NATIONAL AGRICULTURE DEVELOPMENT PROGRAMME (NADP)

DISTRICT AGRICULTURE PLAN

DHARMAPURI

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

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2017

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EXECUTIVE SUMMARY

Agriculture is the major profession in Dharmapuri district, which supports 70 per cent of the Population. It is bounded on the north by Krishnagiri District, on the east by Tiruvannamalai and Villupuram districts, on the south by Salem District and on the west by Karnataka's Chamarajanagar District. The whole district is surrounded by hills and forests. The district has been divided into two revenue divisions namely Dharmapuri and Harur consisting 5 taluks. There are 5 revenue taluks namely Dharmapuri, Harur, Palacode, Papireddipatti and Pennagaram. The district constitutes 8 panchayat unions and 10 town panchayats.

The total geographical area of the district is 4, 49,777 ha of which the net sown area (43.52 per cent) constituted less than one – third (31 per cent) whereas the forests covered 36.50 per cent of the total area. However, the forest area in Dharmapuri district was far below the national goal of achieving the minimum area under forest. The total population of the district is about 15,06,843 numbers of which 82.68 per cent of the population accounted in rural area at a growth rate of 16.34 per cent. The total literate in the district constitutes 60.90 per cent. Different types of the soils such as black or mixed loamy, red and lateritic are found in the district. Red soil is predominant which constitutes 22.60 per cent. More than 70 per cent of the area cultivated is under rain fed conditions.

Dharmapuri district forms a major horticultural belt in the state. As the area is drought – prone it has become essential to switch over to cultivation of drought tolerant perennial fruit crops. Mango is the main horticulture crop is the District. It has the highest area under the fruit crops. The district accounts for nearly one-third area under mango and nearly one-half of the mango yield in the state. Palacode is the main area where tomato is cultivated. Chilli is cultivated mainly at Pennagaram. The area has been increased over the year from 2011-12 to 2012-13 unanimously for all the crops. During 2011-12, Paddy shares the major area (16.93 per cent) followed Sugarcane which occupies 12.70 per cent. Other crops like Groundnut, Ragi, Tapioca and Mango also shares certain per cent of area in the district. The least grown food crops are coconut (4.90 per cent) and Cholam (45.75 per cent).

Among the food grains, paddy holds 7.0 per cent to the total area sown and among pulses horse gram shares 9.0 per cent of the area. Tapioca is another important root vegetable crop growing predominantly in the district (10.0 per cent of the total cropping

area). Commercial flowers like jasmine, marigold, tuberose, chrysanthemum and nerium are cultivated in 1548 hectare area, whereas cumbu, green gram and sunflower are grown in least area. It is expected that the cropping intensity is to be increased to 140 per cent from the current level of 120 per cent. Similarly, the trend is to double the horticulture production in the district during the plan period. The growth of this sector is vitally important to provide food security, sustainability and to increase employment opportunity to the rural people in the district. To achieve this goal, all the sectors involved in the rural development need to respond through concerted effort with active support of all developing agencies of the Government and the stakeholders concerned.

The areas which are to be address in this beyond five year plan period are agriculture and other allied sectors like agricultural engineering, animal husbandry, fisheries and sericulture. This in turn will contribute for the increasing agricultural growth in the future. The department of agriculture and other allied sectors were implementing various development programs in the district right now. These were on all increasing the production and productivity of paddy, pulses, millets, oil seeds, fruits like mango, guava, papaya, hybrid vegetable cultivation, medicinal plants etc., IPM, demonstration of new technologies, promotion and distribution of bio fertilizers, horticultural development programmes and micro irrigation schemes.

The Agricultural Engineering Department is implementing projects on soil conservation measures like contour stone wall, check dams etc., in tribal hilly regions, conservation of rainwater harvesting structures (percolation ponds, check dams, Ooranis, farm ponds etc.), introduction of new machineries, popularization of farm machineries such as tractors, power tillers and implements like rotavator, micro irrigation etc., to improve the welfare of the farmers.

To achieve the overall growth in all the agricultural and allied sectors, the district plan is formulated through detailed project mode. Some of the important proposals under agricultural sector are increasing Water Use Efficiency (WUE) and Fertilizer Use Efficiency (FUE) in sugarcane, increasing production of pulses and improving soil fertility. Precision farming and support system for tomato and banana, organizing enterprising farmers associations are some of the relevant proposals in the horticultural sector. Similarly, feed and fodder development, strengthening model livestock farms, expansion of fish culture and seed production are the proposed development activities in livestock and fishing sectors.

Market infrastructure activities, minimizing post-harvest losses, rehabilitation and improvements of water bodies, strengthening water harvesting structures, soil and water conservation works, afforestation, etc., are the important proposals under NADP district action plan. The total budget requirements of the proposed plan for the development of agricultural and allied sectors the next five years is **₹. 72724.25 lakhs** in Dharmapuri district and the sector wise budget split up is given below.

Consolidated Budget for Dharmapuri District

(₹. in lakhs)

Sl. No.	Sectors	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Agriculture	4854.40	4937.06	5078.57	5847.71	5895.05	26612.52
2	Horticulture	2416.36	2399.31	3059.52	2472.66	2464.41	12812.26
3	Agricultural Engineering	3089.12	2856.62	2831.66	2832.11	2759.26	14368.77
4	Agricultural Marketing	3232.00	161.00	231.00	193.00	194.00	4011.00
5	Seed and Organic Certification	18.36	2.40	2.40	3.00	3.00	29.16
6	Animal Husbandry	1390.35	888.75	688.75	578.75	438.75	3985.35
7	Dairy Development	624.00	1899.00	1080.75	843.75	2396.25	6843.75
8	Fisheries	66.98	110.94	200.70	156.46	146.15	681.23
9	Fisheries Research (TNFU)	0.26	290.56	50.26	0.26	0.26	341.60
10	Public Welfare Department (WRO)	566.08	337.65	333.75	375.40	397.28	2010.16
11	Civil Supplies and Cooperatives	1030.34	384.96	320.22	44.42	16.10	1796.04
	Total	**17288.25**	**14268.25**	**13877.58**	**13347.52**	**14710.51**	**73491.84**

CHAPTER I

INTRODUCTION

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

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

Objectives of RKVY

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

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

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

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

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

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

District and State Agriculture Plans

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

the individual States. Thus, such action-oriented plan documents will remain as a cornerstone of planning and implementation of the NADP/RKVY and other schemes.

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

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

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

The Process

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

Revision and Updation of DAP and SAP in Tamil Nadu

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

Methodology followed

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

CHAPTER II

PROFILE OF THE DISTRICT

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

2.1 District at glance

The present Dharmapuri District which was called as Thagadur ruled by the famous King AdiyamanNadumanAnji during the Sangam era whose patronage sustained the famous poetess Avvaiyar. The Dharmapuri District is located nestled in the North – Western region of Tamil Nadu, is endowed with rich natural resources and unique human resource. The district has two revenue divisions (Dharmapuri and Harur), five taluks of varying sizes *viz.*, Dharmapuri (784.4 sq.km with 18 percent), Harur (907.60 sq.km with 21 percent), Pennagaram (1175.50 sq.km with 27 percent), Palacode (756.10 sq.km with 17 percent) and Pappireddipatti (788.30 sq.km with 18 percent) and 470 revenue villages. In terms of local government units, there are eight blocks, 251 Village Panchayats, ten town Panchayats and one Municipality.

2.2 Area, Location and Geographical features

Dharmapuri District came into existence from October 10, 1965. The district is located between latitudes N 11 47’ and 12 33’ and longitudes E 77 02’ and 78 40’. It occupies an area of 4497.77 km² (i.e. 3.46% of Tamil Nadu). It is bounded on the north by Krishnagiri District, on the east by Tiruvannamalai and Villupuram District, on the south by Salem District and on the west by Karnataka's Chamarajanagar District. The whole district is surrounded by hills and forests. The terrain of the district is rolling plains type. The details of revenue divisions, taluks, panchayat unions and town panchayat are furnished in Table 2.1.

Table 2.1 Administrative Division

Revenue Divisions	Revenue Taluks	Panchayat Unions	Town Panchayat
1.Dharmapuri 2.Harur	1. Dharmapuri 2. Harur 3. Palacode 4. Pappireddipatti 5.Pennagaram	1. Dharmapuri 2. Nallampalli 3. Palacode 4. Pennagaram 5. Karimangalam 6. Morappur 7.Harur 8.Pappireddipatti	1. Marandahalli 2. Palacode 3. Papparapatti, 4.Pappireddipatti 5. Pennagaram 6. Mallapuram 7. Kambinallur 8. Harur 9. Kadathur 10. Karimangalam

Source: Joint Director of Agriculture, Dharmapuri

2.3 Administrative Structure of the district

Dharmapuri is the district headquarters. The district has been divided into two revenue divisions namely Dharmapuri and Harur consisting 5 taluks. They are Dharmapuri, Harur, Palacode, Pappireddipatti and Pennagaram. The district constitutes 8 panchayat unions and 10 town panchayats. The administrative structure of the district is shown in the Figure 1 & 2.

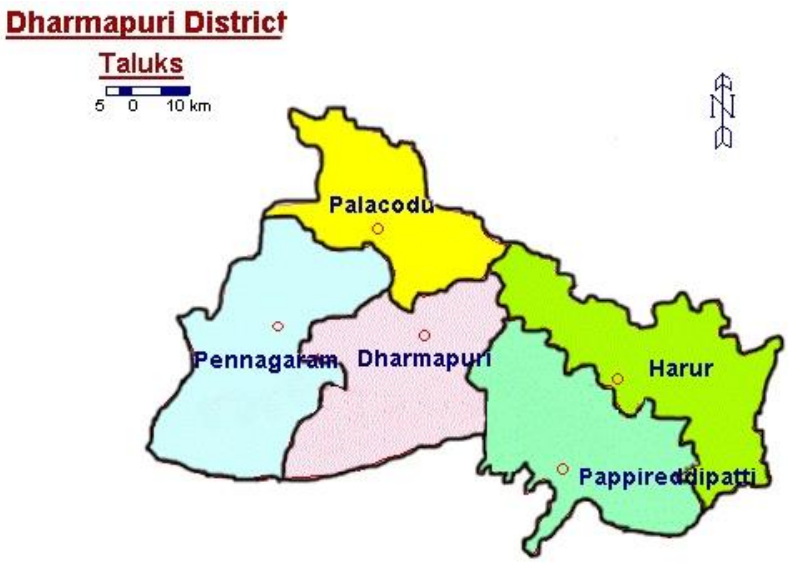

Fig. 1 Map showing Taluks in Dharmapuri District

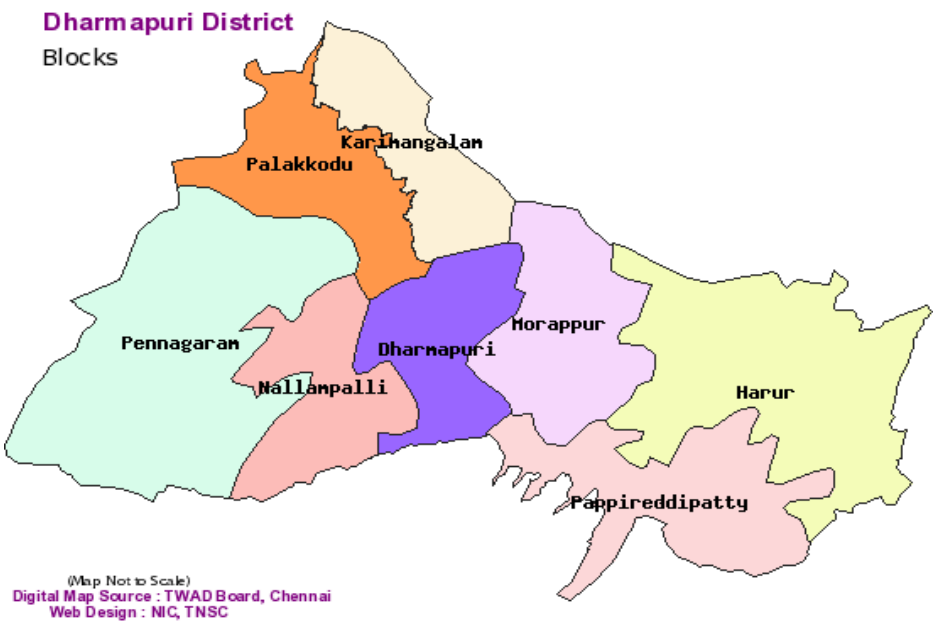

Fig. 2 Map showing blocks in Dharmapuri District

2.4 Demographic profile

2.4.1 Population

The district has population of 15,64,843 numbers. Among the eight blocks, Pennagaram block has the largest share of population (15.54 per cent), followed by Harur (15.53 per cent), Nallampalli (14.36 per cent), Dharmapuri (13.62 per cent) and Morappur block (13.00 per cent). About 82.68 per cent of the people live in rural areas and the remaining 17.32 percent live in the urban areas. The details on block wise population are furnished in Table 2.2

Table 2.2 Block wise population in the district (2011)

S. No	Panchayat Union	No. of Village	Total Population (others)	Total Male	Total Female	Total SC	SC Male	SC Female	Total ST	ST Male	ST Female	Grand Total	% of population
1	Dharmapuri	28	181994	94077	87917	21008	10199	10199	2375	1241	1134	**205377**	**13.62**
2	Nallampalli	32	190535	98042	92493	21596	10650	10650	4252	2214	2038	**216383**	**14.36**
3	Pennagaram	33	205199	108106	97093	24743	11771	11771	4239	2231	2008	**234181**	**15.54**
4	Harur	34	165291	84374	80917	52771	26018	26018	16308	8251	8057	**234370**	**15.53**
5	Morappur	43	151495	77460	74035	41716	20470	20470	2787	1437	1350	**195998**	**13.00**
6	Pappireddipatti	19	96448	48807	47641	20550	10285	10265	24788	12522	12266	**141786**	**9.40**
7	Karimangalam	30	143451	74570	68881	16441	8107	8107	2062	1076	986	**161954**	**10.74**
8	Palacode	32	156117	80448	75669	14743	7477	7266	3798	1891	1907	**174658**	**11.59**
	Grand Total	**251**	**1290530**	**665884**	**624646**	**213538**	**108792**	**104746**	**60609**	**30863**	**29746**		

Source: Census of India (2011), Directorate of Census Operations, Tamil Nadu

Table 2.3 Demographic details of the Dharmapuri District (2011)

Description	Population (in Numbers)	Percentage
Total Population	15,06,843	100
Male	7,74,303	51.38
Female	7,32,540	48.61
Rural Population	12,45,931	82.68
Urban Population	260,912	17.32
Population growth	16.34 %	-
Proportion to Tamil Nadu population	2.09 %	-
Sex ratio (Per 1000)	946	-
Child Sex Ratio (0-6 Age)	913	-

Source: Census of India (2011), Directorate of Census Operations, Tamil Nadu

In 2011, Dharmapuri had total population of 1,564,707 of which male and female were 8,05,539 and 7, 59,138 respectively. Dharmapuri District population constituted 2.09 percent of total Tamil Nadu population. The sex ratio per 1000 is about 946 and child sex ratio (0-9 year) is 913. The details are presented in Table 2.3

2.4.2 Literacy level

The block wise literacy rate during the year 2011 is presented in Table 2.4. Among the 8 blocks, Pappireddipatti has the maximum literacy rate (75 % in male and 53 % in female) followed by the Morappur (74 % in male and 51 % in female) and Nallampalli block (72 % and 48 % respectively).

Table 2.4 Block wise literacy level in the district (2011)

S. No	Name of the block	Literacy rate		SC population (%)	ST Population (%)
		Male (%)	Female (%)		
1	Dharmapuri	67	52	20	4.5
2	Nallampalli	72	48	11	0.9
3	Harur	69	49	30	8.8
4	Morappur	74	51	27	0.9
5	Pappireddipatti	75	53	23	19
6	Pennagaram	66	44	11	1.8
7	Palacode	67	46	8	0.6
8	Karimangalam	66	42	11	0.3

Source: Joint Director of Agriculture, Dharmapuri

The literacy levels in the district are given in Table 2.5. The total literates in the district constituted about 60.90 per cent. Of which 57.49 per cent of people were male and 42.50 per cent female literates, respectively.

Table 2.5 Literacy Level in Dharmapuri District

Description	Literates (in number)	Percentage
Total literates	917,709	60.90
Male literates	527,599	57.49
Female literates	390,110	42.50
Male Literacy	76.85	-
Female Literacy	59.80	-

Source: Census of India (2011), http://www.census 2011. co.in/census/district/24-dharmapuri.html

The Dharmapuri District is categorized as underdeveloped district. The unfavorable natural endowments, topography and the consequent underdevelopment are the major causes for the backwardness of Dharmapuri district. It consists of 85 per cent rural population, 75 per cent of the workforces were engaged in the agricultural sector, and the failure of the primary sector in the district coupled with a stagnant secondary sector is a cause for backwardness of the district. But still the district has its own advantages such as the unique climatic condition with specific cropping pattern and rural population who engaged in agriculture, which facilitates the agricultural production as a core way of livelihood.

2.4.3 Working population

The total workers in the district were 12.95 lakhs. The working population of the district is presented in Table 2.6.

Table 2.6 Population by broad industrial categories

S. No	Industrial Category	Persons	% of total workers
1	**Total Main Workers**	558469	85
	a. Cultivators	240963	36
	b. Agricultural labourers	152658	23
	c. Household Industry, Manufacturing, processing, Servicing and Repairs	11489	2.0
	d. Other workers	153359	24
2	**Marginal workers**	101987	15
	Total workers	660456	**100**
	Non workers	634726	58.96
	Total population	**1295182**	

The district constitutes 5.58 lakhs peoples were total main workers and 1.01 lakhs folks were marginal workers. It is accounted for 85 per cent of the total population and they also engaged in other professionals. About 15 per cent of the population were marginal. 36 per cent of the population from the main workers are cultivators, 23 per cent are agricultural labourers, 2 per cent are household industry workers, manufacturers, processors, servicing and repairing engineers. The non-workers account for 58.96 per cent.

2.5 Topography

2.5.1 Soil types

The soil types at the block levels are presented in the Table 2.7. Different types of soils such as black or mixed loamy, red and lateritic are found in the district. The Black rigor loam is very fertile due to its moisture absorbing character. Red soils are seen in Pennagaram, Palacode and Harur block. Sandy coastal alluvium is seen in Dharmapuri, Harur and Palacode block. In general, the soil in the district is quite loose and fresh with its colour ranging from red to dark brown. The soil has low nitrogen and phosphate content with marked variation between different taluks.

- Coarse textured red sandy loam (Typic Ustorthent) : 80 per cent
- Lateritic :10 per cent
- Black and other soil types :10 per cent

Table 2.7 Soil types in the district (block wise)

S. No	Type of Soil	Places in the District
1	Lateritic Soil	Harur
2	Black Soil	Dharmapuri, Palacode, Pappireddipatti
3	Sandy Coastal Alluvium	Dharmapuri, Harur, Palacode
4	Red Sandy Soil	Pennagaram, Palacode, Harur

Source: Joint Director Agriculture, Dharmapuri

The major soil type in the district is Red soil (101500 ha), which constituted about 22.60 per cent of the total cultivated area. Deep black soils (71100 ha) is the next major soil type, which accounted for 15.80 per cent of the total cultivated area in the district. There are minor soil types like shallow black soils and shallow red soils are found around 21.20 and 4.70 per cent to the total area respectively. The details of soil types are furnished in Table 2.8 & Figure 3.

Table 2.8 Soil Profile in the District

Major Soils	Area (`000 ha)	Percent (%) of total
Deep black soils	71.10	15.80
Deep red soils	101.50	22.60
Miscellaneous soils	23.00	5.10
Moderately deep black soils	39.80	8.90
Moderately deep red soils	38.00	8.50
Moderately shallow black soils	16.40	3.70
Moderately shallow red soils	38.50	8.60
Shallow black soils	9.40	2.10
Shallow red soils	21.20	4.70
Very deep black soils	63.20	14.10
Very shallow red soils	22.30	5.00

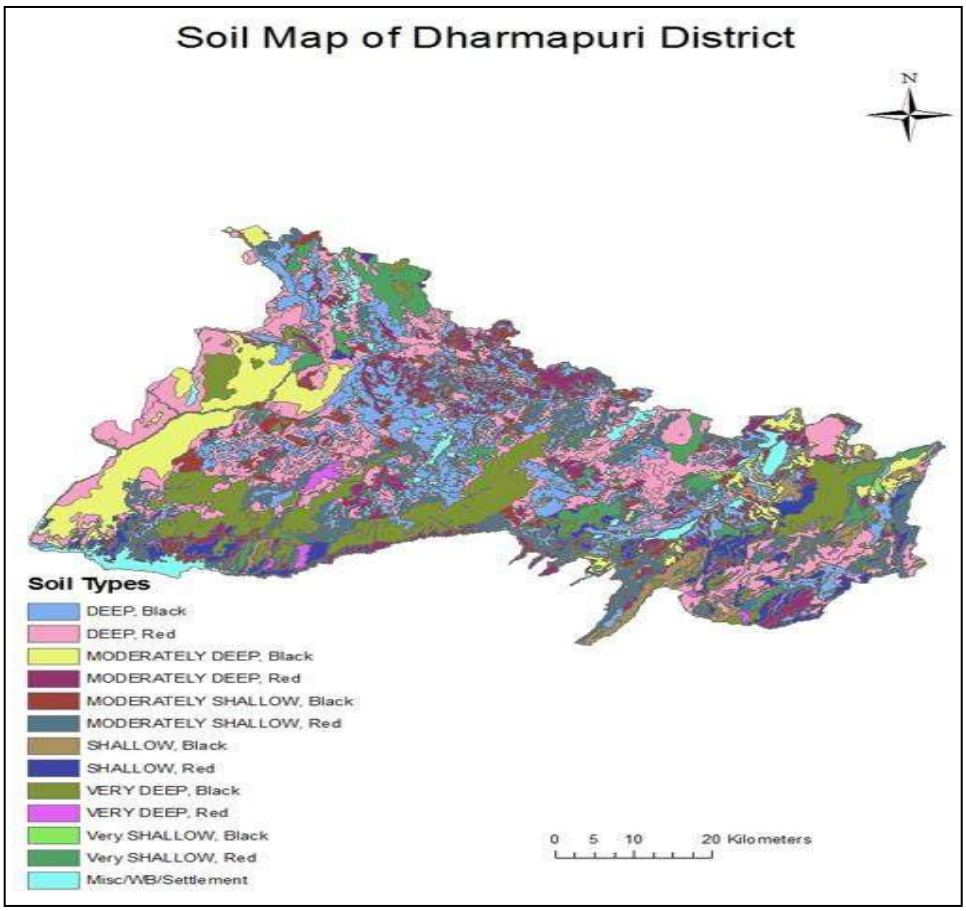

Fig.3 Soil Map of Dharmapuri District

2.6 Climatic Condition and Rainfall

Dharmapuri District is basically an agrarian district. However, the quantity and quality of agricultural operations and crop production depends upon monsoons. Dharmapuri is a border district of Tamil Nadu having a large number of small hills and is generally a low rainfall district. North East monsoon provides more rain than the South

West monsoon. More than 70 per cent of the area cultivated is under rainfed conditions. Also the rain received during the seasons is not evenly distributed throughout the crop growth period. As a result of erratic distribution of rainfall, crop production often fails causing economic loss besides unemployment problem. The mean normal and actual rainfall during 1999-2014 at different monsoon seasons is furnished in Table 2.9.

Table 2.9 Rainfall pattern in the district

Year	South West Monsoon		North East Monsoon		Winter Season		Summer Season		Total	
1999-00	-	370.1	-	448.4	-	47.8	-	140.1	-	1006.4
2000-01	-	596.2	-	285.7	-	0.4	-	160.2	-	1042.5
2001-02	-	451.3	-	253.4	-	2.8	-	118.3	-	825.8
2002-03	-	220.6	-	148.4	-	0.0	-	144.6	-	521.6
2003-04	391.8	377.0	303.4	295.1	14.0	2.0	146.7	401.5	856.9	1075.6
2004-05	391.8	389.3	303.4	295.1	14.0	0.5	146.7	222.0	856.9	827.7
2005-06	361.0	390.4	316.7	720.1	18.5	3.0	156.9	199.0	853.1	1312.5
2007-08	-	380.26	-	337.36	-	18.30	-	227.48	-	963.4
2008-09	-	397.7	-	396.5	-	3.8	-	189.6	-	878.5
2009-10	361	379.8	316.7	244.3	18.5	1.2	156.9	187.4	224.5	203.1
2010-11	393.4	-	330.1	-	18.2	-	160.4	-	902.1	-
2011-12	393.4	261.7	330.1	363.9	18.2	0	160.4	136.0	902.1	761.6
2012-13	393.4	298.9	330.1	285.2	18.2	22.0	160.4	179.6	902.1	785.7
2013-14	393.4	284.6	330.1	314.4	18.2	5.2	160.4	153.2	902.1	757.4

Source: District Statistical Handbook, Dharmapuri

Table 2.10 Month wise / season wise rainfall distribution in the district

Season / Month	2014-15	
	Normal (mm)	Actual (mm)
South West Monsoon		
June	53.60	96.3
July	77.90	8.0
August	99.30	88.1
September	162.60	67.9
Total	**393.40 (43.61)**	**260.3 (29.45)**
North East Monsoon		
October	180.50	280.6
November	103.30	49.5
December	46.30	16.9
Total	**330.10 (36.59)**	**347.0 (39.27)**
Winter Season		
January	8.00	25.5
February	10.20	0.6
Total	**18.20 (2.02)**	**26.1 (2.95)**
Summer		
March	15.90	34.7
April	41.70	92.8
May	102.80	122.7
Total	**160.40 (17.78)**	**250.2 (28.31)**
Annual rainfall	**902.10 (100.00)**	**883.6 (100.00)**

Figures in parenthesis denote percentage to total annual rainfall
Source: District Statistical Handbook, Dharmapuri

The data on rainfall required during 2014-15 is presented in Table 2.10 and graphical representation as Figure 4. From the table, it is cleared that Dharmapuri district is receiving majority of the rainfall (393.40 mm) during South-west monsoon but the actual rainfall obtained during this monsoon is 260.3 mm. About 347 mm of rainfall is received at the North East monsoon season which is higher than the normal rainfall in the district. The least quantity of rainfall is received during the winter season. The data on annual rainfall implied that the district recorded higher rainfall in the entire monsoon than normal rainfall except South West Monsoon.

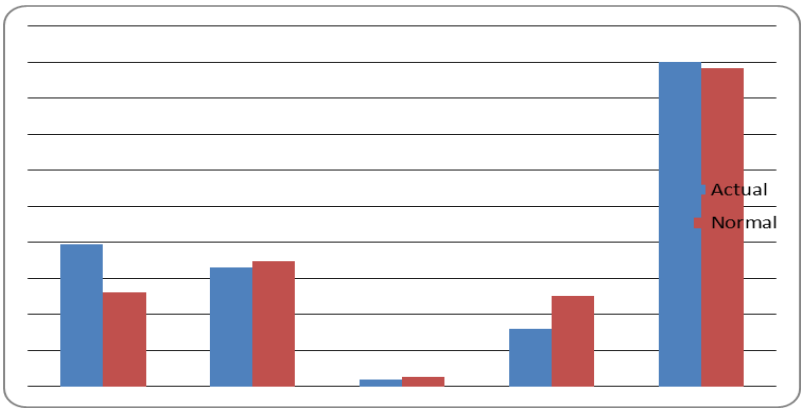

Fig. 4 Average Rainfall of Dharmapuri District (mm)

2.7 Land

2.7.1 Land and its types

The nine-fold classification of the land use pattern is given in Table.2.6. The total geographical area of the district is 4, 49,777 ha of which the net sown area (43.52 per cent) constituted less than one – third (31 per cent) whereas the forests covered 36.50 per cent of the total area. As per the National Forest Policy – 1988, the area under forest cover should be one – third of the total geographical area in order to maintain the ecological balance. However, the forest area in Dharmapuri district is far below the national goal of achieving the minimum area under forest. The area put to non – agricultural uses accounted for almost one – third of the total area indicating that the land area put under commercial uses is equal to that of net sown area. One of the reasons for this phenomenon is that the district is closer to the city and real estate business is a major commercial activity in the district. The share of area under cultivable waste, current fallow and other fallow accounted for about 13.82 per cent of the total area and this would reveal that investment on land reclamation, strengthening of irrigation facilities and so on would facilitate the increase in either net sown area or area under forest.

2.7.2 Land Use Pattern

In Dharmapuri district, more than half of its total geographical area is under the cultivation of crops. During 2014-15, the percentage of net area sown to geographical area was in the following order: Harur (37.49 per cent), Pennagaram (14.34 per cent), Morappur (10.35 per cent), Palacode (8.54 per cent), Nallampalli (8.38 per cent), Karimangalam (7.74 per cent) and Pappireddipatti (5.77 per cent).The percentage of net area sown to geographical area was very low in Palacode and pappireddipatti blocks mainly due to large area under forest in these blocks.

The block wise land use pattern is presented in Table 2.11. The geographical area of the blocks in the district is constituted with different land use pattern. The whole district is predominantly covered with forests. Spider valley located near Hogenakkal is home for many wild animals. The district falls in the migratory path of elephants. The total area under forests coverage is about 164200 ha, of which Harur block had the larger forest coverage (106801 ha) than the other blocks. It was Followed, Pennagaram and Palacode block had a forest coverage of 14586 ha and 12249 ha respectively. It shares the largest part in the district geographical area. The total cropped area was the highest in Morappur (29639 ha) and Harur blocks (28989 ha). About 51662 ha area was put into non- agricultural uses in the district of which maximum area of 1619 ha in Harur block was put into non-agricultural uses because forest coverage is high in the respective block.

Table 2.11 Block wise land utilization pattern in ha (2014-15)

Block	Forest	Barren and uncultivable	Land put to Non-Agricultural uses	Cultivable waste	Permanent pastures and other grazing land	Land under miscellaneous tree crops and groves not included in	Current fallows	Other fallows land	Net area sown	Geographical area according to village papers	Total cropped area	Area sown more than once
Dharmapuri	9978	339	5432	6	956	543	887	0	15022	33163	18022	3000
Nallampalli	5401	1468	4347	53	564	147	6112	2212	17410	37714	21238	3828
Pennagaram	14586	4861	10867	149	1016	625	9576	147	22659	64486	25774	3115
Harur	106801	4010	10406	1619	1868	1037	17540	1321	24034	168636	28989	4954
Morappur	9567	1353	2173	720	1055	292	5304	3199	22909	46572	29639	6730
Pappireddipatti	1011	847	4211	182	97	120	4084	1232	14179	25963	16983	2803
Palacode	12249	1144	7496	58	371	82	3499	116	13420	38435	19225	5805
Karimangalam	4607	1780	6680	11	281	61	5790	0	15619	34829	19764	4145
District Total	**164200**	**15802**	**51662**	**2798**	**6208**	**2907**	**52792**	**8227**	**145252**	**449848**	**179635**	**34382**

Source: 'G' Return, 2014

The land use pattern in the district is presented in Table 2.12. The total geographical area of the district is 449777 ha. Of which 33.56 per cent is net area sown with different agriculture and horticultural crops. Fortunately 36.50 per cent of area in the district accounts for forest area. Very few per cent of the area were under barren and uncultivable land (3.51 per cent), as permanent pastures and grazing land (1.38 per cent), as current fallow (10.53 per cent), as land put into non-agricultural use (11.50 per cent) and 0.64 per cent of the area were under miscellaneous tree crops and groves. The ratio of land which brought under non-agricultural uses is increasing with the year.

