implemented in Palani block.

4.2.21. 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. It would have be implemented in all blocks except Batlagundu, Natham and Shanarpatty.

4.2.22. Budget

Cost of the project works for requirement of the interventions of horticulture is about **₹. 69453** Lakh as shown in table 4.16.

4.2.23. Implementing agency

Department of Horticulture will be implementing the project.

4.16. Budget for Horticulture Development

(₹. in Lakh)

Sl. No.	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
A	**Production Growth**															
I	**Area expansion of fruit crops**															
1	Grapes	Ha	1.25	B1,B3,B7	15	18.75	15	18.75	15	18.75	15	18.75	15	18.75	75	93.75
2	TC Banana & TC Pineapple	Ha	1.25	B1,B3,B5,B9, B10	95	118.75	95	118.75	120	150.00	145	181.25	145	181.25	600	750.00
3	Banana / Hill Banana sucker & Pine apple sucker	Ha	0.875	B1,B2,B3,B5, B10,B11	204	178.50	204	178.50	204	178.50	204	178.50	204	178.50	1020	892.50
4	UHDP in Papaya, Mango, Guava, Pomegranate, Acidlime	Ha	1.25	B6,B8	13	16.25	13	16.25	13	16.25	13	16.25	13	16.25	65	81.25
5	HDP in Mango, Guava, Litchi, Pomegranate	Ha	1	All blocks excep t B5,B10	164	164.00	118	118.00	118	118.00	119	119.00	120	120.00	639	639.00
6	Normal Planting in lime / lemons	Ha	0.6	All blocks except B4,B9,B12	112	67.20	117	70.20	118	70.80	119	71.40	121	72.60	587	352.20
7	Normal Planting in Mango	Ha	0.6	All blocks except B1,B5,B10	93	55.80	72	43.20	72	43.20	73	43.80	73	43.80	383	229.80
8	Normal planting in Guava	Ha	0.6	All blocks except B4,B5,B12, B13	61	36.60	57	34.20	59	35.40	59	35.40	60	36.00	296	177.60
9	Normal planting in Amla	Ha	0.6	B8,B13,B14	10	6.00	11	6.60	11	6.60	11	6.60	13	7.80	56	33.60
10	Normal planting in Papaya	Ha	0.6	B3,B6,B8,B9,B 10,B13,B14	17	10.20	22	13.20	25	15.00	29	17.40	31	18.60	124	74.40

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
11	Normal planting in Pomegranate	Ha	0.6	B2,B3,B5	7	4.20	8	4.80	8	4.80	8	4.80	8	4.80	39	23.40
12	Normal planting in Avacado	Ha	0.6	B5	100	60.00	100	60.00	100	60.00	100	60.00	100	60.00	500	300.00
13	Banana for leaf production	Ha	0.6	B2,B7,B9, B13	27	16.20	37	22.20	37	22.20	37	22.20	37	22.20	175	105.00
14	Area expansion under Palmyrah,	Ha	0.6	B6,B8,B12	0	0.00	4	2.40	7	4.20	11	6.60	13	7.80	35	21.00
15	Commercial production of choice fruits (Kiwi, Mangoosteen, Rambutan, Fig, Date palm, Durian, Carambola, Dragon fruit,Passion Fruit, Kiwi, Grapes, Strawberry, etc.,)	Ha	1.25	B5,B13	20	25.00	20	25.00	20	25.00	22	27.50	20	25.00	102	127.50
16	Commercial production of Traditional fruits (Woodapple, Manila Tamarind, Jamun, Ber, Karonda, Annona, Egg fruit, etc.,)	Ha	0.6	B6,B8,B9, B11,B14	0	0.00	17	10.20	18	10.80	20	12.00	22	13.20	77	46.20
II	**Area expansion of vegetable crops**															
17	Brinjal	Ha	0.5	All blocks except B1,B2,B5, B12,B14	55	27.50	57	28.50	59	29.50	59	29.50	61	30.50	291	145.50
18	Bhendi	Ha	0.5	All blocks except B1,B2,B5, B14	59	29.50	59	29.50	60	30.00	62	31.00	62	31.00	302	151.00
19	Green Chillies	Ha	0.5	All blocks except B1,B2,B5, B14	104	52.00	106	53.00	110	55.00	115	57.50	117	58.50	552	276.00

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
20	Tomato	Ha	0.5	B5	190	95.00	193	96.50	202	101.00	202	101.00	204	102.00	991	495.50
21	Gourds including pumpkin and tinda	Ha	0.5	B1,B3,B6, B10,B11,B12, B13	47	23.50	47	23.50	47	23.50	47	23.50	47	23.50	235	117.50
22	Peas & Beans	Ha	0.5	B5	100	50.00	100	50.00	100	50.00	100	50.00	100	50.00	500	250.00
23	Small Onion	Ha	0.5	All blocks except B3,B5,B6	270	135.00	290	145.00	290	145.00	300	150.00	300	150.00	1450	725.00
24	Bellary Onion	Ha	0.5	B8	40	20.00	50	25.00	60	30.00	60	30.00	50	25.00	260	130.00
25	Cauliflower	Ha	0.5	B5,B8,B9	29	14.50	31	15.50	41	20.50	41	20.50	43	21.50	185	92.50
26	Annual Moringa	Ha	0.5	All blocks except B5,B6,B11, B14	140	70.00	145	72.50	145	72.50	150	75.00	155	77.50	735	367.50
27	Cabbage	Ha	0.5		20	10.00	20	10.00	20	10.00	20	10.00	20	10.00	100	50.00
28	Potato	Ha	0.5	B5	50	25.00	50	25.00	100	50.00	100	50.00	100	50.00	400	200.00
29	Caroot	Ha	0.5	B5	200	100.00	200	100.00	200	100.00	200	100.00	200	100.00	1000	500.00
30	Lab Lab	Ha	0.5	B1,B2,B3,B5, B7,B11,B12	85	42.50	80	40.00	80	40.00	130	65.00	130	65.00	505	252.50
31	Chowchow	Ha	0.5	B1,B3,B5	65	32.50	65	32.50	115	57.50	115	57.50	115	57.50	475	237.50
32	Melons	Ha	0.5	B9,B12	10	5.00	10	5.00	10	5.00	10	5.00	10	5.00	50	25.00
33	Coccinea	Ha	0.5	B7	5	2.50	5	2.50	5	2.50	5	2.50	5	2.50	25	12.50
34	Cluster bean	Ha	0.5	B1,B8,B12	15	7.50	15	7.50	15	7.50	18	9.00	20	10.00	83	41.50
35	Beetroot	Ha	0.5	B10	5	2.50	10	5.00	15	7.50	15	7.50	15	7.50	60	30.00
36	Commercial production of choice vegetables (Bread fruit, Brussels sprout, Brocolli, Spring	Ha	0.5	B5	10	5.00	10	5.00	10	5.00	10	5.00	10	5.00	50	25.00

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
	Onion, Knol Khol, Turnip, Winged Bean, Butter Bean, Chinese Cabbage, Lettuce, Leek, Porum, etc.,															
37	Commercial production of location specific traditional vegetables (Athalakkai, Palu Pavakkai, Mullu kathiri, Poiyur kathiri, Kottapatti kathiri etc.,)	Ha	0.5	B8,B10	5	2.50	7	3.50	7	3.50	7	3.50	7	3.50	33	16.50
38	Cultivation of hybrid Vegetables under protected structures	1000 Sq.m	1.4	All blocks except B4,B6,B7,B8,B9,B14	5017	7023.80	5017	7023.80	5018	7025.20	5018	7025.20	5018	7025.20	25088	35123.20
III	**Area expansion of Medicinal and Aromatic plants**															
39	Gloriosa	Ha	1.6438	B4,B8.B9. B10,B12,B13, B14	138	226.84	143	235.06	148	243.28	148	243.28	153	251.50	730	1199.97
40	Vettiver	Ha	0.3	B5	1	0.30	1	0.30	1	0.30	1	0.30	1	0.30	5	1.50
41	Lemon grass/palmarosa	Ha	0.32	B5	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.1	0.03
42	Rosemary	Ha	1	B5	1	1.00	1	1.00	1	1.00	1	1.00	1	1.00	5	5.00
IV	**Area expansion of Spices crops**															
43	Seed and Rhizomatic spices (Coriander, Turmeric, Ginger, Dry Chilly, Cumin, Fennel, Fenu greek, Dil, Cardamom etc.,)	Ha	0.3	B12	7	2.10	7	2.10	7	2.10	7	2.10	7	2.10	35	10.50

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
44	Perennial spices (Pepper, Curry leaf, All spice, Cinnamon, Clove, Tamarind, Nut meg etc.,)	Ha	0.5	B1,B3,B5,B6, B10	180	90.00	181	90.50	181	90.50	186	93.00	191	95.50	919	459.50
45	Bulbous spices Garlic	Ha	0.5	B5	150	75.00	150	75.00	150	75.00	130	65.00	150	75.00	730	365.00
V	**Area expansion of Flower crops**															
46	Loose flowers - Jasminum sp, Crossandra, Marigold, Rose, Chrysanthemum, Nerium, Torenia	Ha	0.4	All blocks except B4,B5,B8,B9,B 10,B12	68	27.20	118	47.20	118	47.20	118	47.20	118	47.20	540	216.00
47	Bulbous flowers - Tube rose, Gladioli, Dahlia, Bird of paradise, Heliconia, Tulip	Ha	1.5	All blocks except B4,B6,B8,B9,B 12,B14	77	115.50	86	129.00	86	129.00	88	132.00	88	132.00	425	637.50
48	Cut flowers under open condition - Alstromaria, Golden Rod	Ha	1	B5	0	0.00	2	2.00	2	2.00	2	2.00	2	2.00	8	8.00
49	Cost of planting material & cultivation of Orchid, Eustoma & Anthurium under poly house / Shade net house	1000 Sq.m	7	B5	1	7.00	1	7.00	1	7.00	1	7.00	2	14.00	6	42.00
50	Cost of planting material & cultivation of carnation & Gerbera under poly house / Shade net house	1000 Sq.m	6.1	B5	10	61.00	10	61.00	15	91.50	15	91.50	20	122.00	70	427.00

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
VI	**Area expansion /Gap filling of Plantation crops**															
51	Coffee	Ha	0.5	B5,B10	55	27.50	55	27.50	110	55.00	110	55.00	110	55.00	440	220.00
52	Cocoa	Ha	0.5	B2,B5,B6,B7,B8,B9,B10, B11,B13	83	41.50	84	42.00	86	43.00	86	43.00	86	43.00	425	212.50
53	Cashew	Ha	0.5	B11	5	2.50	5	2.50	5	2.50	5	2.50	5	2.50	25	12.50
VII	**Rejuvenation/INM-IPM/Mulching/Anti bird net**															
54	Mango/Cashew - Rejuvenation	Ha	0.4	B1,B6,B9, B11,B13	60	24.00	61	24.40	61	24.40	60	24.00	61	24.40	303	121.20
55	INM/IPM for Horticultural crops	Ha	0.04	All blocks	350	14.00	350	14.00	360	14.40	360	14.40	360	14.40	1780	71.20
56	Mulching	Ha	0.32	All blocks	190	60.80	197	63.04	197	63.04	197	63.04	200	64.00	981	313.92
57	Anti Bird net	1000 Sq.m	0.35	B1,B3,B7	22	7.70	19	6.65	22	7.70	22	7.70	22	7.70	107	37.45
VIII	**Pollination Support through Bee Keeping**															
58	Bee hive & Colony	No	0.04	All blocks	890	35.60	890	35.60	600	24.00	620	24.80	640	25.60	3640	145.60
59	Honey Extractor	No	0.2	All blocks	236	47.20	236	47.20	87	17.40	89	17.80	91	18.20	739	147.80
IX	**Organic Farming**															
60	Organic farming and PGS certification in 50 acre cluster	1 cluster	14.95	B5,B13	0	0.00	2	29.90	1	14.95	0	0.00	1	14.95	4	59.80
61	HDPE Vermibed	No	0.16	All blocks except B6,B13,B14	64	10.24	64	10.24	69	11.04	69	11.04	69	11.04	335	53.60

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
X	**Rainfed Area development**															
62	Integrated farming system - Horticulture Based farming	Ha	0.5	B1,B8,B9, B10	290	145.00	290	145.00	290	145.00	290	145.00	290	145.00	1450	725.00
63	Green manuring	Ha	0.04	B2,B3,B6,B7,B9,B13,B14	107	4.28	132	5.28	137	5.48	142	5.68	147	5.88	665	26.60
64	Moisture stress management - Minimum irrigation gurantee by PUSA hydrogel	Ha	0.1	All blocks except B11	630	63.00	630	63.00	630	63.00	630	63.00	630	63.00	3150	315.00
B	**Infra structures and Assets creation**															
I	**Protected cultivation**															
1	Poly Green House	1000 Sq.m	9.35	All blocks except B9	43	402.05	43	402.05	43	402.05	44	411.40	44	411.40	217	2028.95
2	Shadenet	1000 Sq.m	7.1	All blocks except B2,B6,B9,B12, B14	20	142.00	21	149.10	26	184.60	27	191.70	26	184.60	120	852.00
II	**Mushroom production**															
3	Mushroom production and compost making	1 No.	20	All Blocks	1	20.00	1	20.00	0	0.00	1	20.00	0	0.00	3	60.00
4	Cottage mushroom unit	1 No.	1	All Blocks	2	2.00	1	1.00	2	2.00	2	2.00	1	1.00	8	8.00
III	**Vermicompost unit**															
5	Permanent Vermicompost Unit	600 cu.ft	1	All blocks except B10,B12	13	13.00	14	14.00	13	13.00	13	13.00	14	14.00	67	67.00

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
IV	**Supporting structures for Horticulture crop production**															
6	Staking/ Trellies/ Propping	Ha	1	B1	191	191.00	193	193.00	193	193.00	193	193.00	193	193.00	963	963.00
7	Permanent Pandhal structure	Ha	4	B2,B9,B12	76	304.00	86	344.00	86	344.00	96	384.00	96	384.00	440	1760.00
C	**Special interventions**															
1	Offseason Annual Moringa production - Pod	Ha	1.25	B1,B2,B4,B6,B8,B9,B10	50	62.50	50	62.50	50	62.50	55	68.75	55	68.75	260	325.00
2	Offseason Annual Moringa production - Leaf	Ha	2	B1,B4	20	40.00	20	40.00	20	40.00	20	40.00	20	40.00	100	200.00
3	Farm deficiency correction	Ha	0.04	B3,B5,B6	2110	84.40	2110	84.40	2110	84.40	2610	104.40	2610	104.40	11550	462.00
4	Promotion of Roof top Garden/ Potager garden Kit	No	0.005	B3,B5,B6	165	0.83	165	0.83	215	1.08	215	1.08	215	1.08	975	4.88
5	Promotion of Roof top Garden/ Potager garden Kit with shadenet	No	0.0735	B3	5	0.37	5	0.37	5	0.37	5	0.37	5	0.37	25	1.84
6	Banana Bunch Sleeve	Ha	0.25	B3	100	25.00	100	25.00	100	25.00	0	0.00	0	0.00	300	75.00
7	AESA based IPM in fruits and vegetables Pheramone trap	Ha	0.04	All blocks except B1	485	19.40	495	19.80	525	21.00	525	21.00	535	21.40	2565	102.60
8	AESA Based IPM in fruits and vegetables Yellow sticky trap	Ha	0.04	All blocks except B1	555	22.20	575	23.00	585	23.40	595	23.80	605	24.20	2915	116.60
9	AESA Based IPM in fruits and vegetables Light trap	Ha	0.08	All blocks except B1	260	20.80	260	20.80	270	21.60	270	21.60	280	22.40	1340	107.20

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	All blocks	24	96.00	24	96.00	28	112.00	26	104.00	27	108.00	129	516.00
2	Low cost onion structure 25 mt	1 No	1.75	B1,B4,B7,B8,B9,B13,B14	14	24.50	13	22.75	14	24.50	14	24.50	14	24.50	69	120.75
3	Drying yard	1 No	5	B5,B6,B13	13	65.00	13	65.00	13	65.00	13	65.00	13	65.00	65	325.00
4	Collection centre	1 No	15	B6	1	15.00	0	0.00	1	15.00	0	0.00	1	15.00	3	45.00
5	Retail outlet	1 No	15	B6,B9	3	45.00	2	30.00	2	30.00	2	30.00	2	30.00	11	165.00
6	Refer van/collection vehicle	1 No	26	B8,B10	2	52.00	0	0.00	1	26.00	0	0.00	0	0.00	3	78.00
7	Market intervention - Mobile venindg cart	1 No	0.3	B3,B6,B8,B9,B10,B14	12	3.60	10	3.00	8	2.40	8	2.40	8	2.40	46	13.80
E	**Development of Farms, Nurseries and Parks**															
1	Developmental activities in new/ exsisting state Horticultural farm, Keelapalur	No	25	B2,B5,B10	2	50.00	1	25.00	2	50.00	1	25.00	2	50.00	8	200.00
2	Development of small Nurseries Private sector	No	7.5	B9	1	7.50	0	0.00	0	0.00	0	0.00	0	0.00	1	7.50
F	**Mechanization - Machineries, Equipments& Tools**															
1	Power tiller/Tractor/ Minitractor	Nos	1	B1,B3,B5,B6, B8,B11,B12, B13,B14	15	15.00	11	11.00	14	14.00	11	11.00	14	14.00	65	65.00
2	Land development, tillage and seed bed preparation equipments	Nos	0.3	B3,B6,B9, B12,B13	17	5.10	17	5.10	18	5.40	20	6.00	18	5.40	90	27.00

