



GOVERNMENT OF KERALA



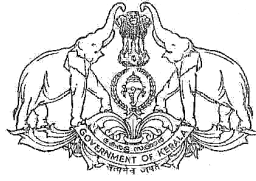
EVALUATION STUDY ON SOIL CONSERVATION IN KERALA 2018-19



**DEPARTMENT OF ECONOMICS AND
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Government of Kerala

Evaluation Study on Soil Conservation in Kerala 2018-19

DEPARTMENT OF ECONOMICS & STATISTICS

THIRUVANANTHAPURAM

2021

PREFACE

Soil conservation assumes importance in the planning process. Heavy soil erosion can cause a decline in soil fertility, water supply and crop yields. It affects the productivity of land and decreases the production of food, feed, fiber and fuel. Erosion can adversely cause the socio-economic conditions of the state to be affected. The state Government is implementing various soil conservation measures through the soil Survey and soil conservation department, local bodies, etc., for maintaining the fertility and moisture content of the surface soil.

The Evaluation study of soil conservation schemes has been done by the Directorate of Economics and Statistics for all districts except Wayanad. This report relates to the survey results of 15 schemes completed by the Soil Survey and Soil Conservation Department and various other agencies. The field survey was conducted during the agricultural year 2018-2019 by the Statistical Investigators under the supervision of the Research Officer and Deputy Director in the District Offices. The schemes implemented and completed before three years are taken up for study so that full benefit of the scheme could be evaluated and assessed. This evaluation study results may be much of use to Administrators, Statisticians, Research Scholars, Agricultural Geologists and others interested in the subject.

I acknowledge my thanks to the staff of Soil Survey and soil Conservation and other local bodies for their valuable suggestion and whole hearted co-operation for the successful conduct of the survey in the state.

Thiruvananthapuram,
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CONTENTS

Chapter-1		Pages	
1.1	Introduction	1	
1.2	Objectives and Methodology	1	
1.3	Selection of Scheme & beneficiaries	2	
1.4	District Wise Schemes	3	
	Table 1.1	Statement showing list of selected schemes	7
	Graph 1.1	District wise Implemented Area in Hectors	8
	Graph 1.2	District wise No. of Beneficiaries	8
	Table 1.2	Statement showing stratum wise distribution of selected beneficiaries	9
	Graph-1.3	District wise - Stratum wise selected beneficiaries	9
	Table-1.3	Statement showing stratum wise distribution of selected Control Plots	10
	Graph -1.4	Statement showing stratum wise distribution of selected Control Plots	11
1.5	Problems of soil erosion	12	
1.6	Responsibility for prevention of erosion	13	
1.7	Methods of soil conservation programme	13	
1.8	Land use particulars of the state	13	
	Chapter -2		
2.1	Impact of soil conservation programme on land use and crop pattern		
	Table- 2.1	District wise details of treated area, cost and number of beneficiaries	16
	Graph -2.1	District wise area of selected scheme	17
2.2	Cost Benefit Analysis in the Soil Conservation Programme		17
	Graph-2.2	District Wise details of Cost in Rs.	18
	Table- 2.2	District wise details of number of beneficiaries in General, SC&ST separating APL & BPL in scheme area and number of farmers in control plot	19
	Table- 2.3	Details of water resources collected from beneficiaries.	20
	Table- 2.4	Water level in wells during April/May of beneficiaries in scheme area.	21
	Table- 2.5	Scarcity of l water of beneficiaries in scheme area & in control plot during survey period	22

2.3	Land use particulars of Beneficiary plots		23
	Table- 2.6	Land use particulars of beneficiary plot	24
	Graph -2.3	Percentage of Current fallow over total area before and after SC work	25
	Graph -2.4	Percentage of area Cultivated over total area before and after SC work	25
	Table- 2.7	Land use particulars of Control plots	26
	Graph -2.5	Percentage of area cultivated over total area in control plots	26
	Graph -2.6	Percentage of area not cultivated and other use over total area in control plots	27
	Graph -2.7	Percentage of current fallow over total area in control plots.	27
2.4	Crop pattern		28
2.5	Contour farming		28
	Table- 2.8	Area wise Crop Pattern before and after SC work.(Area in acres)	30
	Graph -2.8	Percentage of area under perennial crops before and after SC work	31
	Graph -2.9	Percentage of area under seasonal crops before and after SC work	32
	Table- 2.9	Area under selected perennial crops before and after SC work with percentage of variation.	34
	Table- 2.10	Area under selected seasonal crops before and after SC work with percentage of variation.	39
	Table- 2.11	Details of Crop wise production and value of perennial crops	44
	Table- 2.12	Crop wise yield and value of seasonal crops.	55
	Table- 2.13	Quantity and value of selected perennial and seasonal crops	62
	Table- 2.14	Total income, expenditure and net income of beneficiaries.	64
	Graph -2.10	Net income of beneficiaries before and after SC work.	65
	Table- 2.15	Total income, expenditure and net income of Control plots	66
	Graph -2.11	Income & Expenditure in Control Plots	67
	Graph -2.12	Net Income of Control Plot in Rupees	67
	Table- 2.16	Net Income per acre before and after soil conservation programme.	68