Table 2.12 Land use pattern in the district (2014-15)

S. No.	Particulars	Area (ha)	Percent
1	Geographical area	449777	38.55
2	Forest	164177	36.50
3	Barren & Uncultivable area	15804	3.51
4	Land put to non-agricultural uses	51724	11.50
5	Permanent pastures & other grazing lands	6210	1.38
6	Miscellaneous tree crops & groves not incl. in the net area sown	2896	0.64
7	Current fallow	47370	10.53
8	Other fallow	7863	1.75
9	Net area sown	150941	33.56
10	Area sown more than once	59498	13.23
11	Gross area sown	210439	46.79

Source: Season and Crop Report, 2014-15

The compound growth rates were presented in Table 2.13. It indicates the area under different cropping systems such as forests, fallow lands, barren and uncultivable land, pasture and grazing land showing decreasing trend during the year 2014-15. The area which put to non-agricultural uses is increasing at the rate of 0.11 per cent.

Table 2.13 Land Use Pattern of Dharmapuri District (2014-15) Compound Growth Rates (2000-01 to 2014-15) per annum

S. No.	Classification	CGR (%)
1	Forest	-7.29
2	Barren and Uncultivable uses	-9.74
3	Land put to Non-Agricultural uses	0.11
4	Cultivable Waste	-13.48
5	Permanent pastures and other Grazing Land	-7.15
6	Land Under Miscellaneous Tree Crops and Groves not included in Net Area Sown	-9.27
7	Current Fallow	-8.56
8	Other Fallow Land	-14.12
9	Net Area Sown	-7.45
10	Total Geographical Area	-6.94
11	Area Sown More Than Once	-5.16
12	**Total Cropped Area**	-7.13
13	Irrigated Area	

Source: Season and Crop Report, 2014-15

2.7.3 Land Holding pattern

The number and area of operational holdings of Dharmapuri district is presented in Table 2.14. The data indicated that the small holdings with a size of up to 2 ha constitute more than 70.61 per cent of the total number of holdings in the district. On the other hand, the relatively larger land holdings with a size of more than 5 ha accounted for about just 6.0 % of the total number of holdings in the district.

Table 2.14 Number of Operational Land Holdings in the district (2014-15)

Size/Class	Number of operational holdings								Percentage of contribution
	Scheduled Caste		Scheduled Tribes		Others		Total		
	No.	Area (in ha)	No.	Area (in ha)	No.	Area (in ha)	No.	Area (in ha)	
Marginal									
Below 0.5	10735	3071	1785	444	128409	33969	140929	37484	
0.5 – 1.0	4749	3383	1003	718	59155	41230	64907	45331	
Small									**70.61**
1.0 – 2.0	2191	2956	639	856	39278	53967	42108	57779	
Semi medium									
2.0 – 3.0	454	1072	125	291	10524	25110	11103	26473	
3.0 – 4.0	113	384	21	70	3529	12096	3663	12550	
Medium									
4.0 – 5.0	54	236	13	57	1465	6481	1532	6774	
5.0 -7.5	14	82	6	35	1155	6872	1175	6989	
7.5 – 10.0	11	94	2	16	298	2517	311	2627	
Large									
10.0 – 20.0	3	43	1	17	183	2388	187	2448	**6.0**
Above 20.0	-	-	-	-	26	657	26	657	
Total	**18324**	**11321**	**3595**	**2504**	**244022**	**185287**	**265941**	**199112**	

Source: Agricultural Census (2010-11)

2.8 Sources of Irrigation

Water is an important determinant factor of production of crops in agriculture sector. Intensive and extensive cultivation of land depend mainly on the availability of water. Medium and minor irrigation schemes are implementing in the district to augment the irrigation for agriculture. The various sources of irrigation are canals, tanks, tube wells, open wells and springs. The Public Works Department and Panchayat Union tanks, ponds and supply channels play an important role in the irrigation of Dharmapuri district. The gross and net area irrigated is furnished in Table 2.15. The major cropping area was irrigated through open wells (Gross – 68622 ha and Net area – 47174 ha). The tube wells cover about 1161 ha of gross area and tanks of about 749 ha.

Table 2.15 sources of irrigation in the district (Triennium ending Average 2014-15)

S. No.	Irrigation Sources	Area Irrigated (ha)	
		Gross	Net
1	Dug wells / Open wells	68622	47174
2	Tube wells / Bore wells	1161	832
3	Tanks	749	691
4	Canals	303	295
5	Other sources	-	0.00

Source: Season and Crop Report (2014-2015)

Percentage gross area irrigated to gross area sown and net area irrigated to net area sown is depicted in the Table 2.16.

Table 2.16 Area sown and area Irrigated in districts (2014-15)

(in Ha)

District	Gross area irrigated	Gross area sown	Percentage of gross area irrigated to gross area sown	Net area irrigated	Net area sown	Percentage of Net area irrigated to Net area sown
Dharmapuri	70835	210439	33.66	48992	150941	32.46

Source: Season and Crop Report (2014-2015)

Table 2.17 Area irrigated by different sources of water supply and its growth rates

(in Per cent)

S. No.	Source of irrigation	Net Area Irrigated	Gross Area Irrigated
1	Canals	-25.12	-24.90
2	Tanks	-14.83	-14.99
3	Tube wells	9.15	9.58
4	Ordinary wells	-1.41	-0.33
5	Other sources	0.00	0.00
	Total	**-3.13**	**-1.93**

The analysis of growth rates of irrigation sources indicated that, irrigation through canals tanks and other sources were in decreasing trend for both net and gross area under irrigation (Table 2.17). Irrigation through tube wells showed the increasing trend which infers that due to short fall of actual rainfall invigorates the drought in the drought prone areas in the district.

From the Table 2.18, it is inferred that there are 512 tanks in the different blocks of the district. These tanks account for the irrigation sources for multivarious crops. Nallampalli block hold the highest number of 118 tanks followed by Harur (107 tanks) and Karimangalam block (75 tanks). About 19430.46 acre is under varied irrigation sources (canal, tanks and bore wells). Harur block had the larger coverage of irrigation sources (9317.67 acre) through canals, tanks or dams than other blocks.

Table 2.18 Ayacuts in the blocks of Dharmapuri district (2014)

S. No	Name of the Block	No. of Tanks	Ayacut Area
1	Dharmapuri	48	1221.63
2	Nallampalli	118	1512.19
3	Palacode	40	936.07
4	Karimangalam	75	393.37
5	Pennagaram	57	1510.62
6	Harur	107	9317.67
7	Morappur	48	3602.85
8	Pappireddipatti	19	936.06
	Total	**512**	**19430.46**

Source: Joint Director of Agriculture, Dharmapuri

2.9 Cropping pattern

2.9.1 Major crops grown

Dharmapuri district forms a major horticultural belt in the state. As the area is drought prone it has become essential to switch over to cultivation of drought tolerant perennial fruit crops in this district. Mango is the main horticulture crop of this District. It has the highest area under the fruit crops. The district accounts for nearly one-third area under mango and nearly one-half of the mango yield in the state.

Factors such as fertility of land, monsoon behavior, 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 previous years unanimously for all the crops. During 2014-15, Ragi shares the major area (15.26 per cent) and followed by the Paddy which occupies 11.68 per cent. Other crops like Cholam, Maize, Cumbu and other Cereals shares accountable area such as 11.08, 9.02, 0.41 and 52.55 per cent respectively. The mean area and percentage of cropping area are furnished in Table 2.19.

Table 2.19 Area under major crops (2014-15)

S. No.	Crops	Area (in ha)	%
1	Paddy	18303	11.68
2	Maize	14137	9.02
3	Cholam	17365	11.08
4	Cumbu	641	0.41
5	Ragi	23923	15.26
6	Other Cereals	82355	52.55
	Total	**156724**	**100**

Source: Season and Crop Report (2014-15), Tamil Nadu

The net area sown, irrigation and cropping intensity during 2012-13, 2013-14 and 2014-15 are furnished in Table 2.20. The mean irrigation intensity (The ratio of gross area irrigated to net area irrigated) is 1.40 for the district during 2012-15. The ratio is significantly higher in the district during 2013-14 (1.56) followed by 2014-15 (1.45), and lower in 2012-13 with 1.18. Cropping intensity refers to the ratio between the Gross area sown and the Net area sown. The average cropping intensity for the district during 2012-15 is 1.178. It is highest during 2012-13.

Table 2.20 Net sown area, cropping intensity and irrigation intensity in the district

(in Ha)

Year	Net sown area	Irrigation Intensity	Cropping Intensity
2012-13	145253	1.18	1.127
2013-14	159369	1.56	1.203
2014-15	150941	1.45	1.206
Average	**151854**	**1.40**	**1.178**

Source: Season and Crop Report (2012), Tamil Nadu

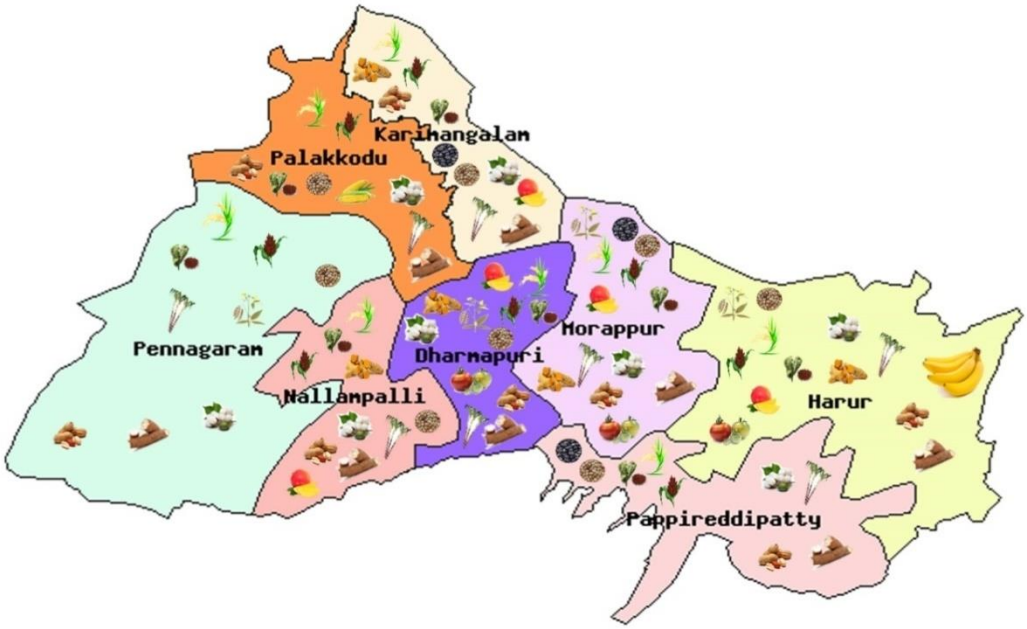

Fig. 5 Major crops grown in different blocks of Dharmapuri district

2.9.2 Productivity of major crops in the district

The data on blockwise productivity of major crops is furnished in Table 2.21. It indicated that Palacode block recorded the highest mean productivity for paddy (2225 kg/acre), maize (3015 kg/acre) and sugarcane (33 tonnes/ha).

Table 2.21 Block wise productivity of major crops in the district (2014-15)

Name of the block	Productivity of major crops (kg/acre)															
	Paddy	Cholam	Cumbu	Ragi	Samai	Maize	Black gram	Greengram	Red gram	Horse gram	Bengal gram	Cowpea	Groundnut	Gingelly	Cotton	Sugarcane
Dharmapuri	2128	811	1660	1623	498	2948	434	342	492	255	410	325	1122	124	701	29
Nallampalli	2115	815	1650	1635	500	2925	415	345	485	255	412	375	1152	113	695	30
Palacode	2225	815	1562	1625	501	3015	428	341	493	258	415	330	1118	126	710	33
Karimangalam	2112	798	1628	1620	505	2948	434	342	492	255	410	325	1122	124	701	29
Pennagaram	2055	789	1605	1635	495	2915	422	341	502	255	395	332	1135	116	705	28
Harur	2205	811	1660	1623	485	2975	436	345	501	259	415	355	1215	125	715	32
Morappur	2151	811	1658	1625	498	2945	455	346	508	255	410	352	1231	125	715	30
Pappireddipatti	2145	850	1625	1605	515	2945	442	345	492	255	410	365	1122	119	718	31
District Average	**2142**	**812**	**1631**	**1624**	**500**	**2952**	**433**	**343**	**496**	**256**	**410**	**345**	**1152**	**122**	**708**	**30**

Source: Joint Director of Agriculture, Dharmapuri

The triennium average ending 2014-15 in area, production and productivity of the major crop in the district is given in Table 2.22. The total area under production of agricultural crops in the district was 1572179 ha. The crops were classified under broad areas such as food grains, pulses, oil seeds and other & other crops. Among the food grains, paddy holds 21385 ha in pulses; horse gram holds 17686 ha area.

Table 2.22 Area and Productivity of major agricultural crops

(Triennium average ending 2014-15)

Sl.No	Particulars	Area (in ha)	Production (in tonnes)	Productivity (in tons/ha)
	Food grains			
1	Paddy	21385	100560	4.7023
2	Maize	6873	42556	6.1917
3	Cholam	14045	19811	1.4105
4	Cumbu	923	2073	2.2459
5	Ragi	18198	54241	2.9806
	Pulses			
6	Bengal Gram	2369	1362	0.5749
7	Red Gram	5875	6261	1.0657
8	Black Gram	5312	3945	0.7426
9	Green Gram	1289	781	0.6058
10	Horse Gram	17686	12342	0.6978
	Oilseeds			
11	Groundnut	12815	31642	2.4691
12	Sunflower	350	519	1.4828
13	Gingelly	472	258	0.5466
	Other crops			
14	Castor	276	68	0.2463
15	Cotton	11260	34280	3.0444
16	Sugarcane	13809	1261480	91.35202
	Total	**132937**	**1572179**	**24963.00**

Source: Season and Crop Report (2012), Tamil Nadu

Apart from mango, other minor horticultural crops including fruits and vegetables are grown in the district. The details on area, production and productivity of major horticultural crops to the districts in Table 2.23. The fruit crops like banana (708 ha), Jack fruit (25 ha), Guava (120.33 ha) and Grapes (12 ha) with an average productivity of 23.91, 5.60, 3.67 and 2.33 kg/ha respectively. In vegetables, Tomato is cultivated in larger area (2237.67 ha) and other crops like onion, brinjal, Bhendi and cabbage are cultivated in smaller area. Among the spice crops, turmeric is cultivated in larger area (9286 ha). The area coverage under major horticultural crops is 76301 ha.

Table 2.23 Area, production and productivity of major horticultural crops

(Triennium average ending 2014-15)

Sl.No	Particulars	Area (in ha)	Production (in tonnes)	Productivity (in kg/ha)
1	**Horticultural crops**			
2	Coconut	6443	606	0.0941
3	Tobacco	32	369	11.5313
4	Onion	321	1867	5.8162
5	Brinjal	570.67	8541	14.9666
6	Bhendi	444.33	3482	7.8365
7	Cabbage	6.67	428	64.1679
8	Tomato	2237.67	43070	19.2477
9	Banana	708	16933	23.9167
10	Mango	35397	35832	1.0123
11	Jack Fruit	25.00	140	5.6000
12	Guava	120	441	3.6750
13	Grapes	12	28	2.3333
14	Chillies	430	190	0.4419
15	Garlic	0	0	0.0000
16	Coriander	89	42	0.4719
17	Turmeric	9286	35955	3.8720
18	Tamarind	694	2423	3.4914
19	Tapioca	19428	564204	29.0408
20	Sweet Potato	57	1206	21.1579
	Total	**76301.34**	**715757**	**218.6733**

Source: Season and Crop Report (2012), Tamil Nadu

2.10 Consumption of Chemical Fertilizers and Pesticides

The Department of Agriculture shoulders the responsibility to closely monitor the demand and supply of the fertilizers and pesticides to ensure timely availability to the farmers. To monitor the fertilizer supply, facilitation centers 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 data on consumption of fertilizers and pesticides during 2014-2015 is given in Table 2.24. From the table it could be observed that the nitrogenous fertilizer consumption was high (14190 MT) followed by potassic fertilizer (5573 MT) in the district. Pesticide used in the form of dust was 36.50 MT and urea consumption was 11138 MT.

Table 2.24 Consumption of chemical fertilizers and pesticides in the district (2013-14)

Fertilizers (in MT)				Pesticides		Urea (MT)
Nitrogenous (N)	Phosphoric (P_2O_5)	Potassium (K_2O)	Total (NPK)	Dust (MT.)	Liquids (Lts.)	
14190	5352	5573	25115	36.50	23	11138

Source: Joint Director of Agriculture, Dharmapuri

Table 2.25 Distribution of Nitrogen, Phosphorus and Potash fertilizer in the district (Lakh tonnes)

year	Nitrogen	Phosphorus	Potash
2012-13	0.11	0.07	0.05
2013-14	0.10	0.05	0.04
2014-15	0.09	0.05	0.05

Source: Department of Agriculture, Chennai-5

2.11 Agricultural Engineering - Machineries and Implements

Tools, implements and powered machinery, are essential and major inputs in agriculture. The term "Mechanization" is generally used as an overall description of the application of these inputs. There are three levels of farm power used to provide an energy source for the utilization of these tools, machines and equipment, manual power, animal draft and motorized power. The level, appropriate choice and proper use of mechanized inputs into agriculture have a direct and significant effect on achievable levels of agricultural production and the profitability of farming. Farm power and machinery consisting of manual labour, draught animals, tractors, implements, hand tools, equipment and machinery is an essential farm input. In almost any agricultural production system the annual expenditure on farm power, whether on labour, draft animals or fuel and depreciation of machines, largely exceeds the costs of other inputs such as agro-chemicals and seeds. Agricultural production and food security can adversely be affected because of insufficient use of farm power, low labour productivity and/or labour scarcity. Machines are also required to assist the post-harvest loss reduction and on-farm processing. Thus it is once again recognized that agricultural mechanization is crucial in the fight against hunger and poverty and at the same time to address environmental and health concerns. The number of agricultural implements and machineries in the district are given in Table 2.26.

Table 2.26 Quantity of Agricultural Machineries and Implements during 2014-15

(In Nos)

S. No.	Item	Numbers
1.	**Ploughs**	
	a) Wooden	167336
	b) Iron (Soil Plough & Soil String	29955
	c) Total	197291
2.	**Water Pumps for Irrigation Purpose**	
	a) Worked by Oil Engine	16601
	b) Worked by Electric Power	32476
	c) Total	49077
3.	**Tractors**	
	a) Government	57
	b) Private	540
	c) Total	597
4.	**Sugarcane Crushers**	
	a) Worked by Power	173
	b) Worked by Bullocks	215
	c) Total	388
5.	**Oil Ghanis**	
	a) 5 Kg. & above	-
	b) Less than 5 Kg.	126
	c) Total	126

Source: Based on "G "Return District Statistical Hand Book (2014-15), Dharmapuri

2.12 Agricultural Marketing and Regulated markets

There are sixteen regulated markets in Dharmapuri district**.** Majority of these Regulated Markets (RMs) are provided with the necessary infrastructure such as godowns, transaction sheds, drying yards and farmers' rest sheds etc. The total arrival of agricultural produce to these markets during 2012-13 was 21637.682 MT for worth of 31.737 lakhs. In order to avoid distress sale by the small and marginal farmers in the peak season, some of the RMs have been identified for providing pledge loans to the farmers. Under this scheme, the farmers can store their produce in these godowns for a maximum period of six months and take pledge loan at a maximum of 75 per cent of the value of the produce up to the maximum limit of Rs. 25000. The sector depends, to a large extent, on the support from the government. A capital investment subsidy scheme for construction / expansion / modernization of multi chamber / multi product cold storages and storages for horticultural produce was introduced by the GOI. Cold storages would help in minimizing post-harvest losses being suffered by farmers, particularly small and marginal farmers. The number of regulated markets and quantity and value of commodities transacted in those markets are given in Table 2.27.

Table 2.27 Agricultural regulated markets in the district

Year (2014-15)

S. No	No. of Regulated Markets	No. of Sub/- Regulated Markets	Name of the Crops	Quantity arrived (in MT) (Product wise)	Receipts (Rs. in Lakhs) (Product wise)	
1	16	Nil	Paddy	935.88	Paddy	2258
2			Cotton	-	Cotton	-
3			Groundnut	825.392	Groundnut	2470
4			Ragi	-	Ragi	-
5			Cholam	-	Cholam	-
6			Cumbu	-	Cumbu	-
7			Coconut	933.392	Coconut	6006
8			Horse gram	-	Horse gram	-
9			Tapioca	16704	Tapioca	3743
10			Potato	-	Potato	-
11			Castor	-	Castor seed	-
12			Tamarind	1311.018	Tamarind	8481
13			Gingelly	814	Gingelly	-
14			Samai	-	Samai	6472
15			Field bean	-	Field beans	-
16			Turmeric	-	Turmeric	-
17			Red gram	-	Red gram	-
18			Green gram	-	Green gram	-
19			Sugarcane	114	Sugarcane	2037
Total				**21637.682**		**31.737**

Source: District Market Office, Dharmapuri

The Government created infrastructural facilities in the regulated markets for the benefit of farmers. The agricultural products can be stored in various kinds such as godowns, drying yards, farm shed, rural business hub, transaction shed and also in their own land. The number and different kinds of storage facilities available in the district are given in the Table 2.28.

Table 2.28 Infrastructure facilities available in Regulated markets (No's)

S.No.	Facilities	Quantity (NOS)
1	Own land	7
2	Rural Godown	5
3	Transaction shed	7
4	Rural Business Hub	1
5	Drying Yard	21
6	Automatic weighing and bagging machine	-
7	Farmers Rest Shed	3
8	Sanitary Facilities	3
9	Drinking water Facilities	7

Value – Addition of Farm Produce - Status and Prospects in Numbers

Mango pulp industries	:	35
Processing Unit	:	2
Mango growers association	:	6
Mango grading units	:	6
Tomato growers association	:	3
Farmer's interest groups	:	20
Commodity interest groups	:	20

2.13 Storage Facilities

The marketing facilities available in Dharmapuri district for the agricultural commodities are presented in the Table.2.29.

Table 2.29 Basic Marketing Infrastructural Facilities available in the district

Storage facilities	Number	Capacity (MT)
Storage godown	4	3500
Agribusiness centre	1	100
Market complex with cold storage	1	50
Drying yard	57	22800
Storage godown (under progress)	3	4100
Cold storage	3	1050

Source: JDA office, Dharmapuri District

2.14 Sericulture

Area, production and value of mulberry production in the district are given in the Table 2.30. The total area under mulberry in the district was 193.59 ha during 2014-15. Of which 26.98 per cent of the area is located in Pennagaram block and followed by Palacode block which covered 23.94 per cent area (217 ha). The blocks like Dharmapuri, Pappireddipatti and Karimangalam holds 21.45, 24.69 and 11.13 hectares respectively. The district produced 327453 kg of Cocoons in an area of 193.59 hectare with the worth of 1155.87 lakhs. In total, 20.75 per cent of value in cocoon production was observed in Palacode block, however karimangalam and Morappur were found to be less in terms of area, production and its value.

Table 2.30. Area under mulberry production and it is value in the district (2014-15)

S. No	Name of the block	Area under Mulberry (in ha)	Production of Cocoons (kgs)	Value in Rupees (lakhs)
1	Dharmapuri	21.45	34892	123.16
2	Harur	17.71	13255	46.79
3	Pappireddipatti	24.69	39997	141.18
4	Pennagaram	52.22	84196	297.21
5	Palacode	46.35	100829	355.92
6	Karimangalam	11.13	12272	43.32
7	Morappur	5.87	19783	69.83
8	Nallampalli	14.17	22229	78.46
	Total	**193.59**	**327453**	**1155.87**

Source: Joint Director of Sericulture, Dharmapuri

2.15 Animal husbandry and Dairy development

2.15.1 Livestock population

During 2012, the total livestock population in the district was 678103 numbers. Among which, 45.36 per cent (307558 numbers) of the population was cattle and 19.26 per cent (130578 numbers) was sheep. Other than cattle and sheep, the farmers were rearing goats, buffaloes, horses and ponies and pigs. The detail on total livestock production in the district is presented in the Table 2.31.

Table 2.31 Livestock population in the district (2012 census)

Sl. No.	Particulars	Population	Per cent
1	Cattle	307558	45.36
2	Buffaloes	49406	7.29
3	Sheep	130578	19.26
4	Goats	188366	27.78
5	Horses and ponies	89	0.01
6	Donkeys	226	0.03
7	Pigs	1880	0.28
8	**Total Livestock**	**678103**	**100.00**
9	Dogs	46398	
10	Rabbits	714	
11	**Poultry**		
	Back yard poultry	380947	
12	Farm poultry	3408058	
13	**Total Poultry**	**3789005**	

Source: 12th Livestock Census (2012)

The block wise livestock population is furnished in the Table 2.32. It is indicated that, Harur block have reared the maximum number of livestock's (376208 No's) and it was followed by Nallampalli block (346549 No's). with regards to the livestock's, cattle's population was highest in all the blocks and least were rearing of goat, buffalo etc.

Among poultry, Harur and Nallampalli block involved in the rearing of higher number (250000) of poultry birds.

Table 2.32 Block wise livestock population in the district (2014-15)

Livestock population	B1	B2	B3	B4	B5	B6	B7	B8
Cattle	34440	64632	49292	64492	44372	38644	30820	52038
Buffalo	330	140	180	120	190	220	180	280
Sheep	34770	60889	43551	37607	51657	33860	22898	87557
Goat	580	0	0	0	280	0	0	0
Pigs	440	547	210	208	50	0	0	0
Poultry	150000	250000	150000	0	250000	170000	0	180000
Others	27470	0	0	0	0	0	0	0
Total	**248030**	**376208**	**243233**	**102427**	**346549**	**242724**	**53898**	**319875**

B1- Dharmapuri, B2 - Harur; B3 - Karimangalam; B4 - Morappur; B5- Nallampalli; B6 - Palacode; B7 - Pappireddipatti; B8 – Pennagaram

Source: TANUVAS, Chennai

2.15.2 Veterinary institutions and hospitals

The different blocks in the district holds veterinary hospitals and dispensaries. There are about 68 Government hospitals and 43 dispensaries, a clinical centre, an animal investigation unit, a sub centre and 2 mobile units. Dharmapuri, Pennagaram and Pappireddipatti block hold the maximum number of about 10 Government hospitals while Harur and Palacode possessed 9 and 8 hospitals respectively. The blocks such as Nallampalli, Pennagaram and Karimangalam hold 6 dispensaries each for the welfare of the livestock. More than 44061 animals were treated in all these veterinary hospitals and institutions through which the farming community gets benefitted in several block. About 3893 castrations were performed during the year 2012-13. The block wise details on veterinary infrastructure facilities, institutions, hospitals and animals treated block wise are presented in the Table 2.33 & 2.34.

Table 2.33 Blockwise veterinary related Infrastructure facilities available in the districts

Infrastructure facilities	B1	B2	B3	B4	B5	B6	B7	B8
Co-operative marketing	yes	yes	yes	-	-	yes	-	yes
Veterinary clinic	yes	yes	yes	yes	yes	yes	Yes	yes
Milk collection centre	yes	yes	yes	yes	yes	yes	Yes	yes

B1- Dharmapuri, B2 - Harur; B3 - Karimangalam; B4 - Morappur; B5- Nallampalli; B6 - Palacode; B7 - Pappireddipatti; B8 – Pennagaram

Source: TANUVAS, Chennai

Almost all the blocks of this district possess infrastructure facilities for the development of dairy. Very few blocks in the district did not possess co-operative marketing society (Morappur, Nallampalli and Pappireddipatti) and the remaining blocks possess cooperative marketing society. The district also possesses veterinary clinics and milk collection centres at various places.

Table 2.34 Veterinary institutions, hospitals and animals treated block wise (2014-15)

Name of the block	Number		Veterinary institutions				Sub-centres	Other units		Animals treated	Castration performed
	Government hospital	Private hospital	Poly clinic	Hospital	Dispensaries	Clinical centres		Animal disease	Mobile units		
B1	10	0	-	-	5	1	1	1	1	62152	567
B2	7	0	-	-	6	-	-	-	-	58302	352
B3	10	0	-	-	6	-	-	-	-	60225	402
B4	8	0	-	1	5	-	-	-	-	57886	613
B5	7	0	-	-	6	-	-	-	-	52152	455
B6	9	0	-	-	5	-	-	-	-	54114	482
B7	10	0	-	1	5	-	-	-	1	49965	526
B8	7	0	-	-	5	-	-	-	-	51265	496
Total	**68**	**0**	**-**	**2**	**43**	**1**	**1**	**1**	**2**	**44061**	**3893**

B1 – Dharmapuri; B2- Nallampalli; B3 – Pennagaram; B4 – Palacode; B5 – Karimangalam; B6 – Harur; B7 – Pappireddipatti; B8 - Morappur

Source: Assistant Director of Animal Husbandry, Dharmapuri

2.15.3 Dairy development

The blockwise details on dairy development in the district is given in the Table 2.35. The district produces 67048 litres of milk per day on an average. Among which, Morappur block produced highest quantity of milk, about 19302 litres per day on an average and it accounts 18.61 per cent from its total production. Remaining blocks such as Harur, Pappiredipatti, Dharmapuri, Palacode and Pennagaram also produce considerable quantity of milk and shares 21.43, 14.78, 12.46, 7.68 and 7.24 per cent from the total production. This recorded quantities of milk production are achieved from 279 milk societies for the value of 15.42 lakhs per day on an average. The maximum numbers of societies (53) were present in the Morappur block.