Sl. No.	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
3	Manual Sprayer-Knapsack/Foot operated Sprayer	Nos	0.12	B3,B5,B6,B7, B9,B10,B11, B13	81	9.72	83	9.96	83	9.96	83	9.96	83	9.96	413	49.56
4	Tractor Mounted / Operated Sprayer (Below 20HP)	Nos	0.2	B4,B6,B7, B11,B12	7	1.40	6	1.20	7	1.40	6	1.20	7	1.40	33	6.60
5	Tractor Mounted / Operated Sprayer (Above 20HP)	Nos	1.26	B6,B7,B9, B11	7	8.82	6	7.56	7	8.82	6	7.56	7	8.82	33	41.58
6	Post Hole Digger/Augur, Pneumatic/ other Planter		1.26	B6,B9	7	8.82	7	8.82	7	8.82	7	8.82	7	8.82	35	44.10
7	Fruit Plucker, Tree pruners, Fruit Harvester, Fruit Graders, Track Trolley, Nursery Media Filling Machine, Power operated horticulture tools for pruning, budding, grating, shearing etc.	No	2.5	B6,B9,B11	12	30.00	10	25.00	11	27.50	10	25.00	11	27.50	54	135.00
8	Potato planter/Potato harvester / Onion harvester	No	0.3	B5	2	0.60	2	0.60	2	0.60	2	0.60	2	0.60	10	3.00
9	Mulch laying machine	No	0.7	B9	5	3.50	5	3.50	5	3.50	5	3.50	5	3.50	25	17.50
10	Hand operated sprayer with face mask	Nos	0.025	B3,B11	7	0.18	7	0.18	7	0.18	7	0.18	7	0.18	35	0.88
11	Nets for safe harvesting of fruits,Headlights for flower picking	Nos	0.005	B2,B3,B6,B7	117	0.59	117	0.59	117	0.59	117	0.59	122	0.61	590	2.95
12	Power operated sprayer	Nos	0.05	All blocks except B2,B3,B5	60	3.00	60	3.00	62	3.10	65	3.25	65	3.25	312	15.60

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
13	Plastic crates for vegetable & fruits handling	No of sets containing 10crates	0.075	All blocks except B1,B2,B4	220	16.50	210	15.75	210	15.75	215	16.13	240	18.00	1095	82.13
14	Pepper Spike Threasher Stripper, Pepper peeler cum Washer	No	0.15	B3,B5,B10	28	4.20	28	4.20	28	4.20	28	4.20	28	4.20	140	21.00
15	Oil engine	No	0.15	B5	0	0.00	1	0.15	1	0.15	1	0.15	1	0.15	4	0.60
16	5 layered Polythene spread sheets for drying horticulture produce	No	0.16	B4,B6,B7,B8, B10,B14	24	3.84	23	3.68	24	3.84	24	3.84	24	3.84	119	19.04
17	Aluminium Ladders for Harvesting	No	0.2	B3,B5,B6,B7, B10	47	9.40	47	9.40	47	9.40	23	4.60	23	4.60	187	37.40
18	Equipments for manure management (Motorized Shredder for cutting biomass for making Vermicomposts and organic mulching)	No	1.26	B6,B8	2	2.52	2	2.52	3	3.78	2	2.52	3	3.78	12	15.12
G	**Water / Irrigation Management**															
1	Micro Irrigation - Drip	Ha	1.12	All blocks	1657	1855.84	1745	1954.40	1805	2021.60	1865	2088.80	1875	2100.00	8947	10020.64
2	Rain gun	Ha	0.34	B12	5	1.70	5	1.70	5	1.70	5	1.70	5	1.70	25	8.50
3	Sprinkler	No	0.195	All blocks	267	52.07	277	54.02	297	57.92	305	59.48	307	59.87	1453	283.34
4	Water harvesting system for individuals	No	1.5	B3,B5,B6,B7,B8,B9	13	19.50	15	22.50	20	30.00	21	31.50	24	36.00	93	139.50

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
H	**Capacity Building**															
1	Training to farmers within the State. 2 days Rs.1000/farmer/day	No	0.02	All blocks	690	13.80	680	13.60	680	13.60	680	13.60	680	13.60	3410	68.20
2	Training to farmers outside the state. 30 farmers/Batch	No	0.105	All blocks except B10	167	17.54	167	17.54	167	17.54	167	17.54	167	17.54	835	87.68
3	Exposure visit to farmers for 5 days. Rs.1000/farmer/day	No	0.05	All blocks except B1,B8	142	7.10	142	7.10	142	7.10	142	7.10	142	7.10	710	35.50
4	Training to farmers at HTC	No	0.0025	All blocks except B1,B2,B5,B8, B12	115	0.29	115	0.29	115	0.29	115	0.29	115	0.29	575	1.44
5	Exposure visit of farmers outside India	No	4	B6,B8,B9,B11	5	20.00	6	24.00	5	20.00	6	24.00	5	20.00	27	108.00
6	Training to staff outside the state / Batch of 5 members	No	0.04	All blocks except B1,B2,B12	31	1.24	31	1.24	31	1.24	31	1.24	31	1.24	155	6.20
7	Training to staff outside India	No	6	B6,B8,B11	3	18.00	3	18.00	3	18.00	3	18.00	3	18.00	15	90.00
8	District level seminar	No	2	B3,B5,B6,B8	4	8.00	4	8.00	4	8.00	4	8.00	4	8.00	20	40.00
9	Computerization & governance	No	1	B5,B11	16	16.00	16	16.00	16	16.00	16	16.00	16	16.00	80	80.00
10	Publicity and Documentation	No	0.5	All blocks	22	11.00	22	11.00	22	11.00	22	11.00	22	11.00	110	55.00
I	**Crop Insurance and Risk Mitigating schemes**															
1	Crop Insurance	Ha	0.025	All blocks except B2,B6,B11	1555	38.88	1555	38.88	1555	38.88	1555	38.88	1555	38.88	7775	194.38
	Grand Total					**13554.79**		**13649.57**		**13956.72**		**14084.19**		**14207.83**		**69453.10**

B1- Athoor, B2- Batlagundu, B3- Dindigul, B4- Gujiliamparai, B5- Kodaikkanal, B6- Natham, B7- Nilakottai, B8- Oddanchatram, B9- Palani, B10- Reddiarchatram, B11- Shanarpatty, B12- Thoppampatty, B13- Vadamadurai, B14- Vedasandur

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.

4.3.1. Strategies:

- Promotion and strengthening of agricultural mechanization through training, Testing and Demonstration in order to ensure performance testing of agricultural machinery and equipment, capacity building of farmers and end users and promoting farm mechanization through demonstrations in all blocks.
- Demonstration 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 in all blocks.
- Promotion of ownership to small and marginal farmers for various agricultural machinery and equipments such as Tractors, Power tillers, Tractor of various types/Power tiller drawn equipments (Cultivator, Rotavator, Post hole digger, Reaper, Brush cutter, Chaff cutter,) and Plant protection equipments in all blocks.
- Provision of suitable financial assistance to establish farm machinery banks for custom hiring for appropriate locations and crops in all blocks.
- Promotion of agro-processing and management machinery at community level through supply of post-harvest machinery such as self-propelled/other driven horticultural machinery (Chain saw/ wheel barrow/ Mango grader/ planter and other suitable self-propelled machineries and equipments), Manual horticultural equipments (Aluminium ladder/ Ladder, Plucker), Post-harvest equipments for grains, oil seeds and Horticultural crops (Mini Dhall mill, Millet Mill, power driven

dehusker, thresher, Harvester, De-spiking, Deconing, Peeler, Splitter, Stripper,) this would make sure that more value is added to farm outputs locally in all blocks.

- 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 in all blocks.
- Distribution of manual , power operated knapsack sprayer, power operated Taiwan sprayer, tree climber, power weeder to the farmers of Dindigul district.

4.3.2. 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.

4.3.3. Budget

Agriculture continues to be the most predominant sector of this district economy, as 70 per cent of the population is engaged in agriculture and allied activities for their livelihood. Agricultural mechanization could provide the stability in agricultural production in a sustainable manner to meet the food requirement of growing population and also to meet the raw material needs of agro based industries, thereby providing employment opportunities to the rural population. The major component required to implement in this district are capacity building of farmers and end users with the budget of ₹ 6.60 lakhs, Financial assistance for the procurement of agricultural machinery, post-harvest machinery and equipments in rural areas with the budget of ₹3933.73 lakhs, establishment of farm machinery banks the budget of ₹56.00 lakhs and also implementation of minor irrigation, tractor hiring scheme, solar energy, innovative schemes of AED, pilot mechanization memonstration, post-harvest technology and management machinery with budget of ₹ 2129.97 lakhs. Some other interventions such as construction of Agricultural Engineering Extension centres (AEECs) with the budget of

₹ 150.00 Lakh are required to implement in this district to enhance the Agricultural Productivity. The overall budget requirement for implementation of above interventions is ₹ 6276.30 Lakh .

4.3.4. Implementing agency

The projects will be implemented by the Department of Agricultural Engineering

Table 4.17. Budget requirement for Agricultural Engineering

(₹. in Lakh)

Sl. No	Interventions	Unit	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Demonstration of Agricultural Machinery	No's/Ha	0.04	All Blocks	17	0.68	17	0.68	17	0.68	17	0.68	17	0.68	85	3.40
2	Training of farmers	No's/Ha	0.04	All Blocks	9	0.36	9	0.36	9	0.36	9	0.36	9	0.36	45	1.80
3	Demonstration of Post Harvest Technologies	No's/Ha	0.04	All Blocks	7	0.28	7	0.28	7	0.28	7	0.28	7	0.28	35	1.40
4	Tractor (15-20 PTO HP)	No's/Ha	4	All Blocks	34	136.00	38	152.00	43	172.00	40	160.00	40	160.00	195	780.00
5	Tractor (Above 20-40 PTO HP)	No's/Ha	6	All Blocks	10	60.00	11	66.00	14	84.00	12	72.00	14	84.00	61	366.00
6	Tractor (40-70 PTO HP)	No's/Ha	8.5	All Blocks	20	170.00	24	204.00	28	238.00	26	221.00	28	238.00	126	1071.00
7	Power Tiller (8 BHP & above)	No's/Ha	1.75	All Blocks	36	63.00	42	73.50	46	80.50	42	73.50	46	80.50	212	371.00
8	Post Hole Digger / Augur	No's/Ha	0.63	All Blocks	5	3.15	6	3.78	7	4.41	6	3.78	7	4.41	31	19.53
9	Cultivator	No's/Ha	0.2	All Blocks	5	1.00	6	1.20	7	1.40	6	1.20	7	1.40	31	6.20
10	Power Weeder (engine operated below 2 BHP)	No's/Ha	0.25	All Blocks	2	0.50	2	0.50	2	0.50	2	0.50	2	0.50	10	2.50
11	Brush Cutter	No's/Ha	0.25	All Blocks	78	19.50	80	20.00	85	21.25	80	20.00	85	21.25	408	102.00
12	f. Chaff Cutter (Operated by engine / electric motor below 3 hp and by power tiller and tractor of below 20 BHP tractor)	No's/Ha	0.25	All Blocks	207	51.75	248	62.00	288	72.00	248	62.00	288	72.00	1279	319.75

Sl. No	Interventions	Unit	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
13	Cultivator	No's/Ha	0.25	All Blocks	10	2.50	12	3.00	14	3.50	12	3.00	14	3.50	62	15.50
14	Rotavator	No's/Ha	0.8	All Blocks	5	4.00	6	4.80	7	5.60	6	4.80	7	5.60	31	24.80
15	Post Hole digger	No's/Ha	0.9	All Blocks	5	4.50	6	5.40	7	6.30	6	5.40	7	6.30	31	27.90
16	Power Weeder (engine operated above 2 BHP)	No's/Ha	0.7	All Blocks	45	31.50	52	36.40	57	39.90	50	35.00	55	38.50	259	181.30
17	Brush Cutter	No's/Ha	0.3	All Blocks	20	6.00	22	6.60	25	7.50	25	7.50	26	7.80	118	35.40
18	Disc Plow	No's/Ha	0.6	All Blocks	7	4.20	8	4.80	10	6.00	9	5.40	10	6.00	44	26.40
19	Cultivator	No's/Ha	0.3	All Blocks	20	6.00	24	7.20	26	7.80	24	7.20	26	7.80	120	36.00
20	Rotavator	No's/Ha	0.95	All Blocks	80	76.00	90	85.50	95	90.25	85	80.75	95	90.25	445	422.75
21	Post Hole digger	No's/Ha	1.05	All Blocks	6	6.30	7	7.35	8	8.40	7	7.35	8	8.40	36	37.80
22	Balers (Round)	No's/Ha	3.5	All Blocks	1	3.50	1	3.50	1	3.50	1	3.50	0	0.00	4	14.00
23	Tree climber	No's/Ha	0.07	All Blocks	17	1.19	20	1.40	24	1.68	22	1.54	29	2.03	112	7.84
24	Manual sprayer: Knapsack/foot operated sprayer	No's/Ha	0.015	All Blocks	29	0.44	34	0.51	39	0.59	33	0.50	37	0.56	172	2.58
25	Powered Knapsack Sprayer/Power operated Taiwan sprayer (capacity 8-12 lts)	No's/Ha	0.06	All Blocks	65	3.90	76	4.56	87	5.22	82	4.92	94	5.64	404	24.24
26	Powered Knapsack Sprayer/Power	No's/Ha	0.08	All Blocks	45	3.60	53	4.24	61	4.88	53	4.24	61	4.88	273	21.84

Sl. No	Interventions	Unit	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	operated Taiwan sprayer (capacity above 12-16 lts)															
27	Powered Knapsack Sprayer/Power operated Taiwan sprayer (capacity above 16 lts)	No's/Ha	0.1	All Blocks	30	3.00	34	3.40	38	3.80	34	3.40	38	3.80	174	17.40
28	Establishment of Farm Machinery Banks for Custom Hiring	No's/Ha	28	All Blocks Except B6	1	28.00	1	28.00	0	0.00	0	0.00	0	0.00	2	56.00
29	5 hp	No's/Ha	3.75	All Blocks	40	150.00	48	180.00	56	210.00	48	180.00	56	210.00	248	930.00
30	7.5 hp	No's/Ha	5.3	All Blocks	19	100.70	22	116.60	23	121.90	21	111.30	26	137.80	111	588.30
31	10 hp	No's/Ha	6.75	All Blocks	8	54.00	9	60.75	11	74.25	12	81.00	14	94.50	54	364.50
32	upto 400sq.ft	No's/Ha	4.25	All Blocks	3	12.75	3	12.75	3	12.75	3	12.75	3	12.75	15	63.75
33	400-600sq.ft	No's/Ha	6.5	All Blocks	2	13.00	2	13.00	2	13.00	2	13.00	2	13.00	10	65.00
34	Computer & its accessories	No's/Ha	0.8	B3	0	0.00	0	0.00	0	0.00	1	0.80	0	0.00	1	0.80

Sl. No	Interventions	Unit	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
35	Chain saw/ Wheel barrow/ Mango grader/ planter and other suitable self propelled machineries and equipments for horticulture Crops	No's/Ha	1	All Blocks	0	0.00	25	25.00	15	15.00	35	35.00	4	4.00	79	79.00
36	Aluminium Ladder/ Ladder	No's/Ha	0.2	All Blocks	0	0.00	8	1.60	30	6.00	40	8.00	25	5.00	103	20.60
37	Plucker	No's/Ha	0.02	All Blocks	0	0.00	1	0.02	0	0.00	10	0.20	10	0.20	21	0.42
38	Mini Dal Mill	No's/Ha	1.7	Dindigul	1	1.70	0	0.00	0	0.00	0	0.00	0	0.00	1	1.70
39	Millet Mill	No's/Ha	1.5	D3,D4,B7,B8,B11	0	0.00	1	1.50	1	1.50	1	1.50	2	3.00	5	7.50
40	All types of Power driven Dehusker/ sheller/ Threshers/ Harvesters/ De-spiking/ Deconing Machine/ Peeler/ Splitter/ Stripper (for all type of Horticulture / Food grain / Oil seeds crop)	No's/Ha	1.2	All Blocks	0	0.00	2	2.40	2	2.40	3	3.60	0	0.00	7	8.40

Sl. No	Interventions	Unit	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
41	Construction of Agricultural Engineering Extension centres (AEECs)	No's/Ha	75	B3 and B11	0	0.00	2	150.00	0	0.00	0	0.00	0	0.00	2	150.00
	Total					**1023.00**		**1354.58**		**1327.10**		**1236.95**		**1334.69**		**6276.30**

Athoor-B1, Batlagundu-B2, Dindigul-B3, Gujiliyamparai-B4, Natham-B5, Nilakkottai-B6, Oddanchahthiram-B7, Palani-B8, Reddiyarchahthiram-B9, Shanarpatti-B10, Thoppamppatti-B11, Vadamadurai-B12, Vedasandur-B13

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 shandie”s 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.