	Graph -2.13	Cultivated Area in Acre before and After SC work	69
	Graph -2.14	Net income in Rupees before and After SC work	69
	Graph -2.15	Net income per acre in rupees Before and After SC work	70
	Table- 2.17	Income per acre in the Control Plots	71
	Graph -2.16	District Wise cultivated Area in Acres in the Control Plots	72
	Graph -2.17	District Wise Net Income per Acre in rupees in Control Plots	73
2.6	Cost Benefit Analysis of the Soil Conservation Programme		74
	a	Extension of area under cultivation	75
	b	Increase in production	75
	c	Diversification of cropping pattern	75
Chapter 3			
3.1	General Observations		76
	Table- 3.1	Opinion of beneficiaries about effectiveness of bunds, Fertility of the soil and Moisture retention .	77
	Table- 3.2	Opinion of beneficiaries about Conditions of Bund	78
	Table-3.3	Opinion of beneficiaries about the Scheme Area	79
	Table- 3.4	Number of beneficiaries having awareness on Soil and Water Conservation Schemes	79
	Table- 3.5	Potentiality of Land in Scheme Area	80
	Table- 3.6	Potentiality of Land in Control Plots	81
	Table- 3.7	Occupational Profile of beneficiaries in the Scheme Area	82
	Table- 3.8	Occupational Profile of beneficiaries in the Control Plots	82
3.2	Occupational Profile		83
3.3	Summary of Findings		83
	Table- 3.9	Cropping Intensity in Scheme Area	84
3.4	Cropping Intensity		85
	Graph 3.1	Total area Cropped Before and After SC Work	85
	Conclusion		86

CHAPTER – I

1.1 Introduction

Soil conservation includes not only control over erosion but all those measures like correction of soil defects, proper crop rotations, and irrigations etc. which aim at maintaining the productivity of the soil at high level. In this sense, soil conservation is closely allied to improvement of land use in general. Considering the importance of soil conservation our plan provisions enhanced for optimizing the use of land resources. An evaluation study in this front can be helpful for developing much more suitable conservation measures.

1.2 Objectives and methodology

The main objectives of the evaluation study are:

1. To assess the benefit of the programme particularly in relation to the cultivation of seasonal and perennial crops.
2. To throw light on various aspects like cost benefit analysis, production potential etc.
3. To estimate the extent of additional area brought under cultivation consequent on the implementation of the programme.
4. To study the effects of the work carried out by the Soil Conservation Department in this direction.

For this, schemes were selected which were implemented three years prior to the survey i.e. during 2015-16 or earlier in the State by the Soil Survey and Soil Conservation Department. The study covered all the districts of the State except Wayanad. The list of beneficiaries under each scheme is collected from the implementing Department. The holdings are stratified into four stratum.

Holdings with less than 1 acre	-	Stratum I
Holdings with 1 acre or more but less than 3 acres	-	Stratum II
Holdings with 3 acres or more but less than 5 acres	-	Stratum III
Holdings with 5 acres and above	-	Stratum IV

1.3 Selection of Scheme & beneficiaries

First of all, one scheme is selected which were executed three years prior to the survey; i.e, during the year 2015-16; In the absence of such schemes which can be selected prior to the year concerned. The list of schemes is collected from the District Soil Conservation Office and from which one is selected using simple random sampling method.

All beneficiaries are selected for detailed survey. For comparison 20% of the total beneficiaries are also selected from the outside of treated area, where the soil conservation works are not carried out under any scheme.

1.4 DISTRICT WISE SCHEMES

1. Thiruvananthapuram

Thannimoodu watershed RIDF XVII.