Table 2.35 Dairy development in the district (2014-15)

Name of the block /town	No. of milk societies	Quantity of Milk produced (in lit/ day (Average)	Value in Milk produced Rs. in lakhs per day (in average)
Dharmapuri	27	8359	1.92
Nallampalli	31	2963	0.68
Pennagaram	31	4855	1.11
Morappur	53	19302	4.43
Harur	49	14370	3.30
Pappireddipatti	33	9915	2.28
Palacode	40	5154	1.18
Karimangalam	15	2130	0.48
Total	**279**	**67048**	**15.42**

Source: Dairy Development, Dharmapuri

2.15.4 Poultry development

The district possess 347 poultry farms. Of which, 340 farms were broiler and 7 farms was layers. Palacode block had the highest number of broiler farms with 1, 82,000 birds. Above 35 per cent of the poultry farms were located in the Palacode block followed by the Nallampalli block which occupies 29.74 per cent. Morappur block had the lowest number of poultry farms (0.48 per cent) in the district. The details on poultry production are given in the Table 2.36.

Table 2.36 Poultry development in the district (2014-15)

S. No	Name of the block	Broiler		Layer		Total Numbers
		No. of farms	No. of Birds	No. of farms	No. of Birds	
1	Dharmapuri	15	22000	-	-	15
2	Nallampalli	102	152000	-	-	102
3	Pennagaram	62	94000	-	-	62
4	Palacode	122	182000	-	-	122
5	Karimangalam	21	32000	-	-	21
6	Harur	8	12000	1	35000	9
7	Pappireddipatti	8	14000	4	180000	12
8	Morappur	2	3000	2	150000	4
	Total	**340**	**511000**	**7**	**365000**	**347**

Source: Department of Animal Husbandry and Veterinary Services, Chennai

2.15.5 Egg production

The district produces 1924.523 Lakh No's of Desi (101.288 lakh no's) and Improved (1823.235 lakh no's). The details on total egg production in the district are furnished in the Table 2.37

Table 2.37 Egg production in the district (2013-14)

(in Lakh No's)

Categories	Egg production
Desi	101.288
Improved	1823.235
Total	**1924.523**

Source: Department of Animal Husbandry and Veterinary Services, Chennai

2.16 Fisheries

Dharmapuri being an inland district, fishing is restricted to inland. Main varieties of fish available are katla, rogu, mirgal, common and corp. The district possesses 6 inland fishing centres with capacity of 18,882 tonnes fish catchment. In total, 45 fishermen were engaged in inland fishing. Vanniyar centre has the highest capacity of fish catchment (6638 tonnes) with 8 fishermen. The details of inland fishing in various centres are presented in the Table 2.38.

Table 2.38 Fisheries development and production in the district (2013-14)

S. No	Name and Address of Fishing centres	Inland fish catch (Tonnes)	Marine fish catch (Tonnes)	Number of Fisherman engaged
1	Chinnar	1627	-	7
2	Thumbalahalli	0877	-	-
3	Nagavathy	0986	-	10
4	Vanniyar	6638	-	8
5	Thoppiar	6065	-	12
6	Kesrkulihalla	2689	-	8
	Total	**18882**	**-**	**45**

Source: Assistant Director of Fisheries, Dharmapuri

2.17 Banking and Insurance

Few blocks in the district covers the insurance scheme. The block like Dharmapuri, Pennagaram, Palacode and Harur possess each one branches. The total number of beneficiaries from various insurance schemes is about 25564. Of which Oriental bank insurance has the highest number of beneficiaries (12,500). The details of policies issued, sum assured and amount paid for compensation are presented in the Table 2.39.

Table 2.39 Insurance scheme in the district (2014-15)

Name of the Insurance	No. of branches	Policies issued	Sum assured (Rs. in crores)	No. of bene ficiaries	Amount paid in compensation (₹ in crores)
LIC, Dharmapuri LIC, Pennagaram	1	11874	157.4	427	336.56
LIC, Palacode	1	6208	72.4901	6208	4.88
LIC, Harur	1	11631	137.23	5510	12.465
General insurance, United Insurance	1	8430	-	919	60
Oriental Insurance	1	12500	-	12500	347.98
Total	**5**	**50646**	**367.0201**	**25564**	**761.885**

Source: (i) Manager. LIC Ltd., Dharmapuri, (ii) Manager, New India Assurance Ltd., Dharmapuri and (iii) Manager, United Insurance Ltd., Dharmapuri

2.18 Co-operation

The details on different types of cooperative societies in the district are presented in the Table 2.40**.** There are 192 societies, of which primary agricultural cooperative bank constitutes 131 societies with largest number of member (324250 Nos) and employees (790 Nos) in the district**.** All the societies shares capital of about 11685.03 lakhs and 206079.01 lakhs of working capital.

Table 2.40 Details on Cooperative societies in the district (2014-15)

(Rs. In Lakh)

S. No	Type of the societies	No. of Societies	Membership	Share Capital	Working capital	Loans Advanced	Outstanding	Over-due	No. of Employees
1	District Central Co-operative Bank	1	493	2893.92	140114	104462	68193	3575	114
2	Primary Agricultural Co-operative Bank	131	304541	3672.40	47742	54244	46965.0	918.60	790
3	Urban Bank	1	324250	642.65	10006.14	7245.65	6230.7	62.01	24
4	Land Development Bank	2	30849	113.20	3695.35	1298.17	897.60	264.88	10
5	Employees Co-op, Thrift & Credit Society	47	28809	3895	2268.56	855.96	25182.91	230.54	69
6	Co-Op Marketing Society	2	30018	160.25	906.56	320.21	0	0	42
7	Wholesale Co-op Society	1	3370	24.19	104.59	0	150.29	0	65
8	Students Co-op stores	0	0	0	0	0	0	0	0
9	Labour contract Co-op Societies	1	1370	10.24	112.17	0	0	0	56
10	Printing Press	1	575	9.17	99.18	0	0	0	26
11	Primary Co-op stores	1	2225	27.01	111.0	0	0	0	5600
12	Co-op Training Institutions	1	0	0	0	0	0	0	1
13	Co-op Union	1	1366	0	0	0	0	0	1
14	Blue Metal Jelly Co-op Society	0	0	0	0	0	0	0	0
15	Vegetable growers	1	0	0	0	0	0	0	1
16	Sitheri Lamp Society	1	1049	237.0	919.46	160.76	176.24	763.49	1241
	Total	**192**	**728915**	**11685.03**	**206079.01**	**168586.75**	**147795.74**	**5814.52**	**8040**

Source: District Register of Co-operative Societies, Dharmapuri

2.19 Industries

The registered small scale industries during 2012 – 13 in different blocks of the district are presented in the Table 2.41. Running of industries in the district provide employment for the rural folks and helps in improvement of economic status of the people. Dharmapuri block possess the maximum number of industries (6 Nos). About 4173 employees were working in about 481 units. The produces from the industries are worth of 5371 lakh rupees. The industry comprised of food based, textile based, animal husbandry, chemical based, electrical and electronic based etc.

Table 2.41 Registered and EM filed small scale industries in the blocks (2014-15)

S. No	Name of the block	Description of the Industry	Name of the important industries	All Employees	Value of Output & Value added (Rs. in Lakhs)
1	Dharmapuri	Food based industries, Textiles based industries, Animal Husbandry industries, Engineering and allied industries, Chemical based industries, Electrical and Electronic Industries and Miscellaneous Industries	Dharmapuri Roller flour Ltd and Dharmapuri District Co-operative Sugar Mills, Palacode, Subramania Siva Co-op. Sugar Mills, Harur, Dharmapuri Paper Mills, Echampadi P.M.P Spinning Mills, Dharmapuri Gowri Spinning Mills, Dharmapuri Dairy Chilling Centre, Dharmapuri	4173 (481 Units)	5371.00
2	Nallampalli				
3	Pennagaram				
4	Palacode				
5	Karimangalam				
6	Morappur				
7	Harur				
8	Pappireddipatti				

Source: District Industries and Commerce, Dharmapuri

The details on small scale industries in the district are presented in the Table 2.42 about 754 small scale industries are present in the district. Food based industries shares about 36.20 per cent among other sectors. Textile based industries occupies 27.0 per cent in the district while electrical and electronic based industries are very meager.

Table 2.42 Registered and EM filed small scale industries in the district (2014-15)

S. No	Classification	Details of Classification	Number of units
1	Food based	Rice, Floor, Vermicelli, Mango pulp, Oil, Soap, etc.,	273
2	Chemical based	Safety matches, Polythene bags, Chalk crayon etc.,	17
3	Plastics & Rubber based	P.V.C pipes, Rubber goods blow molded RP granules etc.,	22
4	Electrical & Electronics	Battery charging lamps, Starters, T.V. Antenna etc.,	7
5	Forest based	Wood furniture sawn timber etc.,	10
6	Engineering based	Fabrication, Machining etc.,	91
7	Textile based	Readymade garments, power loom, silk reeling, Tailoring etc.,	205
8	Others (Specify)	Beauty parlor, Paper, printing on-metal, photo studio, DTP Xerox etc.,	129
		Total	**754**

Source: District Industries and Commerce, Dharmapuri

The details are on Khadi and Village industries present in the district are given in the Table 2.43. The Nepali loom and rural textile are the Khadi industries that involved in the production of about 16.63 lakhs and 4.12 lakhs respectively.

Table 2.43 Khadi and Village Industries in the district (2014-15)

S. No	Industry	Production (Rs. in lakhs)	Sales (Rs. in Lakhs)	Employments (No. of Persons)	Earnings (Rs. in Lakhs)
1	Soap industry`	-	-	-	-
2	Footwear unit	-	-	-	-
3	Handmade Paper Unit	-	-	-	-
4	Agarbathi Unit	-	-	-	-
5	Khadi Production a. Nepali Loom b. Rural Textile	 16.63 - 4.12	 - -	 12 - 17	 1.92 - 1.21
6	Khadi sales a. Khadi sales b. Village industries	 - -	 16.94 1.58	 - -	 - -
7	Others (specify)	-	-	-	-

Source: Assistant Director of Khadi and Village Industries, Salem

CHAPTER III

DEVELOPMENT OF AGRICULTURE AND ALLIED SECTORS

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

i. Assessing the trends in area, production and productivity of major crops and projection till the 12th plan period (2015-16)
ii. Yield gap analysis for the major crops

3.1 Trends in area, production and productivity of major crops

The compound growth rate was worked out for the selected crops for thirty five years from 1980-81 to 2014-15 and projection is made up to 2023. The compound growth rate was calculated for area, production and productivity ofmajor crops using following formulae. The CGR measures the annual growth of any variable over a period of time and it is expressed in percentage.

$$Y_t = ab^t$$

It is estimated by fitting a semi-log equation of the following form.

The logarithmic form of the above equation is : ln Y = ln a + t ln b (or Log Yt = Log a + t log b

Where,

Y	=	Time series data of Area, Production & Yield of Sugarcane
t	=	Number of years varies from the value 1,2,3…n
a	=	Intercept or constant coefficient
b	=	Regression coefficient of t
r	=	Compound Growth Rate

The value of b is computed by using OLS method. Further the value of CGR in percentage was worked out using the formula: CGR = [Antilog b-1] × 100.

Average of area, production and productivity of major crops grown in the district is given in the Table 3.1. From the table, it is inferred that Mango, Paddy, Tapioca, ragi and

sugarcane are the major crops cultivated in the district. On an average (triennium average ending average 2014-15) the district showed a Mango is grown in an area of 35397 ha with an production of 35832 tonnes. Followed by paddy is grown in an area of 21385 ha with an average productivity of 4702 kg/ha. Tapioca is cultivated in area of 19428 ha with average productivity of 29.041 tons/ha. Ragi is the other major agricultural crop grown in an area of 18198 ha with a production of 54241 tonnes.

The other crops like coconut, turmeric, cotton and cholam are also grown in certain areas and made significant contributions to the farming community in terms of production, yield and income.

Table 3.1 Area, Production and productivity of major crops in Dharmapuri District (Triennium average ending 2014-15)

S. No	Crops	Area (Ha)	%	Production (Tonnes)	Productivity (tons/ha)
1	Paddy	21385	13.00514	100560	4.702
2	Cholam	14045	8.541369	19811	1.411
3	Ragi	18198	11.06699	54241	2.981
4	Blackgram	2369	1.440691	3945	1.665
5	Groundnut	12815	7.793353	31642	2.469
6	Coconut*	6443	3.918266	606	0.094
7	Cotton	11260	6.847691	34280	3.044
8	Sugarcane	13809	8.397847	1261480	91.352
9	Tapioca	19428	11.815	564204	29.041
10	Turmeric	9286	5.647216	35955	3.872
11	Mango	35397	21.52644	35832	1.012
	Total	**164435**	**100.00**		

**In lakh nuts*

The Compound growth rates are shown in Table 3.2.

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

S. No	Crops	CGR during 2000-2001 to 2014-15 (%)		
		Area	Production	Productivity
1	Paddy	-3.567	0.369	3.936
2	Cholam	-2.816	0.346	3.162
3	Ragi	-14.008	-9.31	4.698
4	Black gram	-6.562	-5.467	1.095
5	Groundnut	-10.437	-5.114	5.323
6	Coconut	-9.418	-7.095	2.323*
7	Cotton	0.531	9.603	9.072
8	Sugarcane	2.118	3.371	1.253
9	Tapioca	5.688	6.5	0.812
10	Turmeric	17.389	22.643	5.254
11	Mango	-9.230	-7.804	1.426

** Denotes growth rates during 2014-2015*

Barring a few crops like cotton, sugarcane, tapioca and turmeric, the area under others crops has been declining. Similarly, in case of production except the above crops, other crops predominantly grown are suffered from the declining trend in production. Though the major crops like paddy, mango, cholam, ragi, groundnut showed declining trend in area and production but the productivity was increased and thus minimizing the overall decline in production in the district.

3.2 Projected area, production and yield of selected crops

The area, production and yield were projected using CGR for the years up to 2015-16 and the results are furnished in the Table 3.3.

The major crops grown in the district are tapioca, paddy, sugarcane, groundnut, ragi, turmeric, cotton, cholam and mango. These crops account for the major share in the crop production in the district. Therefore, these nine crops were focused as potential crops of the district and the scope for further expansion of their potentiality in terms of production has been explored.

From the Table, it could be inferred that the current pattern of changes (Growth rates) in the area, production and yield. The area under paddy cultivation in 2015-16 is around 15932 ha with a loss in area of about 7481 ha from the existing paddy area (triennium ending average 2014-15). Though the yield show a positive sign, the reduction or loss in area in the forthcoming years could not compensate the increased quantity of production in the district. In order to sustain the overall production of major crops in the district, there is a need to arrest further decline in area and adequate measures are to be taken to increase the productivity of the crops.

The crops like ragi, groundnut and coconut showed a larger reduction of area over the period of time form the existing area. Reduction in area might be owed to reduction in rainfall over the years of time. The increase in drought prone areas in the district leads to decrease in the area of cultivation of major crops. All these crops are high water requirement crop, so the necessity of large quantity of water arises ultimately reduction in the cropping area.

Alternatively, the crops like tapioca and turmeric showed the increasing trend in the area over the year. The tapioca cultivation in the district is increased about 34527 ha in 2015-16 from the existing tapioca cultivation area in the district. The yield trend also showed a positive sign, it indicates that the increase in area will increase the production and ultimately the yield. Though, the production and productivity has been increased over the period, there are certain yield gaps, which can be overcome by the advanced production technologies that evolved during the recent times.

3.3 Projected crop output based on current yield level (2011-12 to 2022-23)

The projection is made for the year 2023 for area, production and productivity of major crops. It is observed that as per the projected value, the area for the crops such as Tapioca, Sugarcane, Mango, Cotton, and Turmeric will increase from the present area. In case of productivity almost all the crops may have higher productivity than the current level

except Cholam, gingelly, cotton, turmeric, horse gram, Mango and Turmeric. The details are furnished in the Table 3.4.

Table 3.3 Projected area, production and yield of major potential crops

Description	Paddy			Cholam			Ragi			Black gram		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
Compound Growth Rate (%)	-3.567	-1.875	3.936	-2.816	-0.583	3.162	-14.008	-11.993	4.698	-6.562	-6.095	1.095
Triennium Average ending 2011-12	23413	100369	4246	12167	12735	1097	15364	35119	2230	3737	2322	550
2012-13	17767	75158	4475	12410	15483	1266	9099	21051	2406	1738	889	517
2013-14	17133	73748	4651	12061	15393	1306	7825	18526	2519	1624	834	522
2014-15	16522	72366	4834	11721	15303	1347	6729	16304	2638	1517	784	528
2015-16	15932	71009	5025	11391	15214	1390	5786	14349	2762	1417	736	534

Description	Groundnut			Coconut			Cotton			Sugarcane		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
Compound Growth Rate (%)	-10.437	-7.191	5.323	-9.418	-1.759*	2.323*	0.531	8.774	9.072	2.118	2.927	1.253
Triennium Average ending 2011-12	12682	31533	2344	7307	1385	19085	8829	22830	428	19099	1751695	91
2012-13	8270	21062	2620	5459	1379	20038	7018	21201	521	17937	1711576	96
2013-14	7407	19547	2759	4945	1354	20503	7055	23061	569	18317	1761676	98
2014-15	6634	18142	2906	4479	1330	20980	7093	25084	620	18705	1813242	99
2015-16	5941	16837	3061	4057	1307	21467	7130	27285	676	19101	1866318	100

Description	Tapioca			Turmeric			Mango		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
Compound Growth Rate (%)	5.688	6.546	0.812	17.389	23.557	5.254	-9.230	-7.933	1.426
Triennium Average ending 2011-12	23579	718059	30626	10016	48910	4680	11448	67387	5863
2012-13	29247	985494	33696	10581	49668	4694	6773	43057	6356
2013-14	30911	1050006	33970	12421	61369	4940	6148	39641	6447
2014-15	32669	1118741	34246	14581	75826	5200	5580	36496	6539
2015-16	34527	1191976	34524	17117	93688	5473	5065	33601	6632

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

Table 3.4 Projected increase in Yield of selected crops from 2011-12 to 2022-23

Year	Tapioca	Paddy	Sugarcane	Cholam	Ragi	Mango	Gingelly	Cotton	Turmeric	Horse gram
Triennium average Ending (2011-12)	29.37	3.94	85.02	1.02	1.91	5.63	2.18	3.35	0.66	29.37
2012-13	2011-12	30.41	4.16	87.62	0.80	1.61	5.61	2.55	2.03	0.75
2013-14	2012-13	30.60	4.25	87.41	0.80	1.65	5.59	2.52	1.98	0.73
2014-15	2013-14	30.79	4.34	87.19	0.80	1.69	5.56	2.50	1.94	0.71
2015-16	2014-15	30.98	4.43	86.98	0.80	1.73	5.54	2.47	1.89	0.69
2016-17	2015-16	31.17	4.53	86.77	0.80	1.78	5.51	2.44	1.84	0.67
2017-18	2016-17	31.37	4.62	86.56	0.80	1.82	5.48	2.42	1.80	0.66
2018-19	2017-18	31.56	4.72	86.35	0.80	1.87	5.46	2.39	1.75	0.64
2019-20	2018-19	31.75	4.82	86.14	0.80	1.91	5.43	2.37	1.71	0.62
2020-21	2019-20	31.95	4.92	85.94	0.80	1.96	5.41	2.34	1.67	0.61
2021-22	2020-21	32.15	5.03	85.73	0.80	2.01	5.38	2.32	1.63	0.59
2022-23	2021-22	32.35	5.13	85.52	0.80	2.06	5.36	2.29	1.59	0.58

3.4 Yield gap analysis

The yield gap, i.e. the difference between potential yield and average farm yield was worked out for selected crops. From the cumulative percentage the major crops of the district are identified. Among these crops the ruling varieties and their related information were collected from the office of the Joint Director of Agriculture and the difference between the potential and average yield had been calculated for both irrigated and rainfed areas. The yield gaps of major crops in the district are furnished in the Table 3.5.

The potential yield is defined as the maximum possible yield of a crop obtained under optimum management. Under irrigated conditions, radiation and temperature during the season determine the upper limit of the potential yield under optimum management. Whereas under rainfed conditions, potential yields are primarily limited by water availability and considered as water-limited potential yields. Maximum experimental yields obtained at research stations, under irrigated or rainfed situation, are usually considered as the potential yields for estimating the yield gaps.

The productivity of the selected crops has been found to be for below the potential yield of the crops. The major reason for the existence of the yield gap was found to be non-adoption of the recommended package of practices and also irrigation water scarcity. In order to bridge the gap, the technological interventions to be followed were recommended in following chapters.

Table 3.5 Yield gap of major crops in Dharmapuri district (in kg)

Crops	Potential Yield	Progressive farmer yield	Overall Yield gap
Tapioca	50000	33250	16750
Paddy	7836	6102	1734
Sugarcane (Tonnes)	171	103	68
Cholam	3640	1078	2562
Ragi	4320	2554	1766
Mango	14555	13200	1355
Cotton	2241	1938	303
Turmeric	9894	5159	4735
Horse gram	870	450	420

Table 3. 6 Milk yield gap of different animals in the blocks

Blocks	Milk yield	Cows		Buffalo	
		Local	Cross breed	Local	Cross breed
B1	**Potential**	5 to 15	20	4	8
	Actual	1.5 to2	8 to 12	2 to2.5	4 to 6
	Reason for low yield	Shortage of technical knowledge on feeding		Breeding shortage of technical knowledge on feeding	
B2	**Potential**	5	15 to 20	4	8
	Actual	1.5 to 2	8 to 12	2 to 2.5	4 to 6
	Reason for low yield	Shortage of technical knowledge on feeding		Breeding shortage of technical knowledge on feeding	
B3	**Potential**	5	15 to 20	4	2 to 2.5
	Actual	1.5 to 2	8 to 12	8	4 to 6
	Reason for low yield	Shortage of technical knowledge on feeding		Breeding shortage of technical knowledge on feeding	
B4	**Potential**	5	15 to 20	4	8
	Actual	1.5 to 2	8 to 12	2 to 2.5	4 to 6
	Reason for low yield	Shortage of technical knowledge on feeding		Breeding shortage of technical knowledge on feeding	
B5	**Potential**	5	1.5 to 2	4	8
	Actual	15 to 20	8 to 12	2 to 2.5	4 to 6
	Reason for low yield	Shortage of technical knowledge on feeding		Breeding shortage of technical knowledge on feeding	
B6	**Potential**	5	15 to 20	4	8
	Actual	1.5 to 2.0	8 to 12	2 to 2.5	4 to 6
	Reason for low yield	Shortage of technical knowledge on feeding		Breeding shortage of technical knowledge on feeding	
B7	**Potential**	5	15 to 20	4	8
	Actual	1.5 to 2.0	8 to 12	2 to 2.5	4 to 6
	Reason for low yield	Shortage of technical knowledge on feeding		Breeding shortage of technical knowledge on feeding	
B8	**Potential**	5	15 to 20	4	8
	Actual	1.5 to 2	8 to 12	2 to 2.5	4 to 6
	Reason for low yield	Shortage of technical knowledge on feeding		Breeding shortage of technical knowledge on feeding	

B1- Dharmapuri, B2 - Harur; B3 - Karimangalam; B4 - Morappur; B5- Nallampalli; B6 - Palacode; B7 - Pappireddipatti; B8 - Pennagaram

Table 3.7 Technological interventions and strategies to reduce the yield gap

Major crops & enterprises being practiced in the district	Prioritized problems in these crops/enterprise	Title of Intervention	Technology options	Proposed Intervention
Paddy	Lack of knowledge on high yielding varieties of paddy	Assessment of location specific high yielding rice varieties	The location specific high yielding varieties of paddy released by TNAU are found suitable for this district • *Kar (May-June)* -ADT 36, ASD 1, ASD18, MDU 5, ADT 43, CO 47, CORH 3, ADT(R) 45, ADT(R) 47 • Samba / Late Samba *(Aug - Oct)* - White Ponni, Bhavani, CO 43, CO(R) 49, ADT(R) 46 • Navarai*(Dec –Jan)* - ADT 36, MDU 5, CORH 3, ADT 37, ADT 42, ASD 20 • Seed hardening with 1% KCl (seed and KCl solution 1:1) for 16 hours to withstand early moisture stress	On farm trial, field demonstrations, seed multiplication and distribution of hybrid seeds to the farmers etc.,

Major crops & enterprises being practiced in the district	Prioritized problems in these crops/enterprise	Title of Intervention	Technology options	Proposed Intervention
	Seed borne diseases caused by fungus and bacteria leads to severe loss	Management of seed borne diseases through seed treatment with bio control agents and chemicals	• Seedling dip with *Pseudomonas fluorescens* (Pf-1) @ 2.5 kg/ha or seed treatment (10g/kg)	On farm trial, field demonstrations, mass production of *P. fluorescens* at research stations, KVK's, constituent colleges for supply to the farmers at subsidy, organizing training on mass production of bio control agents
	Reduction in yield and incurring of loss by the farmers due to erratic rainfall. Reduction in quality of rice due to nutrient imbalance	Popularization of SRI system of rice cultivation in the drought prone areas	• Adoption of SRI technique with low seed rate (5-7 kg/ha), wider spacing (25 cm × 15cm) and improved package of practices. • Foliar Nutrition in flowering stage: - 2% DAP + 1% KCL + 1% Urea at 50% flowering stage or TNAU Rainfed rice MN mixture @ 12.5 kg/ha as EFYM at 1:10 ratio at tillering and panicle initiation stages	Field demonstrations, distribution of seeds to farmers at subsidized rate. Production and supply of TNAU micronutrient mixtures at university research stations and KVK's

Major crops & enterprises being practiced in the district	Prioritized problems in these crops/enterprise	Title of Intervention	Technology options	Proposed Intervention
	Pests and diseases like rice blast, sheath blight, rice root and white tip nematodes and sucking pests are widely prevalent which results in yield decline.	Assessment of efficacy of pesticides and bio control agents on pest control in rice. Mass multiplication of bio control agents at district headquarters/research stations/KVK's	• **Rice blast & Sheath blight** – Seed treatment with TNAU Pf 1 10 ml/kg of seeds or spray Carbendazim 50WP @ 500g/ha or Tricyclozole 75 WP @ 500g/ha or Azoxystrobin 25 SC @ 500 ml/ha or Neem oil at 3% • **Rice root and White tip nematodes -** Seed treatment with *Pseudomonas fluorescens*(10 g/kg seed) and as foliar spraying @ 1 kg/ha thrice at 45, 55 and 65 DAT. • **Sucking pests (Brown leafhopper, Green leaf hopper, Thrips& Gall midge), Stem borer and leaf folder** – Spray Fipronil 5% SC 1000-1500 ml/ha or Triazophos 40% EC 625-	On farm trial, field demonstrations, mass multiplication and supply of TNAU bio control agents at subsidized rate from all the research stations and KVK's
	Scarcity of labour for mechanical operations	Popularization agricultural equipment's and machineries in paddy cultivation	• **Seed drill** – Sow of seeds with 20 cm inter row spacing • **Rotary weeder** - Single row or double weeder for weeding • **Combine harvester** for	Distribution of seed drill, rotary weeder to the paddy farmers at subsidized rate Make availability of combine harvester at the Department of

Major crops & enterprises being practiced in the district	Prioritized problems in these crops/enterprise	Title of Intervention	Technology options	Proposed Intervention
			harvesting	Agricultural Engineering for different blocks at rental basis, training and demonstrations
Tapioca	Lack of technical knowledge on high yielding varieties of tapioca	Promotion of high yielding varieties	• CO 2, CO 3, CO (TP) 4, MVD 1, H 165, H 226, Sree Visakham (H.1687), Sree Sahya (H 2304), Sree Prakash (S. 856), Sree Vijaya, Sree Jaya, Sree Rekha and Sree Prabha, • CTCRI CO (Tp) 5 (Sree Padmanabha): Resistance to cassava mosaic disease with low cyanoglucoside content. Fair starch content (28%) and moderate tuber yield (38 t/ha).	Research and development of high yielding and disease resistance varieties, distribution of disease free setts to the farmers
	Yield reduction by the occurrence of cassava mosaic virus	Popularization of tapioca sett treatment by fungicide treatment	• Mosaic free setts were treated with Carbendazim 1 g in one liter of water for 15 minutes before planting.	Dissemination of technology through trainings and demonstrations

Major crops & enterprises being practiced in the district	Prioritized problems in these crops/enterprise	Title of Intervention	Technology options	Proposed Intervention
	Reduction in yield by inadequate use of fertilizers and drought	Adoption of micro irrigation systems and integrated nutrient management system	• Irrigation through drip with dripper rate of 4 LPH • **Fertigation** – Adoption of fertigation technique (Fertilizer requirement: 90:90:240 kg of NPK / ha) once in three days throughout the cropping period.	Research and development on standardization of water requirement, on farm trial, field demonstrations, supply of micro irrigation systems at subsidy, training to the farmers on fertigation system.
	Pests and diseases like mosaic and sucking pests are widely prevalent which cause decline in yield.	Assessment of efficacy of pesticides and bio control agents	• **Mosaic -** Spray Dichlorvos 76 WSC @ 1 ml/l or Triazophos 40 EC 2 ml/l and install sticky cum light traps. • **White fly -** Remove alternate weed hosts *viz*., *Abutilon indicum* and install yellow sticky trap at 12 No's/ha or Spray neem oil 3 % or fish oil rosin soap @25 g/l or Methyl demeton @25 EC @2 ml/l.	On farm trial, trainings and field demonstrations, distribution of yellow sticky traps to the farmers at subsidy
Sugarcane	Lack of knowledge on selection in high yielding varieties of sugarcane	Performance evaluation of high yielding varieties, Popularization of varieties suitable for specific location	The primary seed materials are available in large quantity at the Sugarcane Research Stations at Cuddalore, Sirugamani and	Distribution of sets of high yielding sugarcane varieties, training and field demonstrations.