4.4.1. Components

- Promotion of commodity groups and market information viz., establishment of e-learning centre in all blocks.
- Construction of Storage godown for commodity groups to strengthen of uzhavar shandai and regulated market in all blocks.
- Construction of drying yards in all blocks.
- Formation of Farmer Producer Organizations (FPO) to strengthen existing commodity groups in all blocks.
- Distribution of chaff cutter to Palani, Thoppampatti, Oddanchatram, Vedasanthur, Vadamadurai, Guziliamparai.
- Distribution of dunnages and tarpaulins to enhance market activities in all blocks.
- Distribution of post harvest infrastructure and machineries such as coconut ladder (for all blocks), coffee pulper (Reddiarchatram, Kodaikanal), coconut peeling machine (Palani, Thoppampatti, Oddanchatram, Vedasanthur, Vadamadurai, Guziliamparai), garlic iron burner for Shanarapatti.
- Distribution of harvestors for ground nut to Dindugul, Vedasanthur, Vadamadurai, Guziliamparai, for maize to Dindugul, Reddiarchatram, Vadamadurai, Guziliamparai, and for paddy to Athoor, Nilakotai and Batlagundu.
- Exposure visit (within state & outside state) for commodity group farmers to acquire value addition technologies for all blocks.

Budget

The district plan proposes an outlay of **Rs.3363.00** Lakh over a period of five years for Dindugal district.

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 programmes.

Table 4.18 Budget for strengthening of Agricultural Marketing and Agri-Business

(₹. in Lakh)

Sl. No	Intervention	Unit	Unit cost	Block covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Promotion of Commodity Groups and Market Information															
1	e-learning Centre	1	80	All Blocks	1	80.00		0.00		0.00		0.00		0.00	1	80.00
	Strengthening of Uzhavar Sandhai and Regulated Market															
2	Drying Yard	1	4	All Blocks	15	60.00	15	60.00	16	64.00	14	56.00	15	60.00	75	300.00
3	Storage godown	1	15	All Blocks	2	30.00	11	165.00	6	90.00	8	120.00	5	75.00	32	480.00
4	Ticker Board and External Electrification	1	0.01	B1, B2, B6, B7	155	2.00	140	1.00	150	2.00	165	2.00	140	1.00	750	8.00
	Formation of FPO / Strengthening of Existing Commodity Groups															
5	FPO	1	43.2	all Blocks	2	86.00	8	346.00	4	173.00	3	130.00	8	346.00	25	1081.00
	Provision of Market Access and Market Activities															
6	Chaff cutter	1	0.6	B8, B9, B10, B11, B12, B13	26	16.00	26	16.00	23	14.00	23	14.00	23	14.00	121	74.00
7	Dunnage	1	0.03	All Blocks	80	2.00	145	4.00	145	4.00	160	5.00	180	5.00	710	20.00
8	Tarpaulin	1	0.08	All Blocks	325	26.00	420	34.00	355	28.00	390	31.00	395	32.00	1885	151.00
	Post Harvest Infrastructure and Machinaries															
9	Coconut Ladder	1	0	All Blocks	127	51.00	157	63.00	170	68.00	149	60.00	159	64.00	762	306.00
10	Coffee pulper	0	0.65	B3, B14	2	1.00	2	1.00	2	1.00	2	1.00	2	1.00	10	5.00
11	Cocnut peeling Machine	1	0.003	B8, B9, B10, B11, B12, B13	205	1.00	170	1.00	195	1.00	155	0.00	200	1.00	925	4.00

Sl. No	Intervention	Unit	Unit cost	Block covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
12	Garlic Iron Burner	0	0.01	B14	25	0.00	25	0.00	50	1.00	25	0.00	50	1.00	175	2.00
13	Groundnut Harvestor	1	0.75	B1, B11, B12, B13	13	10.00	12	9.00	13	10.00	12	9.00	13	10.00	63	48.00
14	Maize - Combind harvester	1	23	B1, B3, B5, B8, B9	1	23.00	3	69.00	2	46.00	1	23.00	2	46.00	9	207.00
15	Paddy - Combind harvester	1	23	B2, B6, B7	0	0.00	1	23.00	1	23.00	1	23.00	1	23.00	4	92.00
	Capacity building Programme															
16	Exposure Visits - within state	1	3	All Blocks	30	90.00	28	84.00	29	87.00	28	84.00	30	90.00	145	435.00
17	Exposure Visits - outside state - 3 days	1	0.2	All Blocks	36	7.00	32	6.00	35	7.00	34	7.00	31	6.00	168	33.00
18	Training on Market led Extension, Agmark grading&Food safety, post harvest technology, Supply Chain Management, Grading-sorting-packing, Market linkages & Exports, Food processing and value addition at district level	1	0.2	All Blocks	28	6.00	45	9.00	28	6.00	40	8.00	39	8.00	180	37.00
	Total					**491.00**		**891.00**		**625.00**		**573.00**		**783.00**		**3363.00**

B1-Dindigul, B2-Athoor, B3-Reddiarchatram, B4-Shanarpatti, B5-Natham, B6-Nilakottai, B7-Batlagundu, B8-Palani, B9-Thoppampatti, B10-Oddanchatram, B11-Vedasandur, B12-Vadamadurai, B13-Guziliamparai, B14-Kodaikanal

4.4. 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 Tamilnadu 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.

4.5.1. 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 Humidifier, Conductivity Meter, Dehuller/ Scarifier,

Seed Grinder, Blower, Hot Air oven, Incubator and Miscellaneous are required for all blocks.

- 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, and seed certification procedures to all blocks.

- Strengthening of communication and networking facilities

Information on quality seed production techniques would be disseminate among the farmers and seed growers and provide computer accessories to all blocks.

4.5.2. Expected outcome

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

4.5.3. Budget

Seed testing plays a pivotal role in modern agriculture. It is being carried out to analyze factors like germination, physical purity, moisture, seed health and admixture of other distinguishable varieties. Seed testing is carried out in the notified seed testing laboratories. The Seed testing results are very important for the successful implementation of Seed Certification and Seed Law Enforcement programmes. Apart from certified seed samples and samples received from the seed quality control wing, the service samples sent by the farmers, seed dealers and seed producers are also tested in these laboratories of Dindigul district. The budget requirement for implementation of interventions such as strengthening seed testing laboratory is ₹4.41 Lakh , for capacity building is ₹ 2.0 Lakh and Strengthening of communication and network facilities is ₹ 5.0 Lakh. The overall budget requirement for implementation of above interventions is ₹ 33.72.Lakh.

4.5.4. Implementing agency

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

Table.4.19. Budget requirement for Seed and Organic Certification

(₹. in Lakh)

Sl. No	Interventions	Unit	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
I	**Strengthening of Seed Certification lab**															
	Blower, Conductivity meter, Dehuller/Scarifier, Dehumidifier Air Conditioner, Digital moisture meter, Dunnage, Fabricated display Racks ,Geaser, Generator, Heater,Hot air oven,Humidifier,Incubator,Induction stove,Microscope,Moisture meter,Packing machine,R. O system,Sample racks,Seed Grinder,Sieve,Thermohydro meter,Dunnage,Trolley for carriages,Working chair,Working table, Miscellaneous,	No's	13.36	All Blocks	1.00	13.36	1.00	13.36	0.00	0.00	0.00	0.00	0.00	0.00	2.00	26.72
II	**Strengthening of communication and networking facilities**															
	Computer accessories	No's	0.50	All Blocks	10.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	5.00
III	**Capacity Building**															
1	Training to seed grower for quality seed production	No's	0.20	All Blocks	0.00	0.00	2.00	0.40	2.00	0.40	2.00	0.40	2.00	0.40	8.00	1.60
2	Training to seed producers on seed certification procedures	No's	0.10	All Blocks	0.00	0.00	1.00	0.10	1.00	0.10	1.00	0.10	1.00	0.10	4.00	0.40
	Total					**18.36**		**13.86**		**0.50**		**0.50**		**0.50**		**33.72**

Athoor-B1, Batlagundu-B2, Dindigul-B3, Gujiliyamparai-B4, Natham-B5, Nilakkottai-B6, Oddanchahthiram-B7, Palani-B8, Reddiyarchahthiram-B9, Shanarpatti-B10, Thoppamppatti-B11, Vadamadurai-B12, Vedasandur-B13

4.6. Animal Husbandry

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

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

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

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

4.6.1. 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. The budget requirement for fulfilling the below interventions is ₹ **1707.80** Lakh. To overcome these issues the following field level interventions are proposed to improve the fodder availability.

1. Establishment of vermicomposting unit for all blocks.
2. Distribution of Azolla trays for all blocks.
3. Fodder plot development for all blocks.
4. Meikal land development for all blocks.
5. Distribution of grass cutter and chaff cutter to the farmers of all blocks.
6. Enhancing fodder production to the farmers by hydroponic methods for all blocks.

4.6.3. 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 kg, compared to a global average of 6.6 kg. 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 budget requirement for fulfilling the below interventions is ₹ **62.20** Lakh. The following interventions will help to improve livestock breeding management, such as

1. CIDR for all blocks.
2. Distribution of sex-sorted semen facility for all blocks.

4.6.5. 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 budget requirement for fulfilling the below interventions is ₹ **6039.00** Lakh. The intervention have been propose are

1. Distribution of sheep, goat, buffalo for all blocks.
2. Establishment of disposal pits for poultry unit for all blocks.
3. Development of native chicken farms for all blocks.
4. Enhancing integrated farming for all blocks.

4.6.6.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 budget requirement for fulfilling the below interventions is ₹ **1870.00** Lakh. The intervention have been propose are

1. Provide deep freezer facility for storage of vaccines and medicines for all blocks.
2. Establishment of infrastructure facilities, disease diagnostic lab, mobile veterinary units, surgical theaters and ambulance facilities for all blocks.
3. Provide package of modern veterinary diagnosis aids and solar panel to veterinary institutions for all blocks.

4.6.7. Enhancing livestock management

The country has rich and diverse genetic resources of livestock in the form of a large number of species, breeds, and strains within a species. India has some of the best breeds of cattle and buffaloes with traits for dairy, draught power and dual purposes, several carpet wool breeds of sheep, highly prolific breeds of goats and adaptive breeds of poultry. Such utility genes and breeds would be identified, conserved and utilized for breeding and research. The focus would be on conservation of indigenous breeds of livestock and poultry. By developing slaughter house, livestock shandy also be helpful to enhancing livestock management. The budget requirement for fulfilling the below interventions is ₹ **92.00** Lakh. The intervention have been propose are

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

4.6.8.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. The budget requirement for fulfilling the below interventions is ₹ **446.00** Lakh.

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

4.6.9 Budget allocation

The major themes proposed in the plan for animal husbandry sector with a total budget out lay of ₹**. 10217.00** Lakh.

4.6.10 Project implementing agency

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

Table 4.20. Budget requirement for Animal Husbandry

(₹. in Lakh)

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Increasing the Availability of Fodder through Field level Interventions															
1	Establishment of Vermicomposting unit (single bed)	Nos	0.05	All Blocks	480	24.00	495	24.75	495	24.75	495	24.75	495	24.75	2460	123.00
2	Fodder production to the farmers by Hydrophonic methods	Nos	0.1	All Blocks	480	48.00	495	49.50	495	49.50	495	49.50	495	49.50	2460	246.00
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	Distribution of Chaff Cutter to farmers	Nos	0.3	All Blocks	642	192.60	660	198.00	660	198.00	660	198.00	660	198.00	3282	984.60
5	Distribution of Grass Cutter to farmers	Nos	0.3	All Blocks	178	53.40	184	55.20	184	55.20	184	55.20	184	55.20	914	274.20
	Livestock Breeding Management															
6	CIDR (Controlled Internal Drug Release) for increasing Fertility in Cattle	Nos	0.01	All Blocks	1020	10.20	1050	10.50	1050	10.50	1050	10.50	1050	10.50	5220	52.20
7	Distribution of sex sorted semen to veterinary institution	Nos	0.02	B2, B3	100	2.00	100	2.00	100	2.00	100	2.00	100	2.00	500	10.00
	Improving the Livestock Productivity															
8	Distibution of Sheep/Goat units -semi intensive system	Nos	0.6	All Blocks	500	300.00	515	309.00	515	309.00	515	309.00	515	309.00	2560	1536.00
9	Distribution of Buffalo units(5 Buffaloes)	Nos	4.5	All Blocks except B5	182	819.00	188	846.00	188	846.00	188	846.00	188	846.00	934	4203.00
10	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

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
11	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
12	Establishment of disposal pits for poultry unit	Nos	1	All Blocks	25	25.00	25	25.00	25	25.00	25	25.00	25	25.00	125	125.00
	Improving the Service Delivery at Veterinary Institutions															
13	Deep freezer facility for Storage of vaccines and Medicines	Nos	10	All Blocks	0	0.00	0	0.00	14	140.00	0	0.00	0	0.00	14	140.00
14	Establishment of Infrastructure facilities for Veterinary Institutions	Nos	30	All Blocks Except B4, B10, B13, B14	4	120.00	4	120.00	4	120.00	4	120.00	3	90.00	19	570.00
15	Establishment of Mobile Disease Diagnostic Labs	Nos	20	Palani	1	20.00	0	0.00	0	0.00	0	0.00	0	0.00	1	20.00
16	Establishment of Mobile Veterinary Units	Nos	10	B2, B3, B9	1	10.00	0	0.00	1	10.00	1	10.00	0	0.00	3	30.00
17	Establishment of surgical theatres at veterinary institution	Nos	30	All Blocks	3	90.00	3	90.00	3	90.00	3	90.00	2	60.00	14	420.00
18	Providing solar lighting panels at veterinary institution	Nos	1	All Blocks	22	22.00	24	24.00	22	22.00	22	22.00	20	20.00	110	110.00
19	Package of Modern Veterinary Diagnostic Aids to Veterinary Institutions such as Computerised X rays, Ultrasound, Diathermy etc.	Nos	30	All Blocks	3	90.00	3	90.00	3	90.00	3	90.00	2	60.00	14	420.00
20	Establishment of Ambulance facility for animals	Nos	80	B3	1	80.00	1	80.00	0	0.00	0	0.00	0	0.00	2	160.00

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Livestock Management															
21	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
22	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															
23	Establishment of Farmers training Centre	Nos	200	B3	0	0.00	1	200.00	0	0.00	0	0.00	0	0.00	1	200.00
24	Conducting Demonstrations, Camps and Campaigns	Nos	0.1	All Blocks	288	28.80	297	29.70	297	29.70	297	29.70	297	29.70	1476	147.60
25	Creating awarness of livestock management to the farmers through Training Programmes	Nos	0.1	All Blocks	192	19.20	198	19.80	198	19.80	198	19.80	198	19.80	984	98.40
	Grand Total					**2049.20**		**2241.45**		**2109.45**		**1959.45**		**1857.45**		**10217.00**

B1-Athoor, B2-Batlagundu, B3- Dindugal, B4-Guziliamparai, B5- Kodaikanal, B6- Natham, B7- Nilakottai, B8- Oddanchatram, B9- Palani, B10- Reddiarchatram, B11- Shanarpatti, B12 - Thooppampatti, B13- Vadamadurai, B14- Vedasandur

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.

4.7.1.Strengthening of milk storages and processing units

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

The major interventions are,

1. Milk storage tanks of various capacities for all blocks.
2. Milk tankers for all blocks.
3. Milk pumps for all blocks.
4. Curd processing equipment's for all blocks.
5. Pasteurizers for all blocks.
6. Heaters and chillers for all blocks.
7. Washer and conveyors for all blocks.

8. Pipes and fittings for all blocks.
9. Cleaning equipment's for all blocks.
10. Electrical installations (UPS, generators, stabilizers, control panel) for all blocks.

4.7.2. Enhancing milk production and milk processing units

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

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

1. Provision of veterinary medicine for all blocks.
2. Provide fodder development equipment for all blocks.
3. Milk testing equipment's for all blocks.
4. Equipment's for artificial insemination for all blocks.
5. Establishment of milk society buildings and cow shed for all blocks.
6. Cryogenic containers for all blocks.
7. Weighing machines for all blocks.
8. Computer accessories for all blocks.
9. Provide two wheelers for AI technicians for all blocks.
10. Distribution of bulk milk coolers, milk cans of various capacities for all blocks.

4.7.3.Capacity building

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

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

4.7.4. Marketing structures

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

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

4.7.5. Quality control

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

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

4.7.6. Processing and value addition

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

1. Refrigeration plants for all blocks.
2. Dairy processing plants for all blocks.
3. Water and effluent treatment plants for all blocks.
4. Steam raisning plant for all blocks.
5. Fat handling and other dairy equipment's for all blocks.

4.7.7.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 for all blocks.
2. BMC building for all blocks.
3. Ware house for dairy products and dairy consumables for all blocks.

4.7.8.Budget allocation

An outlay of Rs.11016 Lakh is proposed to fulfill the aforementioned interventions for five years. Out of this, ₹ 389.00 Lakh allocated for the Strengthening of milk storage

and processing units, ₹1131.50 Lakh allocated for enhancement of milk productions and milk processing units, ₹ 22.5 Lakh allocated for capacity Building, ₹ 294 akhs allocated for marketing ₹ 7400 Lakh for processing of value addition and ₹ 1990 Lakh allocated for dairy development in Dindigul District. By constructing dairy unit in rural areas more and more beneficiaries belonging to the weaker sections of the District are baled out of poverty, thus ensuring equitable growth and development. This foresighted implementation of developmental schemes in Dairy Sector has enabled to increase the per capita income of rural households in backward Districts.