It was commenced in 2012 and completed in 2016, located in Nanniyode Panchayath, Vamanapuram Block in Nedumangad Taluk. The aim of the scheme was the improvement of environmental, ecological and economic development status of the people by implementing scientific and planned watershed measures. Number of Beneficiaries is 104 with total area 550 ha and 430 ha as treated area of land.

2. Kollam

Mannayem Watershed project-RIDF-15

Total area treated in Mannayem watershed 330 Ha of land with 283 beneficiaries. The scheme started in 2010 and completed in 2016. The stipulated area located in Kalluvathukal Panchayath in Ethikkara Block, Kollam Taluk, Kollam Dist.

3. Pathanamthitta

Arayanjilimann watershed -RIDF-16

It is implemented in Ranni Taluk of Pathanamthitta District and the scheme consists of with 141 beneficiaries with total area 600 ha and 540 ha as treated area.

It started in 2011 and completed in 2016. The main cultivation in this region are Paddy, Tapioca, Plantain, Betalleaves, Arecanut ,pepper, Rubber and Coconut. The goal of the scheme was to save from the agriculture loss due to flood and drought.

4. Alappuzha

Pallipuram-Thaikkattussery vellakettu nivarana padhathi Phase - I and II

Pallipuram-Thaikkattussery vellakettu nivarana padhathi Phase - I was started in 2011 and completed in 2016, and consist of 99 beneficiaries with total area 350 ha and 336ha as treated area. Phase - II consists of total 208 ha and treated area is 175 ha with 39 beneficiaries and started in 2012 and completed in 2016. Unscientific way of farming and the lack of activity to control soil erosions lead to the scarcity of water eventhough these regions are levelised with 300 cm rainfall. So the Agriculture production and productivity are in low range.

5. Kottayam

Neeloor water shed

Neeloor water shed scheme stated in 2012 and comprises of 300 Ha and the treated area is stipulated as 260 ha of land; located in Lalam block, Meenachil Taluk, Kottayam district. 150 Beneficiaries are included in the scheme and completed in 2016. The aim of the scheme was the improvement of environmental, ecological and economic development status of the people by implementing scientific and planned watershed measures.

6. Idukki

Valliyankavu Neerthada Padhathi RIDF- XIX

Valliyankavu Neerthada Padhathi implemented in Peerumedu Taluk in Idukki

district. The total area covered is 350 ha and treated area is 348 ha of land and the total beneficiaries 196. It is started in 2014 and completed in 2016.

7. Ernakulam

Attuvelikuzhi Thodu watershed project (RIDF-17) and Kalamboorthodu flood control & drainage protection (RIDF-19)

This schemes are in Pambakuda gramapanchayath, Muvattupuzha Thaluk in Ernakulam district.

Attuvelikuzhi Thodu watershed project was implemented during 2012 to 2016, comprising of 63 beneficiaries with an area of 350 ha of land. Kalam boor thodu flood control & drainage protection project was implemented during 2014 to 2017, comprising of 75 beneficiaries with an area of 55 ha of land.

8. Thrissur

MallankuzhyneerthadaPadhathi(RIDF-IX)

The geographical area of watershed is 1050 ha the scheme area is stipulated for the implementation of the project in 790 ha and which comprises of 125 beneficiaries. It is started in 2005 with an aim to control drought and soil erosion and completed in 2014.

9. Palakkad

Chulliyar Water Shed-XVII

It is a project in Muthalamada village Muthalamada panchayath, Kollengod block Chittur Thaluk in Palakkad district comprising of 101 beneficiaries covered 399ha of land. The project had taken 3 yrs to complete till 2015.

10. Malappuram

Ammanamchola watershed RIDF XVII

This scheme started in 2012 and completed in 2016 and which is located in Mankada grama panchayath, Perithalmanna Taluk in Malapuram district. It is comprised of the total area as 350 ha and 300 ha land as treated as the area involves 104 beneficiaries.

11. Kozhikode

Aanayodu neerthada padhathi

This scheme started in 2012 and completed in 2016 and implemented in Thuneri Block, Vadakara Taluk, Kozhikode District. The treated area was 285 ha of lands comprising of 188 beneficiaries. Different activities were involved in the scheme to conserve the soil and safe guarding the water sources

12. Kannur

Malur neerthadapadhathi RIDF-14

Malur watershed scheme was started in 2011 and completed in 2015 comprising of 150 beneficiaries with total area 721 ha and treated area is in 490 ha of land. It is located in Sivapuram village, Peravoorblock, Thalasseri Taluk in Kannur district.