Major crops & enterprises being practiced in the district	Prioritized problems in these crops/enterprise	Title of Intervention	Technology options	Proposed Intervention
			Melalathur. Suitable varieties: Co 86032, Co Si (Sc)6, Co G (Sc)5, Co C (Sc)22, Co 97009, CoV 94101, CoC 90063, CoSi 95071, CoC 24 TNAU SC Si7, TNAU SC Si 8 (Drought tolerance and better yield)	
	Less plant population caused delay in achievement of potential yield of varieties	Evaluation of sugarcane varieties under different planting densities, popularization of technologies	• Paired row system of planting double side planting of sugarcane setts with 150 + 30 cm spacing for Astraf 8000 series (Mechanical harvester) operated areas and 150 + 30 cm spacing for New Holland 4000 series operated areas may be adopted with single row of cane planting.	Research and development, popularization of technologies through trainings and demonstrations
	Lack of knowledge on application of growth regulators and chemicals to increase yield and sugar percentage	Popularization / dissemination of technologies through different modes	• **Growth hormones:** Foliar application of TNAU Sugarcane Booster @ 1.0, 1.5 and 2 kg/acre in 200 litres of water at 45,60 and 75 days after planting enhances cane growth and weight, internodal length, cane yield, sugar content	• Mass production and distribution of TNAU Sugarcane boosters at different centres of TNAU • Supply of TNAU micronutrient mixture at subsidized rate

Major crops & enterprises being practiced in the district	Prioritized problems in these crops/enterprise	Title of Intervention	Technology options	Proposed Intervention
			and offers drought tolerance. • **Application of Micronutrients:** To provide all micronutrients to sugarcane, 50 kg /ha of micronutrient mixture containing 20 kg Ferrous sulphate, 10 kg Manganese sulphate, 10 kg Zinc sulphate, 5 kg of Copper sulphate, 5 kg of Borax mixed with 100 kg of well decomposed FYM, can be recommended as soil application prior to planting or Apply TNAU MN mixture @ 50 kg/ha as EFYM for higher cane yield. • **Application of cane ripener's:** Spraying of Sodium metasilicate 4 kg/ha in 750 litres of water on the foliage of crop at 6, 8 & 10th month after planting will enhance cane yield and sugar percentage.	• Dissemination of technologies through on farm trial, trainings and field demonstrations • Through pamphlets, books and notices etc.
	Lack of knowledge on integrated pest and disease management	Standardization of pest management strategies for sugarcane	• **Red rot:** Sett treatment with Carbendazim before planting (Carbendazim 50 WP @ 0.05% or	• Training and demonstration's on disease and pest management,

Major crops & enterprises being practiced in the district	Prioritized problems in these crops/enterprise	Title of Intervention	Technology options	Proposed Intervention
			Carbendazim 25 DS @ 0.1% along with 1.0% Urea for 5 minutes) • **Smut:** Sett treatment with fungicides *viz.*, Triadimefon @ 0.1% or Carbendazim @ 0.1% for 10 minutes or Treating the seed setts with Aerated Steam Therapy (AST) at 50 ºC for 1 hour or in hot water at 50 ºC for 30 minutes or at 52 ºC for 18 minutes • **Shoot borer:** Spraying ofFipronil 5%SC 1500-2000 ml/ha or Fipronil 0.3%GR 25-33.3 Kg/ha or intercropping of daincha in sugarcane can lower the shoot borer incidence. • **Termite:** Dip the setts in imidacloprid 70 WS 0.1% or Chlorpyriphos 20 EC 0.04 % for 5 minute or Imidacloprid 17.8% SL 350 ml/ha or Chlorpyriphos 20%EC 750 ml/ha.	distribution pest control kits on subsidy

Major crops & enterprises being practiced in the district	Prioritized problems in these crops/enterprise	Title of Intervention	Technology options	Proposed Intervention
	Preparation of setts and sugarcane planter is a labour intensive work	Popularization of technologies for sugarcane sett cutting and planting	• Sharp knife or sett cutting machine was developed by TNAU to prepare setts without splits. • TNAU mechanical planter is useful for cost effective planting with saving of Rs.3750 / ha and it can cover an area of 1.5ha/day.	• Distribution of sett cutting machines and sugarcane planter in a block on custom hiring basis, training and demonstrations
Ragi	Expected yield was not obtained due to non-availability of high yielding varieties	Popularization of varieties suitable for specific location to increase the productivity of the crop	Marghazipattam (Dec – Jan) - CO 9, CO 13, CO (Ra) 14, TRY 1 Chithiraipattam (April – May) - CO 9, CO 13, CO (Ra) 14 Adipattam (June – July) - Paiyur 1, CO 13, CO (Ra) 14, Paiyur 2 Puratasipattam (Sept. – Oct.)- Paiyur 1, CO 13, CO (Ra) 14	• Distribution of seeds of high yield varieties in subsidy, training and demonstrations of performance evaluation of high yielding varieties

Major crops & enterprises being practiced in the district	Prioritized problems in these crops/enterprise	Title of Intervention	Technology options	Proposed Intervention
	Non – achievement of high productivity in ragi due to improper management technologies	Popularization of advanced crop production technologies for ragi	• **Seed treatment** with Azospirillum may be done @ 3 packets/ha (600 g/ha) and 3 packets (600 g/ha) of Phosphobacteria or 6 packets of Azophos (1200 g/ha). • **Seed hardening** will not only improve germination and subsequent plant stand but also impart early seedling vigor and tolerance to drought. • **Root dipping with Azospirillum** as slurry with 5 packets (1000 g/ha) and 5 packets (1000g/ha) of Phosphobacteria or 10 packets of Azophos (2000 g/ha) in 40 litres of water and dip the root portion of the seedlings in the solution for 15-30 minutes and transplant improve seedling growth. • **Crop rotation** with legumes like Green gram / black gram / field bean / soybean / horse gram or groundnut will minimize inorganic fertilizer application and also sustain higher yields.	• • Mass multiplication and distribution of bio fertilizers at subsidy, training and demonstrations on seed treatment, seed hardening techniques and root dipping and cropping pattern

Major crops & enterprises being practiced in the district	Prioritized problems in these crops/enterprise	Title of Intervention	Technology options	Proposed Intervention
	Sowing and planting of ragi seedlings requires high labour	Popularization of mechanized planting in millets	• Sowing by seed-cum-fertilizer drill is advantageous for line sowing besides efficient utilization of applied nutrients	• Training and demonstrations on operation of seed – cum – fertilizer drill to the farmers, distribution of seed – cum – fertilizer drill at subsidy
Groundnut	Lack of knowledge on high yielding varieties	Popularization and distribution of seed nuts through Department of Agriculture	Karthigai pattam (Nov – Dec)- TMV 7, CO 3, COGn 4, VRI 2, VRI 3, ALR 3, VRIGn5, VRIGn 6 , TMVGn 13 Anippattam- TMV 7,VRI 2, VRIGn 5, VRI Gn 6, TMVGn 13,	• Distribution of seeds at subsidy, training and demonstration on performance of high yielding varieties
	Less productivity due to non-adoption of advanced technologies	Promotion / dissemination of advance crop cultivation technologies	• **Seed Treatment** with talc formulation of *Trichoderma viride* @ 4 g/kg seed or *Pseudomonas fluorescens*@ 10 g/kg seed (or) with Thiram or Mancozeb @ 4 g/kg of seed or Carboxin or Carbendazim at 2 g/kg of	• Mass production and supply of bio control agents / bio fertilizer at subsidy, distribution of TNAU MN mixture during rainfed conditions, supply of gypsum, polythene mulching,

Major crops & enterprises being practiced in the district	Prioritized problems in these crops/enterprise	Title of Intervention	Technology options	Proposed Intervention
			seed (or) Treat the seeds with 3 packets (600 g)/ha of Rhizobial culture TNAU14 + 3 packets of Azospirillum (600 g/ha) and 3 packets (600 g/ha) of Phosphobacteria or 6 packets of Azophos (1200 g/ha) developed at TNAU using rice kanji as binder • **Micronutrients:** TNAU MN mixture @ 7.5 kg /ha as Enriched FYM (Prepare enriched FYM at 1:10 ratio of MN mixture & FYM; mix at friable moisture &incubate for one month in shade) under rainfed conditions. • **Apply Calcium Sulphate (Gypsum)** @ 400 kg/ha by the side of the plants on 40th to 70th day depending upon soil moisture.Avoid gypsum in calciferous soils. Gypsum is effective in soils deficient in calcium and sulphur. Application of gypsum encourages pod formation and better filling up of the pods. Application	TNAU groundnut rich in subsidy, dissemination of technologies etc.,

Major crops & enterprises being practiced in the district	Prioritized problems in these crops/enterprise	Title of Intervention	Technology options	Proposed Intervention
			of gypsum at the rate of 50 % basal both in rainfed and irrigated condition reduces Khadhasty malady and pod scab nematode under rainfed conditions. • Spray nutrient solution prepared by soaking DAP 2.5 kg, Ammonium sulphate 1 kg and borax 0.5 kg in 37 lit of water overnight. The next day morning it can be filtered and about 32 litre of mixture can be obtained and it may be diluted with 468 lit of water so as to made up to 500 litre to spray for one ha. Plano fix at the rate of 350 ml can also be mixed while spraying. This can be sprayed on 25th and 35th day after sowing under rainfed conditions. • **Polythene Film Mulching:** Spread black polythene sheet (90 cm width) over the soil surface.	

Major crops & enterprises being practiced in the district	Prioritized problems in these crops/enterprise	Title of Intervention	Technology options	Proposed Intervention
			• Irrigation based on physiological growth phases. ○ **Life irrigation –** 4 to 5 days after sowing ○ **Pegging stage -** 1 or 2 irrigations should be given ○ **Flowering stage –** 2 irrigations should be given ○ **Pod development stage -** 2 to 3 irrigations should be given • **Foliar spray of TNAU Groundnut Rich** @ 2 kg/acre in 200 litres of water at peak flowering and at pod development stages increases flower retention, pod filling and improves moisture stress tolerance and pod yield. • Spraying 0.5% Potassium chloride during flowering and pod development stages will aid to mitigate the ill effects of water stress.	

Major crops & enterprises being practiced in the district	Prioritized problems in these crops/enterprise	Title of Intervention	Technology options	Proposed Intervention
	Harvesting and separation of groundnut husk is a laborious task	Popularization of TNAU groundnut stripper	**Farm mechanization:** Groundnut stripper developed by TNAU can be used for stripping the pods from the plants	Distribution of groundnut stripper at subsidy, training and demonstrations on groundnut stripping
Mango	Less productivity due to less population and older varieties	Promotion of high density planting systems and advanced management techniques	• **High Density Planting:** 5 m x 5 m (400 plants / ha). Dwarf statured varieties with narrow canopy are much suitable for HDP system. • **Double hedge row system:** Adopt a spacing of 5 m x 5 m within double rows and 10 m between successive double rows (266 plants / ha)	• Training and field demonstrations on HDP systems in fruit crops, subsidy for promotion of HDP systems
	Reduction on productivity by old varieties and long old orchards	Promotion of rejuvenating old orchards through top working techniques	• **Top working of senile orchards for rejuvenation:** Use scions of choice varieties like Alphonso and Banganapalli for top working. Behead the trees to be top worked portion during July- August leaving the main trunk at a convenient height and allow for new shoots to develop. Adopt cleft method of	• Training and demonstrations on rejuvenation, introduction of subsidy component for converting unfruitful old orchards to fruitful one, dissemination of technologies

Major crops & enterprises being practiced in the district	Prioritized problems in these crops/enterprise	Title of Intervention	Technology options	Proposed Intervention
			grafting or softwood grafting on the emerging shoots on the main stem from the cut end during September-October.	
	Fruit yield is reduced by non-application of nutrient s and chemicals at critical stages of the crop	Foliar spraying of chemicals and secondary nutrients at critical stages of the crop	• Spray NAA @ 20 ppm at flowering to increase the fruit retention. • During February 0.5% Urea (5 g / lit.) or 1% Potassium nitrate (10 g / lit.) may be sprayed to induce flowering, if trees do not flower by that time. • Spray 2% KNO3 at mustard size to increase fruit set and retention of fruits. • Spray 2 % Sulphate of potash at pea stage and 15 days after to improve yield and quality.	• Distribution of nutrients and chemicals at subsidy • Training and demonstrations on chemical application • Dissemination if technologies through pamphlets (multilingual languages), books, notices etc.,
	Irregular bearing nature of mango leads to fluctuation in the yield and income to the farmers	Promotion of off season production of mango through chemical application and pruning time	• To induce off-season flowering**,** heading back of 10 cm terminal growth after the emergence of new growth (vegetative and floral growth) during December to January along with soil application of Paclobutrazol @ 0.75g a.i. per tree during March and April is	• Training and demonstration on off season mango production • Distribution of Paclobutrazol in subsidy

Major crops & enterprises being practiced in the district	Prioritized problems in these crops/enterprise	Title of Intervention	Technology options	Proposed Intervention
			recommended for mango cv. Neelum. Keeping good soil moisture conditions and nutrient health status of the plant are very important when Paclobutrazol application is resorted.	
	Economic loss occurs due to mis management of pests and diseases in the mango orchard	Integrated disease and pest management through new generation fungicides and insecticides	• **Anthracnose and Stalk end-rot:** Spray Mancozeb@ 2 g / lit or Carbendazim @1 g / lit or Thiophanate methyl 1 g / lit or Chlorothalonil @2 g / lit as pre-harvest spray, 3 times at 15 days interval (or) Spray chitin based *Pseudomonas fluorescens* (Pf 7) immediately after flowering @ 5 g / lit five times at 21 days interval.	• Supply of recommended dose of insecticides and fungicides as a kit on subsidy basis during onset of the pests and diseases
Turmeric	Lack of knowledge on new varieties and cultivars	Promotion of cultivation of advanced and high yielding turmeric varieties	• **High yielding varieties:** CO 1, BSR 1, BSR 2, Roma, Suvarna, Sudarshana, Suguna, Sugandham, Ranga, Rasmi, Rajendra Sonia, Krishna, Suroma and Allepy Supreme, Kedaram, Prabha, Prathiba	• Promotion of new varieties through supply of planting materials • Training on its cultivation
	Reduction in yield by insufficient supply of	Dissemination of advanced production	• **Fertigation:** Fertigation is done as per the	

Major crops & enterprises being practiced in the district	Prioritized problems in these crops/enterprise	Title of Intervention	Technology options	Proposed Intervention
	nutrients	technologies and distribution of nutrients	recommended dose with 150:60:108 kg of NPK/ha • **Micronutrient application:** Apply 375 g each of Boron, Iron and Zinc, at rhizome development stage, as Borax, Ferrous sulphate, Zinc sulphate + 375 g of Urea in 250 lit of water/ha. Spray twice at 25 days interval.	
Coconut	Lack of awareness on location specific coconut varieties	Assessment of high yielding varieties of coconut for the specific locations	• Varieties suitable for the district are Tall and T X D hybrids. • **Tall -** VPM3, ALR 1, ALR 2 and West Coast Tall • **Dwarf (tender coconut) -** COD, CYD, CGD and MYD+ • **Hybrids** - VHC1, VHC2 and VHC3	• On farm trail, field demonstrations • Supply of coconut seedlings of high yielding varieties at subsidized cost
	Yield reduction due to improper water management and nutrient management system.	Adoption of micro irrigation system and drip fertigation in coconut Mass production and popularization of TNAU micronutrient mixtures for commercial crops	• Drip irrigation -Irrigating coconut trees at the rate of 30 l/h for 2.5 h with an irrigation frequency of 8 days. • Fertigation - To be done at monthly intervals with 75% RDF	• On farm trial, field demonstration, supply of drip materials for installation at subsidy. • Mass production of TNAU micronutrient mixture at research stations/kvks and

Major crops & enterprises being practiced in the district	Prioritized problems in these crops/enterprise	Title of Intervention	Technology options	Proposed Intervention
				constituent colleges. • Supply of MN mixture at subsidy cost to the farmers.
	Increase in button shedding and yield reduction was observed.	Assessment of effect of coconut tonic for the control of physiological disorders. Commercialization of coconut tonic to the coconut farmers	• **TNAU Coconut Tonic Nutrition**- Root feeding of TNAU coconut tonic @ 200 ml/palm once in six months decreases button shedding and increases the number and size of nuts.	Distribution of coconut tonic at subsidized cost. Mass production of coconut tonic at KVKs and colleges. Trainings and demonstrations
	Monocropping of coconut leads to yield reduction.	Promotion of multitier cropping system in coconut.	• **Multitier cropping system** –Banana + pepper + cocoa + nutmeg + vanilla	Field demonstrations and trainings

Major crops & enterprises being practiced in the district	Prioritized problems in these crops/enterprise	Title of Intervention	Technology options	Proposed Intervention
	Integrated pest and disease management	Mass production of bio control agents at research stations, KVKs and colleges.	• **Rhinoceros beetle -** Place Phorate 10 G @ 5 g in perforated sachets in two inner most leaf axils for 2 times at 6 months intervals. • **Red palm weevil -** Setting up of traps (mud pots) containing sugarcane molasses 2½ kg or toddy 2½ litres + acetic acid 5 ml + yeast 5 g + longitudinally split tender coconut stem/logs of green petiole of leaves of 30 numbers or Root feeding of Monocrotophos 36 WSC 10 ml + water 10 ml in a 7 x 10 cm polythene bag. • **Basal stem rot / Bud rot / stem bleeding / Lethal leaf blight -** Spray 1.0 per cent Bordeaux mixture or 0.25 per cent Copper oxychloride or 0.2 per cent Mancozeb (4 times at monthly interval during February, March, April and May) and Soil application of *Pseudomonas fluorescens*(Pf1) @ 100 g/palm +	Field trials, trainings and demonstrations, mass production and supply of bio control agents at low cost.

Major crops & enterprises being practiced in the district	Prioritized problems in these crops/enterprise	Title of Intervention	Technology options	Proposed Intervention
Cotton	Lack of knowledge on high yielding varieties of cotton	Promotion of high yield varieties	**Winter Irrigated (Aug – Sep) -** MCU 5, Surabhi, TCHB 213, MCU 12 MCU 13 **Rainfed (Sep-Oct) -** LRA 5166, K 11, KC 2, SVPR 2, KC 3	On farm trail, field demonstrations Supply of seeds of high yielding varieties at subsidized cost
	Lack of awareness on application of basal fertilizers and seed treatment at the time of planting	Popularization of bio fertilizers for basal application and seed treatment techniques Mass production of bio fertilizers at research stations, KVKs and constituent colleges.	• **Basal application of fertilizers:** Azophos @ 2kg/ha or Azospirillum + Phosphorus Solubilising Bacteria + Pink Pigmented Facultative Methyl tropics @ 2.2 kg/ha each apply as basal application. • **Seed treatment:** Seed treatment with 3 packets of Azospirillum (600 g/ha) and 3 packets (600 g/ha) of Phosphobacteria or 6 packets of Azophos (1200 g/ha). In addition apply 10 packets of Azospirillum (2000 g/ha) and 10 packets (2000 g/ha) of Phosphobacteria or 20 packets of Azophos (4000 g/ha) mixed with 25 kg FYM and 25 kg of soil on	Field demonstrations, supply of bio fertilizers at subsidized cost

Major crops & enterprises being practiced in the district	Prioritized problems in these crops/enterprise	Title of Intervention	Technology options	Proposed Intervention
			the seed line. This saves 25% nitrogen besides increasing yield.	
	Yield and quality were reduced by the non-adoption of integrated nutrient management system	Popularization and adoption of STCR-IPNS system of plant nutrition system. Popularization of TNAU MN mixture	• Adoption of soil test crop response based integrated plant nutrition system (STCR- IPNS) • **Micro nutrient application:** TNAU MN mixture @12.5 kg/ha for variety and 15 kg/ha for hybrid apply as enriched FYM or apply 12.5 kg of micronutrient mixture formulated by the Department of Agriculture, Tamil Nadu with enough sand to make a total quantity of 50 kg for one ha.	On farm trial, supply of TNAU micronutrient mixture at subsidized cost.
	Growth and yield reduction by the lack of growth regulators	Testing of crop boosters for enhancing of yield and quality of cotton	• Spray 40 ppm NAA at 60 and 90 days after sowing on the crop to prevent early shedding of buds and squares and to increase the yield.	On Farm trial, field demonstration
	Reduction in yield and cotton quality due to occurrence of	Testing of NPV virus and pesticides on boll worm control.	• **American bollworm:** Application of Nuclear Polyhedrosis Virus (NPV) at 3 x 10 12 POB /ha in	Filed demonstrations, Popularization of bacteriomycin on cotton leaf blight

Major crops & enterprises being practiced in the district	Prioritized problems in these crops/enterprise	Title of Intervention	Technology options	Proposed Intervention
	pests and disease	Assessment of bacteriomycin and fungicide on cotton leaf blight	evening hours at 7th and 12th week after sowing or spraying of Fipronil 5%SC 2000 ml/ha at early stages or spraying of Carbaryl 50 WP 2.5 kg/ha at bolling and maturation stage. • **Bacterial leaf blight:** Spray Streptomycin sulphate + Tetracycline mixture 100g + Copper oxychloride 1250g/ha. Repeat spraying at 10 days interval twice or thrice if drizzling continues.	control.

CHAPTER IV

DISTRICT PLAN

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

4.1. Agriculture

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

4.1.1. Enhancing the rice productivity in Dharmapuri District

In Dharmapuri district rice grown in an area of 73,552 ha. The average yield of rice in the district is around 4.9 tonnes/ha. The area under rice is decreasing year by year due to the failure of monsoon. But the demand for food is increasing due to the rise in population. This has to be met with only by increasing the productivity of paddy from the limited available area. System of Rice Intensification (SRI) and Integrated Pest Management practices (IPM) are the new technologies which need awareness and adoption for improving the productivity of the crop.

Besides due to shortage of farm workers, farmers are not in a position to undertake various field operations in time. So the distribution of incentives for planting machine and the supply of farm machineries like automatic nursery raising machine, cono-weeder, transplanter, power tiller, rotavator, combined harvester and power sprayer for pesticides application will enhance the efficient and judicious use of inputs. The supply of certified seeds, portrays and tarpaulin for nursery establishment, micronutrients, herbicides, bio-fertilizers, manures, biocontrol agents and rat traps will certainly improve the yield of rice by 10 to 20 per cent.

Project components

- Promotion of SRI (All blocks except Dharmapuri, Nallampalli block)
- Production of certified/foundation seeds (All blocks)
- Distribution of certified/foundation seeds and Polyvinyl coated tarpaulin (All blocks)
- Distribution of MN mixture, biofertilizer, zinc sulphate and herbicides (All blocks)

Budget

The budget requirement for fulfilling the various interventions is **₹ 1740.55 Lakhs**. The details of budget requirement for each intervention across the blocks are shown in Table 4.1.

Expected outcome

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

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.1 Budget Requirement for Rice Crop in Dharmapuri District

(₹ in lakhs)

Sl. No	Interventions	Unit	Unit Cost (in Rs.)	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Promotion of SRI	Ha	15000	All Blocks Except B1,B5	0	0.00	1000	150.00	1400	210.00	1550	232.50	2200	330.00	6150	922.50
2	Distribution of High Yielding Varieties	MT	35000	All Blocks	100	35.00	130	45.50	135	47.25	155	54.25	170	59.50	690	241.50
3	Distribution of Foundation	MT	40000	All Blocks	40	16.00	40	16.00	80	32.00	80	32.00	80	32.00	320	128.00
4	Seed production - Foundation	MT	32000	All Blocks	40	12.80	40	12.80	80	25.60	80	25.60	80	25.60	320	102.40
6	seed production - Certified class	MT	26000	All Blocks	100	26.00	120	31.20	135	35.10	145	37.70	190	49.40	690	179.40
7	Distribution of MN mixture/ Copper Sulphate	Ha	1000	All Blocks	480	4.80	720	7.20	750	7.50	750	7.50	750	7.50	3450	34.50
8	Distribution of biofertilizer / PPFM / bioinputs / plant nutrient mobilizing bacteria	Ha	300	All Blocks	480	1.44	720	2.16	750	2.25	750	2.25	750	2.25	3450	10.35
9	Distribution of Zinc sulphate (Soil application & foliar)	Ha.	1000	All Blocks	1150	11.50	1150	11.50	1500	15.00	1500	15.00	1500	15.00	6800	68.00
10	Distribution of herbicides	Ha.	1000	All Blocks	800	8.00	300	3.00	450	4.50	450	4.50	450	4.50	1950	24.50
11	Polyvinyl coated Tarpaulin (6m x 5m)	No.	2000	All Blocks	0	0.00	80	1.60	80	1.60	155	3.10	155	3.10	470	9.40
12	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					**119.54**		**284.96**		**384.80**		**418.40**		**532.85**		**1740.55**

B1 – Dharmapuri, B2 – Harur, B3 – Karimangalam, B4 – Morappur, B5 – Nallampalli, B6 – Palacode, B7 – Pappireddipatti, B8 – Pennagaram

4.1.2. Enhancing the millets productivity in Dharmapuri District

Millets are cultivated approximately in an area of 1, 49,184 ha. The yield of various millets is in between 1 to 6 tonnes/ha. Millets play an important role in maintaining the financial status of farmers in the district due to its low cost of cultivation and low water requirements. Since the awareness has increased, importance should be given to increase the area, production and productivity under millets. Therefore there is a scope for increasing the productivity of millets through appropriate strategies like Integrated Pest Management and encouraging the farmers for millet cultivation through the supply of improved seeds, bio-fertilizers, herbicides, micronutrient mixtures and farm machineries. Thus the overall objective of proposed project is to increase the yield and production through the use of high yielding varieties along with the adoption of new technologies. By the implementation of interventions the yield will be increased by 5 percent.

Project components

- Seed production and distribution of biofertilizers (All blocks)
- Expansion of area under Minor Millets and formation of small millet groups (All blocks)
- Minor millet processing unit (Harur, Karimangalam, Morappur, Pennagaram block)
- Distribution of biofertilizers and MN mixture for Sorghum (All blocks)
- Demonstration in Maize (All blocks except Nallampalli, Palacode block)
- Distribution of biofertilizers and hybrid seed in Maize (All blocks)
- Drip irrigation for maize (Harur, Karimangalam, Morappur, Pappireddipatti block)
- Distribution of cumbu hybrid seed and MN mixture (Pennagaram block)
- Demonstration and distribution of seeds, biofertilizers and MN mixture for Ragi (All blocks)

Budget

The total cost of the project for five years works to **₹. 1178.79 Lakhs**. The details of budget requirement for each intervention across the blocks are shown in Table 4.2.

Expected outcome

There is a scope to increase the area under millets in Dharmapuri district. By distributing improved varieties / hybrids of millets will certainly improve the living standard of the farmers of this tract. Supply of quality seeds of newly released varieties will certainly increase the production and productivity.

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.2 Budget Requirement for Millets in Dharmapuri District

(₹. in lakhs)

Sl. No.	Components	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total Amount	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Millets															
1	Distribution on biofertilizer - Liquid / Carrier	Ha	0.003	All Blocks	800	2.40	800	2.40	800	2.40	800	2.40	800	2.40	4000	12.00
2	Expansion of area under Minor Millets (Demo - supply of seed, seed treatment, MN mixture & Organic package)	Ha	0.05	All Blocks	800	40.00	800	40.00	800	40.00	800	40.00	800	40.00	4000	200.00
3	Millet Processing unit - Minor millet	Nos.	2.5	B8,B3,B4, B2	0	0.00	4	10.00	4	10.00	4	10.00	4	10.00	16	40.00
4	Seed Production / Incentives for quality seed	MT	0.63	All Blocks	0	0.00	26	16.38	31	19.53	38	23.94	41	25.83	136	85.68
5	Soil moisture conservation practices	Ha	0.05	All blocks	125	6.25	135	6.75	125	6.25	125	6.25	125	6.25	635	31.75
6	Initiative for Nutritional Security through Intensive Millet Promotion (INSIMP)	ha	0.04	All Blocks	300	12.00	300	12.00	300	12.00	300	12.00	300	12.00	1500	60.00
	Sorghum															
7	Distribution of biofertilizers - Liquid / Carrier	Ha	0.003	All Blocks	800	2.40	800	2.40	800	2.40	800	2.40	800	2.40	4000	12.00
8	Distribution of MN mixture (12.5kg/ha)	Ha	0.007	All Blocks	400	2.80	400	2.80	400	2.80	400	2.80	400	2.80	2000	14.00
	Maize															
9	Demonstration (Supply of seed, seed treatment & MN mixture, organic package)	Ha	0.05	All Blocks Except B5,B6	100	5.00	600	30.00	600	30.00	600	30.00	600	30.00	2500	125.00
10	Distribution of biofertilizers - Liquid / Carrier	Ha	0.003	All Blocks	400	1.20	400	1.20	400	1.20	400	1.20	400	1.20	2000	6.00
11	Drip irrigation for maize	Ha	1	B2,B3,B4, B7	0	0.00	40	40.00	40	40.00	40	40.00	40	40.00	160	160.00
12	Seed Distribution Hybrid seeds for maize	MT	1.8	All Blocks	6.5	11.70	6.5	11.70	6.5	11.70	6.5	11.70	6.5	11.70	32.5	58.50
	Cumbu															
13	Distribution of cumbu hybrid seed	MT	2.6	B8	0	0.00	0.5	1.30	0.5	1.30	0.5	1.30	0.5	1.30	2	5.20

Sl. No.	Components	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total Amount	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
14	Distribution of MN mixture (12.5kg/ha)	Ha	0.007	B8	0	0.00	50	0.35	50	0.35	50	0.35	50	0.35	200	1.40
	Ragi															
15	Demonstration (supply of seed, seed treatment, MN mixture & organic package)	Ha	0.05	All Blocks	800	40.00	800	40.00	800	40.00	800	40.00	800	40.00	4000	200.00
16	Distribution of biofertilizers - Liquid / Carrier	Ha	0.003	All Blocks	1600	4.80	1600	4.80	1600	4.80	2000	6.00	2000	6.00	8800	26.40
17	Distribution of MN mixture	Ha	0.007	All Blocks	800	5.60	800	5.60	800	5.60	800	5.60	800	5.60	4000	28.00
18	Seed Distribution	MT	0.66	All Blocks	19	12.54	36	23.76	36	23.76	40	26.40	40	26.40	171	112.86
	Total					**146.69**		**251.44**		**254.09**		**262.34**		**264.23**		**1178.79**

B1 – Dharmapuri, B2 – Harur, B3 – Karimangalam, B4 – Morappur, B5 – Nallampalli, B6 – Palacode, B7 – Pappireddipatti, B8 – Pennagaram

4.1.3. Enhancing the pulses productivity in Dharmapuri District

In Dharmapuri district, pulses are grown in an area of 46,758 ha and the yield is around 500-700 kg. The improved varieties as well as the packages of practices developed have to be undertaken for increasing the pulses production and productivity. By delivering improved seed varieties of pulses will certainly improve the living standard of the farmers of this tract. Awareness creations through campaigns, demonstrations and motivating the farming community through the supply of critical inputs have to be done. Thus the overall goal is to increase the yield by 5-10 percent through the project components like use of high yielding varieties, distribution of machineries along with the adoption of the recommended practices.

Project components

- Purchase of breeder seeds (All blocks)
- Production of foundation/certified pulses seeds (All blocks)
- Distribution of certified seeds, biofertilizers, bund cropping, line sowing and DAP Spray (All blocks)
- Cropping system based demonstration (Morappur, Pappireddipatti block)
- Pure crop demonstration - black gram and green gram (All blocks)
- Promotion of Redgram Transplantation for nursery preparation (All blocks)
- Seed treatment with chemicals (All blocks)

Budget

The total budget for the proposed intervention is **₹ 3514.41 Lakhs**. The details of budget requirement for each intervention across the blocks are shown in Table 4.3.