4.7.9.Implementing agency

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

Table. 4.21. Budget requirement for Dairy Development

(₹in Lakh)

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Engineering section															
1	Electrical installation like Tranformemr, UPS, Stabilisers, Control Panel MCC etc.,	1	25	All blocks	0	0.00	1	25.00	0	0.00	0	0.00	0	0.00	1	25.00
2	Milk Storage Tanks of various capacities	1	15	All blocks	0	0.00	0	0.00	3	45.00	0	0.00	0	0.00	3	45.00
3	Tub washer, Canwashers, Crate conveyor systems.	1	10	All blocks	0	0.00	0	0.00	2	20.00	0	0.00	0	0.00	2	20.00
4	Point of Sale Machines and billing systems	1	0.25	All blocks	10	2.50	10	2.50	10	2.50	10	2.50	10	2.50	50	12.50
5	SS pipes and fittings	1	5	All blocks	1	5.00	1	5.00	0	0.00	1	5.00	0	0.00	3	15.00
6	Solar system for water heating	1	2	All blocks	0	0.00	2	4.00	0	0.00	0	0.00	0	0.00	2	4.00
7	Packing Machineries for milk, Butter, Ghee, SMP and Other Milk products	1	18	All blocks	0	0.00	2	36.00	0	0.00	0	0.00	0	0.00	2	36.00
8	Plate Heat type Chillers and pasteurizers	1	10	All blocks	1	10.00	0	0.00	1	10.00	0	0.00	0	0.00	2	20.00
9	Milk Pumps of Vaious capacities	1	0.5	All blocks	2	1.00	3	1.50	0	0.00	5	2.50	5	2.50	15	7.50
10	Generator of various capacities	1	20	All blocks	0	0.00	2	40.00	0	0.00	0	0.00	0	0.00	2	40.00
11	Curd processing equipments	1	50	All blocks	0	0.00	0	0.00	1	50.00	0	0.00	0	0.00	1	50.00
12	Cleaning In Place equipments with accessories	1	75	All blocks	0	0.00	0	0.00	1	75.00	0	0.00	0	0.00	1	75.00
	Procurement and Input															
13	Veterinary Medicine	1	2	All blocks	3	6.00	3	6.00	4	8.00	4	8.00	5	10.00	19	38.00

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
14	Two wheeler for AI technician	1	0.5	All blocks	5	2.50	5	2.50	5	2.50	5	2.50	5	2.50	25	12.50
15	Computer system with accessories	1	0.5	All blocks	5	2.50	5	2.50	5	2.50	5	2.50	5	2.50	25	12.50
16	Fodder development equipments like chaff cutter, Mower etc.,	1	0.2	All blocks	5	1.00	5	1.00	5	1.00	10	2.00	15	3.00	40	8.00
17	Bulk Milk coolers of Various capacities	1	15	All blocks	2	30.00	2	30.00	0	0.00	0	0.00	2	30.00	6	90.00
18	Milk cans	1	0.035	All blocks	300	10.50	400	14.00	500	17.50	500	17.50	500	17.50	2200	77.00
19	Electronic weighing scales of various capacities.	1	0.3	All blocks	10	3.00	10	3.00	10	3.00	10	3.00	10	3.00	50	15.00
20	Electronic milk testing equipments	1	1.25	All blocks	10	12.50	10	12.50	10	12.50	10	12.50	10	12.50	50	62.50
21	Milking machine	1	0.8	All blocks	5	4.00	5	4.00	5	4.00	5	4.00	5	4.00	25	20.00
22	Cow shed	1	5	All blocks	10	50.00	10	50.00	10	50.00	10	50.00	10	50.00	50	250.00
23	Society Buildings	1	20	All blocks	5	100.00	5	100.00	5	100.00	5	100.00	5	100.00	25	500.00
24	Cryogenic containers	1	0.35	All blocks	7	2.45	7	2.45	8	2.80	10	3.50	10	3.50	42	14.70
25	Equipments for Artificial Insemination	1	0.5	All blocks	4	2.00	4	2.00	4	2.00	4	2.00	4	2.00	20	10.00
	Capacity building															
26	Training of personnel of MPCS, Union and Federation.	1	0.05	All blocks	50	2.50	50	2.50	50	2.50	50	2.50	50	2.50	250	12.50
27	Infertility Camps	1	0.2	All blocks	10	2.00	10	2.00	10	2.00	10	2.00	10	2.00	50	10.00
	Marketing															
28	Parlour structures	1	5	All blocks	5	25.00	5	25.00	10	50.00	10	50.00	15	75.00	45	225.00
29	Milk product storage cabinets	1	0.3	All blocks	25	7.50	35	10.50	40	12.00	40	12.00	40	12.00	180	54.00
30	Product Billing systems	1	0.3		10	3.00	10	3.00	10	3.00	10	3.00	10	3.00	50	15.00

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Quality control															
31	Adulteration detection equipments	1	4	All blocks	2	8.00	2	8.00	0	0.00	2	8.00	0	0.00	6	24.00
32	Milk testing equipment and Laboratory.	1	5	All blocks	1	5.00	2	10.00	2	10.00	0	0.00	0	0.00	5	25.00
	Processing															
33	Dairy Processing Plants	1	6000	All blocks	0	0.00	0	0.00	1	6000.00	0	0.00	0	0.00	1	6000.00
34	Refrigeration Plants	1	500	All blocks	0	0.00	0	0.00	1	500.00	0	0.00	0	0.00	1	500.00
35	Water Treatment Plants. Reverse Osmosis plant	1	100	All blocks	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00
36	Effluement treatment plant	1	100	All blocks	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	1	100.00
37	Steam raisning plant with accessories	1	100	All blocks	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	1	100.00
38	Fat handling equipments	1	200	All blocks	0	0.00	0	0.00	1	200.00	0	0.00	0	0.00	1	200.00
39	Dairy equipments	1	50	All blocks	1	50.00	1	50.00	0	0.00	1	50.00	1	50.00	4	200.00
	Civil work Infrastructure															
40	Construction of Dairy	1	1500	All blocks	0	0.00	0	0.00	1	1500.00	0	0.00	0	0.00	1	1500.00
41	BMC buildings	1	15	All blocks	2	30.00	2	30.00	0	0.00	0	0.00	2	30.00	6	90.00
42	Ware house for Dairy products	1	200	All blocks	0	0.00	1	200.00	0	0.00	0	0.00	0	0.00	1	200.00
43	Ware house for Dairy consumables	1	200	All blocks	0	0.00	0	0.00	1	200.00	0	0.00	0	0.00	1	200.00
	Grand Total					**477.95**		**784.95**		**8987.80**		**345.00**		**420.00**		**11015.70**

B1-Athoor, B2-Batlagundu, B3- Dindugal, B4-Guziliamparai, B5- Kodaikanal, B6- Natham, B7- Nilakottai, B8- Oddanchatram, B9- Palani, B10-Reddiarchatram, B11- Shanarpatti, B12 - Thooppampatti, B13- Vadamadurai, B14- Vedasandur.

4.8. Fisheries sector

Fisheries' as a sector is one of the thrust are as in the overall economic development of the state playing a predominant role in its economic activity by its contribution to direct and indirect employment for more than 11 lakh fishers, contributing food security to a considerable portion of population and earning substantial revenue, especially from foreign exchange. The Fisheries sector over the years has transformed from subsistence-based artisanal activities to modern livelihood activities with the application of science and modern technologies in the field of capture fishing and culture fisheries. It is developing as a major industry with diversifications *viz*., exploring deep sea resources and eco-friendly aquaculture practices for culture of finfish and shell fish, ornamental fish culture, eco-tourism, fish processing parks, mid sea fish processing units, etc.

4.8.1. Enhancement of fisheries production

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

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

publicity. Several species of fish are herbivorous in that their principal diet is aquatic vegetation. One such species, the grass carp (also known as the white amur or Chinese carp), is being tested in various parts of the country.

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 for all blocks except kodaikanal.
2. Enhancement of fish production in irrigation tanks and panchayat tanks by stocking fish seeds in all blocks except Guziliamparai, Reddiarchatram, Vadamadurai.
3. Promotion of quality fish marketing by traditional fishers by providing moped with ice box in all blocks except Natham, Shanarapatti, Palani.
4. Improvement of hygienic fish handling by providing ice boxes in Natham, Shanarapatti, Palani.
5. Propagation of Fish culture in multi-purpose farm ponds in Tamil Nadu in Athoor, Dindigul, Batalagundu, Nilakotai, Oddanchatram, Palani, Thoppampatti.
6. Up gradation of fishing efficiency of inland fishermen of Tamil Nadu for all blocks.
7. Promotion of ornamental fish culture at Batalagundu and Nilakotai.
8. Improvement of hygienic fish culture by establishinf modern fih kiosk TNFDC for Natham, Shanarapatti, Palani.

4.8.2. Infrastructure and assets

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

the produce. The fish culture technologies and economics are simple and understandable to the fish farmers. Also, the fishery wealth in the inshore waters is being overexploited due to excessive fishing pressure on the resources. Artificial reefs help in augmenting the productivity of the marine ecosystem. Artificial reefs act as habitats to marine aquatic organisms enhance the fish production through increased breeding activity and survival of young ones and act as a barrier for bottom trawling operations. Hence it is necessary to install theEstablishment of District Extension and Training centres and establishment of mini lab facilities in government fish farm of this district with budget cost of ₹1.00 Lakh.

The interventions are

1. Establishment of mini lab facilities in Government fish farms at Palani.

4.8.3. Capacity Building

Effective extension support is essential for the promotion of Aquaculture in freshwater and brackish water areas. It is necessary to establish the information centres/data dissemination centres in Fishermen villages, animation camps in fisheries villages, seminars, exhibitions and workshop, and awareness centres for linking the fishing villages, marketing centres and the district offices. Hence in this district it is necessary to give training to fish farmers and organization of fish festival with budget of cost of **₹630.06** Lakh.

Project components

- Enhance the capacity building programme through providing demonstration of cage culture in rural tanks at Athoor, Batalagundu, Dindigul, Oddanchatram, Palani, Thoppampatti.
- Arranging exposure visit to farmers to other state for Batalagundu, Oddanchatram, Vedasanthur.
- Organizing fish festival to Nilakotai, Oddanchatram, Palani.
- Provide training to fish farmers in all blocks.

4.8.4. Budget

The budget requirement for fulfilling the above interventions is**₹ 1529.83 Lakh** .

4.8.5. Implementing agency

Department of Fisheries will be implementing the project.

Table 4.22 Budget requirement for Fisheries

(₹in Lakh)

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Enhancement of fisheries															
1	Up gradation of Fishing Efficiency of Inland Fishermen of Tamil Nadu.	No.s	0.15	All Blocks	190	28.50	195	29.25	110	16.50	100	15.00	105	15.75	700	105.00
2	Propagation of Fish Culture in Multi-purpose farm ponds in Tamil Nadu	No.s	1.4	Athoor, Batlagundu , Dindigul, Nilakottai, Oddanchatr am, Palani , Thoppam patti	75	105.00	50	70.00	41	57.40	41	57.40	41	57.40	248	347.20
3	Promotion of quality fish marketing by traditional fishers by providing mobbed with icebox	No.s	0.5	All Blocks Except Natham, Palani , Shanarpatti	5	2.50	36	18.00	36	18.00	21	10.50	21	10.50	119	59.50
4	Promotion of Ornamental fish culture	No.s	3	Batlagundu , Nilakottai	0	0.00	10	30.00	10	30.00	0	0.00	0	0.00	20	60.00
5	Improvement of hygenic fish handling by providing ice boxes	No.s	0.5	Natham, Palani , Shanarpatti	2	1.00	14	7.00	13	6.50	7	3.50	6	3.00	42	21.00
6	Improvement of hygienic fish marketing by establishing modern fish kiosk TNFDC	No.s	12.17	Natham, Palani , Shanarpatti	0	0.00	0	0.00	0	0.00	1	12.17	0	0.00	1	12.17

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
7	Enhancement of Fish production in irrigation tanks and Panchayat tanks by stocking fish seeds	No.s	0.01	Athoor, Batlagundu , Dindigul, Natham Nilakottai, Oddanchatr am ,Palani ,Shanarpatt i ,Thoppamp atti,Vedasa ndur	322	2.18	1355	9.18	1355	9.18	1355	9.18	1355	9.18	5742	38.90
8	Biological Control of Aquatic Weeds by Stocking of Grass Carps in Aquatic Weed Infested water bodies	Ha	0.2	All Blocks Except Kodaikanal	285	57.00	185	37.00	95	19.00	105	21.00	105	21.00	775	155.00
	Section Total					**196.00**		**200.00**		**157.00**		**129.00**		**117.00**		**799.00**
	Creation of infrastructure facilities															
9	Establishment of District Extension and Training centres	No.s	50	Oddanchatr am ,Palani	0	0.00	1	50.00	0	0.00	1	50.00	0	0.00	2	100.00
	Section Total					**0.00**		**50.00**		**0.00**		**50.00**		**0.00**		**100.00**
	Infrastructure and Assets															
10	Establishment of mini lab facilities in Government fish farms	No.s	0.04	Palani	5	0.20	5	0.20	5	0.20	5	0.20	5	0.20	25	1.00
	Section Total					**0.20**		**0.20**		**0.20**		**0.20**		**0.20**		**1.00**

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Capacity building programme															
11	Cage culture demonstration in rural tanks	No.s	5.61	Athoor, Batlagundu, Dindigul, Oddanchatram, Palani, Thoppampatti	7	39.27	3	16.83	7	39.27	3	16.83	7	39.27	27	151.47
12	Exposure visit to farmers to other states	No.s	3	Dindigul, Oddanchatram, Vedasandur	50	150.00	0	0.00	50	150.00	0	0.00	50	150.00	150	450.00
13	Organisation of Fish festivel	No.s	5	Nilakottai, Oddanchatram, Palani	0	0.00	2	10.00	0	0.00	1	5.00	0	0.00	3	15.00
14	Training to fish farmers	No.s	0.03	All Blocks	48	1.44	120	3.60	95	2.85	95	2.85	95	2.85	453	13.59
	Section Total					**191.00**		**30.00**		**192.00**		**25.00**		**192.00**		**630.00**
	Grand Total					**387.00**		**281.00**		**349.00**		**204.00**		**309.00**		**1529.83**

B1- Athoor, B2- Batlagundu, B3- Dindigul, B4- Guziliamparai, B5- Kodaikanal, B6- Natham B7- Nilakottai, B8- Oddanchatram, B9- Palani, B10- Reddiarchatram, B11- Shanarpatti, B12- Thoppampatti, B13- Vadamadurai, B14- Vedasandur

4.8.1.Fisheries Research

The Tamil Nadu Fisheries University, Nagapattinam (TNFU) is the unitary professional University in fisheries established in June 2012 by the Government of Tamil Nadu. TNFU offers B.F.Sc and B.E (Fisheries Engineering) at Undergraduate level, M.F.Sc in the disciplines of Aquaculture, Fisheries Resource Management, Fish Processing Technology, Fish Quality Assurance and Management, Fisheries Engineering and Technology, Aquatic Environment Management, Fish Biotechnology, Aquatic Animal Health, Fish Pharmacology, Fisheries Extension, and Fisheries Economics at Postgraduate level and Ph.D. in the disciplines of Aquaculture, Fisheries Resource Management, Fish Processing Technology, Fish Quality Assurance and Management, Aquatic Environment Management, Aquatic Animal Health, Fisheries Extension, and Fisheries Economics at doctoral level.

1. AQUACULTURE

A. Inland Aquaculture

Natural resources are to be protected, nurtured and used meaningfully for the human welfare. Land and water resources are obviously and primarily to be used for the food production in order to prevent the human-animal conflicts for food. Indian fisheries sector has been playing an important role in the country's economy by its contributions to employment generation, income augmentation, foreign exchange earnings and providing food and nutritional security. The state of Tamil Nadu is geographically blessed with good natural resources like land and water. The fishery wealth of the State comprises of marine and inland fisheries that contribute remarkably for the supply of food Protein to the people of Tamil Nadu in addition to the export front. Like any other tropical province on the earth, Tamil Nadu too has conducive and supportive climate for the biological advantages of many aquatic organisms. The natural resources are bountiful with regard to fisheries development in the state and if meaningfully managed and maintained, it can yield a long term sustainable production for the benefit of the people of the state.

The State has a vast extent of freshwater and brackishwater resources constituting the inland fishery resources in the State. Totally 3,83,000 ha of inland water bodies are available made up of 78 reservoirs and short and long term seasonal ponds and tanks and brackishwater areas. The inland fish production during the year 2015-16 has been reported as 2,42,000 (0.24 million) tonnes. This accounted to 0.63 ton per ha.

The following Table gives the fish productivity from the inland water resources of the State during 2015-16:

Sl.No	Total available water spread (in ha)	Total production reported (in tonnes)	Fish productivity (kg /ha)
1.	383000	242000	631

The production that has been reported above is not falling in line with the actual carrying capacity of any tropical water body. The carrying capacity of the tropical water bodies has been reported to be around 500 g of fish biomass per m^3, while the presently reported production is at 63g per m^3 indicating just 12 % achievement of the available potential. Even at the worst situations like fluctuating monsoon and failure of rains in the tropical climate, the productivity can be 250 g per m^3 leading to 2500 kg per ha which is about 4 times higher than what is achieved now.

The nominal estimations of the inland fisheries production in the state has revealed that a production of 4.50 lakh tonnes of fish in times of normal rainfall is possible in the State. This would present the situation of more than 1000 kg (1.17 ton) production per ha. Achieving this production is the short-term goal for inland aquaculture, while the long-term goal must be 3.0 tons of fish per ha with the available water resources falling in line with other tropical countries in the world.

Interventions through infrastructure development and technology application

In filling up the above identified gap, interventions can be made in the following areas

The present level of low productivity can be enhanced through creation of needed infrastructure at appropriate locations with introduction and adoption of improved technologies in inland aquaculture. The proven research data and strong research support system for drafting new policy or modification of existing policies can pave way for increasing the inland fisheries production. Introduction of alternate species and adoption of improved species, along with value addition on inland aquaculture can enhance fish production. Besides the above, channelizing the marketing procedure for increased income will attract more entrepreneurs. The intensification or expansion of aquaculture activity in the state may lead to a demand of 700 million fingerlings every year. Therefore, creation of additional rearing area is a must to cater to the needs of the inland sector.

With these brief background idea, Tamil Nadu Fisheries University is submitting the following plans and proposals in the identified districts as Action Plan for the improvement of the inland aquaculture production.

Application of newer technologies

Following are the possible working models for the task

1. Creation of modern fish farming facilities together with modernization of existing hatcheries and farms in the State.
2. Identification and application of improved fish farming technologies in the districts with specific technical alterations.
3. Improvement in the seed production sector through improved broodstock development, management and dissemination of technologies to the hatchery operators for adoption
4. Evaluation and certification of seeds for farming and certification of genetically improved varieties for biosecured production process
5. Troubleshooting with more technical personnel and recommendation for the safe and sustainable aquaculture in the identified water bodies
6. Training and capacity building at various levels through demonstration and hands on training
7. Data collection, documentation and forming a support system for the policy making for the inland fisheries development

Keeping the above in mind, it is proposed to have projects in the following lines

1. Planning for more advanced infrastructure with suitable operation protocol for different farming systems, seed production activities, value addition, feed production and feeding processes.
2. Evaluation of identified water bodies for their suitability in terms of nutrient availability and application of intensive farming practices like cage farming, raceway or running water farming systems, integrated farming, increased stocking with conventional and alternative species like GIF Tilapia, Jayanthi Rohu, Pangassius, Murrel, Loaches, etc.
3. Development of Pilot level farming systems for Recirculatory Aquaculture System (RAS), integrated farming, culture of multi-species and alternative species, nutrient controlled farming system, etc can be established in different districts based on the resources and available technical manpower. Technology can be demonstrated to the farmers and stake-holders.

4. Creation of regional water quality testing and disease diagnostics laboratories in different districts which can be established and manned for extending support services to the farmers and recommending the nutrient use in the aquaculture systems.

5. Major breeding centres in the state can be equipped with the sperm bank for collection, storage and supply of cryopreserved spermatozoa for the breeding and production of genetically improved seeds. Characterization and spermatological features can be addressed by the University through the already established Cryopreservation Lab in the University. Technical inputs and needed training can be extended by the University as it was done earlier through NADP.

6. Cage culture of fast growing fishes in seasonal tanks: Open water bodies like tanks and lakes with large extend of water spread are reported to give a very low fish production in the country due to various reasons. The low stocking and poor control over the stock due to the large extend of the water span are the major reasons behind such low production and this can be rectified by the adoption of cage farming in the open waters. Natural fertility in the open water bodies can be used for the successful growth of fishes by adoption suitable stocking density and culture practice so as to have high survival and better growth. This has been proved beyond doubt in many east Asian countries where the per unit production is around 50 kg per m^2. Such high productivity is also possible in Indian water bodies, if suitable cages are framed and erected in the open water bodies like natural tanks, lakes, pools and reservoirs where the control of the fish stock will be possible in the cages.

7. Formation of certification centre will help in the certification of quality of broodstock and seeds. The protocol and procedure are already available for the fishes and in practice in other countries. The same can be done for the inland fish species to avoid culture of unwanted species. Only quality seeds can be used for the culture that can increase the production many folds.

8. Similar to sperm bank, separate brood banks can be established in selected places in the Cauveri, Thamirabarai, and Bhavani river basins, through which the quality brooders can be identified, segregated, developed and supplied to the farmers continuously so as to improve the seed production status in the state. In this line, needed evaluation and identification can be done by the University for efficient functioning of the brood bank.

9. An analytical wing can be established to identify potential areas for aquaculture in the selected districts through GIS and nutrient mapping of the water bodies in order to suggest suitable species and culture methodology. Needed training for the extension workers / agencies and farmers can be done through this Unit.

10. Data recording and support system is an essential component for the development of inland aquaculture. Therefore, TNFU proposes to have a functional unit for the recording of fish production data in the inland water bodies of the state including species composition, their biological data and the farmers' attitude and mind-set in the inland fish farming so as to redefine the inland fish production policies of the government.

In the national scenario, Tamil Nadu with its 0.383 million ha of potential freshwater area is standing at 9th place in inland fish production. States like Assam and Chhattisgarh which are having same extend of freshwater bodies (sometimes lesser than that made available for farming due to flooding and drought) stand at 7th and 6th place, respectively with above 25 % more fish production than Tamil Nadu. In simpler estimation, if 50 % of the potential water spread is considered useful for fish production purposes in the State, with 0.2kg per m^3 production per annum, there will be a production of 0.38 million tonnes instantly.

Possible outcome due to the above intervention in inland fisheries in the State

Inland fisheries in the state can yield the following benefits to the stakeholders and public in general:

1. With the creation of newer infrastructure in the farming and seed production centres, more technologies can be evaluated and disseminated for the benefit of the farmers. This would help in enhancing the area of production and yield. More production will ensure more fish available for consumption thereby good quality food is assured for the people of the state.

2. With adoption of newer and advanced technologies in the fish farming, the open waters can yield as high as 2 tonnes fish per ha, which is approximately 4 times higher than that of the present level of production. Ultimately the State's total fish production can go at least 100% increase from the present level.

3. Approximately 0.40 million tonnes of fish production is possible per annum from the available resources against the present production of 0.24 million tonnes. This can result in the increased revenue (at least 100 % of the present level) and more protein rich food for the people.

4. Through the establishment of brood bank and sperm bank production, sub-standard seeds can be totally avoided. This would also ensure the higher yield through stocking of certified seeds.

5. There are 2.0 lakh inland fisherfolk depending on the inland fisheries in the state and they can be provided with assured revenue and employment by adopting best fish farming practices in the inland water bodies. Fish farmers can be supported with the Aquaculture Information Centre.

6. Approximately this would benefit 1.0 lakh people directly and 2.0 lakh people indirectly in addition to the supply of protein-rich food to approximately 20 million people residing in the inland areas of the State.

B. Coastal Aquaculture/ Mariculture

The marine fisheries wealth of Tamil Nadu is well known. Long coast line together with biodiversity that helps in the enrichment of marine fauna and flora and efficient fishermen population make the state to contribute more from marine sector. Besides the natural exploitation of resources, coastal areas can be more effectively used for the production of marine fishes and shellfishes through aquaculture. Although Andhra Pradesh stands first in the quantum of shrimp production, Tamil Nadu is standing first in terms of productivity (tons/ha area). This vouches the fact that the aquaculture is done on more scientific lines with due consideration for ecosystem protection.

Tamil Nadu State with the second longest coastline in the country covers an area of 1,076 km accounting for 13.3 per cent of the Nation's Coastal line of 8,118 km. The following table gives the status of the marine fisheries in the State.

Exclusive Economic Zone (EEZ)	1.9 lakh sq. km
continental shelf	41,412 sq. km
Number of Coastal Districts	13
Number of Fishing Villages	608
Marine Fisher folk Population (Projected)	9.85 lakh
Fishing Crafts Registered (online): (2016-17)	
Mechanised Fishing boats	5,944
Traditional Crafts (mechanised & non - mechanised)	34,920 (29,587+ 5,333)
Infrastructure available	
Major Fishing Harbours	5 (Chennai, Thoothukudi, Chinnamuttom, Colachel and Muttom (PPP)
Medium Fishing Harbours	4 (Pazhayar, Mallipatnam, Nagapattinam and Cuddalore)
Fish landing Jetties (Landing Centres)	36

Misc Landing Points (unorganized)	254
Marine Fish Production 2015-16	4.77 lakh tonnes
Marine Products Export (2015-16)	85,063 MT (Rs.4,184.06 crore)

The inshore waters of 1,016 km long coast on the eastern side and 60 km long coast on the western side are found to be over-exploited, whereas the offshore and deep sea resources are yet to be exploited to its optimum levels. The marine fish production of the State presently is estimated to be 4.77 lakh tons against the estimated potential of 7 lakh tons.

Scope for coastal aquaculture in Tamil Nadu

People living along the coastal region have the greater chances of accessing the seawater and saline areas. Most of the population is largely depending on the exploitation of the sea and natural resources. Due to varied reasons there have been steady decline in the stock that results in diminishing revenue for the people who are depending on them. Therefore alternate livelihood options are to be developed and provided for the upliftment of their socio-economic status.

The proposed action plan is to establish demonstration and training centres for the technology transfer and providing technical assistance to the people in the coastal region to identify the possible alternate livelihood options. The living zones of the people can be enriched with the activities like small scale fish farming and aquatic animal fattening farms. These are chosen because of the familiarity of the animals among the people and the easy understanding of the animals' behavior for better management of the farming. Therefore the major activities that can be taken in the Action Plan are,

1. Establishment of technology development Centres and demonstration units
2. Support system for the coastal farming through laboratory, technical assistance, marketing guidance, trouble shooting and adoption of newer technologies.

The following activities can be considered for the coastal aquaculture development in the Tamil Nadu coast:

1. Sea weed farming – raft and pole methods
2. Sea weed processing and packing for market
3. Cage farming – marine fin fishes & lobster
4. Marine ornamental fish farming
5. Marine ornamental fish breeding and seed supply
6. Marine live-feed production
7. Marine finfish farming

8. Marine fin fish seed collection and brood stock development
9. Marine crustacean seed collection and rearing
10. Production of genetically improved species for aquaculture
11. Shell fish fattening (Lobster & crab)
12. Fabrication of cages and support structures for the farming activities
13. Feed production and supply
14. Micro rearing units with minimal expenditure for the local fisher folk as an alternative employment
15. Marketing assistance for the grown fishes as well as seeds

Achieving the goals

In achieving the goals, centres can be established in 5 to 7 places identified in the coastal region where in the pilot level farming facilities for the above activities can be developed. Technical people at the level of Training Associates and Training Assistants can be employed for the training and demonstration purposes. Moderate level farming and laboratory facilities are to be established with a focus to assist the entrepreneurs to carry out the activities. Marketing assistances through buyer-seller meets can also be arranged for the efficient marketing of the produces.

Possible outcome due to the above intervention in the state

The adoption of the above activities along the coast of Tamil Nadu can yield the following benefits to the stakeholders and public in general:

1. With the creation of newer infrastructure in the farming and seed production centres, more technologies can be evaluated and disseminated for the benefit of the farmers. This would help in enhancing the area of production and yield.
2. Approximately 0.10 million ton of finfishes could be produced from coastal aquaculture that can increase the revenue and income to the farmers.
3. Alternative employment opportunities can help the coastal fisher folk to gain more control over their lives and economic development in the livelihood of the fisherfolk is possible.
4. There are about 0.4 million fishermen families depending on the sea in the State and they can be provided with assured revenue and employment by adopting fish farming in the coastal areas. Steady migration from capture to

culture ensure their life.

2. AQUATIC ANIMAL HEALTH

Disease outbreak is a major problem that affects the development and expansion of aquaculture sector. Diseases are caused due to imbalances in the interactions of the host, pathogen and the environment. Maintaining the health of the cultured organisms by providing adequate nutrition, optimum water quality parameters would help to avoid the disease outbreaks and associated production and economic losses due to diseases. Accurate and timely diagnosis of fish diseases combined with suitable management measures greatly help in their control and prevent diseases in aquaculture.

The following are some of the bottle necks in aquatic animal health management

1. Lack of a well equipped facility under one umbrella to carry out the diagnosis of diseases caused by pathogens, parasites, analyse the variations in the water quality parameters
2. Unavailability of field level diagnostic kits for rapid and accurate diagnosis of diseases
3. Lack of surveillance and awareness on the existing and emerging diseases and appropriate management in aquaculture
4. Lack of training on the field level identification of diseases and their control measures
5. Lack of awareness on the Good Management Practices (GMPs) for successful and sustainable aquaculture practices

Hence, the identified thrust areas for proposing on aquatic animal health are

1. Establishment of satellite laboratories across the state with well equipped facilities to extend services on disease diagnosis and water quality analyses
2. Development of rapid and accurate diagnostics for field level and lab identification of diseases
3. A disease surveillance network and monitoring system for continuous monitoring of existing and emerging diseases to develop strategies to prevent disease outbreaks in aquaculture production systems
4. Conducting training and awareness programmes on the field level identification of diseases and their management measures including biosecurity methods

3. HARVEST AND POST-HARVEST TECHNOLOGY

A. Harvest Technology

Fishing is one of the multi-million dollar industry provides huge foreign exchange and livelihood opportunities to millions of people in the country besides offering high quality protein rich food. Among the coastal state in India, Tamil Nadu is one of the major fish producing state, 5th in total fish production and contributing 0.7 percent of the total Gross State Domestic Product of the state. The state Tamil Nadu has a long coastline of about 1076 kms, accounting for about 17% of the Indian coastline. It has the EEZ area of 0.19million sq.km sharing 9.4 % of the total EEZ of the country. The total fish production of the State during the year 2014-15 is 6.97 lakh tons (sector wise, from marine resources-4.57 lakh tons and freshwater and brackish water resources -2.40 lakh tons). A total of 5,395 traditional crafts 30,022 motorized traditional crafts and 5,936 mechanized crafts are supports the coastal fish production. (Tamil Nadu Fisheries Department report, 2017). Tamil Nadu is one of the leading exporter of the marine products, exported to the tune of 93,477 MT and earned a foreign exchange of Rs.5,308.17 crore during 2014-15.

Scope for Deep sea fishing in Tamil Nadu

In earlier days, fishing in the state was purely a traditional activity has now transformed to a commercial, market driven, multi-dollar enterprise owing to introduction of synthetic fishing gear materials and mechanization. But due to uncontrolled increment of fishing vessels and over exploitation of fishery resources in the inshore waters, 90% of the stock within 50mt depth was exploited, this lead to reduction in livelihood income of the fishermen. Therefore the alternative livelihood option available with us is development of deep sea fishing for the upliftment of their socio-economic status.

Research and Extension gaps

Under the existing scenario, following are identified as the major research and extension gaps prevailing in the state,

1. Non adoption of Eco-friendly fishing gear technologies as being followed in the developed fishing Nations
2. Non availability of eco-friendly fishing technique like trap fishing
3. Non availability of training services to the fishermen of Tamil Nadu on engine maintenance, sea safety and responsible fishing
4. Non availability shore based ship in campus of training facility to impart training on deep sea fishing technique to the fishermen of Tamil Nadu
5. Non availability of laboratory facilities to conserve the forage fish stock depletion along the coast of Tamil Nadu due Long lining .

The proposed Action Plan is to establish demonstration and training centres for the technology transfer and providing technical assistance to the people in the coastal region to

identify the possible alternate livelihood options. The major activities that can be taken in the Action Plan are,

1. Establishment of Technology Development Centres and Demonstration units
2. Support system for the coastal fishing communities through ship in campus facility to impart training on Deep Sea fishing technique.
3. Establishment of Artificial fish bait development Laboratory to support Long line fishing.

The following activities can be considered for the inshore and deep sea fishing developments in Tamil Nadu:

1. Popularization of eco-friendly fishing techniques – Gill netting , Long lining and Trap fishing Technologies
2. Organizing training on sea safety and responsible fishing methods
3. Imparting training programs on engine maintenance
4. Imparting cost effective training on deep sea fishing techniques with ship in campus facility
5. Creating artificial fish bait development laboratory to support the development of artificial fish baits for Long line fishing.
6. Introducing automated trap fishing techniques as low energy fishing technique

Achieving the goals

In order to achieve the goals, centres can be established both at main and shore laboratory campuses of Fisheries College and Research Institute, Thoothukudi. Technical personals such as Senior Research Fellow, Gear Technician, Skipper, Mechanical Engineer, Mechanic, Training Associates and Training Assistants can be employed for the training and demonstration purposes. Ship in campus facility will be established with a focus to reduce cost of training on deep sea fishing; artificial fish bait development laboratory will be developed with the objective of studying the behaviour response of marine predatory fishes to different types of artificial baits which are found to be very much essential for successful long line fishing being encouraged both by central and state Governments in India. Trap setting vessel is yet to be introduced in India despite vast potential in coral and rocky coasts of India.

Possible outcome due to the above intervention in the state

The adoption of the above activities can yield the following benefits to the fishermen community:

1. With the creation of new facilities such as eco-friendly fishing gear technology centre, mobile training unit, ship in campus facility, artificial fish bait development laboratory and trap setting vessel, many technologies can be disseminated for the benefit of

the fishermen communities which would pave way to increase fish production of the state and there by the livelihood of the fishermen.

2. Approximately 1,000 fishermen around the state will be trained to bridge the extension and research gaps in the field of fishing technology particularly with reference to deep Sea fishing , sea safety, responsible fishing methods and marine engine maintenance.
3. Introduction of alternative fishing methods such as long lining and trap fishing can help the coastal fisher folk to venture into deep sea to harvest underutilized deep sea resources.

B. Post-Harvest Technology

Fisheries sector plays a significant role in the Indian economy in terms of its contribution to growth and development. For growth, the sector contributes through its share in GDP and foreign exchange earnings gained through the export of fish and fishery products. Tamil Nadu ranks fourth among the states in terms of total fish production. Fishes can be effectively used for the preparation of value added fishery products which can provide better employment opportunities and income to the fishers. It can also provide high quality protein for human consumption by conversion into value added products in various convenient forms.