Expected outcome

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

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.3 Budget Requirement for Pulses in Dharmapuri District

(₹. in lakhs)

Sl. No.	Interventions	Unit	Unit cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Purchase of breeder seeds	MT	250000	All Blocks	0	0.00	2	5.00	2	5.00	4	10.00	4	10.00	12	30.00
2	Production of Foundation/ Certified pulses seeds	MT	86000	All Blocks	205	176.30	205	176.30	280	240.80	280	240.80	280	240.80	1250	1075.00
3	Distribution of Certified Seeds	MT	100000	All Blocks	205	205.00	205	205.00	280	280.00	280	280.00	280	280.00	1250	1250.00
4	Distribution of Biofertilizer/ Organic packages (Rhizobium + Phosphobacteria) - Liquid / Carrier	Ha	600	All Blocks	1600	9.60	1600	9.60	2000	12.00	2000	12.00	2400	14.40	9600	57.60
5	Distribution of Micro Nutrients(5 kgs/ Ha)	Ha	350	All Blocks	900	3.15	900	3.15	1300	4.55	1300	4.55	1700	5.95	6100	21.35
6	DAP Spray	Ha	700	All Blocks	1200	8.40	2100	14.70	2100	14.70	2600	18.20	2600	18.20	10600	74.20
7	Bund Cropping	Ha	300	All Blocks	1600	4.80	1600	4.80	1600	4.80	1600	4.80	1600	4.80	8000	24.00
8	Line sowing	Ha	2250	All Blocks	480	10.80	800	18.00	800	18.00	1600	36.00	1600	36.00	5280	118.80
9	Cropping system based demonstration	Ha	12500	B4,B7	200	25.00	200	25.00	400	50.00	400	50.00	400	50.00	1600	200.00
10	Pure crop demonstration - Black gram and green gram	Ha	6300	All Blocks	800	50.40	800	50.40	800	50.40	800	50.40	800	50.40	4000	252.00
11	Promotion of Redgram Transplantation for nursery preparation	Ha	5000	All Blocks	1150	57.50	1550	77.50	1650	82.50	1800	90.00	1900	95.00	8050	402.50
12	Seed treatment with chemicals	Ha	250	All Blocks	3582	8.96	0	0.00	0	0.00	0	0.00	0	0.00	3582	8.96
	Total					**559.91**		**589.45**		**762.75**		**796.75**		**805.55**		**3514.41**

B1 – Dharmapuri, B2 – Harur, B3 – Karimangalam, B4 – Morappur, B5 – Nallampalli, B6 – Palacode, B7 – Pappireddipatti, B8 – Pennagaram

4.1.4. Enhancing the oilseeds productivity in Dharmapuri District

Oilseeds are the major crop in Dharmapuri district. Groundnut is traditionally cultivated in the district under irrigated and rainfed condition and the yield is around 2.4 tonnes/ ha. Hence, the introduction of recently developed high yielding varieties and hybrids with improved package of practices would add profit. There is scope to improve the yield levels by the adoption of improved package of practices and irrigation support.

Project components

- Certified/foundation seed production (All blocks)
- Distribution of certified seeds, MN mixture, gypsum, biofertilizers and liquid biofertilizer (All blocks)
- Bund cropping - castor (All blocks)
- CBD - groundnut and purchase of breeder seeds (All blocks)
- Seed drill sowing / line sowing of groundnut with pulses as intercrop (All blocks)
- Production of certified seeds in gingelly (Dharmapuri block)

Budget

The total cost of the project for five years works to **₹ 1962.34 Lakhs**. The details of budget requirement for each intervention across the blocks are shown in **Table 4.4**.

Expected outcome

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

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.4 Budget Requirement for Oilseeds in Dharmapuri District **(₹. in lakhs)**

Sl. No	Components	Unit	Unit Cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	OILSEEDS															
1	Purchase of Breeder seed	Mt	1.50	All Blocks	4	6.00	4	6.00	4	6.00	4	6.00	4	6.00	20	30.00
2	Compact Block Demonstration - Groundnut	Ha	0.20	All Blocks	310	62.00	310	62.00	340	68.00	400	80.00	400	80.00	1760	352.00
	GROUNDNUT															
3	Strengthening seed chain by foundation seed production	Mt	0.76	All Blocks	40	30.40	40	30.40	40	30.40	40	30.40	40	30.40	200	152.00
4	Strengthening seed chain by certified seed production	Mt	0.73	All Blocks	105	76.65	105	76.65	105	76.65	105	76.65	105	76.65	525	383.25
5	Distribution of Certified seeds	Mt	0.84	All Blocks	145	121.80	145	121.80	145	121.80	145	121.80	145	121.80	725	609.00
6	Application of Gypsum to Groundnut Crop	Ha	0.02	All Blocks	1200	19.20	1200	19.20	1350	21.60	1650	26.40	1800	28.80	7200	115.20
7	Distribution of Micro Nutrient Mixture	Ha	0.02	All Blocks	600	9.00	600	9.00	600	9.00	600	9.00	600	9.00	3000	45.00
8	Distribution of Biofertilizer	Ha	0.01	All Blocks	1300	7.80	1300	7.80	1300	7.80	1300	7.80	1300	7.80	6500	39.00
9	Distribution of Liquid Biofertilizer	Ha	0.01	All Blocks	1300	7.80	1300	7.80	1300	7.80	1300	7.80	1300	7.80	6500	39.00
10	Castor as Bund crop	Ha	0.01	All Blocks	650	3.90	650	3.90	900	5.40	1050	6.30	1050	6.30	4300	25.80
11	Seed Drill Sowing / Line sowing of Groundnut with Pulses as intercrop(hiring charges only)	Ha	0.03	All Blocks	0	0.00	1350	40.50	1350	40.50	1500	45.00	1500	45.00	5700	171.00
	GINGELLY															
12	Production of Certified Seeds	Mt	1.09	B1	0	0.00	0	0.27	0	0.27	0	0.27	0	0.27	1	1.09
	Total					**344.55**		**385.32**		**395.22**		**417.42**		**419.82**		**1962.34**

B1 – Dharmapuri, B2 – Harur, B3 – Karimangalam, B4 – Morappur, B5 – Nallampalli, B6 – Palacode, B7 – Pappireddipatti, B8 – Pennagaram

4.1.5 Enhancing the oil palm productivity in Dharmapuri District

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

Project components

- Oil palm area expansion programme (Harur, Morappur, Pappireddipatti block)
- Inputs for intercropping and cultivation maintenance (Harur, Morappur, Pappireddipatti block)
- Supply of diesel pumps (Harur, Pappireddipatti block) and aluminium ladder (Harur block)
- Construction of borewells (Pappireddipatti block)
- Neem/ Pungam Area Expansion Programme (All blocks except Harur, Morappur, Pappireddipatti block)

Budget

It is proposed to incur **₹ 27.72 Lakhs** over a period of five years **(Table 4.5)** with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing agency

Department of Agriculture will implement the project.

Table 4.5 Budget Requirement for Oil palm in Dharmapuri District

(₹. in lakhs)

Sl. No	Components	Unit	Unit Cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	NMOOP -Mini Mission -II (Oilpalm)															
1	Oilpalm Area Expansion Programme	Ha	0.14	B2,B4,B7	40	5.60	0	0.00	0	0.00	0	0.00	0	0.00	40	5.60
2	Cultivation maintenance	Ha	0.1	B2,B4,B7	70	7.00	0	0.00	0	0.00	0	0.00	0	0.00	70	7.00
3	Inputs for Intercropping	Ha	0.1	B2,B4,B7	70	7.00	0	0.00	0	0.00	0	0.00	0	0.00	70	7.00
4	Supply of Diesel pumps	No	0.3	B2,B7	2	0.60	0	0.00	0	0.00	0	0.00	0	0.00	2	0.60
5	Construction of Borewells	No	1	B7	1	1.00	0	0.00	0	0.00	0	0.00	0	0.00	1	1.00
6	Alumium portable ladder	No	0.06	B2	2	0.12	0	0.00	0	0.00	0	0.00	0	0.00	2	0.12
	NMOOP -Mini Mission -III (Tree Borne Oilseeds)															
7	Neem/ Pungam Area Expansion Programme	Ha	0.2	All Blocks Except B2,B4,B7	32	6.40	0	0.00	0	0.00	0	0.00	0	0.00	32	6.40
	Total					**27.72**		**0.00**		**0.00**		**0.00**		**0.00**		**27.72**

B1 – Dharmapuri, B2 – Harur, B3 – Karimangalam, B4 – Morappur, B5 – Nallampalli, B6 – Palacode, B7 – Pappireddipatti, B8 – Pennagaram

4.1.6. Enhancing the cotton productivity in Dharmapuri District

In Dharmapuri district cotton crop grown in an area of 10,527 ha and the yield of lint is around 186 kg/ha. It is a highly remunerative crop which requires much care in pest and disease management. The reduction in the area under cotton is mainly due to the increased cost of cultivation because of the high cost of labour and plant protection in the cultivation of cotton. However, adoption of improved package of practices by the farmers with the use of quality seeds, bio-fertilizers and micronutrient mixture, is the important concern for improvement of cotton yield.

Project components

- Distribution of MN mixtures, biopesticides and biofertilizers (All blocks)
- Distribution of PP chemicals (All blocks)
- Topping of cotton (All blocks)

Budget

The total cost of the project for five years works to **₹ 442.40 Lakhs**. The details of budget requirement for each intervention across the blocks are shown in **Table 4.6**.

Expected outcome

The timely supply of inputs like MN mixture, biofertilizer, PP chemicals, weedicide and machineries will certainly increase the production and productivity of cotton.

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.6 Budget Requirement for Cotton in Dharmapuri District

(₹. in lakhs)

Sl. No	Components	Unit	Unit Cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Distribution of biofertilizer	Ha	300	All Blocks	2400	7.20	2600	7.80	3000	9.00	3900	11.70	3900	11.70	15800	47.40
2	Distribution of biopesticides / Bio agents	Ha	1000	All Blocks	2400	24.00	2600	26.00	3000	30.00	3900	39.00	3900	39.00	15800	158.00
3	Distribution of MN Mixture	Ha	1000	All Blocks	800	8.00	800	8.00	800	8.00	800	8.00	800	8.00	4000	40.00
4	Distribution of PP chemicals	Ha	1000	All Blocks	1800	18.00	1800	18.00	2100	21.00	2500	25.00	2500	25.00	10700	107.00
5	Topping of cotton	Ha	1000	All Blocks	1100	11.00	1700	17.00	1800	18.00	2000	20.00	2400	24.00	9000	90.00
	Grand total					**68.20**		**76.80**		**86.00**		**103.70**		**107.70**		**442.40**

B1 – Dharmapuri, B2 – Harur, B3 – Karimangalam, B4 – Morappur, B5 – Nallampalli, B6 – Palacode, B7 – Pappireddipatti, B8 – Pennagaram

4.1.7. Enhancing the sugarcane productivity in Dharmapuri District

In Dharmapuri district sugarcane grown in an area of 7143.5 ha and the yield is around 73 tonnes/ha. 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 sugarcane industry more competitive and sustainable in Dharmapuri district. Supply of quality sets and implementing sustainable sugarcane initiative is very important to enhance the sugarcane yield in the district. Distribution of micronutrient mixture, bio-fertilizers and trash mulching techniques will enhance the production and productivity of sugarcane. Implementation of interventions will certainly increase the yield of sugarcane up to 5-10 percent.

Project components

- Sustainable Sugarcane Initiative (Shade net establishment and distribution of single bud seedling) (All blocks)
- Distribution of micro nutrient mixture and biofertilizer (All blocks)
- Micro-irrigation – drip (All blocks)

Budget

The total cost of the project for five years works to **₹ 10764.05 Lakhs**. The details of budget requirement for each intervention across the blocks are shown in **Table 4.7**.

Expected outcome

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

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.7 Budget Requirement for Sugarcane in Dharmapuri District

(₹ in lakhs)

Sl. No	Components	Unit	Unit Cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Distribution of biofertilizer (Ha)	Ha	0.006	All blocks	750	4.50	1050	6.30	1400	8.40	1600	9.60	1700	10.20	6500	39.00
2	Distribution of Micro Nutrient Mixture	Ha	0.02	All blocks	0	0.00	1250	25.00	1250	25.00	1250	25.00	1250	25.00	5000	100.00
3	Micro irrigation - Drip (1.2x0.6)	ha	1.24	All blocks	1945	2411.80	1425	1767.00	1425	1767.00	1725	2139.00	1725	2139.00	8245	10223.80
	Sustainable Sugarcane Initiative (SSI)															
4	A. Establishment of Shadenet	Nos	1.5	All blocks	107	160.50	0	0.00	0	0.00	0	0.00	0	0.00	107	160.50
5	B. Distribution of Single Bud Seedling	Ha	0.225	All blocks	1070	240.75	0	0.00	0	0.00	0	0.00	0	0.00	1070	240.75
	Grand Total					**2817.55**		**1798.30**		**1800.40**		**2173.60**		**2174.20**		**10764.05**

B1 – Dharmapuri, B2 – Harur, B3 – Karimangalam, B4 – Morappur, B5 – Nallampalli, B6 – Palacode, B7 – Pappireddipatti, B8 – Pennagaram

4.1.8. Enhancing the coconut productivity in Dharmapuri District

Coconut was grown in an area of 6123 ha in Dharmapuri district and the yield is 6469 nuts/ ha. Coconut is propagated by nuts and planting in dry areas. The cultural operations are very difficult because of its tall growing nature. Hence the introduction of high yielding hybrids (Tall × Dwarf) would add profit and increase the numbers and productivity of coconut trees. There is also scope for increasing the area under coconut in Dharmapuri district by developing improved tall varieties or hybrids. Thus the overall objective will be is to enhance the coconut area and their productivity through the use of new hybrids.

Project components

- Distribution of Tall and T × D hybrid seedlings and tall seedlings (All blocks)
- Distribution of MN mixture (All blocks)
- Drip irrigation (All blocks)

Budget

The total cost of the project for five years works to **₹ 1129.21 Lakhs**. The details of budget requirement for each intervention across the blocks are shown in **Table 4.8**.

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 in the employment opportunity and income of the farming community.

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.8 Budget Requirement for Coconut in Dharmapuri District

(₹. in lakhs)

Sl. No	Components	Unit	Unit Cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Distribution of T x D hybrid seedlings	No	0.0006	All Blocks	0	0.00	7500	4.50	10600	6.36	14000	8.40	14000	8.40	46100	27.66
2	Distribution of Tall Seedlings	No	0.0004	All Blocks	0	0.00	20000	8.00	23000	9.20	24000	9.60	30000	12.00	97000	38.80
3	Distribution of MN mixture	Ha	0.1000	All Blocks	0	0.00	700	70.00	700	70.00	700	70.00	1300	130.00	3400	340.00
4	Drip irrigation	Ha	0.3500	All Blocks	185	64.75	385	134.75	385	134.75	490	171.50	620	217.00	2065	722.75
	Grand Total					**64.75**		**217.25**		**220.31**		**259.50**		**367.40**		**1129.21**

B1 – Dharmapuri, B2 – Harur, B3 – Karimangalam, B4 – Morappur, B5 – Nallampalli, B6 – Palacode, B7 – Pappireddipatti, B8 – Pennagaram

4.1.9. Enhancing the livelihood of farmers through training in Dharmapuri District

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

Project components

- State and district level trainings of farmers (All blocks)
- Training of farmers within the district (All blocks)
- Exposure visits of farmers (All blocks)

Budget

It is proposed to incur **₹ 266.00 Lakhs** over a period of five years **(Table 4.9)** with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing agency

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

Table 4.9 Budget Requirement for Training of Farmers in Dharmapuri District

(₹. in lakhs)

Sl. No	Cafeteria of Activities	Unit	Unit Cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	District Level															
	Training of Farmers															
1	Inter State Training of Farmers	Nos.	1.25	All Blocks	8	10.00	8	10.00	8	10.00	8	10.00	8	10.00	40	50.00
2	Inter State Training of Farmers	Nos.	1.75	All Blocks	8	14.00	8	14.00	8	14.00	8	14.00	8	14.00	40	70.00
3	Training of 536 Groups of Seed Village Farmers in quality Seed Production technology.	Nos.	0.1	All Blocks	40	4.00	40	4.00	40	4.00	40	4.00	40	4.00	200	20.00
4	Training of Farmers under Mission Soil Health Card	Nos.	0.15	All Blocks	16	2.40	16	2.40	16	2.40	16	2.40	16	2.40	80	12.00
5	With in the State training of Farmers	Nos.	1.2	All Blocks	8	9.60	8	9.60	8	9.60	8	9.60	8	9.60	40	48.00
	Training of Farmers With in the district															
6	Awareness campaigns	Nos.	0.1	All Blocks	8	0.80	8	0.80	8	0.80	8	0.80	8	0.80	40	4.00
7	Groundnut	Nos.	0.1	All Blocks	8	0.80	8	0.80	8	0.80	8	0.80	8	0.80	40	4.00
8	Major & Minor Millets	Nos.	0.1	All Blocks	8	0.80	8	0.80	8	0.80	8	0.80	8	0.80	40	4.00
9	Paddy	Nos.	0.1	All Blocks	8	0.80	8	0.80	8	0.80	8	0.80	8	0.80	40	4.00
10	Pulses	Nos.	0.1	All Blocks	8	0.80	8	0.80	8	0.80	8	0.80	8	0.80	40	4.00
11	Value addition training	Nos.	0.1	All Blocks	8	0.80	8	0.80	8	0.80	8	0.80	8	0.80	40	4.00
	Exposure visit of Farmers															
12	Rodent Pest Management	Nos.	0.04	All Blocks	40	1.60	40	1.60	40	1.60	40	1.60	40	1.60	200	8.00

Sl. No	Cafeteria of Activities	Unit	Unit Cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Demonstration															
13	With in State Exposure visit	Nos.	0.4	All Blocks	8	3.20	8	3.20	8	3.20	8	3.20	8	3.20	40	16.00
14	Organisation of Kisangosthies on Soil test based nutrient application (Campaign)	Nos.	0.15	All Blocks	16	2.40	16	2.40	16	2.40	16	2.40	16	2.40	80	12.00
15	With in the district exposure visit	Nos.	0.15	All Blocks	8	1.20	8	1.20	8	1.20	8	1.20	8	1.20	40	6.00
	TOTAL					**53.20**		**53.20**		**53.20**		**53.20**		**53.20**		**266.00**

B1 – Dharmapuri, B2 – Harur, B3 – Karimangalam, B4 – Morappur, B5 – Nallampalli, B6 – Palacode, B7 – Pappireddipatti, B8 – Pennagaram

4.1.10. Infrastructure Development in Dharmapuri District

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

Project components

- Storage godown (Karimangalam block)
- Dunnage, electronic platform balance, bag closure, seed rack and tarpaulin (All blocks)
- Construction of IAEC (383 Nos.) with vehicle shed and compound wall (Harur, Karimangalam block)
- Office furnishing and other amenities (All blocks)

Budget

It is proposed to incur **₹ 1249.73 Lakhs** over a period of five years **(Table 4.10)** with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing agency

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

Table 4.10 Budget Requirement for Infrastructure Development in Dharmapuri District

(₹ in lakhs)

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	B3	0	0.00	1	25.00	0	0.00	0	0.00	0	0.00	1	25.00
2	Construction of Integrated Agricultural Extension Centre with vehicle shed and compound wall	Nos.	25000000	B2,B3	0	0.00	2	500.00	0	0.00	0	0.00	0	0.00	2	500.00
3	Dunnage	Nos.	7500	All Blocks	0	0.00	261	19.58	0	0.00	0	0.00	0	0.00	261	19.58
4	Moisture meter	Nos.	25000	All Blocks Except B6	0	0.00	11	2.75	0	0.00	0	0.00	0	0.00	11	2.75
5	Bag closure	Nos.	10000	All Blocks	0	0.00	16	1.60	0	0.00	0	0.00	0	0.00	16	1.60
6	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
7	Seed rack	Nos.	30000	All Blocks	0	0.00	16	4.80	0	0.00	0	0.00	0	0.00	16	4.80
8	Tarpaulin	Nos.	25000	All Blocks	0	0.00	16	4.00	0	0.00	0	0.00	0	0.00	16	4.00
9	Office Furnishings and other amenities	Nos.	200000	All Blocks	0	0.00	9	18.00	0	0.00	0	0.00	0	0.00	9	18.00
10	Establishing state seed seed farm as model farm and technology demonstration centres	Nos.	10000000	All Blocks	0	0.00	0	0.00	0	0.00	1	100.00		0.00	1	100.00
11	Strengthening of training institute / nursery / FTC / KVK	Nos.	50000000	B1	0	0.00	0	0.00	0	0.00	1	500.00	0	0.00	1	500.00
12	Infrastructure for empowerment of coconut nurseries	Nos.	5000000	All Blocks	0	0.00	0	0.00	1	50.00	0	0.00	0	0.00	1	50.00
	Grand total					**0.00**		**599.73**		**50.00**		**600.00**		**0.00**		**1249.73**

B1 – Dharmapuri, B2 – Harur, B3 – Karimangalam, B4 – Morappur, B5 – Nallampalli, B6 – Palacode, B7 – Pappireddipatti, B8 – Pennagaram

4.1.11. Soil Health Management in Dharmapuri District

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

Project component

- Green manuring and production of enriched FYM (All blocks)
- Establishment of permanent and HDPE vermicompost units (All blocks except Dharmapuri block)
- Distribution of soil health card (All blocks)
- Composting of farm waste (All blocks)

Budget

Enhancing soil health by distributing enriched farm yard manure, micro-nutrient mixture, gypsum, bio-fertilizers, *etc.* is essential to maximize profitability. The overall budget to undertake the various interventions in Dharmapuri district is **₹ 439.70 Lakhs (Table 4.11)**.

Expected outcome

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

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.11 Budget Requirement for Soil Health Management in Dharmapuri District

(₹ in lakhs)

Sl. No	Components	Unit	Unit Cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Permanent Vermi compost units	Cluster Nos.	50000	All Blocks Except B1	35	17.50	35	17.50	35	17.50	35	17.50	35	17.50	175	87.50
2	HDPE Vermi compost units	Kit Nos	12000	All Blocks Except B1	35	4.20	35	4.20	35	4.20	35	4.20	35	4.20	175	21.00
3	Green Manuring	Nos	4000	All Blocks	800	32.00	1600	64.00	1600	64.00	1600	64.00	1600	64.00	7200	288.00
4	Production of Enriched FYM	MT	2500	All Blocks	160	4.00	240	6.00	400	10.00	400	10.00	400	10.00	1600	40.00
5	Composting of Farm Waste Through Pluerotus (Production and Distribution of Kits)	MT	200	All Blocks	160	0.32	240	0.48	400	0.80	400	0.80	400	0.80	1600	3.20
6	Distribution of Soil Health Card	Ha	300	All Blocks	0	0.00	0.13	0.00	0.17	0.00	0	0.00	0	0.00	0.30	0.00
	Total					**58.02**		**92.18**		**96.50**		**96.50**		**96.50**		**439.70**

B1 – Dharmapuri, B2 – Harur, B3 – Karimangalam, B4 – Morappur, B5 – Nallampalli, B6 – Palacode, B7 – Pappireddipatti, B8 – Pennagaram

4.1.12. Rainfed Area Development in Dharmapuri District

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

Project components

- Milch Animal (1 no) + 1 ha cropping system with inter crop & border plantation like castor/sesbania *etc*. (All blocks except Dharmapuri block)

Budget

It is proposed to incur **₹ 1210.00 Lakhs** over a period of five years **(Table 4.12)** with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing agency

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

Table 4.12 Budget Requirement for Rainfed Area Development in Dharmapuri District

(₹. in lakhs)

Sl. No	Components	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Milch Animal (1 no) + 1 ha cropping farming system (Cropping system with inter crop & border plantation like castor/sesbania etc.) @ Rs.27500/ as subsidy per Unit	Ha	0.55	All Blocks Except B1	800	440.00	0	0.00	700	385.00	0	0.00	700	385.00	2200	1210.00
	Total					**440.00**		**0.00**		**385.00**		**0.00**		**385.00**		**1210.00**

B1 – Dharmapuri, B2 – Harur, B3 – Karimangalam, B4 – Morappur, B5 – Nallampalli, B6 – Palacode, B7 – Pappireddipatti, B8 – Pennagaram

4.1.13. Integrated Pest Management in Dharmapuri District

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

Interventions

- Farmers Field Schools (FFS) (All blocks)
- IPM School (All blocks)

Budget

It is proposed to incur **₹ 38.40 Lakhs** over a period of five years **(Table 4.13)** with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.13 Budget Requirement for Integrated Pest Management in Dharmapuri District

(₹ in lakhs)

Sl. No	Components	Unit	Unit Cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Farmers Field Schools (FFS)	Nos.	20000	All Blocks	0	0.00	16	3.20	16	3.20	16	3.20	16	3.20	64	12.80
2	IPM School	Nos.	40000	All Blocks	0	0.00	16	6.40	16	6.40	16	6.40	16	6.40	64	25.60
	Total					**0.00**		**9.60**		**9.60**		**9.60**		**9.60**		**38.40**

B1 – Dharmapuri, B2 – Harur, B3 – Karimangalam, B4 – Morappur, B5 – Nallampalli, B6 – Palacode, B7 – Pappireddipatti, B8 – Pennagaram

4.1.14. Farm Mechanization in Dharmapuri District

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

Project component

- Distribution of tractor, power tiller, rotovator and conoweeder (All blocks)
- Distribution of mini tractor (Karimangalam block) and mobile sprinkler (Nallampalli, Palacode block)
- PVC pipes to carry irrigation water from source to field (All blocks)
- Distribution of hand/power operated sprayers (All blocks)
- Distribution of tarpaulins (All blocks)
- Distribution of rain guns (Dharmapuri, Nallampalli, Palacode block)
- Solar power pump system (All blocks)

Budget

Agricultural mechanization programs are proposed to implement in a big way to increase the agricultural production and to popularize the agricultural machinery among the farmers of this district with a budget of **₹ 2568.30 Lakhs (Table 4.14)**.

Expected outcome

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

Implementing agency

The projects will be implemented by the Department of Agriculture.

Table 4.14 Budget Requirement for Farm Mechanization in Dharmapuri District

(₹. in lakhs)

Sl. No	Components	Unit	Unit Cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Power operated sprayer	Nos.	8000	All Blocks	80	6.40	200	16.00	200	16.00	200	16.00	200	16.00	880	70.40
2	Hand operated sprayer	Nos.	1500	All Blocks	80	2.00	80	2.00	80	2.00	80	2.00	80	2.00	400	10.00
3	Distribution of cono weeder	Nos	2000	All Blocks	0	0.00	800	16.00	800	16.00	800	16.00	800	16.00	3200	64.00
4	Distribution of Mini Tractor	Nos	300000	B3	0	0.00	1	3.00	1	3.00	1	3.00	1	3.00	4	12.00
5	Distribution of Mobile Sprinklers	Ha	30000	B5,B6	0	0.00	35	10.50	35	10.50	35	10.50	35	10.50	140	42.00
6	Distribution of Power tiller	Nos	150000	All Blocks	8	12.00	25	37.50	25	37.50	37	55.50	38	57.00	133	199.50
7	Distribution of Pump set	Nos	30000	B8,B3	0	0.00	7	2.10	7	2.10	7	2.10	7	2.10	28	8.40
8	Distribution of Rain guns	Ha	40000	B1,B5,B6	0	0.00	25	10.00	25	10.00	25	10.00	25	10.00	100	40.00
9	Distribution of Rotavator	Nos	80000	All Blocks	72	57.60	112	89.60	115	92.00	135	108.00	135	108.00	569	455.20
10	Distribution of Tarpaulins	Nos	8000	All Blocks	0	0.00	115	9.20	120	9.60	120	9.60	130	10.40	485	38.80
11	Distribution of Tractor	Nos	600000	All Blocks	0	0.00	19	114.00	20	120.00	25	150.00	30	180.00	94	564.00
12	PVC Pipes to carry Irrigation water from source to field	Unit	40000	All Blocks	190	76.00	210	84.00	370	148.00	375	150.00	375	150.00	1520	608.00
13	Solar power pump system	Nos	600000	All Blocks	0	0.00	19	114.00	19	114.00	19	114.00	19	114.00	76	456.00
	Total					**154.00**		**507.90**		**580.70**		**646.70**		**679.00**		**2568.30**

B1 – Dharmapuri, B2 – Harur, B3 – Karimangalam, B4 – Morappur, B5 – Nallampalli, B6 – Palacode, B7 – Pappireddipatti, B8 – Pennagaram

4.1.15. State Seed Farms in Dharmapuri District

Seed is the basic and most critical input for sustainable agriculture. The response of all other inputs depends on quality of seeds to a large extent. It is estimated that the direct contribution of quality seed alone to the total production is about 15–20% depending upon the crop and it can be further raised up to 45% with efficient management of other inputs. The total seed requirement of the country amounts to 2.56 lakh tonnes. However, about 20 per cent of the total seed requirement is met as quality seeds, while the rest is managed by farm saved seeds. Hence, high emphasis has to be given for the production and supply of quality seeds of pulses and oilseeds to farmers and increase the Seed Replacement Rate. Therefore, the infrastructure facilities at the SSFs like leveled land, more area, assured irrigation, thrashing floor, drying yard, processing units, storage *etc*., are essential to produce, process and pack quality seeds. Therefore, the strengthening of state seed farms is aimed for quality seed production in Tamil Nadu.

Project components

- Soil Fertility Improvement and Land development works (Pennagaram block)
- Rain guns and deepening of open well (Pennagaram block)
- Farm office (Pennagaram block)

Budget

It is proposed to incur **₹ 28.80 Lakhs** over a period of five years **(Table 4.15)** with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing Agency

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

Table 4.15 Budget Requirement for State Seed Farms in Dharmapuri District

(₹. in lakhs)

Sl. No	Components	unit	unit cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
I	Soil Fertility Improvement and Land development works in SSF	Ac	2	B8	0	0.00	1	2.00	0	0.00	1	2	0	0.00	2	4.00
II	**Irrigation Component**															
1	Rain gun	Nos	0.4	B8	0	0.00	2	0.80	0	0.00	0	0	0	0.00	2	0.80
2	Deepening of open well	Nos	8	B8	0	0.00	1	8.00	0	0.00	1	8	0	0.00	2	16.00
III	**Civil Works**															
3	Farm office	Nos	8	B8	0	0.00	1	8.00	0	0.00	0	0	0	0.00	1	8.00
	Total					**0.00**		**18.80**		**0.00**		**10**		**0.00**		**28.80**

B1 – Dharmapuri, B2 – Harur, B3 – Karimangalam, B4 – Morappur, B5 – Nallampalli, B6 – Palacode, B7 – Pappireddipatti, B8 – Pennagaram

4.1.16. Agricultural Information Technology in Dharmapuri District

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

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

Project components

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

Budget

It is proposed to incur **₹ 52.13 Lakhs** over a period of five years **(Table 4.16)** with the finance facilities under the NADP and other sources.