Being a highly perishable commodity, fish requires proper landing facilities, processing, storage, transport and distribution facilities running through the entire supply chain from capture to consumer. The demand for fish and fishery products shows growing trend and the depletion of resources in near shore waters demands the use of this resource effectively and make available to common man. Hence it is necessary to ensure that every kilogram of harvested fish is fully utilized for human consumption. The loss in the post harvest fishery has been estimated at 15 % owing to lack of adequate post harvest infrastructure in the state.

If fishermen can sell their fish to consumers within a few hours of catching, little post-harvest technology is needed. However, this is seldom the case, and fish has always to be preserved in some way - iced, frozen or cured until it reaches the consumer in distant places. The major factors that affect the nutritive value of fish products depend on the way fish is handled, processed or preserved, stored, transported and marketed. The fish is exposed to stress from the time it is caught to landing onshore by the fishing vessel. Moreover, the time lag in transport of fish from the processing/wholesale markets to the consumers' table is very crucial that determines the quality of fish supplied. The way in which the fish is handled while transporting plays a vital role in ensuring the quality of fish that serves the consumers' table.

About two-thirds of the total landed fish in India is consumed in the fresh condition and the remaining is utilized for preservation by other methods. The fishes caught from inland sources are almost entirely diverted to the fresh fish market, none of the long-term preservation techniques being employed for them.

The post-harvest field with its emphasis on handling, processing, distribution and marketing is a complex series of events that is challenging to the policy making body/administration. Moreover, post-harvest fishery losses play an important role in maintaining or increasing the domestic supply of fresh fish or fishery products that can be purchased by middle and larger income level family.

Problems to be addressed

- *Percapita consumption of fish is very low,* it is only 9 kg against the recommendation 14 kg. Availability of diversified quality fish products in the domestic market has to be increased to ensure increase in percapita consumption of fish.
- *The post-harvest losses recorded is 12%* in the state which leads to intense revenue loss to fishers. Creation of awareness among fishers, train them on improvised fish preservation techniques and value addition will be the ideal solution to overcome this loss. *The reduction in post-harvest losses has a direct impact on local and regional trade flows.*
- There are entrepreneurs interested in taking up the business of production of value added fish products. But they could not as the *venture capital is high*. There are improvised and modern techniques available with state and central organizations for the entrepreneurs. The projects under NADP will serve as a bridge and fill the gap to promote entrepreneurship that results in *availability of diversified fish products in household brands in the domestic market*.
- Fish is a wonderful, nutritious food that has much health beneficial attributes which helps us to overcome lifestyle diseases and malnutrition. The project under will have great role in addressing *malnutrition issues, creating food security and providing employment opportunities*.
- Post harvest infrastructure is inadequate with regard to business incubation centers and marketing channels like Aavin. *The domestic fish marketing system is neither efficient nor modern and is mainly own by private hands with* a *huge number of intermediaries between producer and consumer*. This project under NADP will eliminate intermediaries and increase the fisher's share in consumer rupee. *Branding of state fishery products is essential that signals difference in quality and price points.*
- *The institutional fish marketing with the active participation of the stakeholders* would be successful. The production centers and retail units established through NADP

project will function like Aavin to promote marketing of fish and fishery products to augment income to fishers.

- Awareness among consumers is lacking and the *consumers should be educated about their right to have healthy fish, free from spoilage and unhygienic environment, including their right to have value for their money*.

The following activities in Fish Processing that can be considered in the Action Plan

I	**Fish processing - Novel technologies and techniques**
1	Development of techniques to improvise and modernize traditional preservation of fish
2	Modernization of dry fish production through solar drier
II	**Value addition and product diversification**
1	Development of snack foods from fish
2	Promotion of consumption of farmed Tilapia through product development and diversification
3	Development of ready to eat products from farmed freshwater fishes to promote consumption
III	**Branding of fish products and institutional marketing**
1	Creation of regional production centres for fishery products with State Brand
2	Creation of institutional fish retail outlets with the participation of stakeholders
IV	**Reduction of post harvest losses**
1	Awareness to fishers on hygienic handling of fish
2	Creation of awareness among fishers on fish processing technologies
3	Capacity building and skill development programmes on fish processing technologies
V	**Enhancement of percapita consumption of fish**
1	Awareness campaign on health beneficial attributes of fish
2	Production of short films on nutritive value of fish and screening in theaters and television channels
VI	**Utilization of seaweeds and other marine resources for food security**
1	Development of nutraceutical products form seaweeds
2	Popularization of seaweed products through mass media
3	Development of seaweed snack foods
VII	**Ensuring nutritional security through fish and fishery products**
1	Supply of preserved ready to eat and ready to cook fish products through public distribution systems

2	Supply of fish and fish products in mid day meal programme
VIII	**Enforcement of international quality standards in fishery products meant for domestic market**
1	Creation of laboratory facility at regional level for testing and certification of fish and fishery products
2	Establishment of sea food forensic laboratory to test the authenticity of fishery products international market
3	Establishment of state level Aquatic Food Safety Analytical Center
4	Accredited Microbial Quality Testing Laboratory for Certification of Aquatic Food Products in South Tamil Nadu
IX	**Utilization of fish processing waste and by catch**
1	Installation of fish waste rendering plant at selected fishing harbours and fish markets
2	Development of fish compost for production of organic food
3	Installation of unit for producing biogas from fish waste
4	Development of technologies for effective utilization of shrimp shell waste
5	Development of peptides from fish processing wastes as dietary supplement

Possible outcome due to the above intervention in the state

- Creation of “Fish Processing Business Incubation Centre” in all coastal districts and fish and fishery products retail outlets in all inland (non coastal) districts to transfer fish processing and value addition technologies through incubation and marketing support to fishers, unemployed youth and women self help groups.
- Fishes could be processed using recent and updated techniques in production centers and packed in attractive packages distributed and sold through retail outlets.
- Better utilization of catch, improve returns to fishers and provide employment and income generation opportunities to the fishers and other entrepreneurs.
- Promotion of consumption of value added fish products among school children and general public through distribution of diversified value added fish and fishery products.
- Necessary guidance will be rendered to food industries and government agencies with sound scientific knowledge supported by state of art facilities.
- Nutritional labelling, quality testing, shelf life assessment, certification of cleanliness, safeness and nutritional quality of ingredients and products, analysis of additives, adulterants, contaminants will be carried for the aquatic products meant for domestic market which is not strictly adhered in the current scenario.

- The post harvest losses can be minimized by adopting suitable post harvest technologies to create direct impact on regional trade flows and to minimize the intermediaries to increase the returns to fishers.
- Branding of state fishery products to promote diversified fish products in household brands in the domestic market through institutional fish marketing with the participation of stakeholders.
- The nutritional benefits of edible macroplants from the sea can be made available for human consumption.
- Offal from finfish and shellfish can be effectively converted in to products of commercial importance

4. FISHERIES RESOURCE AND ENVIRONMENTAL MANAGEMENT

Tamil Nadu is one of the important state which is blessed with both freshwater and marine fisheries resources. Being part of tropical region it is blessed with rich aquatic diversity and fisheries in the state form one of the important sector which provides employment to millions of people and contributes to food security. It has a coastline of over 1076km and the continental shelf area of 41,412 sq.km. Tamil Nadu ranks second in marine capture production with the share of 7.07 lakh tonnes which is 20% of the total Indian Fisheries Landings during the year 2016. The marine fish landings has been a growing continuously growth.

The State is also endowed with extensive freshwater resources with an extent of 3.73 lakh ha. Fisheries play a vital role. Presently, this sector provides employment opportunity for 11.85 lakh people – 9.64 lakh in marine sector and the remaining 2.21 lakh in freshwater sector. The fisheries resources are essential for

i) food and nutrition security
ii) economic and social development from fisheries and aquaculture, marine and coastal tourism, shipping, mining, energy and
iii) ecosystem services such as carbon sequestration, water filtration, atmospheric and temperature regulation, protection from erosion and extreme weather event

There are 2500 species of fishes found in different aquatic environment. The fisheries in the state are one of the vital source for food security. These resources are affected by pollution, habitat alteration and over exploitation. The unique aquatic environment face gradual decline in aquatic resources particularly the rare and endangered organisms necessitates some urgent steps that need to be taken to conserve them. The existing resources have to be effectively managed to provide adequate employment.

As India is the signatory of convention on biodiversity, these distinctive aquatic marine gemplasms have to be preserved and conserved to get the benefit out of it. The conservation initiative will help to fulfil the prime objective of Tamil Nadu Biodiversity Board and Tamil Nadu State Fisheries Department on continuously improving knowledge and understanding of the aquatic resources, their conservation, management and development. Over recent decades, resource managers have been working to limit the loss of aquatic resource. Longstanding strategies and programs are in place across all jurisdictions that are concerned with conservation specifically or with the ecological sustainability of aquatic sectors. Despite limitations in the knowledge of what exists, its current condition and pressures, observations of significant decline in some aquatic resource in some areas lead to the conclusion that India's fisheries resources are in a state of continuing decline. The effects of a number of threatening processes are resulting in declines in habitats, changes in ecosystems and loss of species. The resources are eroding rapidly because of over fishing, pollution from land based sources, mangrove deforestation, climate change and ocean acidification. The effectiveness of, and seek improvements in, efforts to minimize future degradation has to be monitored and regulated.

Fishermen are constantly upgrading the fleet to reach new resources (species/stocks) and new areas after over-fishing the stocks in the earlier fishing grounds. The catches from the new areas and new resources mask the decline of many near shore resources. Small pelagic fishes contribute significantly during the recent years particularly the oil sardine, whose increase could be attributed to a combination of over-fishing of apex predators and increase in sea surface temperature. Available studies from marine indicates that the species like (i) elasmobranchs, (ii) anchovy, (iii) penaeid prawns, (iv) lobsters, (v) pomfrets and (vi) seerfishes were declined after reaching a peak and indicating overfishing. The large number of juveniles landed indicates recruitment over fishing and growth over fishing which leads to severe loss in yield. The bycatch related issues further worsens the resource. Apart from this Indian is facing changing climatic conditions and on-going environmental degradation, which loom food security and livelihoods. So there is an urgent to conserve the resource from the impacts of climate change and evaluate the potential conservation strategies to improve food security. Presently the adoption of proper management measures to capture the right sized species, low-cost inshore fish-aggregating device utilization, and improved natural resources management (including marine-protected areas) were identified as important measures to conserve these resources.

The existing knowledge on inland aquatic resources is very little because of poor exploration activities particularly in Tamil Nadu. There is an urgent need to protect, sustain and responsibly use these resources. Managing these water bodies in proper manner will

offer sustainable livelihood option for the rural poor.New initiatives should also be taken to exploit the resources effectively in a sustainable manner. Through sustained technological up gradation and proper managerial measure could help to use these resources. Eco-system approach to fisheries management has to be implemented for the sustainable harvest of these resources.

Deployment of low-cost inshore fish-aggregating devices is likely to have the highest positive impact on oceanic fish supply in Gulf of Mannar and Palk Bay and substantially enhancing the regions food security. Low-cost inshore FADs are accessible to subsistence and small-scale fishers, thereby increasing the domestic production of oceanic fish.

Introduction of more effective management of coastal and marine resources, especially those associated with coral reef ecosystems is evolved. This will help to maintain their productivity over a longer period of time, while building their resilience to climate change impacts and human-induced environmental threats. The project has to support capacity-building activities on integrated coastal resources management. Climate change adaptation for resilience-building has been emphasized through the implementation of project activities. The application of fish-aggregating devices, development of community-based resource management plans, and effective management of MPAs are much need activities.

Possible Interventions

State Apex fisheries biodiversity reference centre for resource conservation

It will provide a regional focus on developing taxonomic expertise and skills, as well as the infrastructure needed to support the natural resource management and scientific communities within the Gulf of Mannar region and Bay of Bengal area.

Although species identification and nomenclature are fundamental for resource conservation, Government agencies throughout the world often lack taxonomic expertise and some have little scientific credibility for their management of aquatic resources. Scientific advice is needed to improve environmental management, prevent harmful incursions of alien species and to identify new aquatic resources for aquaculture and fishery developments. Since the 1980s, there has been worldwide decline in the number of qualified taxonomists employed in research institutions.

The center will create awareness on the importance of fisheries resources through the collection housed at the biodiversity centre. DVDs on aquatic biodiversity will be produced and the same will be used to educate the need for conservation of aquatic resources to the coastal people. Awareness camp will also be conducted at school level.

Indigenous fisheries resource conservation

Tamil Nadu ranks 8th place in inland fish production in India (1.85 Lakh MTs). The inland fisheries sector has about 3.73 lakh ha. of water spread area with nearly 2.23 lakh inland fisherman directly depending on this sector for their livelihood. Diversification of agricultural activities for increased production, employment and income is well - known. Likewise, aquacultural activities also increased fish production and economical status. Fish seeds and broodstock quality, Monsoon failure affects the inland fish production. Introduction of Gangetic carps (catla, rohu, mrigal) in inland waters affected the minor carps. Hence, minor carps restoration and production must be done to improve Tamil Nadu fish production.

Native fish species form a major component of food consumed by families, especially those living closer to freshwater resources. Some species available and amenable for diversified in freshwater aquaculture are *Labeo cabasu, L. bata, L. gonius, L. fimbriatus, Puntius sarana, Mystus gulio, Anabas testudineus, Clarias batrachus, H. fossilis, Pangasius pangasius, Channa marulius* and *Etroplus suratensis*. These species are a rich source of nutrition for the rural poor either on a seasonal basis or round the year. These native species are considered as low volume and high value fish species. These small indigenous species are always part of enhancing rural food and livelihood security.

Fish Genomic conservation centre

Threats to fish biodiversity are prevalent worldwide. Its conservation is imperative both for the continued development of aquaculture and for the re-establishment of weak stocks in natural systems. Fish gene banks have become an essential support system for existing efforts to protect habitat.

The fish genetic diversity of this region is not thoroughly studied. New species as well as new records have been described from the region especially from Western Ghat Rivers and Gulf of Mannar Biosphere. Further, studies on closely related fish group will help to find out new finfish varieties

Conservation of weak stock genetic diversity has particular importance for locals who rely on them for food. This centre will promote, train, and help implement the management and preservation of fish biodiversity in Tamil Nadu and help to establish "ex situ" (gene banking) conservation initiatives for the management of fish genetic resources.

This facility has to be created to guarantee the proper preservation of genetic resources (tissues samples, molecular preparations and products available in the southern Tamil Nadu region, particularly the aquatic resources of Gulf of Mannar and River

Thamirabarani, and to facilitate their use by the National / global scientific community. The voucher specimen and data relevant to their value will be stored in this facility under sub-zero level.

The preservation of genetic diversity and enable healthy propagation of the breeds/strains, at present or some future date breeding objectives change. The fish gemplasm will also be maintained in live conditions.

GIS centre for fisheries resource management

Geo graphical information system technology has wider application. They can be used in optimizing sampling, explain spatial distribution of fish species. It could be used for ecosystem sensitive zone identification, effect of fishing and pollution. These information could also be useful in stock assessment and fisheries resource management. These advanced information tools could facilitate knowledge based coastal resource management and provide sufficient input for the managers to take appropriate decisions.

Blue growth initiative in fisheries resource conservation

Aquatic ecosystems act as important reservoirs for inorganic carbon with the oceans storing roughly 50 times more carbon dioxide (CO_2) than the atmosphere; ecosystems such as mangroves, seagrasses, and inland waters are among the most efficient ecosystems in sequestering CO_2 in the form of 'blue carbon' sinks. They can sequester up to five times the amounts of carbon absorbed by tropical forests and function as important nursery, feeding and reproduction areas for many species. In addition, mangrove forests provide natural protection against storms and erosion for coastal communities and breeding grounds for many aquatic species.

The climate change based projections from global warming models indicate that we may see nearly continuous warming of about 0.74°C per decade of this century. Climate change has the potential to significantly affect fisheries, as it will influence the workings of ecosystems and the abundance of different species. Blue Growth/ Blue Economy strategies have to be adopted to promote at the initial stages food security and decent livelihoods. Blue growth aims to assess ways and means to mitigate the cumulative impact of these economic sectors on the living aquatic resources, biodiversity and eco-system services and to develop synergies between the sectors. To overcome the effects of climate change, studies needed in the following areas for mitigation measures.

-Impact of climate change on critical habitats such as coral reefs, seagrasses and commercially important fish resources to evolve monitoring protocol and mitigation strategies

-Impact of climate change on coastal and inland aquaculture and possible mitigation measures

-Use of renewable energy resources to reduce the carbon emissions from fisheries and aquaculture activities

Possible Outcome

- With the creation of newer infrastructure will help to establish the existing fish fisheries resources of Tamil Nadu.
- Could help to monitoring and maintain endangered fish species.
- Help to use and exchange of aquatic genetic resources in a better way for aquaculture/ fisheries.
- These units will help to create public awareness on conservation and management of fisheries resources.

5. FISHERIES ENGINEERING

Fisheries resources of Tamil Nadu are abundant. The state has about 1,076 km long coastline and 3.83 Lakh ha of freshwater spread in the inland; including lakes, tanks and 56,000 ha of brackishwater spread which can form the base for the diverse fisheries industries in the State. There are about 848 registered aqua farmers and 346 European Union approved fish processing facilities which give sustenance to around million families in the country and in the state. Besides this, there are about 10 million people depending on this fisheries industries and allied activities in one way or other. The water ecosystems have been identified as a food production system for the people and offer livelihood to the rural people. Though this sector generates significant foreign exchange earnings, these biological activities are depending on many engineering structures and machineries. It is believed that engineering interventions in various fields of fisheries are very minimum as a today and needs to be given due considerations in order to make this sunrise sector flourish further.