Expected outcome

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

Implementing Agency

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

Table 4.16 Budget Requirement for Information Technology in Dharmapuri District

(₹. in lakhs)

Sl. No	Components	Unit	Unit Cost	Block Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Procurement of Hardware for replacement of old hardware	Nos	50000	All Blocks	0	0.00	8	4.00	0	0.00	0	0.00	0	0.00	8	4.00
2	Connectivity Charges	Nos	11000	All Blocks	0	0.00	8	0.88	0	0.00	0	0.00	0	0.00	8	0.88
3	Printer cum Scanner	Nos	20000	All Blocks	0	0.00	8	1.60	0	0.00	0	0.00	0	0.00	8	1.60
4	UPS and Electrical Accessories	Nos	35000	All Blocks	0	0.00	8	2.80	0	0.00	0	0.00	0	0.00	8	2.80
5	Xerox machine	Nos	75000	All Blocks	0	0.00	8	6.00	0	0.00	0	0.00	0	0.00	8	6.00
6	Laptop/Desktop	Nos	50000	All Blocks	0	0.00	16	8.00	0	0.00	0	0.00	0	0.00	16	8.00
8	Television	Nos	100000	All Blocks	0	0.00	8	8.00	0	0.00	0	0.00	0	0.00	8	8.00
9	Colour printer	Nos	15000	All Blocks	0	0.00	16	2.40	0	0.00	0	0.00	0	0.00	16	2.40
10	4G Internet – Dongle	Nos	2500	All Blocks	0	0.00	16	0.40	0	0.00	0	0.00	0	0.00	16	0.40
11	**Equipments for Documentation**															
a	Handycam	Nos	30000	All Blocks	0	0.00	8	2.40	0	0.00	0	0.00	0	0.00	8	2.40
b	Camera	Nos	25000	All Blocks	0	0.00	8	2.00	0	0.00	0	0.00	0	0.00	8	2.00
c	GPS instrument	Nos	20000	All Blocks	0	0.00	8	1.60	0	0.00	0	0.00	0	0.00	8	1.60
d	External Hard disk	Nos	5000	All Blocks	0	0.00	16	0.80	0	0.00	0	0.00	0	0.00	16	0.80
12	Audio - visual Aids	Nos	150000	All Blocks												
	LCD projector	Nos	75000	All Blocks	0	0.00	7	5.25	0	0.00	0	0.00	0	0.00	7	5.25
	Pico Projector	Nos	35000	All Blocks	0	0.00	8	2.80	0	0.00	0	0.00	0	0.00	8	2.80
13	Air conditioner for computer room	Nos	40000	All Blocks	0	0.00	8	3.20	0	0.00	0	0.00	0	0.00	8	3.20
	Total					**0.00**		**52.13**		**0.00**		**0.00**		**0.00**		**52.13**

B1 – Dharmapuri, B2 – Harur, B3 – Karimangalam, B4 – Morappur, B5 – Nallampalli, B6 – Palacode, B7 – Pappireddipatti, B8 – Pennagaram

Table 4.17 Consolidated Agriculture Budget for Dharmapuri District

(₹ in lakh)

Sl. No.	Components	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Rice	119.54	284.96	384.80	418.40	532.85	1740.55
2	Millets	146.96	251.44	254.09	262.34	264.23	1178.79
3	Pulses	559.91	589.45	762.75	796.75	805.55	3514.41
4	Oilseeds	344.55	385.32	395.22	417.42	419.82	1962.33
5	Oilpalm	27.72	0.00	0.00	0.00	0.00	27.72
6	Cotton	68.20	76.80	86.00	103.70	107.70	442.40
7	Sugarcane	2817.55	1798.30	1800.40	2173.60	2174.20	10764.05
8	Coconut	64.75	217.25	220.31	259.50	367.40	1129.21
9	Trainings	53.20	53.20	53.20	53.20	53.20	266.00
10	Infrastructure Development	0.00	599.73	50.00	600.00	0.00	1249.73
11	Soil Health Management	58.02	92.18	96.50	96.50	96.50	439.70
12	Rainfed Area Development	440.00	0.00	385.00	0.00	385.00	1210.00
13	Integrated Pest Management	0.00	9.60	9.60	9.60	9.60	38.40
14	Farm Mechanization	154.00	507.90	580.70	646.70	679.00	2568.30
15	State Seed Farms	0.00	18.80	0.00	10.00	0.00	28.80
16	Information Technology	0.00	52.13	0.00	0.00	0.00	52.13
	Total	**4854.40**	**4937.06**	**5078.57**	**5847.71**	**5895.05**	**26612.52**

4.2. Horticulture

Dharmapuri is the major belt of the horticultural crops such as mango, papaya, tomato, brinjal and Bhendi under precision systems, protected cultivation of flowers like rose, chrysanthemum etc. Horticultural crops provide higher productivity per unit area and offer a good scope on value addition, post-harvest management, and marketing of horticultural commodities.

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 for the cultivation of horticultural crops which prove remunerative. The challenge lies in taking the technologies to 90 per cent of farmers who are small and marginal farmers. In all, horticulture crops are grown in 10.01 lakh hectares, of which vegetables, spices, plantation crops, flowers and medicinal plants are the major crops cultivated in the State. Totally, 86 horticultural crops are grown in the State which clearly indicates the crop diversity and also the possibility of augmenting the income of farmers. The major strategies suggested are as follows:

Area expansion of Horticultural crops

a. Fruit Crops

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

b. Vegetable crops

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

reefer vans, retail outlets, mobile stores are the components to be promoted for increasing the productivity and marketing of vegetables.

c. Flower crops

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

d. Spice crops

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

Improving Infrastructural facilities for production

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

Maintenance of Plantation

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

Area expansion by Precision Farming Technology

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

Area expansion by high density planting

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

Area expansion by Normal Planting

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

Protected cultivation

Precision farming through hi tech cultivation practices 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.

Rejuvenation of Old Orchards – Mango and Guava

In general, 40-45 years old mango trees exhibit decline in fruit yield because of dense and overcrowded canopy. The trees do not get proper sunlight resulting in decreased production of shoots. New emerging shoots are weak and are unsuitable for flowering and fruiting. The population of insects and pests builds up and the incidence of diseases increases in such orchards. These unproductive trees can be converted into productive ones by pruning with the techniques developed. Similarly, a procedure to rejuvenate and restore the production potential of old unproductive and wilt affected guava orchards has been

developed, which employs pruning of branches at different periodicity and at different severities. Crowding and encroachment of guava trees with subsequent inefficient light utilization is an obvious problem with older orchards, if trees are not well managed. The internal bearing capacity of guava trees also decreases with time, due to overshadowing of internal bearing wood.

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. 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.

Post-Harvest Management

In agriculture, postharvest handling is the stage of crop production immediately following harvest, including cooling, cleaning, sorting and packing. Postharvest treatment largely determines final quality, whether a crop is sold for fresh consumption, or used as an ingredient in a processed food product. The most important goals of post-harvest handling is to avoid moisture loss and slow down undesirable chemical changes, and avoiding physical damage such as bruising, to delay spoilage. Sanitation is also an important factor, to reduce the possibility of pathogens that could be carried by fresh produce, for example, as residue from contaminated washing water.

Marketing Interventions

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

Capacity building of Horticultural Officers and Farmers

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

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 in hill areas, Scheduled Castes /Scheduled Tribes under Western Ghats Development Programmes, Hill Area Development Programme and Integrated Tribal Development Programme. The income earned by the farmers through bee-keeping activities is an additional income to their agriculture income. Honey industry in the country can well become a major foreign exchange earner if international standards are met. Beekeeping is an age-old tradition in India but it is considered a no-investment profit giving venture in most areas. Of late, it has been recognized that it has the potential to develop as a prime agri-horticultural and forest-based industry. Honey production is a lucrative business and it generates employment.

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

Mechanization in cultivation of horticultural crops

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

Micro Irrigation, Water harvesting and Management

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

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

Special Interventions

Production Enhancement through Precision Farming

Farmers have experienced fruitful results of technology especially during the past five years. Hence further increase in the production of horticultural crops would be possible both by increasing area and productivity by adopting advanced technologies like precision farming, high density planting, protected cultivation, shade net nursery, integrated pest management and integrated nutrient management. Besides increasing infrastructure and mechanization facilities, productivity enhancement is considered by area expansion and

resorting to high tech cultivation practices. Annual crops like vegetables, flowers, spices, medicinal plants and one year long season crops like banana, tapioca, turmeric and annual moringa could be considered for expansion by precision farming technology and providing assistance for inputs like water soluble fertilizers, hybrid/ high yielding vegetable seeds, plant protection chemicals etc., with subsidy.

Pandal / Trellis cultivation, Propping / Support / Staking

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

Banana Bunch Sleeve

'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.

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.

Control of coconut Red Palm weevil

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

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.

Perimetro Vegetable Cluster Development Programme

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

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

Establishing Centre of Excellence for different crops

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

Computerization and Governance

As per the state 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.

Research on Crop Diversification

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

Special Development Programme – Onion

Onion Storage Structures

India is one of the largest producers of onion in the world. It is one of the most important vegetable crops of our country and forms a part of daily diet in almost all households. In Tamil Nadu onion was grown in an area of about 35,000 ha with a production of 3,80,000 tons. Most of the farmers bring onion directly to the market after harvest as proper storage facilities are not available with them. The present storage capacities are quite inadequate and most of the available units are traditional and unscientific.

Tissue Culture Unit

Plant tissue culture is a collection of techniques used to maintain or grow plant cells, tissues or organs under sterile conditions on a nutrient culture medium of known composition. Plant tissue culture is widely used to produce clones of a plant in a method known as micro propagation.

Plant tissue culture relies on the fact that many plant cells have the ability to regenerate a whole plant (totipotency). Single cells, plant cells without cell walls (protoplasts), pieces of leaves, stems or roots can often be used to generate a new plant on culture media given the required nutrients and plant hormones. Although some growers and nurseries have their own labs for propagating plants by the technique of tissue culture, additional number of laboratories need to be created to provide custom propagation services and commercially viable plants to propagate in a laboratory.

Off-season Moringa Production – Pods and Leaves

Extremes of weather conditions that prevail in Northern States during karif as well as Rabi seasons do not favour the cultivation of Moringa. Hence truckloads of drumsticks are being transported from Tamil Nadu, Andhra Pradesh 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.

Establishment of Mushroom unit

Mushrooms have been valued throughout the world as both food and medicine for thousands of years. They are a rich source of nutrition and form a major chunk of health foods. Earlier mushroom eating was restricted to specific regions and areas of the world but due to globalization, interaction between different cultures, growing consumerism has ensured the accessibility of mushrooms in all areas. Mushrooms are increasingly gaining acceptance in different Cuisines and in everyday consumption. They have created a space in a common man’s kitchen. Also, current trend of consumption conveys the opportunity that lies in the area of mushroom exports.

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.

Coastal area development programme

The coastal area in Tamil Nadu is susceptible to cyclones periodically, which cause damage to life and property. The coastal area supports several important economic activities such as fisheries, ports, industries, and tourism. Most ecologically critical and threatened areas in the coastal areas are coastal wet lands especially lagoons and estuaries and their mangrove swamps. The coastal areas provide food and shelter for waterfowls, fishes, crustaceans, molluscs including some of the world’s lucrative fisheries. Mangroves and coral reef system are important for protecting shorelines and coastal lines against erosion. Thus coastal areas play a prominent role in the human life.

Infrastructure Development

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.

Supporting structures for vegetable production

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

a. Staking, trellis and propping

Though most vegetables grow on their own, plants with vining and sprawling growth or with brittle stems and heavy fruits need support. Peas, cucumbers, pole beans, tomatoes,

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

b. Pandal structure

Pandal vegetables, being short duration crops, fit very well in the intensive cropping system. It offers viable option for the growers to get increased income per unit area. It includes number of vegetables 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 the area and production of pandal vegetables. Along with which the support on supply of high yielding / hybrid seed materials for cultivation will be additional assistance among the farmers to get enhanced yield per unit area.

District Horticulture information and training centre

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

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

Community Seed Bank

Community Seed Banks (CSBs) are places of storage where indigenous seed varieties are conserved and managed by community members. These ex-situ conservation

sites provide farmers with free and easy access to traditional seeds under the condition that a farmer returns twice the amount of seeds he or she borrowed. They not only reduce farmers' dependence on seed companies but also help conserve the agro-biodiversity of their villages. These seed banks form the cornerstone of GREEN's efforts for biodiversity conservation through community empowerment.

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.

Establishment of Processing Units

Tamil Nadu produces nearly 110 lakh tonnes of vegetables and fruits but it has only 136 cold storage locations with a capacity of 2.3 lakh tonnes which is shared amongst marine, milk and agro produce. The combined capacity is small as compared to required capacity. Further it has been reported that nearly 30 per cent of the horticultural crops produced are wasted due to rotting and in the post-harvest supply chain of storage and handling. Reducing this wastage calls for conversion of value added horticultural crops, fruits and flowers. Hence, it has been programmed to establish horticultural processing unit and essential oil extraction unit.

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.

Horticultural mechanization

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

Micro irrigation in horticultural crops

Micro-irrigation will generally use less than half the volume of water required by the more traditional 'watering' systems such as sprinkler irrigation. Lower pressures used mean less energy for pumping while precise placement of more exact water volumes enhances and improves water management. Micro irrigation system scales down requirement of labour and takes care of application of fertilizers.

Conducting Field Days / Shows and Farmer's mela

Regular training programmes on relevant topics for upgradation of knowledge and skill of extension functionaries of development department and farmers are essential. Apart from this, exhibition, horticulture show, farmers' mela, field days in farmer's field and frontline demonstrations to demonstrate technologies are to be regularly conducted.

Project components

- Area expansion of fruit crops (All blocks)
- Area expansion of vegetable crops (All blocks except few)
- Area expansion of medicinal, aromatic and spice crops (All blocks except few)
- Area expansion of flower crops (All blocks)
- Rejuvenation and pollination support through bee keeping (All blocks)
- Infrastructure and assets creation (All blocks except few)
- Special interventions and post-harvest management (All blocks)
- Development of farms, nurseries, mechanization and irrigation management (All blocks except few)
- Capacity building, crop insurance and risk mitigating scheme (All blocks except few)

Project cost

The proposed interventions will be implemented with a budget outlay of **₹ 12812.24 lakhs (Table 4.18)**.

Implementing agency

The project will be implemented by the Department of Horticulture & Plantation crops and Tamil Nadu Agricultural University. The evaluation will be done by the evaluation committee from the Government.

Expected outcome

The implementation of the project will increase the area and production of horticultural crops. This will indirectly improve the production, productivity and ultimately the profitability of the farmer.

Table 4.18 Budget for increasing the productivity of Horticultural crops **(₹. in lakhs)**

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
A	**Production growth**															
I	**Area expansion of fruit crops**															
1	TC Banana & TC Pineapple	Ha	1.25	All Blocks	43	53.75	43	53.75	46	57.50	46	57.50	46	57.50	224	280.00
2	Banana / Hill Banana sucker & Pine apple sucker	Ha	0.875	All Blocks	26	22.75	26	22.75	26	22.75	26	22.75	26	22.75	130	113.75
3	HDP in Mango, Guava, Litchi, Pomegranate	Ha	1	All Blocks	85	85.00	85	85.00	95	95.00	97	97.00	97	97.00	459	459.00
4	Normal planting in Mango	Ha	0.6	All Blocks	42	25.20	42	25.20	44	26.40	44	26.40	44	26.40	216	129.60
5	Normal planting in Guava	Ha	0.6		3	1.80	3	1.80	4	2.40	6	3.60	6	3.60	22	13.20
6	Normal planting in Papaya	Ha	0.6	All Blocks	27	16.20	27	16.20	30	18.00	31	18.60	33	19.80	148	88.80
II	**Area expansion of vegetable crops**															
7	Brinjal	Ha	0.5	All Blocks	45	22.50	45	22.50	47	23.50	48	24.00	48	24.00	233	116.50
8	Bhendi	Ha	0.5	All Blocks	45	22.50	45	22.50	47	23.50	50	25.00	50	25.00	237	118.50
9	Green Chillies	Ha	0.5	All Blocks except B8	13	6.50	13	6.50	15	7.50	16	8.00	16	8.00	73	36.50
10	Tomato	Ha	0.5	All Blocks	143	71.50	143	71.50	158	79.00	168	84.00	173	86.50	785	392.50
11	Gourds including pumpkin and tinda	Ha	0.5	B4,B6,B7, B8	12	6.00	12	6.00	14	7.00	16	8.00	16	8.00	70	35.00
12	Greens	Ha	0.5	All Blocks	115	57.50	115	57.50	125	62.50	130	65.00	130	65.00	615	307.50
13	Small Onion	Ha	0.5	B3,B5	3	1.50	3	1.50	3	1.50	3	1.50	3	1.50	15	7.50
14	Annual Moringa	Ha	0.5	B1,B2,B5, B6	11	5.50	11	5.50	11	5.50	12	6.00	12	6.00	57	28.50
15	Cucumber/ gherkin	Ha	0.5	B2,B3,B5, B6,B7	19	9.50	19	9.50	20	10.00	23	11.50	23	11.50	104	52.00
16	Melons	Ha	0.5	B2,B6,B8	14	7.00	14	7.00	20	10.00	20	10.00	20	10.00	88	44.00
17	Tapioca	Ha	0.5	All Blocks	480	240.00	480	240.00	485	242.50	490	245.00	490	245.00	2425	1212.50
18	Cultivation of hybrid Vegetables under protected structures	1000 Sq.m	1.4	B6	2	2.80	2	2.80	2	2.80	2	2.80	2	2.80	10	14.00

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.
III	**Area expansion of Medicinal and Aromatic plants**															
19	Lemon grass/ palmarosa	Ha	0.32	B1,B2	50	16.00	50	16.00	50	16.00	50	16.00	50	16.00	250	80.00
IV	**Area expansion of Spices crops**															
20	Seed and Rhizomatic spices (Coriander, Turmeric, Ginger, Dry Chilly, Cumin, Fennel, Fenugreek, Dil, Cardamom etc.,)	Ha	0.3	All Blocks	355	106.50	355	106.50	375	112.50	385	115.50	395	118.50	1865	559.50
21	Perennial spices (Pepper, Curry leaf, All spice, Cinnamon, Clove, Tamarind, Nut meg etc.,)	Ha	0.5	B4,B7,B8	20	10.00	20	10.00	26	13.00	27	13.50	27	13.50	120	60.00
V	**Area expansion of Flower crops**															
22	Loose flowers – Jasminum sp, Crossandra, Marigold, Rose, Chrysanthemum, Nerium, Torenia	Ha	0.4	All Blocks	60	24.00	60	24.00	67	26.80	68	27.20	68	27.20	323	129.20
23	Bulbous flowers - Tube rose, Gladioli, Dahlia, Bird of paradise, Heliconia, Tulip	Ha	1.5	All Blocks	32	48.00	32	48.00	37	55.50	40	60.00	40	60.00	181	271.50
VII	**Rejuvenation/INM-IPM/Mulching/Anti bird net**															
24	INM/IPM for Horticultural crops	Ha	0.04	All Blocks	340	13.60	340	13.60	340	13.60	345	13.80	345	13.80	1710	68.40
25	Mulching	Ha	0.32	All Blocks	80	25.60	80	25.60	82	26.24	89	28.48	89	28.48	420	134.40
VIII	**Pollination Support through Bee Keeping**															
26	Bee hive & Colony	No	0.04	All Blocks	118	4.72	118	4.72	118	4.72	118	4.72	118	4.72	590	23.60
27	Honey Extractor	No	0.2	All Blocks	11	2.20	11	2.20	11	2.20	11	2.20	11	2.20	55	11.00
IX	**Organic Farming**															
28	Organic farming and PGS certification in	1 cluster	14.95	B5	0	0.00	1	14.95	1	14.95	1	14.95	0	0.00	3	44.85

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.
	50 acre cluster / Organic vegetable production															
29	HDPE Vermibed	No	0.16	All Blocks	38	6.08	38	6.08	38	6.08	39	6.24	39	6.24	192	30.72
X	**Rainfed Area development**															
30	Integrated farming system - Horticulture based farming	Ha	0.5	B1,B4,B5, B6,B7	25	12.50	25	12.50	25	12.50	25	12.50	25	12.50	125	62.50
31	Moisture stress management - Minimum irrigation gurantee by PUSA hydrogel	Ha	0.1	All Blocks	240	24.00	240	24.00	240	24.00	240	24.00	240	24.00	1200	120.00
B	**Infra structures and Assets creation**															
32	Poly Green House	1000 Sq.m	9.35	B1,B5,B6	9	84.15	9	84.15	9	84.15	9	84.15	9	84.15	45	420.75
33	Shadenet	1000 Sq.m	7.1	All Blocks except B2	7	49.70	7	49.70	7	49.70	7	49.70	7	49.70	35	248.50
II	**Mushroom production**															
34	Cottage mushroom unit	1 No.	1	B1	0	0.00	0	0.00	0	0.00	1	1.00	1	1.00	2	2.00
III	**Vermicompost unit**															
35	Permanent Vermicompost Unit	600 cu.ft	1	All Blocks	15	15.00	15	15.00	15	15.00	15	15.00	15	15.00	75	75.00
IV	**Supporting structures for Horticulture crop production**															
36	Staking/ Trellies/ Propping	Ha	1	All Blocks	22	22.00	22	22.00	22	22.00	22	22.00	22	22.00	110	110.00
37	Permanent Pandhal structure	Ha	4	All Blocks	24	96.00	24	96.00	24	96.00	24	96.00	24	96.00	120	480.00
V	**District Horticulture information and training centre**															
VI	**Community seed bank**															
C	**Special interventions**															
38	Farm deficiency correction	Ha	0.04	All Blocks	685	27.40	685	27.40	685	27.40	705	28.20	705	28.20	3465	138.60
39	Promotion of Roof top Garden/ Potager garden Kit	No	0.005	All Blocks	570	2.85	570	2.85	570	2.85	570	2.85	570	2.85	2850	14.25

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.
40	Banana Bunch Sleeve	Ha	0.25	B1,B6	100	25.00	100	25.00	100	25.00	0	0.00	0	0.00	300	75.00
41	AESA based IPM in fruits and vegetables Pheramone trap	Ha	0.04	All Blocks	255	10.20	255	10.20	260	10.40	260	10.40	260	10.40	1290	51.60
42	AESA Based IPM in fruits and vegetables Yellow sticky trap	Ha	0.04	All Blocks	255	10.20	255	10.20	260	10.40	260	10.40	260	10.40	1290	51.60
43	AESA Based IPM in fruits and vegetables Light trap	Ha	0.08	All Blocks	80	6.40	80	6.40	80	6.40	85	6.80	85	6.80	410	32.80
D	**Post Harvest Management**															
44	Pack house (9m X 6m)	1 No	4	All Blocks	8	32.00	8	32.00	8	32.00	8	32.00	8	32.00	40	160.00
E	**Development of Farms, Nurseries and Parks**															
45	Deveopment of eco park / Rose garden	No	600	B1	0	0.00	0	0.00	1	600.00	0	0.00	0	0.00	1	600.00
46	Developmental activities in new/ exsisting state horticultural farm, Keelapalur	No	25	B7	1	25.00	0	0.00	0	0.00	0	0.00	0	0.00	1	25.00
F	**Mechanization - Machineries, Equipments & Tools**															
47	Power tiller/Tractor/Mini tractor	Nos	1	All Blocks	11	11.00	11	11.00	11	11.00	11	11.00	11	11.00	55	55.00
48	Manual sprayer-Knapsack/Foot operated Sprayer	Nos	0.12	B2,B3	3	0.36	3	0.36	3	0.36	3	0.36	3	0.36	15	1.80
49	Hand operated sprayer with face mask	Nos	0.025	All Blocks except B3,B8	13	0.33	13	0.33	13	0.33	13	0.33	13	0.33	65	1.63
50	Nets for safe harvesting of fruits, Headlights for flower picking	Nos	0.005	All Blocks except B1	178	0.89	178	0.89	183	0.92	190	0.95	190	0.95	919	4.60
51	Power operated sprayer	Nos	0.05	All Blocks except B7	47	2.35	47	2.35	47	2.35	47	2.35	47	2.35	235	11.75
52	Plastic crates for	No of	0.075	All Blocks	510	38.25	510	38.25	510	38.25	510	38.25	510	38.25	2550	191.25

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.
	vegetable & fruits handling	sets containing 10 crates		except B1												
53	Turmeric boiler		2.5	All Blocks Except B2,B6,B7	5	12.50	5	12.50	5	12.50	5	12.50	5	12.50	25	62.50
54	Turmeric Polishing Machine		0.88	B1,B3,B4, B5,B8	5	4.40	5	4.40	5	4.40	5	4.40	5	4.40	25	22.00
55	5 layered Polythene spread sheets for drying horticulture produce	No	0.16	All Blocks	520	83.20	520	83.20	520	83.20	520	83.20	520	83.20	2600	416.00
G	**Water / Irrigation Management**															
56	Micro Irrigation - Drip	Ha	1.12	All Blocks	685	767.20	685	767.20	685	767.20	690	772.80	690	772.80	3435	3847.20
57	Rain gun	Ha	0.34	B4,B6,B7, B8	25	8.50	25	8.50	25	8.50	25	8.50	25	8.50	125	42.50
58	Sprinkler	No	0.195	All Blocks except B3,B5,B6	60	11.70	60	11.70	60	11.70	60	11.70	60	11.70	300	58.50
59	Water harvesting system for individuals	No	1.5	All Blocks	40	60.00	40	60.00	40	60.00	40	60.00	40	60.00	200	300.00
H	**Capacity Building**															
60	Training to farmers within the State. 2 days Rs.1000/farmer/day	No	0.02	All Blocks	200	4.00	200	4.00	200	4.00	200	4.00	200	4.00	1000	20.00
61	Training to farmers outside the state. 30 farmers/Batch	No	0.105	All Blocks	30	3.15	30	3.15	30	3.15	30	3.15	30	3.15	150	15.75
62	Exposure visit to farmers for 5 days. Rs.1000/farmer/day	No	0.05	All Blocks	27	1.35	27	1.35	27	1.35	27	1.35	27	1.35	135	6.75
63	Training to farmers at HTC	No	0.0025	All Blocks	68	0.17	68	0.17	68	0.17	68	0.17	68	0.17	340	0.85
64	Exposure visit of farmers outside India	No	4	B5,B6,B7	3	12.00	3	12.00	3	12.00	3	12.00	3	12.00	15	60.00
65	Training to staff outside the state / Batch of 5 members	No	0.04	B1,B3,B5, B6	4	0.16	4	0.16	4	0.16	4	0.16	4	0.16	20	0.80

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		Total	
					Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
66	Training to staff outside India	No	6	B3,B5,B6	3	18.00	3	18.00	3	18.00	3	18.00	3	18.00	15	90.00
67	District level seminar	No	2	B1,B5,B6, B7	4	8.00	4	8.00	4	8.00	4	8.00	4	8.00	20	40.00
68	Computerization & governance	No	1	All Blocks	8	8.00	1	1.00	1	1.00	1	1.00	1	1.00	12	12.00
69	Publicity and Documentation	No	0.5	All Blocks	8	4.00	8	4.00	8	4.00	8	4.00	8	4.00	40	20.00
I	**Crop Insurance and Risk Mitigating schemes**															
70	Crop Insurance	Ha	0.025	B3	10	0.25	10	0.25	10	0.25	10	0.25	10	0.25	50	1.25
	Grand Total					**2416.36**		**2399.31**		**3059.52**		**2472.66**		**2464.41**		**12812.24**

B1 – Dharmapuri; B2 – Nallampalli; B3 – Pennagaram; B4 – Palacode; B5 – Karimangalam; B6 – Morappur; B7 – Pappireddipatti; B8 – Harur

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 output per unit time. Besides its paramount contribution to the multiple cropping and diversification of agriculture, mechanization also enables efficient utilization of inputs such as seeds, fertilizers and irrigation water. The agricultural mechanization is the only way out to face the challenge of farm worker's shortage. Thus the ultimate objective of Agricultural Mechanization Strategies in developing countries is to help increase the welfare of farm households and create positive dynamics and opportunities for economic growth in rural areas.

Strategies

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

- Promotion of appropriate technologies and to set up farm machinery banks in identified villages
- Provision of financial assistance on per hectare basis to the beneficiaries hiring machinery/equipments from custom hiring centres
- Increases the tractor hire services in the farms of small and marginal farmers
- Strengthening of Minor irrigation for the rainfed and hard rock areas. It would establish through construction of open well, tube wells and Bore wells. Revitalisation of wells by side boring and blasting in hard rock areas.
- Introduction of renewable energy in the villages which would replace other fuels. Also attractive for water pumping applications in remote areas. Hence solar operated photovoltaic water pumping system provides better sustainable alternative option to fulfill irrigation requirement of agriculture.
- Provision of components such as High tech Earth excavator, Poly Green House with Fogging facility, Vermi Compost unit with packing accessories, Farm pond / Fish pond, Farmers kit (Crow bar, Hand hoe, rose can, pruning siccature, coconut dehusker, trolley etc.,), Land levelling, Pipe laying, Stening wall, Well deepening, Replacement of old Pumpsets, Infrastructure like packing unit, godown, cattle shed and Threshing floor, Publicity and propaganda for farm mechanization in AED, Special Training for Coconut Growers, Special Training for Coconut Tree Climbing, J C B, Mini Drill, Compartmental Bund Formation, Farm Ponds, Community Bore wells, Deepening of Open Wells, Renovation of MI Tanks, Check Dam, Percolation Pond, Recharge Shaft, Summer Ploughing, PVP pipe laying, Replacement of Submersible Motors pump sets, Telescopic Pruner, Motorized Rubber Roller, Trays for Paddy Nursery Raising, Combine Harvester, Diesel Pump, Rotary Tiller, Smoke House, Mist Blower, Tea Harvester, Construction of LD & MI Repair Shed and Construction of Training Centre for farmers with furniture and accessories at the department of Agricultural engineering
- Strengthening of communication and information facilities in order to disseminate the information in rural areas
- Promotion of agro-processing and management machinery at community level through supply of post-harvest machinery such as self-propelled/other driven horticultural machinery (Chain saw/ wheel barrow/ Mango grader/ planter and other suitable self-propelled machineries and equipments), Manual horticultural equipments (Aluminium ladder/ Ladder, Aluminium pole, Plucker), Post-harvest equipments for grains, oil seeds and Horticultural crops (Mini Rice mill, Mini Dhall mill, Millet Mill, Oil mill with filters, Extractor, pomegranate air extractor, Custard

apple pulper, Dehydration unit, Pricking Machine, Humidifier, Packing machine, power driven dehusker, thresher, Harvester, De-spiking, Decoding, Peeler, Splitter, Stripper, Boiler, Steamer, Dryer solar, Washing Machine, Grinder, Pulveriser, Polisher, Cleaner cum grader, gradient separator, Specific gravity separator) this would make sure that more value is added to farm outputs locally

- Establishment of Agricultural Engineering Extension centres in order to collect information related to Government subsidy on agricultural / machineries / equipment / irrigation systems etc., compilation of latest technologies related to Agricultural Engineering and Development of video cassettes library related to Processing of agricultural products, Working of important agricultural machines and equipment and Repair, maintenance and proper setting of the different agricultural Machines / and equipment
- All the above said interventions are planned to carryout in all the blocks of Dharmapuri district except few interventions like demonstration of agricultural machinery, training of farmers, demonstration of post-harvest technologies, dehydration unit and purchase of grinders/pulverisers which will be carried out in few blocks of the districts as furnished in Table 4.19

Expected outcome

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

Budget

The budget requirement for fulfilling the various interventions is **₹ 14368.76 lakhs.** The details of budget requirement for each intervention across the blocks are shown in **Table 4.19**.

Implementing agency

The projects will be implemented by the Department of Agricultural Engineering. The progress will be monitored by the Heads of State Department officials.

Table 4.19 Budget outlay for Agricultural Engineering

(₹ in lakhs)

Sl. No	Interventions	Unit	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Capacity Building	No's/Ha	0.04	All Blocks	37	1.48	37	1.48	39	1.56	37	1.48	37	1.48	187	7.48
2	Demonstration of Agricultural Machinery	No's/Ha	0.04	All Blocks Except B2,B4,B7	12	0.48	12	0.48	12	0.48	12	0.48	12	0.48	60	2.40
3	Training of farmers	No's/Ha	0.04	All Blocks Except B2, B4, B7	14	0.56	14	0.56	14	0.56	14	0.56	14	0.56	70	2.80
4	Training of Rural Youth in workshops	No's/Ha	0.04	All Blocks	26	1.04	26	1.04	26	1.04	26	1.04	26	1.04	130	5.20
5	Demonstration of Post Harvest Technologies	No's/Ha	4	All Blocks Except B2,B4,B7	20	80.00	19	76.00	19	76.00	19	76.00	19	76.00	96	384.00
6	Tractors	No's/Ha	3	All Blocks	8	24.00	8	24.00	8	24.00	8	24.00	8	24.00	40	120.00
7	Tractor (8-15 PTO HP)	No's/Ha	4	All Blocks	29	116.00	29	116.00	29	116.00	29	116.00	29	116.00	145	580.00
8	Tractor (15-20 PTO HP)	No's/Ha	6	All Blocks	21	126.00	21	126.00	16	96.00	16	96.00	16	96.00	90	540.00
9	Tractor (Above 20-40 PTO HP)	No's/Ha	8.5	All Blocks	70	595.00	68	578.00	63	535.50	63	535.50	63	535.50	327	2779.50
10	Power Tillers	No's/Ha	1	All Blocks	12	12.00	12	12.00	8	8.00	8	8.00	8	8.00	48	48.00
11	Power Tiller (below 8 BHP)	No's/Ha	1.75	All Blocks	41	71.75	41	71.75	45	78.75	45	78.75	45	78.75	217	379.75
12	Rice Transplanter	No's/Ha	2.5	All Blocks	9	22.50	9	22.50	9	22.50	9	22.50	9	22.50	45	112.50
13	Self Propelled Rice Transplanter (4 rows)	No's/Ha	16	All Blocks	4	64.00	4	64.00	4	64.00	4	64.00	4	64.00	20	320.00
14	Self Propelled Machinery	No's/Ha	3	All Blocks	14	42.00	13	39.00	13	39.00	14	42.00	14	42.00	68	204.00
15	Specialized Self Propelled Machinery	No's/Ha	1.1	All Blocks	17	18.70	14	15.40	17	18.70	14	15.40	14	15.40	76	83.60
16	Reaper	No's/Ha	0.63	All Blocks	6	3.78	6	3.78	6	3.78	6	3.78	6	3.78	30	18.90
17	Disc Plow	No's/Ha	0.2	All Blocks	14	2.80	14	2.80	13	2.60	13	2.60	13	2.60	67	13.40
18	Leveler Blade	No's/Ha	0.25	All Blocks	9	2.25	9	2.25	9	2.25	9	2.25	9	2.25	45	11.25

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
19	Reversible Mechanical plough	No's/Ha	0.35	All Blocks	10	3.50	10	3.50	6	2.10	6	2.10	6	2.10	38	13.30
20	Rotavator	No's/Ha	1	All Blocks	8	8.00	8	8.00	6	6.00	6	6.00	6	6.00	34	34.00
21	Sowing Planting, Reaping and Digging Equipments:	No's/Ha	0.8	All Blocks	8	6.40	7	5.60	7	5.60	7	5.60	7	5.60	36	28.80
22	Post Hole Digger	No's/Ha	0.95	All Blocks	2	1.90	2	1.90	2	1.90	2	1.90	2	1.90	10	9.50
23	IntercultivationEquipments	No's/Ha	0.25	All Blocks	9	2.25	9	2.25	9	2.25	9	2.25	9	2.25	45	11.25
24	Brush Cutter	No's/Ha	0.25	All Blocks	16	4.00	16	4.00	16	4.00	16	4.00	16	4.00	80	20.00
25	Disc Plow	No's/Ha	0.25	All Blocks	24	6.00	24	6.00	24	6.00	24	6.00	19	4.75	115	28.75
26	Reversible Mechanical plough	No's/Ha	0.8	All Blocks	50	40.00	50	40.00	50	40.00	50	40.00	50	40.00	250	200.00
27	Zero till seed cum fertilizer drill	No's/Ha	0.5	All Blocks	2	1.00	2	1.00	2	1.00	2	1.00	2	1.00	10	5.00
28	Inter Cultivation Equipments	No's/Ha	0.7	All Blocks	3	2.10	3	2.10	3	2.10	3	2.10	3	2.10	15	10.50
29	Harvesting & Threshing Equipments	No's/Ha	3	All Blocks	4	12.00	4	12.00	4	12.00	4	12.00	4	12.00	20	60.00
30	Multi crop Threshers	No's/Ha	1.9	All Blocks	6	11.40	6	11.40	6	11.40	6	11.40	6	11.40	30	57.00
31	MB Plow	No's/Ha	0.6	All Blocks	7	4.20	7	4.20	6	3.60	6	3.60	6	3.60	32	19.20
32	Disc Plow	No's/Ha	0.3	All Blocks	52	15.60	52	15.60	52	15.60	52	15.60	47	14.10	255	76.50
33	Harrow	No's/Ha	0.3	All Blocks	9	2.70	9	2.70	9	2.70	7	2.10	7	2.10	41	12.30
34	Leveler Blade	No's/Ha	0.4	All Blocks	12	4.80	12	4.80	12	4.80	10	4.00	10	4.00	56	22.40
35	Ridger	No's/Ha	0.8	All Blocks	2	1.60	2	1.60	2	1.60	2	1.60	2	1.60	10	8.00
36	Laser Land Leveller	No's/Ha	0.95	All Blocks	195	185.25	155	147.25	145	137.75	145	137.75	145	137.75	785	745.75
37	Rotopuddler	No's/Ha	2	All Blocks	11	22.00	11	22.00	11	22.00	11	22.00	11	22.00	55	110.00
38	Sowing Planting, Reaping and Digging Equipments:	No's/Ha	0.7	All Blocks	4	2.80	4	2.80	4	2.80	4	2.80	4	2.80	20	14.00
39	Zero till seed cum fertilizer drill	No's/Ha	1.25	All Blocks	8	10.00	8	10.00	8	10.00	8	10.00	8	10.00	40	50.00
40	Tractor drawn reaper	No's/Ha	1.05	All Blocks	10	10.50	10	10.50	10	10.50	10	10.50	10	10.50	50	52.50

Sl. No	Interventions	Unit	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
41	Harvesting & Threshing Equipments	No's/Ha	4	All Blocks	37	148.00	36	144.00	36	144.00	36	144.00	36	144.00	181	724.00
42	Thresher/Multi Crop threshers	No's/Ha	2.2	All Blocks	25	55.00	25	55.00	25	55.00	25	55.00	25	55.00	125	275.00
43	Coconut Frond chopper	No's/Ha	3.5	All Blocks	8	28.00	8	28.00	8	28.00	8	28.00	8	28.00	40	140.00
44	All Manual/animal drawn equipment/implements / Tools	No's/Ha	0.1	All Blocks	2	0.20	2	0.20	2	0.20	2	0.20	2	0.20	10	1.00
45	Drum Seeder (Below 4 Row)	No's/Ha	0.15	All Blocks	6	0.90	6	0.90	6	0.90	6	0.90	6	0.90	30	4.50
46	Drum Seeder (Above 4 Row)	No's/Ha	0.07	All Blocks	8	0.56	8	0.56	6	0.42	6	0.42	6	0.42	34	2.38
47	Plant protection equipments	No's/Ha	0.015	All Blocks	20	0.30	20	0.30	20	0.30	15	0.23	15	0.23	90	1.35
48	Manual sprayer: Knapsack/foot operated sprayer	No's/Ha	0.06	All Blocks	120	7.20	120	7.20	120	7.20	115	6.90	115	6.90	590	35.40
49	Powered Knapsack Sprayer/Power operated Taiwan sprayer (capacity 8-12 lts)	No's/Ha	0.08	All Blocks	49	3.92	49	3.92	49	3.92	49	3.92	49	3.92	245	19.60
50	Powered Knapsack Sprayer/Power operated Taiwan sprayer (capacity above 12-16 lts)	No's/Ha	0.1	All Blocks	32	3.20	32	3.20	32	3.20	32	3.20	32	3.20	160	16.00
51	Powered Knapsack Sprayer/Power operated Taiwan sprayer (capacity above 16 lts)	No's/Ha	28	All Blocks	15	420.00	15	420.00	15	420.00	12	336.00	12	336.00	69	1932.00
52	Establishment of Hi-Tech, High Productive Equipment Hub for Custom Hiring	No's/Ha	11.5	All Blocks	17	195.50	16	184.00	14	161.00	16	184.00	16	184.00	79	908.50

Sl. No	Interventions	Unit	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
53	Promotion of farm mechanization in selected villages	No's/Ha	0.04	All Blocks	520	20.80	520	20.80	520	20.80	520	20.80	520	20.80	2600	104.00
54	Tractor Hiring Scheme	No's/Ha	8	All Blocks	8	64.00	0	0.00	0	0.00	8	64.00	0	0.00	16	128.00
55	Purchase of Tractors for AED	No's/Ha	0.5	All Blocks	8	4.00	0	0.00	0	0.00	8	4.00	0	0.00	16	8.00
56	Solar Powered Pumping System with automatic tracking facility	No's/Ha	3.75	All Blocks	25	93.75	25	93.75	45	168.75	45	168.75	45	168.75	185	693.75
57	5 hp	No's/Ha	5.3	All Blocks	20	106.00	20	106.00	20	106.00	20	106.00	20	106.00	100	530.00
58	7.5 hp	No's/Ha	6.75	All Blocks	4	27.00	4	27.00	4	27.00	4	27.00	4	27.00	20	135.00
59	Farmers kit (Crow bar, Hand hoe, rose can, pruning siccative, coconut de husker, trolley etc.,)	No's/Ha	0.07	All Blocks	290	20.30	290	20.30	290	20.30	290	20.30	290	20.30	1450	101.50
60	Land levelling,Pipe laying	No's/Ha	0.25	All Blocks	125	31.25	125	31.25	125	31.25	125	31.25	125	31.25	625	156.25
61	Stoning wall	No's/Ha	0.5	All Blocks	125	62.50	125	62.50	120	60.00	120	60.00	120	60.00	610	305.00
62	Well deepening	No's/Ha	0.2	All Blocks	300	60.00	285	57.00	200	40.00	200	40.00	200	40.00	1185	237.00
63	Replacement of old pump sets	No's/Ha	1	All Blocks	105	105.00	105	105.00	125	125.00	120	120.00	120	120.00	575	575.00
64	Information Technology (IT) related items	No's/Ha	0.8	All Blocks	5	4.00	0	0.00	2	1.60	0	0.00	0	0.00	7	5.60
65	Computer & its accessories	No's/Ha	0.25	All Blocks	8	2.00	8	2.00	0	0.00	0	0.00	0	0.00	16	4.00
66	Tablet (Tab)	No's/Ha	1.5	B1	1	1.50	1	1.50	0	0.00	0	0.00	0	0.00	2	3.00
67	Mini Dal Mill	No's/Ha	1.5	All Blocks	0	0.00	0	0.00	0	0.00	0	0.00	2	3.00	2	3.00
68	Millet Mill	No's/Ha	1.2	All Blocks	0	0.00	0	0.00	2	2.40	0	0.00	0	0.00	2	2.40
69	Oil mill with filter press (for all type of Horticulture / Food grain / Oil seeds crop)	No's/Ha	1	All Blocks	0	0.00	0	0.00	2	2.00	0	0.00	0	0.00	2	2.00

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
70	Dehydration unit/ Pricking Machine/ Humidifier (for all type of Horticulture / Food grain / Oil seeds crop)	No's/Ha	3	B8	0	0.00	0	0.00	0	0.00	2	6.00	0	0.00	2	6.00
71	Packing Machines (for all types of Horticulture / Food grain / Oil seeds crop)	No's/Ha	1.2	All Blocks	5	6.00	5	6.00	5	6.00	5	6.00	5	6.00	25	30.00
72	All types of Washing Machines (for all type of Horticulture / Food grain / Oil seed crop)	No's/Ha	0.3	All Blocks	3	0.90	0	0.00	0	0.00	2	0.60	0	0.00	5	1.50
73	All types of Grinder/ Pulveriser/ Polisher (for all type of Horticulture / Food grain / Oil seed crop)	No's/Ha	0.75	B8	0	0.00	0	0.00	0	0.00	0	0.00	2	1.50	2	1.50
74	Bio- mass gasifier	No's/Ha	75		1	75.00	0	0.00	0	0.00	0	0.00	0	0.00	1	75.00
	Total					**3089.12**		**2856.62**		**2831.66**		**2832.11**		**2759.26**		**14368.76**

B1-Dharmapuri, B2-Harur, B3-Karimangalam, B4-Morappur, B5-Nallampalli, B6-Palacode, B7-Pappireddipatti, B8-Pennagaram

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 marketing opportunities, the marketing of such incremental output can be ensured. To further improve the marketing opportunities and to reduce the loss of agricultural produces, several measures have to be taken up by way of interventions like strengthening of shandies, construction of storage godown, provision of market accessories and capacity building of farmers.

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

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

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

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

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

a. Strategies

The proposed interventions will promote the Agri-business practices and models required to support Agri-business development, allowing the sector to contribute to the economic growth especially in rural areas. New Agri-business practices will be introduced relating to (i) farmers and entrepreneurs engaging service providers to solve specific technology problems (ii) learning to work together in the value-chain (iii) making effective use of market intelligence in decision making and (iv) making investments in supply-chain infrastructure and market places.

Rather than starting from a production point of view, stakeholders are encouraged to start from understanding market requirements and opportunities. The interventions will help stakeholders to access the relevant technologies and knowledge services needed for realizing the identified profit opportunities.

b. Project components

- Promotion of commodity groups and market information (Dharmapuri block)
- Construction of Storage godown and drying yard for commodity groups (All blocks)
- Collection van, computer with accessories (Dharmapuri, Harur, Palacode block)
- Controlled atmosphere with conventional bin storage (Pennagaram block)
- Provision of pack house (Palacode block)
- Formation of Farmer Producer Organizations (Harur, Nallampalli, Pennagaram block)
- Supply chain and post-harvest management (All blocks except few)
- Distribution of Turmeric boiler and polisher (All blocks)
- Promotion of cold storage facilities (Pennagaram block)
- Distribution of plastic crates to vegetable commodity group farmers (All blocks)
- Solar drier (Harur, Palacode block)
- Vegetable air drying unit (Harur block)
- Capacity building programme (All blocks)

Budget

It is proposed to incur **₹ 4011.00 lakhs** over a period of five years **(Table 4.20)**.

Expected Outcome

The interventions will promote entrepreneurs by organizing trainings and exposure visits. Farmers are facilitated to use drying yards and cold storage to market good quality graded products. It will also avoid distress sale by storing their agricultural produce. It helps them to get loans during storage period and sell it when the market price is high. This will strengthen the economic condition of the farmers as well as habituate them for grading, drying, sorting and storing.

Implementing Agency

Agricultural Marketing and Agri Business Department will implement the programs.

Table 4.20 Budget outlay for Strengthening of Agricultural Marketing and Agri-Business (₹. in lakhs)

Sl. No.	Intervention	Unit	Unit cost	Blocks	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	Provision of AGMARK Lab equipments	6	4	B1	6	24.00	0	0.00	0	0.00	0	0.00	0	0.00	6	24.00
	Strengthening of Uzhavar Sandhai and Regulated Market															
2	Additional Shops	1	1	All Blocks	120	60.00	0	0.00	0	0.00	0	0.00	0	0.00	120	60.00
3	Cold Storage	1	400	B4	1	400.00	0	0.00	0	0.00	0	0.00	0	0.00	1	400.00
4	Drying Yard	1	4	All Blocks	16	64.00	8	32.00	8	32.00	16	64.00	16	64.00	64	256.00
5	Storage godown	1	10	All Blocks	8	80.00	8	80.00	8	80.00	8	80.00	8	80.00	40	400.00
6	Administrative Office Room (Vehicle shed ,waiting hall, washing Room, Borewell with Motor, water Tank)	3 No	100	B1, B3, B6	3	300.00	0	0.00	0	0.00	0	0.00	0	0.00	3	300.00
7	Traders shop	1	30	B4	2	60.00	0	0.00	0	0.00	0	0.00	0	0.00	2	60.00
	Formation of FPO / Strengthening of Existing Commodity Groups															
8	FPO	1	55	B2,B4,B6	5	275.00	0	0.00	0	0.00	0	0.00	0	0.00	5	275.00
9	Formation of Commodity Group, FPCs and Business Support to FPCs	1	35.778	B7	1	36.00	0	0.00	0	0.00	0	0.00	0	0.00	1	36.00
	Provision of Market Access and Market Activities															
10	Collection Van	4 Nos	50	B1, B3, B6	12	600.00	0	0.00	0	0.00	0	0.00	0	0.00	12	600.00
11	Computer with Accessories	4 Nos	4	B1, B3, B6	9	36.00		0.00	0	0.00	0	0.00	0	0.00	9	36.00
12	Controlled atmosphere with conventional bin storage (300 Kg/bin)	25mt, 50 mt, 100 MT	100, 125, 200	B4	3	425.00	0		0	0.00	0	0.00	0	0.00	3	425.00
13	Dunnage	1	0.08	B1, B3, B4,B6	200	16.00	0	0.00	0	0.00	0	0.00	0	0.00	200	16.00
14	Dustbin	10 Nos	0.5	B3	10	5.00	0	0.00	0	0.00	0	0.00	0	0.00	10	5.00
15	Electronic Digital Weighing Scale - 5 Kg	1	36	All Blocks	1	36.00	0	0.00	0	0.00	0	0.00	0	0.00	1	36.00
16	Lift for stocking of Exiting Cold Storage	1 Nos	1	B3, B6	2	2.00	0	0.00	0	0.00	0	0.00	0	0.00	2	2.00

Sl. No.	Intervention	Unit	Unit cost	Blocks	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
17	Loading platform	1 Nos	1	B3, B6	2	2.00	0	0.00	0	0.00	0	0.00	0	0.00	2	2.00
18	Plastic crates	1	0	All Blocks	1600	6.00	1940	8.00	2360	9.00	2660	11.00	2920	12.00	11480	46.00
19	Productive Investments for Farmer Common service Centre - FCSC	1	68.5	B7	0	0.00	0	0.00	1	69.00	0	0.00	0	0.00	1	69.00
20	Pruning saw for 500 farmers(1 per farmer)per year	1 No	15	B3	1	15.00	0	0.00	0	0.00	0	0.00	0	0.00	1	15.00
21	Reefer vehicle	1 No	15	B3	1	15.00	0	0.00	0	0.00	0	0.00	0	0.00	1	15.00
22	Steel Ladder	1	0.1	All Blocks	40	4.00	77	8.00	79	8.00	46	5.00	49	5.00	291	29.00
23	Tarpaulin	50 Nos	1	B1, B3, B6	150	75.00	0	0.00	0	0.00	0	0.00	0	0.00	150	75.00
	Post Harvest Infrastructure and Machineries															
24	Grading and Packing Hall(30X6 Mtr)	1 Unit	15	B1, B3, B6	3	45.00	0	0.00	0	0.00	0	0.00	0	0.00	3	45.00
25	Provision of Pack House	1 No	300	B3	1	300.00	0	0.00	0	0.00	0	0.00	0	0.00	1	300.00
26	Solar Dryer	1 No	6	B3, B6	3	18.00	0	0.00	0	0.00	0	0.00	0	0.00	3	18.00
27	Turmeric boiler	1	0	All Blocks	8	1.00	8	1.00	9	1.00	10	1.00	11	1.00	46	5.00
28	Turmeric Polisher	1	2	All Blocks	8	16.00	8	16.00	8	16.00	8	16.00	8	16.00	40	80.00
29	Vegetable Air Drying Unit	1 Unit	300	B6	1	300.00	0	0.00	0	0.00	0	0.00	0	0.00	1	300.00
	Capacity building Programme															
30	Exposure Visits - within state	1	1.5	All Blocks	8	12.00	8	12.00	8	12.00	8	12.00	8	12.00	40	60.00
31	Exposure Visits - outside state - 3 days	1	0.5	All Blocks	8	4.00	8	4.00	8	4.00	8	4.00	8	4.00	40	20.00
32	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	All Blocks	40	0.00	40	0.00	40	0.00	40	0.00	40	0.00	200	2.00
	Total					**3232.00**		**161.00**		**231.00**		**193.00**		**194.00**		**4011.00**

B1-Dharmapuri, B2-Harur, B3-Karimangalam, B4-Morappur, B5-Nallampalli, B6-Palacode, B7-Pappireddipatti, B8-Pennagaram

4.5. Seed Certification and Organic Certification

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

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

Project components

- **Strengthening of Seed Testing laboratories**

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

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

- **Creation of infrastructure facilities in seed testing laboratories**

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

- **Capacity building**

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

- **Strengthening of communication and networking facilities**

  Information on quality seed production techniques would be disseminating among the farmers and seed growers. (All blocks)

Expected outcome

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

Budget

The budget requirement for fulfilling those interventions is **₹ 29.16 Lakhs.** The details of budget requirement for each intervention are shown in **Table 4.21**.

Implementing agency

The projects will be implemented by the Directorate of Seed Certification and Organic certification.

Table 4.21 Budget outlay for Seed and Organic Certification

(₹. in lakhs)

Sl. No	Interventions	Unit	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
I	**Strengthening of Seed Certification lab**															
	Blower, Conductivity meter, Dehuller/Scarifier, Dehumidifier Air Conditioner, Digital moisture meter, Dunnage, Fabricated display Racks ,Geaser, Generator, Heater, Hot air oven, Humidifier, Incubator, Induction stove, Microscope ,Moisture meter, Packing machine, R. O system, Sample racks, Seed Grinder, Sieve, Thermohydro meter, Dunnage, Trolley for carriages, Working chair, Working table, Miscellaneous,	Nos	13.36	All blocks	1.00	13.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	13.36
II	**Strengthening of communication and networking facilities**															
	Computer accessories	No's	0.50	All blocks	10.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	5.00
III	**Capacity Building**															
	Training to seed grower for quality seed production	No's	0.20	All blocks	0.00	0.00	12.00	2.40	12.00	2.40	15.00	3.00	15.00	3.00	54.00	10.80
	Total					**18.36**		**2.40**		**2.40**		**3.00**		**3.00**		**29.16**

B1-Dharmapuri, B2-Harur, B3-Karimangalam, B4-Morappur, B5-Nallampalli, B6-Palacode, B7-Pappireddipatti, B8-Pennagaram

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 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. Livestock breeding management
3. Improving the livestock productivity
4. Improving the service delivery at veterinary institutions
5. Enhancing livestock management
6. Capacity building

Increasing the availability of fodder through field level interventions

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

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

1. Establishment of vermicomposting unit (All blocks)
2. Distribution of Azolla trays (All blocks)
3. Fodder plot development (All blocks)
4. Meikkal land development (Pappireddipatti block)
5. Distribution of grass cutter (All blocks)
6. Distribution of rain gun to livestock farmers (Karimangalam, Morappur, Palacode, Pappireddipatti block)

Livestock breeding management

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

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

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

1. CIDR (All blocks except Pappireddipatti block)

Improving the livestock productivity

Although India is the 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 implemented. The interventions proposed are

1. Distribution of sheep, goat, buffalo, piggery, poultry units (All blocks)
2. Establishment of modern poultry, rabbit , piggery, sheep, goat and bull shed (All blocks)
3. Integrated farming (All blocks)

Improving the service delivery at veterinary institutions

Veterinary hospitals, dispensaries, Aid Centers, diagnostic laboratories and veterinary manpower already available are much less than what is required. These services would be improved and expanded and will continue to be provided by the state owned facilities with an

appropriate system of recovery of cost wherever feasible. Private investment to improve delivery of animal health services including facilities by private veterinary graduates would be encouraged. Mobile veterinary dispensaries with provision for vaccination and facilities to generate awareness of farmers regarding various livestock management issues would be promoted to improve outreach. For companion animals, state governments may consider to extend the veterinary services on full cost recovery basis. To improve the service delivery the below mentioned intervention have been proposed. The intervention have been propose are

1. Deep freezer facility for storage of vaccines and medicines (All blocks)
2. Establishment of infrastructure facilities, disease diagnostic lab, mobile veterinary units, surgical theaters and ambulance facilities. (All blocks except few)

Enhancing livestock management

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

1. Animal identification and traceability (All blocks)
2. Conservation of indigenous breeds (All blocks)

Capacity building

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

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

1. Establishment of farmers training Centre (Dharmapuri block)
2. Conducting demonstrations camps and campaigns (Pappireddipatti block)
3. Creating awareness of livestock management to the farmers through training programmes (Pappireddipatti block)
4. Conducting demonstration on enrichment of dry fodder and silo making for green fodder (All blocks)
5. Update of scientific advancement and technical skill of Veterinarians (All blocks)

Budget

The budget requirement for fulfilling the various above interventions is **₹. 3985.35 lakhs**. The details of budget requirement for each intervention across the blocks are shown in **Table 4.22**.

Implementing agency

The projects will be implemented by the Department of Animal Husbandry.

Table 4.22 Budget outlay for Animal Husbandry **(₹. in lakhs)**

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Increasing the Availability of Fodder through Field level Interventions															
1	Establishment of Vermicomposting unit (single bed)	Nos	0.05	All Blocks	335	16.75	335	16.75	335	16.75	335	16.75	335	16.75	1675	83.75
2	Distribution of Azolla trays	Nos	0.03	All Blocks	1675	50.25	1675	50.25	1675	50.25	1675	50.25	1675	50.25	8375	251.25
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	Meikkal land development (infrastructure development)	acre	6	B7	60	360.00	0	0.00	0	0.00	0	0.00	0	0.00	60	360.00
5	Distribution of Grass Cutter to farmers	Nos	0.25	All Blocks	335	83.75	335	83.75	335	83.75	335	83.75	335	83.75	1675	418.75
6	Distribution of Rain gun to Livestock farmers	Nos	0.25	B6,B3,B7, B4	160	40.00	160	40.00	160	40.00	160	40.00	160	40.00	800	200.00
	Livestock Breeding Management															
7	CIDR (Controlled Internal Drug Release) for increasing Fertility in Cattle	Nos	0.01	All Blocks Except B7	600	6.00	600	6.00	600	6.00	600	6.00	600	6.00	3000	30.00
	Improving the															

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 Productivity															
8	Distribution of Sheep/Goat units -semi intensive system	Unit	0.6	All Blocks	25	15.00	25	15.00	25	15.00	25	15.00	25	15.00	125	75.00
9	Distribution of Buffalo units(5 Buffaloes)	Unit	4.5	All Blocks	5	22.50	5	22.50	5	22.50	5	22.50	5	22.50	25	112.50
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
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
13	Milking Mechine	Nos	0.3	All Blocks	345	103.50	335	100.50	335	100.50	335	100.50	335	100.50	1685	505.50
14	Distribution of Piggery units (fattening-5 Nos)	Nos	1.25	B1	5	6.25	0	0.00	0	0.00	0	0.00	0	0.00	5	6.25
15	Starting of Rural Backyard Poultry Scheme (50) to unemployed	No	0.1	All Blocks	67	6.70	67	6.70	67	6.70	67	6.70	67	6.70	335	33.50
	Improving the Service Delivery at Veterinary Institutions															
16	Deep freezer facility for Storage of vaccines and Medicines	Nos	10	All Blocks	0	0.00	0	0.00	8	80.00	0	0.00	0	0.00	8	80.00
17	Establishment of	Nos	30	All Blocks	7	210.00	0	0.00	0	0.00	0	0.00	0	0.00	7	210.00

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
	Infrastructure facilities for Veterinary Institutions			Except B3, B4, B6												
18	Establishment of Mobile Disease Diagnostic Labs	Nos	20	B2	1	20.00	0	0.00	0	0.00	0	0.00	0	0.00	1	20.00
19	Establishment of Mobile Veterinary Units	Nos	20	All Blocks	2	40.00	2	40.00	2	40.00	1	20.00	0	0.00	7	140.00
20	Establishment of surgical theatres at veterinary institution	Nos	30	All Blocks	2	60.00	2	60.00	2	60.00	2	60.00	0	0.00	8	240.00
21	Providing solar lighting panels at veterinary institution	Nos	1	All Blocks Except B4	74	74.00	0	0.00	0	0.00	0	0.00	0	0.00	74	74.00
22	Package of Modern Veterinary Diagnostic Aids to Veterinary Institutions such as Computerized X rays, Ultrasound, Diathermy etc.	Nos	30	All Blocks	2	60.00	2	60.00	2	60.00	2	60.00	0	0.00	8	240.00
23	Establishment of Ambulance facility for animals	Nos	80	B1	1	80.00	1	80.00	0	0.00	0	0.00	0	0.00	2	160.00
	Livestock Management															
24	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
25	Conservation of	Pack	10	All Blocks	1	10.00	1	10.00	1	10.00	1	10.00	1	10.00	5	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
	Indigenous breeds															
	Capacity Building															
26	Establishment of Farmers training Centre	Nos	200	B1	0	0.00	1	200.00	0	0.00	0	0.00	0	0.00	1	200.00
27	Conducting Demonstrations, Camps and Campaigns	Nos	0.01	B7	90	0.90	90	0.90	90	0.90	90	0.90	90	0.90	450	4.50
28	Creating awareness of livestock management to the farmers through Training Programmes	Nos	0.15	B7	9	1.35	0	0.00	0	0.00	0	0.00	0	0.00	9	1.35
29	Conducting demonstration on enrichment of dry fodder and silo making for green fodder	Nos	0.1	All Blocks	67	6.70	67	6.70	67	6.70	67	6.70	67	6.70	335	33.50
30	Update of scientific advancement and technical skill of Veterinarians (Workshop, Hands-on trainings)	Nos	0.1	All Blocks	67	6.70	67	6.70	67	6.70	67	6.70	67	6.70	335	33.50
	Grand Total					**1390.35**		**888.75**		**688.75**		**578.75**		**438.75**		**3985.35**

B1-Dharmapuri, B2-Harur, B3-Karimangalam, B4-Morappur, B5-Nallampalli, B6-Palacode, B7-Pappireddipatti, B8-Pennagaram

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 socio economic development of millions of rural households. India has one of the largest stocks of cattle and buffaloes more than 50 percent of the world's buffaloes and 20 percent of its cattle. Dairy sector acts as an important source of income for rural families, plays a vital role in providing gainful employment and income generating opportunities in the district. Dairy industry in the country is expected to witness spectacular growth in 2017, according to experts.