Problems to be addressed

- Inland aquaculture and mariculture involves many manual operations for effective aquaculture. In order to reduce the human drudgery during the farm operations, development of many on-farm implements/machines are essential.
- Harvesting of fish is the biggest task in aquaculture and it is mainly done by manual operations. Existing crafts and gears should be modernized to most sophisticated large scale modern fishing system for reducing the harvesting time and human drudgery.

- Energy requirement in the ponds as well as feeding cost occupies huge amount of operational cost. Also, uninterrupted power supply is essential for pond automation and effective management in aquaculture. Hence, renewable energy based farm systems will save the money as well as energy for the fish farmers.
- Automation is required for Fisheries and Aquaculture Technologies, since other industries (Manufacturing, Transportation and Food processing) are successfully well established. However, problems faced by the farmers in this sector require demand based special solutions. Hence, automation of technologies could help this sector to flourish further.
- Management in fish farming is a high laborious task. Farmers are facing problems like water shortage, feed control, disease control, etc. that will severely affect the harvest. Hence, time-based control measures are required. That can be executed through remote monitoring systems through wireless sensor networks. Such sensor networks could be employed in advanced aquacultural systems like recirculatory aquaculture, nano-filtratiton system, cage culture and aquaponics.
- Precision Fish Farming (PFF) concept is required to apply control-engineering principles to fish production, thereby improving the farmer's ability to monitor, control and document biological processes in fish farms.
- Crossing international border line is one of the major issues faced by fishermen. Hence advanced navigational aids are essential to be a part of the any fishing boat. So that fishermen can safely do the fishing operation within a limit and international problems could be avoided.
- Fish needs to undergo Pre-processing operations like de-scaling and filleting that are important operations before the fish is further processed into next stage.
- Marine catches include variety of fishes that are categorized into low value and high value fishes based on need and utilization. However, utilization of low value fishes is very meagre and dumped as a waste. Hence, utilizing the low value fish into value addition to meet out the demand of fish and fish based products through extrusion and other processing technologies are necessary.
- It is necessary to provide them a unified facility whereas they can produce their products at a minimal cost. Hence, establishment of fish processing technology based business incubation centre that motivates the beneficiaries to turn-up the entrepreneurs is needed.
- Processing of fish leads to develop many value added products from the fully extracted meat. Such kind of machines is needed for the fish processing industries as well as fisherwomen for effective value addition.

- Waste in the fish/food industry is a major issue but generation of this waste is unavoidable. The kind of waste produced from processing industry primarily consists of the organic residue of processed raw materials. The utilization and disposal of product specific waste is difficult, due to its inadequate biological stability, potential pathogenic load, high water content, potential for rapid auto-oxidation and high level of enzymatic activity.

The following are the thrust areas in Fisheries engineering that can be considered in the Action Plan

I	**Aquacultural Engineering**
1	Farm implements for effective aquaculture practices
2	e-interface gadgets for sustainable aquaculture practices
3	Renewable energy power operated aerators/feeders for aquaculture
4	Wireless sensor network/Remote monitoring system for aquaculture farms
5	Mobile gadgets/apps for remote monitoring system for aquaculture farms
6	Advanced aquaponics systems for dual income
7	Nanocomposites for effective water recirculation in aquaculture farms
8	Bionanosensors for water quality monitoring system
9	Modified abosrbents for wastewater treatment system
II	**Navigation and Marine Engineering**
1	Cost effective fibre boat
2	Weather station for effective fishing
3	Cost effective gadgets for sustainable fishing
III	**Fish Process Engineering**
1	Low cost handling devices/machines for fish processing
2	Solar power operated fish processing machines / tricycle for fish vendors
3	Cost effective packaging and storage technologies for fish and fish products
4	Fisheries technopark cum fish processing technology business incubation centre

Possible outcome due to the above interventions in the state

- Development of farm implements/machines for fish farming helps to reduce the human drudgery and encourage the fish farmers to do farming in a large scale.
- Development of gadgets for fish farming makes the fish farmers to do farming in a remote-control method. Hence, farmers need not be in a farm all the time. Farmers can able to operate a feeder or aerator being in a home or any other place.
- Precision fish farming helps to effectively utilize the resources and helps the farmers to achieve more profit.
- Advanced aquacultural systems helps to increase the production as well as managing the resources effectively.
- Development of harvestors could reduce the harvesting time for farmers and also reduce the human drudgery.

- Development of fish processing machines could make the pre-processing and processing in a hygienic manner. Better utilization of catch, improvement of returns to fishers and providing employment and income generation opportunities to the fishers and other entrepreneurs are possible through the development of many value added products.
- Retailing of fish could be increased by effective packaging techniques and advanced cold storage systems.
- Fisheries Techno Park cum Fish processing technology business incubation centre shall enable fish farmers to take up the venture successfully, which shall later promote them to have their own self-employment and also it can be utilized to develop the skilled manpower to the fish processing industries.
- The post-harvest losses can be minimized by processing the fish before it spoiled by adopting suitable post-harvest technologies to create direct impact on regional trade flows and to minimize the intermediaries to increase the returns to fishers.
- Waste utilization could be enhanced by adapting suitable technologies to convert waste into effective feed materials for usage by the farms.

6. FISHERIES EXTENSION

Fisheries, especially the areas of aquaculture and processing has already been globally acknowledged as important source of nutritional food and livelihood. Based on its continuous and enormous contribution in providing proteinaceous diet in recent years, fisheries is generally regarded as the most promising sub-sector in agriculture. However, food industry experts feel that the benefits from the sub-sector has not yet been optimally harvested on par with its actual potential. This can be understood, when we take the example of Tamil Nadu, one of the progressive States of India especially in terms of fisheries development. The state, with the second longest coastline in the country has been blessed with vast and diverse fisheries resources. Despite the abundant natural wealth, the state's marine (4.72 lakh tons) and inland (1.97 lakh tons) fish production is comparatively low against the estimated production (Marine - 7.00 lakh tons and inland - 4.50 lakh tons) potential of the state. It clearly depicts that there is a gap between fish production and potential of the state. Subsequently, the gap extends in the form of recommended (13 kg) and actual (9.80 kg) annual percapita intake of the State.

Though several anthropogenic (pollution, destructive fishing methods, multiple stakeholders for fresh water) environmental degradation (climate change, habitat destruction) exists as a challenge for augmenting fish production in the state, Government of Tamil Nadu through Department of Fisheries and Tamil Nadu Fisheries University (TNFU) is

on right track in scouting viable options for increasing fish production of the State. All the food production sector line departments (like Agriculture, Veterinary, fisheries etc) have been started in the respective states of our Country to ensure the increase in food production through research and extension activities. Hence, these departments can be considered as the first and largest extension system of a State. Since the establishment of state Agricultural Universities (SAUs) with the mandate of teaching, research and extension, these departments slowly deviated from their very purpose of creation and currently concentrating mainly on the prosperity of people involved in food production. In this case, Tamil Nadu Fisheries Department is also no more an exception. After the establishment of TNFU in 2012, the department is largely held responsible for the socio-economic welfare (through its schemes and subsidies) of 12.14 lakh fisher population whereas fisheries research and development activities of the state are entrusted with TNFU. However, none can deny the fact that both the TNFU and the State dept. of fisheries need to work together to narrow down the aforesaid gap in fish production through efficient utilization of the fisheries resources of the state.

Realizing the importance of research and human resource development activities of TNFU, government. of Tamil Nadu is constantly encouraging the University to strengthen its infrastructure by establishing new colleges, research and extension centres throughout Tamil Nadu. At present, the University in total has 34 constituent units across the State. For the past five years, the University has proved its calibre and has successfully emerged as the number one fisheries university of India (ICAR SAU ranking 16-17). Using its State-of-the art research infrastructure and faculty, the University has developed many innovative fish production technologies in accordance with different resources of fisheries existing in the State. These technologies can be used for increasing the production, only by ensuring adoption of it in large numbers by farmers. It has to be also noted that lack of awareness about the scientific practices for obtaining optimum yields is often being cited as one of the major reasons for under-utilization of the available resources.

This is the point, where one of the mandate i.e., extension (transfer of technology) of the University is expected to play a major role to help increase fish production. However, it has been learned from the past experience of SAUs in the State that extension still remains as one of the weakest linkages that need to be strengthened sufficiently to realize the potential of any food producing sector to increase food production and generation of more employment opportunities in the sector. This strengthening will definitely help in addressing the major problems existing in fisheries technology transfer such as:

(a) Non-availability of skilled man power with different levels of skill to meet out the man power requirements of emerging fisheries enterprises

(b) Non-availability of incubation centres to train and encourage (in the form of hand holding) the aspiring youth to venture into fisheries based businesses

(c) Lack of fisheries related base line data especially the technology, training and other service requirements of farmers

(d) Lack of recent advancements in content generation infrastructure like Information and Communication Technology (ICT) driven communication lab which will enable developing required extension education materials like extension publications, educational video and audio (radio) programs

(e) Paucity of aforesaid extension education materials and appropriate training modules for imparting the knowledge and skills on the improved technologies among the farmers, interested entrepreneurs and educated youth

Hence, considering the above difficulties and keeping in mind the fact that it is a newly established University, TNFU's extension wing has to be exclusively strengthened in terms of infrastructure and manpower. Overcoming the aforesaid difficulties through various "extension exclusive" establishments will help to strengthen the extension linkages not only with the field functionaries but also with the various types of stakeholders associated with the development of fisheries. In most of the well-established SAUs of the State, KVKs and exclusive communication centres has already been established to carry out and coordinate various multiple extension activities which is helping them to get wider reach in the technology dissemination activities. Therefore, this proposal has been made as an initial step for establishing a state of the art infrastructure exclusively for extension activities of all the constituent units of the University.

Project components

- To enhance the per capita consumption of fish in dindigul district, make awareness campaign on health beneficial attributes of fish to the farmersin the district.
- Produce short films on nutritive value of fish and screening in theaters and television channels.
- Supply of preserved ready to eat and ready to cook fish products through public distribution system in dindigul l district.
- Supply of fish and fish products in mid day meal programme in dindigul district.
- Supply chain management to promote consumption of farmed freshwater fishes in dindigul district.

Budget requirement:

The overall budget requirement for fishery research is **₹. 141.60** Lakh as shown in Table 4.24.

Table.4.23. Budget requirement for fishery research

(₹. in Lakh)

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

4.9. Public Works Department

Public works department is a premier agency of the state government operating throughout the state for construction of works in roads, bridges, Buildings, maintenance and repairs of works and construction of works of other departments of the state government and centrally sponsored schemes. The main function of public works department is designing, construction and maintenance of roads and bridges, residential and non-residential building of state government, construction of national highway, construction of roads financed from NABARD, RIDF, CRF and construction of various works on Airport and Air landing ground.

With the declining and erratic rainfall, it has become necessary to go in for *in situ* water conservation. Further the loss of top soil through erosion needs to be controlled to maintain the soil fertility. The reduction of water storage facilities and the conversion of water bodies for non-agricultural purposes result in the rainwater run-off. The *in situ* water conservation will help in reducing the water and soil erosion and also improve the ground water recharge which is the need of the day. Hence, to raise the water table level, construction of check dams, need to be taken up in canals to increase the storage capacity of the tanks and there by crop cultivation area in tank ayacut area may be increased. Thus the main objective of public works department in this district is to construct check dam and anicut across the river in order to increase the ground water level.

4.9.1. Project components

- Construction of checkdam across Nanganjiar river in SF.No.487 in Thangatchiammapatti village of ottanchatram block.
- Construction of checkdam across Periya odai in Javvathupatti village of ottanchatram block.
- Construction of checkdam across Nanganjiar River in S.F.No.605 in Virupakshi village of Ottanchatram block.
- Construction of checkdam across Nanganjiar near in Javvathupatti village of Ottanchatram block.
- Construction of checkdam across Mangarai river near Rajapudur in Kodalvavi village of Dindigul block.
- Construction of checkdam across Kodaganar River near Velakoundanpatti village in Seevalsaragu village of Athoor block.
- Construction of checkdam across Kodaganar River in Ponnimandurai Hamlet of Sindalagundu village of Dindigul block.
- Construction of checkdam across Mangarai River near Rajapudur in Kodalvavi village of Dindigul West Taluk in Dindigul district.

- Construction of Checkdam across Nanganjiyar River in Virupatchi Village Oddanchatram Taluk in Dindigul district.
- Construction of Checkdam across Nanganjiyar River in Veriappoor Village Oddanchatram Taluk in Dindigul district.
- Construction of Checkdam across Kodagarnar near Ponmanthurai Village of Dindigul West Taluk in Dindigul district.
- Construction of Checkdam across Varattar River in Padiyur Village of Vedasandur Taluk in Dindigul district
- Rehabilitation of Athoor Anicut and Channel Athoor Taluk of Dindigul District
- Rehabilitation of Kottur Avarampatti Tamaraikulam Supply Channel in Agaram Village of Dindigul West Taluk of Dindigul district.
- Rehabilitation of Venkatrama Iyyengar Anicut Channel Dindigul Taluk of Dindigul District in Dindigul west.
- Rehabilitation of Padiyur Anicut and Supply in Padiyur Village of Vedasandur Taluk of Dindigul district.
- Rehabiliation of Left Main Canal and Right Main Canal of Kodaganar Dam in Dindigul and Karur District at Vedasanthur and Gujiliamparai block.
- Modernisation of Puliyankulam tank supply channel in Sitherevu village of Authoor taluk in Dindigul district.
- Modernisation of Kattuperiyakulam anicut and supply channel in Punnapatti village of Natham taluk in Dindigul district.
- Modernisation of Karuthakone anicut and supply channel in Budhagudi village of Natham taluk in Dindigul district.
- Modernisation of Peekulam tank supply channel in Natham village of Natham taluk in Dindigul district.
- Modernisation of Kookkal tank in Kookkal village of Kodaikanal taluk in dindigul district.
- Construction of a Check Dam across Kongarkulam tank supply channel in Kodanginayakkanpatti village of Nilakkottai taluk in Dindigul district.
- Construction of a Check Dam across Kongarkulam tank supply channel in Chinnamanaikenkottai village of Nilakkottai taluk in Dindigul district
- Check dam across Vanji Odai L.S. 4400m in Malayagoundanpatti village of Nilakkottai taluk in Dindigul district.
- Check dam across Vanji Odai L.S. 5600m. in Malayagoundanpatti village of Nilakkottai taluk in Dindigul district

- Construction of check dam across Sirumalai Odai feeding to Eramankulam tank at L.S. 4400m in Malayagoundanpatti (v) of Nilakkottai taluk in Dindigul district.
- Construction of check dam across Sirumalai Odai feeding to Eramankulam tank at L.S. 5600m in Malayagoundanpatti (v) of Nilakkottai taluk in Dindigul district .
- Construction of check dam across Mannavarathi tank supply channel in Kottur Village of Nilakkottai taluk in Dindigul district.
- Construction of check dam across Kongarkulam tank supply channel in Kodanginayakkanpatti Village of Nilakkottai taluk in Dindigul district
- Construction of checkdam across Mangarai River near Rajapudur in Kodalvavi village of Dindigul West Taluk in Dindigul district.
- Construction of checkdam across Nanganjiyar River at SF No.487 in Thangachiammapatti Village Oddanchatram Taluk in Dindigul district
- Construction of Checkdam across Nanganjiyar River in Virupatchi Village Oddanchatram Taluk in Dindigul district.
- Construction of Checkdam across Nanganjiyar River in Veriappoor Village Oddanchatram Taluk in Dindigul district.
- Construction of Checkdam across Kodagarnar near Ponmanthurai Village of Dindigul West Taluk in Dindigul district.
- Construction of Checkdam across Varattar River in Padiyur Village of Vedasandur Taluk in Dindigul district.
- Rehabilitation of Athoor Anicut and Channel Athoor Taluk of Dindigul district
- Rehabilitation of Kottur Avarampatti Tamaraikulam Supply Channel in Agaram Village of Dindigul West Taluk of Dindigul district.
- Rehabilitation of Venkatrama Iyyengar Anicut Channel Dindigul Taluk of Dindigul District at Dindugul west.
- Rehabilitation of Padiyur Anicut and Supply in Padiyur Village of Vedasandur Taluk of Dindigul district
- Rehabiliation of Left Main Canal and Right Main Canal of Kodaganar Dam in Dindigul and Karur District at Vedasanthur and Gujiliamparai block.

4.9.2. Budget

The budget requirement for fulfilling the above interventions is**₹8607.35** Lakh.

4.9.3. 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.