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

Strengthening of milk storages and processing units

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

The major interventions are,

1. Milk storage tanks of various capacities (All blocks)
2. Milk tankers (All blocks)
3. Milk pumps (All blocks)
4. Processing equipment’s (All blocks)
5. Pasteurizers (All blocks)

6. Heaters and chillers (All blocks)
7. Washer and conveyors (All blocks)
8. Pipes and fittings (All blocks)
9. Cleaning equipments (All blocks)
10. Electrical installations (UPS, generators, stabilizers, control panel) (All blocks)

Enhancing milk production and milk processing units

The quality of animals is critical in determining its milk productivity and hence overall production. Currently, low productivity per animal hinders development of the dairy sector. Despite being the world's largest milk producer, India's productivity per animal is very low, at 987 kg per lactation, compared with the global average of 2038 kg per lactation. The low productivity is a result of ineffective cattle and buffalo breeding programmes, limited extension and management on dairy enterprise development, traditional feeding practices that are not based on scientific feeding methods, 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, 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 (All blocks)
2. Fodder development equipment and seed material (All blocks)
3. Milk testing equipment's (All blocks)
4. Equipment's for artificial insemination (All blocks)
5. Milk society buildings and cow shed (All blocks)
6. Cryogenic containers (All blocks)
7. Weighing machines (All blocks)
8. Computer accessories (All blocks)

Capacity building

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

1. Training of personnel of MPCS, Union and federation (All blocks)
2. Infertility camps (All blocks)

Marketing structures

Marketing is generally defined as the process of planning and executing the conception, pricing, promotion, 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 (All blocks)
2. Milk product storage cabinets (All blocks)
3. Product billing system (All blocks)

Quality control

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

1. Adulteration detection equipments (All blocks)
2. Milk testing equipment and laboratory (All blocks)

Processing and value addition

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

1. Dairy processing plants (All blocks)
2. Water and effluent treatment plants (All blocks)
3. Steam raisning plant (All blocks)
4. Fat handling and other dairy equipments (All blocks)

Development for dairy sector

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

1. Construction of dairy farm and skim milk powder plant (All blocks)
2. BMC building (All blocks)
3. Ware house for dairy products and consumables (All blocks)

Budget

The budget requirement for fulfilling the various above interventions is **₹ 6843.75 lakhs**. The details of budget requirement for each intervention across the blocks are shown in **Table 4.23**.

Implementing agency

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

Table 4.23 Budget outlay for Dairy Development

(₹. in lakhs)

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
A	**Strengthening of milk storages and processing units**															
1	Electrical installation like Transformer, UPS, Stabilizers, Control Panel MCC etc.,	1	25	All blocks	0	0.00	0	0.00	1	25.00	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	0	0.00	4	60.00	0	0.00	4	60.00
3	Tub washer, Can washers, Crate conveyor systems.	1	10	All blocks	0	0.00	1	10.00	0	0.00	0	0.00	0	0.00	1	10.00
4	Point of Sale Machines and billing systems	1	0.25	All blocks	5	1.25	5	1.25	5	1.25	5	1.25	10	2.50	30	7.50
5	SS pipes and fittings	1	5	All blocks	0	0.00	2	10.00	0	0.00	2	10.00	0	0.00	4	20.00
6	Solar system for water heating	1	2	All blocks	0	0.00	2	4.00	2	4.00	2	4.00	2	4.00	8	16.00
7	Packing Machineries for milk, Butter, Ghee, SMP and Other Milk products	1	18	All blocks	0	0.00	1	18.00	0	0.00	0	0.00	1	18.00	2	36.00
8	Plate Heat type Chillers and pasteurizers	1	10	All blocks	0	0.00	2	20.00	2	20.00	0	0.00	0	0.00	4	40.00
9	Milk Tankers of various capacities	1	25	All blocks	0	0.00	0	0.00	2	50.00	0	0.00	0	0.00	2	50.00
10	Milk Pumps of Various capacities	1	0.5	All blocks	5	2.50	5	2.50	5	2.50	5	2.50	5	2.50	25	12.50

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
11	Generator of various capacities	1	20	All blocks	0	0.00	2	40.00	0	0.00	2	40.00	0	0.00	4	80.00
12	Curd processing equipments	1	50	All blocks	0	0.00	0	0.00	0	0.00	2	100.00	0	0.00	2	100.00
13	Cleaning In Place equipments with accessories	1	75	All blocks	0	0.00	0	0.00	2	150.00	0	0.00	0	0.00	2	150.00
B	**Enhancing milk production and milk processing units**															
14	Veterinary Medicine	1	2	All Blocks	3	6.00	3	6.00	5	10.00	5	10.00	5	10.00	21	42.00
15	Two wheeler for AI technician	1	0.5	All blocks	10	5.00	10	5.00	10	5.00	10	5.00	10	5.00	50	25.00
16	Computer system with accessories	1	0.5	All blocks	10	5.00	10	5.00	15	7.50	15	7.50	15	7.50	65	32.50
17	Fodder seed materials	1	0.25	All blocks	10	2.50	10	2.50	15	3.75	15	3.75	20	5.00	70	17.50
18	Fodder development equipments like chaff cutter, Mower etc.,	1	0.2		10	2.00	10	2.00	10	2.00	10	2.00	10	2.00	50	10.00
19	Bulk Milk coolers of Various capacities	1	15	All blocks	5	75.00	5	75.00	5	75.00	5	75.00	5	75.00	25	375.00
20	Milk cans	1	0.035	All blocks	500	17.50	500	17.50	500	17.50	500	17.50	500	17.50	2500	87.50
21	Electronic weighing scales of various capacities.	1	0.3	All blocks	25	7.50	25	7.50	25	7.50	25	7.50	25	7.50	125	37.50
22	Electronic milk testing equipments	1	1.25	All blocks	25	31.25	25	31.25	25	31.25	25	31.25	25	31.25	125	156.25
23	Milking machine	1	0.8	All blocks	20	16.00	20	16.00	20	16.00	20	16.00	20	16.00	100	80.00
24	Cow shed	1	5	All blocks	20	100.00	20	100.00	20	100.00	20	100.00	20	100.00	100	500.00

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
25	Society Buildings	1	20	All blocks	5	100.00	5	100.00	5	100.00	5	100.00	5	100.00	25	500.00
26	Cryogenic containers	1	0.35	All blocks	20	7.00	20	7.00	20	7.00	20	7.00	20	7.00	100	35.00
27	Equipments for Artificial Insemination	1	0.5	All blocks	20	10.00	20	10.00	20	10.00	20	10.00	20	10.00	100	50.00
C	**Capacity building**															
28	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
29	Infertility Camps	1	0.2	All Blocks	25	5.00	25	5.00	25	5.00	25	5.00	25	5.00	125	25.00
D	**Marketing structures**															
30	Parlour structures	1	5	All blocks	25	125.00	25	125.00	25	125.00	25	125.00	25	125.00	125	625.00
31	Milk product storage cabinets	1	0.3	All blocks	30	9.00	30	9.00	30	9.00	30	9.00	30	9.00	150	45.00
32	Product Billing systems	1	0.3	All blocks	30	9.00	30	9.00	30	9.00	30	9.00	30	9.00	150	45.00
E	**Quality control**															
33	Adulteration detection equipments	1	4	All blocks	0	0.00	2	8.00	0	0.00	2	8.00	0	0.00	4	16.00
34	Milk testing equipment and Laboratory.	1	5	All blocks	2	10.00	0	0.00	2	10.00	0	0.00	0	0.00	4	20.00
F	**Processing and value addition**															
35	Refrigeration Plants	1	500	All blocks	0	0.00	1	500.00	0	0.00	0	0.00	0	0.00	1	500.00
36	Water Treatment Plants. Reverse Osmosis plant	1	25	All blocks	0	0.00	1	25.00	0	0.00	0	0.00	0	0.00	1	25.00
37	Effluent treatment plant	1	100	All blocks	0	0.00	1	100.00	0	0.00	0	0.00	0	0.00	1	100.00
38	Steam raising plant with	1	100	All blocks		0.00	1	100.00		0.00		0.00		0.00	1	100.00

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	accessories															
39	Fat handling equipments	1	200	All blocks		0.00	1	200.00		0.00		0.00	1	200.00	2	400.00
40	Dairy equipments	1	50	All blocks	0	0.00	1	50.00	0	0.00	0	0.00	1	50.00	2	100.00
G	**Development of Dairy sector**															
41	Construction of Dairy	1	1500	All blocks	0	0.00	0	0.00	0	0.00	0	0.00	1	1500.00	1	1500.00
42	BMC buildings	1	15	All blocks	5	75.00	5	75.00	5	75.00	5	75.00	5	75.00	25	375.00
43	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
44	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					**624.00**		**1899.00**		**1080.75**		**843.75**		**2396.25**		**6843.75**

B1-Dharmapuri, B2-Harur, B3-Karimangalam, B4-Morappur, B5-Nallampalli, B6-Palacode, B7-Pappireddipatti, B8-Pennagaram

4.8. Fisheries

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

Enhancement of fisheries production

Aquatic plants growing in ponds and lakes are beneficial for fish and wildlife. They provide food, dissolved oxygen, spawning nesting habitat for fish and waterfowl. Aquatic plants can trap excessive nutrients and detoxify chemicals. However, dense growths (over 25% of the surface area) of algae and other water plants can seriously interfere with pond recreation and threaten aquatic life. Water plants can restrict swimming, boating, fishing, and other water sports. Biological controls for aquatic vegetation have received considerable publicity. Several species of fish are herbivorous in that their principal diet is aquatic vegetation. One such species, the grass carp (also known as the white amur or Chinese carp), is being tested in various parts of the country. Hence, it is suggested to implement the biological control of aquatic weeds by stocking of Grass Carps in Aquatic Weed Infested water bodies with project cost of ₹ 27.00 lakhs (All blocks) in Dharmapuri district.

Tremendous potential exists in India to augment fish production from freshwater aquaculture resources, which are spread across the length and breadth of the country. With concerted efforts to mobilize farmers to adopt fish farming, application of appropriate technologies for sustainable fish farming, fish seed production and availability of institutional finance, it would be possible to bring in substantial hikes in the annual fish production from the aquaculture sector within a span of 5 years. Hence in this district it suggested to implement the following intervention to enhance the production and growth of fisheries through Increasing Fishing Efficiency of Inland Fishermen and Fish Farmers, Enhancement of Fish production in irrigation tanks and Panchayat tanks by stocking fish seeds, Promotion of quality fish marketing by traditional fishers by providing moped with ice box, Improvement of hygienic fish handling by providing ice boxes, Resource enhancement by ranching of seeds in rivers and sea, Upgradation of Fishing Efficiency of Inland Fishermen, Introduction of short seasonal fish species in existing farm ponds, Establishment of modern mobile fish marketing vehicles, Organization of Fish festival, Increasing quality seed production through

seed rearing in cages, Promotion of cage farming of fishes in inland water bodies, Providing 50 % subsidy assistance to traditional fishermen's of Cauvery waters for the purchase of Bamboo layered coracle and Larvivorous Fish Seed Production with budget cost of ₹. 645.30 lakhs. (All blocks except few)

Infrastructure and assets

Fish farming is an age old activity and in practice from ancient times. The successful fish culture requires ploughing of pond, addition of manure, stocking of fish seed, eradication of unwanted aquatic plants and animals, watering the pond; harvesting the crop and marketing of the produce. The fish culture technologies and economics are simple and understandable to the fish farmers. Hence the construction of fish ponds in this district is recommended for its commercial production with budget cost of ₹ 5.63 lakhs (Dharmapuri, Karimangalam, Morappur, Palacode block).

Quality fish seed is the pre-requisite for successful fish farming. Department is using the techniques of hypophysation for the production of fish seed of cultivable varieties. Brood stocks of required fish are maintained and sex-wise segregate is made two months before. The pairing is made and injected with calculated dose of pituitary gland or ovaprim, ovatide or ovpal is injected to male and female fish. Within the 6-8 hours of the injection eggs from female and sperm from male are released in the water. The fertilizer is external. Normally one kg fish releases about one lakh eggs. Hence it is necessary to construct the fish seed rearing centres, Establishment of mini lab facilities in Government fish farms, Establishment of District Extension and Training centres, Improvement of hygienic fish marketing by establishing modern fish kiosk TNFDC and Establishment of GIFT farms and provision of inputs in Dharmapuri district with budget cost of ₹. 19.63 lakhs (Few blocks).

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, 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, exposure visit to farmers to other States and providing trainers training and exposure visit to Departmental staff is Dharmapuri of with budget of ₹ 16.30 lakhs (Few blocks).

Budget

The budget requirement for fulfilling the above interventions is **₹ 681.23 lakhs (Table 4.24)**.

Implementing agency

Department of Fisheries will be implementing the project.

Table 4.24 Budget requirement for Fisheries Sector

(₹ in lakhs)

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Up gradation of Fishing Efficiency of Inland Fishermen of Tamil Nadu.	No's	0.15	All Blocks Except Nallampalli	53	7.95	35	5.25	35	5.25	35	5.25	35	5.25	193	28.95
2	Resource enhancement by ranching of seeds in rivers and sea	No's	0.5	Morappur, Pennagaram	1	0.50	1	0.50	1	0.50	10	5.00	10	5.00	23	11.50
3	Providing 50 % subsidy assistance to traditional fishermen's of Cauvery waters for the purchase of Bamboo layered coracle	No's	0.04	Thomas Malai	50	2.00	50	2.00	50	2.00	50	2.00	50	2.00	250	10.00
4	Promotion of quality fish marketing by traditional fishers by providing mobbed with icebox	No's	0.50	All Blocks	0	0.00	10	5.00	10	5.00	10	5.00	15	7.50	45	22.50
5	Promotion of cage farming of fishes in inland water bodies	No's	5.5	Palacode, Pappireddipatti	0	0.00	0	0.00	0	0.00	1	5.50	1	5.50	2	11.00
6	Larvivorous Fish Seed Production	No's	1	All Blocks Except Morappur	0	0.00	10	10.00	10	10.00	10	10.00	15	15.00	45	45.00
7	Introduction of short seasonal fish species in existing farm ponds	ha	0.4	Dharmapuri, Harur, Karimangalam, Palacode, Pennagaram	0.5	0.20	0.5	0.20	0.5	0.20	1	0.40	0.5	0.20	3	1.20
8	Increasing quality seed production through seed rearing in cages	No's	2	Dharmapuri, Harur, Karimangalam, Palacode, Pappireddipatti	0	0.00	2	4.00	0	0.00	2	4.00	2	4.00	6	12.00

Sl. No	Interventions	Unit	Unit cost	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
9	Increasing fishing efficiency of inland fishermen and fish farmers	No's	0.15	All Blocks	57	8.55	40	6.00	40	6.00	40	6.00	40	6.00	217	32.55
10	Improvement of hygienic fish handling by providing ice boxes	No's	0.07	All Blocks	0	0.00	10	0.70	10	0.70	15	1.05	10	0.70	45	3.15
11	Improvement of Hygienic fish marketing by Establishing Modern Fish Market															
12	Improvement of hygienic fish marketing by establishing modern fish kiosk TNFDC	1	5	Dharmapuri, Harur, Karimangalam, Nallampalli, Pennagaram	5	25.00	0	0.00	0	0.00	0	0.00	4	20.00	9	45.00
13	Establishment of GIFT farms and provision of inputs	1	5.05	All Blocks Except Morappur, Pappireddipatti	1	5.05	2	10.10	1	5.05	1	5.05	4	20.20	9	45.45
14	Enhancement of Fish production in irrigation tanks and Panchayat tanks by stocking fish seeds	ha	1	All Blocks Except Harur, Morappur	0	0.00	50	50.00	150	150.00	100	100.00	50	50.00	350	350.00
15	Biological Control of Aquatic Weeds by Stocking of Grass Carps in Aquatic Weed Infested water bodies	ha	0.02	All Blocks	450	9.00	225	4.50	225	4.50	225	4.50	225	4.50	1350	27.00
	Section Total					**58.25**		**98.25**		**189.20**		**153.75**		**145.85**		**645.30**
	Creation of infrastructure facilities															
16	Increasing seed availability by establishing seed rearing units	1	2	Dharmapuri, Pappireddipatti	0	0.00	2	4.00	0	0.00	0	0.00	0	0.00	2	4.00
17	Establishment of fish	ha	2.25	Dharmapuri,	0.5	1.13	1	2.25	0	0.00	1	2.25	0	0.00	2.5	5.63

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
	culture ponds and provision of inputs			Karimangalam, Morappur, Palacode												
18	Establishment of District Extension and Training centres	0	0	Dharmapuri	0	0.00	1	0.00	0	0.00	0	0.00	0	0.00	1	0.00
	Section Total					**1.13**		**6.25**		**0.00**		**2.25**		**0.00**		**9.63**
	Infrastructure and Assets															
19	Establishment of mini lab facilities in Government fish farms	1	5	Palacode, Pennagaram	0	0.00	1	5.00	1	5.00	0	0.00	0	0.00	2	10.00
	Section Total					**0.00**		**5.00**		**5.00**		**0.00**		**0.00**		**10.00**
	Capacity building programme															
20	Establishment of modern mobile fish marketing vehicles	No's	7	Morappur	1	7.00	0	0.00	0	0.00	0	0.00	0	0.00	1	7.00
21	Exposure visit to farmers to other states	No's	0.06	All Blocks	0	0.00	8	0.48	12	0.72	0	0.00	0	0.00	20	1.20
22	Organization of Fish festival	1	5	Dharmapuri	0	0.00	0	0.00	1	5.00	0	0.00	0	0.00	1	5.00
23	Providing trainers training and exposure visit to Departmental staff	No's	0.1	Dharmapuri, Karimangalam, Morappur, Nallampalli, Palacode, Pappireddipatti	0	0.00	3	0.30	3	0.30	0.1	0.01	0	0.00	6.1	0.61
24	Training to fish farmers	No's	0.03	All Blocks	20	0.60	22	0.66	16	0.48	15	0.45	10	0.30	83	2.49
	Section Total					**7.60**		**1.44**		**6.50**		**0.46**		**0.30**		**16.30**
	Grand Total					**66.98**		**110.94**		**200.70**		**156.46**		**146.15**		**681.23**

4.9. Fisheries Research

Fisheries sector is one of the promising sub-sectors of agriculture that has the potential to address the food and nutritional security of the ever – growing population throughout the world. The state of Tamil Nadu is bestowed with vast resources for developing fisheries. With a view to develop fisheries, the government established the Tamil Nadu Fisheries University (TNFU) during 2012. One of the major mandates of the university is extension education to help in dissemination of fisheries technologies and innovations among the end users in an easily understandable and convincing manner. Establishment of communication centre will help to accomplish this task to a great extent. It is a known and acknowledged fact that extension linkages are very weak in fisheries and the establishment of communication centre 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 all the SAUs, communication centre are established to coordinate various extension activities which will bring wider reach to the technology dissemination activities.

Project components

- Enhancement of per capita consumption of fish (Dharmapuri block)
- Ensuring nutritional security through fish and fishery products (Dharmapuri block)
- Indigenous fisheries resource conservation centres (Dharmapuri block)

Budget

The budget requirement for fulfilling the above interventions is **₹ 341.60 Lakhs (Table 4.25)**.

Expected outcome

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

Implementing agency

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

Table 4.25 Budget requirement for fisheries research

(₹. in lakhs)

Sl. No	Interventions	Unit cost	Blocks Covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
a	**Enhancement of per capita consumption of fish**														
1	Awareness campaign on health beneficial attributes of fish	0.005	Dharmapuri	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	Dharmapuri	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**														
3	supply of preserved ready to eat and ready to cook fish products through public distribution systems	12.9	Dharmapuri	0	0.00	1	12.90	0	0.00	0	0.00	0	0.00	1	12.90
4	Supply of fish and fish products in mid-day meal programme	12.9	Dharmapuri	0	0.00	1	12.90	0	0.00	0	0.00	0	0.00	1	12.90
5	Supply chain management to promote consumption of farmed freshwater fishes	64.5	Dharmapuri	0	0.00	1	64.50	0	0.00	0	0.00	0	0.00	1	64.50
c	**Indigenous fisheries resource conservation centres**														
6	Freshwater (River Tamirabharani and Cauvery)	200	Dharmapuri	0	0.00	1	200.00	0	0.00	0	0.00	0	0.00	1	200.00
	Total				**0.26**		**290.56**		**50.26**		**0.26**		**0.26**		**341.60**

4.10. Public Works Department

Water is an important determinant factor of production of crops in agriculture sector. Intensive and extensive cultivation of land depend mainly on the availability of water. Medium and minor irrigation schemes are implemented in the state for augmenting the irrigation for agriculture. The various sources of irrigation are canals, tanks, tube wells, open wells and springs. The Public Works Department and Panchayat union tanks, ponds and supply channels play an important role in the irrigation of Dharmapuri district. Proper maintenance and upkeep would make the systems more effective. The analysis of growth rates of irrigation sources indicated that, irrigation through canals; tanks and other sources were in decreasing trend for both net and gross area irrigation. Most of the canals and tanks are silted and bushes like *Prosopis*, *Acassia* spp and water hyacinth occupied major part of the tanks and canals, there by storage capacity of the tank is very much reduced. Hence, to raise the water table level, construction of check dams need to be taken up in canals to increase the storage capacity of the tanks and increasing the ground water table in and around area of check dams and there by crop cultivation area in tank ayacut area can be increased.

Project components

- Construction of check dams across the rivers (Harur, Morappur, Nallampalli, Palacode, Pappireddipatti, Pennagaram block)

Budget

It is proposed to incur **₹ 2010.16 lakhs** over a period of five years **(Table 4.26)**.

Expected outcome

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

Implementing agency

Department of Public Works will be implementing the project.

Table 4.26 Budget requirement for PWD (WRO) **(₹ in lakhs)**

Sl. No	Intervention	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Construction of a Check dam across Vaniyar River in S.F No.41 & 116 of Chinnapannimaduvu Village in Harur taluk of Dharmapuri District	Harur	Ha	16.61	18.03	299.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.03	299.40
2	Construction of a Check dam across Thoppaiyar River S.F.No: 94 of Kammampatty Village in Nallampalli taluk of Dharmapuri District	Nallampalli	Ha	16.17	8.50	137.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.50	137.41
3	Construction of a Check dam across Nagavathy River in S.F No. 258 of Kendaiyanahalli Village in Pennagaram taluk of Dharmapuri District	Pennagaram	Ha	25.80	5.01	129.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.01	129.27
4	Construction of a Checkdam across Kodupallam in S.F No. 700 of Koduhalli Village in Pennagaram taluk of Dharmapuri District	Pennagaram	Ha	7.78	0.00	0.00	8.10	63.00	0.00	0.00	0.00	0.00	0.00	0.00	8.10	63.00
5	Construction of a Check dam across Vaniyar River in S.F No.81 of Nachinampatty Village in Harurtaluk of Dharmapuri District	Harur	Ha	10.20	0.00	0.00	14.82	151.15	0.00	0.00	0.00	0.00	0.00	0.00	14.82	151.15
6	Construction of a Check dam across Poolapatty River in S.F No.224 of Bannikulam	Morappur	Ha	15.26	0.00	0.00	8.10	123.50	0.00	0.00	0.00	0.00	0.00	0.00	8.10	123.50

Sl. No	Intervention	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
	Village in Karimangalam taluk of Dharmapuri District															
7	Construction of a Check dam across Varrattar River in S.F No. 179 of Siteri Village near Tholthukki in Pappireddipattytaluk of Dharmapuri District	Pappireddi patty	Ha	6.44	0.00	0.00	0.00	0.00	13.66	88.00	0.00	0.00	0.00	0.00	13.66	88.00
8	Construction of a Checkdam across Kesarikuli River in S.F No. 485 of Thirumalvadi Village Palacode taluk of Dharmapuri District	Palacode	Ha	4.53	0.00	0.00	0.00	0.00	17.00	77.00	0.00	0.00	0.00	0.00	17.00	77.00
9	Construction of a Check dam across Vaniyar River in S.F No.299 of Alapuram Village in Pappireddipatty taluk of Dharmapuri District	Pappireddi patty	Ha	4.09	0.00	0.00	0.00	0.00	41.28	168.75	0.00	0.00	0.00	0.00	41.28	168.75
10	Construction of a check dam across Nagavathy River near Tholur in S.F.No:112 in Chinnampalli village of Pennagaram taluk in Dharmapuri District	Pennagaram	Ha	13.99	0.00	0.00	0.00	0.00	0.00	0.00	10.01	140.00	0.00	0.00	10.01	140.00
11	Construction of a Checkdam across Thoppaiyar River near Pappampatty in S.F no 335 of Kammampatty Village in Nallampalli Taluk of Dharmapuri District	Nallampalli	Ha	16.96	0.00	0.00	0.00	0.00	0.00	0.00	9.17	155.40	0.00	0.00	9.17	155.40

Sl. No	Intervention	Blocks covered	Unit	Unit cost	2017-18		2018-19		2019-20		2020-21		2021-22		Total	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
12	Construction of a Check dam across Kesarikuli River in S.F No. 451 of Thirumalvadi Village Palacode taluk of Dharmapuri District	Palacode	Ha	4.87	0.00	0.00	0.00	0.00	0.00	0.00	16.43	80.00	0.00	0.00	16.43	80.00
13	Construction of a Checkdam across Semmandakuppam River in S.F No.53 of Pallipatty Village in Harur taluk of Dharmapuri District	Morappur	Ha	4.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.21	94.00	19.21	94.00
14	Construction of a Checkdam across Varattupallam in S.F No. 236 of Pavalanthur Village in Pennagaram taluk of Dharmapuri District	Pennagaram	Ha	12.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.64	68.68	5.64	68.68
15	Construction of a Check dam across Kesarikuli River in S.F No. 29 of Seeriyampatty Village Palacode taluk of Dharmapuri District	Palacode	Ha	96.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.43	234.60	2.43	234.60
	Total					**566.08**		**337.65**		**333.75**		**375.40**		**397.28**		**2010.16**

B1-Dharmapuri, B2-Harur, B3-Karimangalam, B4-Morappur, B5-Nallampalli, B6-Palacode, B7-Pappireddipatti, B8-Pennagaram

4.11. Cooperatives

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

Project components

- Construction of compound wall, office building renovation and furniture (All blocks)
- Construction of office building (All blocks except Harur block)
- Modern counter (Dharmapuri, Harur, Karimangalam, Morappur, Nallampalli block)
- Air conditioner (All blocks except Pennagaram block)
- Construction of night watchman room (Dharmapuri, Karimangalam block)
- Godown renovation (All blocks except Karimangalam block)
- Processing unit and electronic weigh bridge (Pappireddipatti block)
- Agro service centre shed (All blocks except Dharmapuri, Karimangalam block)

Budget

The budget requirement for fulfilling the above interventions is **₹. 1796.04 Lakhs (Table 4.27)**.

Expected outcome

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

Implementing agency

Department of Cooperative Societies will be implementing the project.

Table 4.27 Budget Requirement for Cooperatives in Dharmapuri District **(₹ in lakhs)**

Sl. No	Co-operation	Blocks covered	2017-18		2018-19		2019-20		2020-21		2021-22		Total Amount	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Agro Service Centre Shed	All blocks except B1, B3	0	0	0	0	5	13.75	3	9.27	2	2.8	10	25.82
2	Construction of Compound wall	All blocks	27	285.12	35	259.14	28	258.38	3	15.9	2	13.3	95	831.84
3	Construction of Night watchman room	B1, B3	1	8.5	1	1.4	1	3	0	0	0	0	3	12.9
4	Construction of Office Building	All blocks except B2	19	381	0	0	0	0	0	0	0	0	19	381
5	Construction of Electronic Weigh bridge	B7	1	24.67	0	0	0	0	0	0	0	0	1	24.67
6	Establishment of Processing unit	B7	2	27.83	0	0	0	0	0	0	0	0	2	27.83
7	Renovation of Godown	All blocks except B3	6	34.43	3	9	2	12	3	11.25	0	0	14	66.68
8	Renovation of Office Building	All blocks	12	58.61	4	37.8	0	0	0	0	0	0	16	96.41
9	Strengthening of Cooperation Centres (Furniture's, Solar panel, Modern counter, Xerox machine, Air Conditioner, CCTV Camera, Bore well, Generator, UPS Battery, Cash Counting Machine, Invertor, Jewel Weighing Machine, Packing Machine, Purchase of computer and peripherals, 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	66	210.18	35	77.62	12	33.09	2	8	0	0	115	328.89
	Grand Total			**1030.34**		**384.96**		**320.22**		**44.42**		**16.1**		**1796.04**

B1-Dharmapuri, B2-Harur, B3-Karimangalam, B4-Morappur, B5-Nallampalli, B6-Palacode, B7-Pappireddipatti, B8-Pennagaram

Table 4.28 Consolidated Budget for Dharmapuri District

(₹ in lakhs)

Sl. No.	Sectors	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1	Agriculture	4854.40	4937.06	5078.57	5847.71	5895.05	26612.52
2	Horticulture	2416.36	2399.31	3059.52	2472.66	2464.41	12812.26
3	Agricultural Engineering	3089.12	2856.62	2831.66	2832.11	2759.26	14368.77
4	Agricultural Marketing	3232.00	161.00	231.00	193.00	194.00	4011.00
5	Seed and Organic Certification	18.36	2.40	2.40	3.00	3.00	29.16
6	Animal Husbandry	1390.35	888.75	688.75	578.75	438.75	3985.35
7	Dairy Development	624.00	1899.00	1080.75	843.75	2396.25	6843.75
8	Fisheries	66.98	110.94	200.70	156.46	146.15	681.23
9	Fisheries Research (TNFU)	0.26	290.56	50.26	0.26	0.26	341.60
10	Public Welfare Department (WRO)	566.08	337.65	333.75	375.40	397.28	2010.16
11	Civil Supplies and Cooperatives	1030.34	384.96	320.22	44.42	16.10	1796.04
	Total	**17288.25**	**14268.25**	**13877.58**	**13347.52**	**14710.51**	**73491.84**

The total budget requirement for the implementation of various interventions by different departments in Dharmapuri district is **₹ 73491.84 Lakhs.**


KARNATAKA
KERALA
SRI LANKA