4.9.4. Implementing agency

Department of Public Works will be implementing the project

Table. 4.24. Budget requirement for Public Works Department

(₹in Lakhs)

Sl. No.	Intervention	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Construction of Checkdam across Nanganjiar river in SF.No.487 in Thangatchiammapatti village	Ha	3.8	Oddanchatram	36.73	139.70	0	0.00	0	0.00	0	0.00	0	0.00	36.73	139.70
2	Construction of checkdam across Periya odai in Javvathupatti village.	Ha	1.53	Oddanchatram	70.66	107.80	0	0.00	0	0.00	0	0.00	0	0.00	70.66	107.80
3	Construction of checkdam across Nanganjiar River in S.F.No.605 in Virupakshi village.	Ha	2.9	Oddanchatram	44.81	130.00	0	0.00	0	0.00	0	0.00	0	0.00	44.81	130.00
4	Construction of checkdam across Nanganjiar near in Javvathupatti village.	Ha	2.68	Oddanchatram	42.93	115.20	0	0.00	0	0.00	0	0.00	0	0.00	42.93	115.20
5	Construction of checkdam across Mangarai river near Rajapudur in Kodalvavi village.	Ha	1.73	Dindigul	47.03	81.50	0	0.00	0	0.00	0	0.00	0	0.00	47.03	81.50
6	Construction of checkdam across Kodaganar River near Velakoundanpatti village in Seevalsaragu village.	Ha	7.04	Authur	25.26	177.80	0	0.00	0	0.00	0	0.00	0	0.00	25.26	177.80
7	Construction of checkdam across Kodaganar River in Ponnimandurai Hamlet of Sindalagundu village.	Ha	6.4	Dindigul	26.16	167.35	0	0.00	0	0.00	0	0.00	0	0.00	26.16	167.35

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
8	Construction of checkdam across Mangarai River near Rajapudur in Kodalvavi village of Dindigul West Taluk in Dindigul District.	Ha	1.73	Dindigul West	47.04	81.50	0	0.00	0	0.00	0	0.00	0	0.00	47.04	81.50
9	Construction of checkdam across Nanganjiyar River at SF No.487 in Thangachiammapatti Village Oddanchatram Taluk in Dindigul District.	Ha	3.78	Oddanchatram	36.74	139.00	0	0.00	0	0.00	0	0.00	0	0.00	36.74	139.00
10	Construction of Checkdam across Nanganjiyar River in Virupatchi Village Oddanchatram Taluk in Dindigul District.	Ha	3.54	Oddanchatram	36.42	129.00	0	0.00	0	0.00	0	0.00	0	0.00	36.42	129.00
11	Construction of Checkdam across Nanganjiyar River in Veriappoor Village Oddanchatram Taluk in Dindigul District.	Ha	2.73	Oddanchatram	76.92	210.00	0	0.00	0	0.00	0	0.00	0	0.00	76.92	210.00
12	Construction of Checkdam across Kodagarnar near Ponmanthurai Village of Dindigul West Taluk in Dindigul District.	Ha	6.38	Dindigul West	26.17	167.00	0	0.00	0	0.00	0	0.00	0	0.00	26.17	167.00
13	Construction of Checkdam across Varattar River in Padiyur Village of Vedasandur Taluk in Dindigul District.	Ha	3.09	Vedasandur	48.53	150.00	0	0.00	0	0.00	0	0.00	0	0.00	48.53	150.00

Sl. No.	Intervention	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
14	Rehabilitation of Athoor Anicut and Channel Athoor Taluk of Dindigul District	Ha	1.08	Athoor	322.67	350.00	0	0.00	0	0.00	0	0.00	0	0.00	322.67	350.00
15	Rehabilitation of Kottur Avarampatti Tamaraikulam Supply Channel in Agaram Village of Dindigul West Taluk of Dindigul District.	Ha	2.85	Dindigul West	87.65	250.00	0	0.00	0	0.00	0	0.00	0	0.00	87.65	250.00
16	Rehabilitation of Venkatrama Iyyengar Anicut Channel Dindigul Taluk of Dindigul District.	Ha	2.99	Dindigul West	41.77	125.00	0	0.00	0	0.00	0	0.00	0	0.00	41.77	125.00
17	Rehabilitation of Padiyur Anicut and Supply in Padiyur Village of Vedasandur Taluk of Dindigul District.	Ha	1.69	Vedasandur	88.62	150.00	0	0.00	0	0.00	0	0.00	0	0.00	88.62	150.00
18	Rehabiliation of Left Main Canal and Right Main Canal of Kodaganar Dam in Dindigul and Karur District	Ha	0.67	Vedasandur and Kujiliyamparai	1482.9	1000.00	0	0.00	0	0.00	0	0.00	0	0.00	1482.9	1000.00
19	Modernisation of Puliyankulam tank supply channel in Sitherevu village of Authoor taluk in Dindigul District.	No	900	Authoor	0	0.00	1	900.00	0	0.00	0	0.00	0	0.00	1	900.00
20	Modernisation of Kattuperiyakulam anicut and supply channel in Punnapatti village of Natham taluk in Dindigul District.	No	400	Natham	0	0.00	1	400.00	0	0.00	0	0.00	0	0.00	1	400.00

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
21	Modernisation of Karuthakone anicut and supply channel in Budhagudi village of Natham taluk in Dindigul District.	No	250	Natham	0	0.00	1	250.00	0	0.00	0	0.00	0	0.00	1	250.00
22	Modernisation of Peekulam tank supply channel in Natham village of Natham taluk in Dindigul District.	No	200	Natham	0	0.00	0	0.00	1	200.00	0	0.00	0	0.00	1	200.00
23	Modernisation of Kookkal tank in Kookkal village of Kodaikanal taluk in Dindigul District.	No	100	Kodaikanal	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	1	100.00
24	Construction of a Check Dam across Kongarkulam tank supply channel in Kodanginayakkanpatti village of Nilakkottai taluk in Dindigul District.	No	40	Nilakottai	0	0.00	0	0.00	1	40.00	0	0.00	0	0.00	1	40.00
25	Construction of a Check Dam across Kongarkulam tank supply channel in Chinnamanaikenkottai village of Nilakkottai taluk in Dindigul District.	No	40	Nilakottai	0	0.00	0	0.00	0	0.00	1	40.00	0	0.00	1	40.00
26	Check dam across Vanji Odai L.S. 4400m in Malayagoundanpatti village of Nilakkottai taluk in Dindigul District.	No	40	Nilakottai	0	0.00	0	0.00	0	0.00	1	40.00	0	0.00	1	40.00
27	Check dam across Vanji Odai L.S. 5600m. in Malayagoundanpatti village of Nilakkottai taluk in Dindigul District.	No	40	Nilakottai	0	0.00	0	0.00	0	0.00	1	40.00	0	0.00	1	40.00

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
28	Construction of check dam across Sirumalai Odai feeding to Eramankulam tank at L.S. 4400m in Malayagoundanpatti (v) of Nilakkottai taluk in Dindigul District.	No	40	Nilakkottai	0	0.00	0	0.00	0	0.00	1	40.00	0	0.00	1	40.00
29	Construction of check dam across Sirumalai Odai feeding to Eramankulam tank at L.S. 5600m in Malayagoundanpatti (v) of Nilakkottai taluk in Dindigul District.	No	40	Nilakkottai	0	0.00	0	0.00	0	0.00	0	0.00	1	40.00	1	40.00
30	Construction of check dam across Mannavarathi tank supply channel in Kottur Village of Nilakkottai taluk in Dindigul District.	No	45	Nilakkottai	0	0.00	0	0.00	0	0.00	0	0.00	1	45.00	1	45.00
31	Construction of check dam across Kongarkulam tank supply channel in Kodanginayakkanpatti Village of Nilakkottai taluk in Dindigul District.	No	50	Nilakkottai	0	0.00	0	0.00	0	0.00	0	0.00	1	50.00	1	50.00
32	Construction of checkdam across Mangarai River near Rajapudur in Kodalvavi village of Dindigul West Taluk in Dindigul District.	Ha	1.73	Dindigul West	47.04	81.50	0	0.00	0	0.00	0	0.00	0	0.00	47.04	81.50

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
33	Construction of checkdam across Nanganjiyar River at SF No.487 in Thangachiammapatti Village Oddanchatram Taluk in Dindigul District.	Ha	3.78	Oddanchatram	36.74	139.00	0	0.00	0	0.00	0	0.00	0	0.00	36.74	139.00
34	Construction of Checkdam across Nanganjiyar River in Virupatchi Village Oddanchatram Taluk in Dindigul District.	Ha	3.54	Oddanchatram	36.42	129.00	0	0.00	0	0.00	0	0.00	0	0.00	36.42	129.00
35	Construction of Checkdam across Nanganjiyar River in Veriappoor Village Oddanchatram Taluk in Dindigul District.	Ha	2.73	Oddanchatram	76.92	210.00	0	0.00	0	0.00	0	0.00	0	0.00	76.92	210.00
36	Construction of Checkdam across Kodagarnar near Ponmanthurai Village of Dindigul West Taluk in Dindigul District.	Ha	6.38	Dindigul West	26.17	167.00	0	0.00	0	0.00	0	0.00	0	0.00	26.17	167.00
37	Construction of Checkdam across Varattar River in Padiyur Village of Vedasandur Taluk in Dindigul District.	Ha	3.09	Vedasandur	48.53	150.00	0	0.00	0	0.00	0	0.00	0	0.00	48.53	150.00
38	Rehabilitation of Athoor Anicut and Channel Athoor Taluk of Dindigul District	Ha	1.08	Athoor	322.67	350.00	0	0.00	0	0.00	0	0.00	0	0.00	322.67	350.00

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
39	Rehabilitation of Kottur Avarampatti Tamaraikulam Supply Channel in Agaram Village of Dindigul West Taluk of Dindigul District.	Ha	2.85	Dindigul West	87.65	250.00	0	0.00	0	0.00	0	0.00	0	0.00	87.65	250.00
40	Rehabilitation of Venkatrama Iyyengar Anicut Channel Dindigul Taluk of Dindigul District.	Ha	2.99	Dindigul West	41.77	125.00	0	0.00	0	0.00	0	0.00	0	0.00	41.77	125.00
41	Rehabilitation of Padiyur Anicut and Supply in Padiyur Village of Vedasandur Taluk of Dindigul District.	Ha	1.69	Vedasandur	88.62	150.00	0	0.00	0	0.00	0	0.00	0	0.00	88.62	150.00
42	Rehabiliation of Left Main Canal and Right Main Canal of Kodaganar Dam in Dindigul and Karur District	Ha	0.67	Vedasandur and Kujiliyamparai	1482.9	1000.00	0	0.00	0	0.00	0	0.00	0	0.00	1482.9	1000.00
	Total					**6422.35**		**1550.00**		**340.00**		**160.00**		**135.00**		**8607.35**

4.10. Cooperative Sector

The Cooperative Marketing Societies in Tamil Nadu help the farmer members by supply of quality seeds, fertilizers, pesticides and other farm requirement at competitive rates as and when required by them. The Cooperative Marketing Societies also help the farmers in processing, storing and marketing their agriculture produces to fetch reasonable price for their agricultural produces. With these objectives the Cooperative Marketing Societies are functioning at taluk levels.

In Tamil Nadu, Cooperatives play a prominent role in the day to day affairs of the common man. They help the farmer to improve agricultural production by providing crop loans and by supplying agricultural inputs such as fertilizers and insecticides. They also enable the farmer to store and market his produce. In most districts, cooperatives run the fair price shops which provide the rural and urban poor essential commodities at highly subsidized prices. The policy of the State Government is to ensure adequate availability of essential commodities of acceptable quality at an affordable price to the general public particularly the poor. Public Distribution System has been one of the most crucial elements in food policy and food security system in the country.

Cooperatives all over the world have become an effective and potential instrument of economic development. The Cooperative movement in Tamil Nadu has witnessed over the decades substantial growth in diverse areas of economy. There is not a single major sphere of economic activity which has not been touched by Cooperatives. Cooperatives are also envisaged as an instrument for implementing many important policies like agricultural credit, urban credit, market intervention, price support for agricultural commodities through cooperative wholesale stores, Public Distribution system etc. The office infrastructure has to be improved. The intervention is proposed for creating of infrastructure facilities.

Project components

- Office Infrastructure *viz*., construction of office building in all blocks except Vadamadurai, Vedasanthur, kodaikanal.
- Construction of compound wall in all blocks.
- Costruction of community hall at Natham.
- Installation od CCTV camera in Guziliamparai
- Renovation of office building at Batalagundu, Guzilamparai, Nilakotai, Palani, Reddiarchatram, Shanarapatti.
- Purchase of computer and peripherals in Batalagundu, Dindigul, Natham, Reddiarchatram, Vedasanthur, Kodaikanal.

- Distribution of furniture, solar panel (Natham), modern counter at Athoor, Batlagundu, Reddiyarchatram, Thoppampatti.
- Distribution of Xerox machine to Shanarapatti.

Capital Asset Creation

- Godown renovation in Nilakotai, Palani, Vadamadurai, Vedasanthur, Kodaikanal.
- Establishment of tractor shed at Guziliamparai, Oddanchatram, Shanarapatti.
- Construction of godown in Palani, Thoppampatti, Vadamadurai, Vedasanthur, Guziliamparai.
- Establishment of processing unit in Guziliamparai.
- Construction of seed selling centre in Reddiyarchatram.
- Construction of complex fertilizer unit inNilakotai.
- Distribution of safty locker to Dindigul, Guziliamparai, Reddiyarchatram, Shanarapatti.

Budget

It is proposed to incur **₹. 2902.27** Lakh over a period of five years.

Implementing agency

Department of Cooperation will be implementing the project

Table. 4.25. Budget requirement for Cooperative Sector

(₹in Lakh)

Sl. No	Co-operation	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total Amount	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Construction of Community Hall	B5	0	0.00	0	0.00	0	0.00	0	0.00	1	39.00	1	39.00
2	Construction of Complex Fertiliser Processing unit	B6	0	0.00	1	77.00	0	0.00	0	0.00	0	0.00	1	77.00
3	Construction of Compound wall	All blocks	22	164.62	20	142.50	22	136.50	19	148.97	23	141.90	106	734.49
4	Construction of Godown	B8, B11, B12, B13, B14	9	138.49	8	111.00	7	144.14	8	121.00	8	110.00	40	624.63
5	Construction of Office Building	All blocks except B12, B13, B14	5	100.00	4	80.00	6	108.50	5	93.50	5	81.40	25	463.40
6	Construction of Seed selling center	B9	0	0.00	0	0.00	1	11.00	0	0.00	0	0.00	1	11.00
7	Establishment of Processing unit	B4	1	9.97	0	0.00	0	0.00	0	0.00	0	0.00	1	9.97
8	Establishment of Tractor Shed	B4, B7, B10	5	37.56	5	48.75	6	41.91	0	0.00	0	0.00	16	128.22
9	Renovation of Godown	B6, B8, B12, B13, B14	9	274.06	5	35.45	6	38.70	7	43.15	8	65.50	35	456.86
10	Renovation of Office Building	B2, B4, B6, B8, B9, B10	9	30.18	12	56.31	2	17.00	3	10.75	3	19.71	29	133.95

Sl. No	Co-operation	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total Amount	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
11	Strengthening of Cooperation Centres (Furniture's, Solar panel, Modern counter, Xerox machine, Air Conditioner, CCTV Camera, Bore well, Generator, UPS Battery, Cash Counting Machine, Invertor, Jewel Weighing Machine, Packing Machine, Purchase of computer and peripherals, Hand Billing machine, LED Display for tender process, Purchase of Jewel Carat Meter, Smart Card Printing Machine, Burglary Alarm, Agricultural Equipments, Safety Locker, Purchase of Display racks, Defender Door, Purchase of Paddy drying machine, Automatic Printer machine, Conveyer, E-Tender process, Fork Lifter, Gunny Bag Stitching machine, Jewel tester, Pallets, Tarpaulin, Trolley and Printing Press machineries)	All Blocks	22	42.02	22	31.02	29	78.37	27	38.45	28	33.89	128	223.75
	Total			**796.90**		**582.03**		**576.12**		**455.82**		**491.40**		**2902.27**

Shanarpatti-B1,Batlagundu-B2,Guziliamparai-B3,Palani-B4,Vadamadurai-B5,Vedasandur-B6,Kodaikanal-B7,Nilakottai-B8,Oddanchatram-B9,Thoppampatti-B10,Dindigul-B11 ,Reddiyarchatram-B12,Athur-B13,Natham-B14

Table 4.26. Budget Abstract for Dindigul district

(₹in Lakh)

Sl. No	Sectors	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Agriculture	5758.86	5154.51	3773.87	4776.39	5130.59	24594.19
2	Agricultural Research (TNAU)	91.00	557.00	16.00	80.00	100.00	844.00
3	Horticulture	13554.79	13649.57	13956.72	14084.19	14207.83	69453.10
4	Agricultural Engineering	1023.00	1354.58	1327.10	1236.95	1334.69	6276.30
5	Agricultural Marketing	491.00	891.00	625.00	573.00	783.00	3363.00
6	Seed Certification & Organic Certification	18.36	13.86	0.50	0.50	0.50	33.72
7	Animal Husbandry	2049.20	2241.45	2109.45	1959.45	1857.45	10217.00
8	Animal Science Research (TANVASU)	0.00	0.00	0.00	0.00	0.00	0.00
9	Dairy Development	477.95	784.95	8987.80	345.00	420.00	11015.70
10	Fisheries	387.00	281.00	349.00	204.00	309.00	1529.83
11	Fisheries Research (TNFU)	77.66	13.16	50.26	0.26	0.26	141.60
12	Water Resource Organization (WRO)	6422.35	1550.00	340.00	160.00	135.00	8607.35
13	Civil Supplies & Co-Operation	796.90	582.03	576.12	455.82	491.40	2902.27
	Total	**31148.07**	**27073.11**	**32111.82**	**23875.56**	**24769.72**	**138978.06**

The total budget requirement for the implementation of various interventions by different departments in Dindigul district is **₹. 138802.06 Lakh.**


KARNATAKA
ANDHRA PRADESH
KERALA
SRI LANKA