13. Kasargod

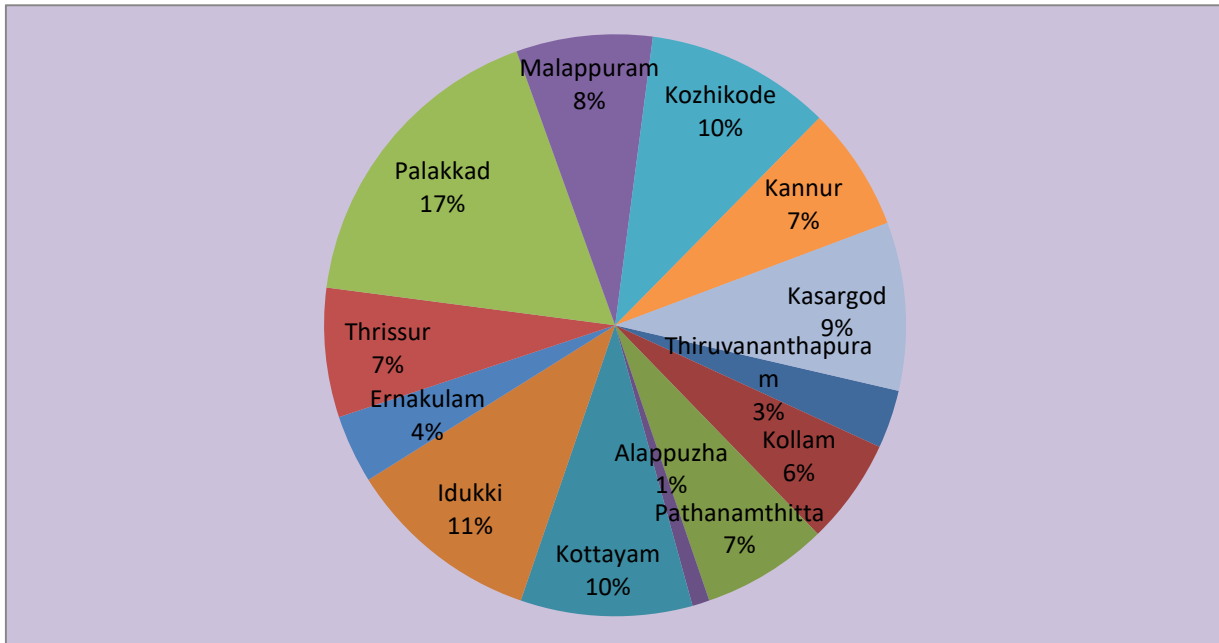
Paramba Neerthada scheme RIDF- XIX

Paramba Neerthada scheme is situated in Maloth, West Eleri village on Vellerikunnd Taluk, Kasargod District. The Scheme area under the water shed is 380ha and 171 beneficiaries. The project starts from 2014 and completed in 2016. The project achieved 100% of physical as well as financial average

Table-1.1 List of selected schemes

Sl No	District Name	Name of Selected Scheme	Total Area in the scheme (in acre)	No of beneficiaries	No of control plots
1	Thiruvananthapuram	Thannimoodu watershed RIDF XVII	93.020	104	21
2	Kollam	Mannayam Watershed project RIDF-15	168.470	283	57
3	Pathanamthitta	Arayanjilimann watershed -RIDF-16	201.290	141	28
4	Alappuzha	Pallipuram- Thaikkattusseryvellakettunivaranapadha thi Phase - I and II	27.350	138	28
5	Kottayam	Neeloor water shed	273.944	150	30
6	Idukki	Valliyankavuneerthadapadathathi RIDF-19	310.540	196	40
7	Ernakulam	AttuvelikuzhiThoduwatershedproject (RIDF-17) and kalamboorthodu flood control & drainage protection (RIDF- 19)	108.650	138	31
8	Trissur	Mallankuzhy water shed (RIDF IX)	206.170	125	25
9	Palakkad	Chulliyar Water Shed-XVII	499.822	101	20
10	Malappuram	Ammanamcholawatershed RIDF-17	216.790	104	22
11	Kozhikode	Anayodu Watershed Scheme	295.420	188	38
12	Kannur	Malur watershed RIDF-14	197.910	150	30
13	Kasargod	ParambaNeerthadascheme RIDF-19	267.570	171	34
	Total		2866.946	1989	404

Graph 1.1 District wise Implemented Area in Hectors



Graph 1.2 District wise No .of Beneficiaries

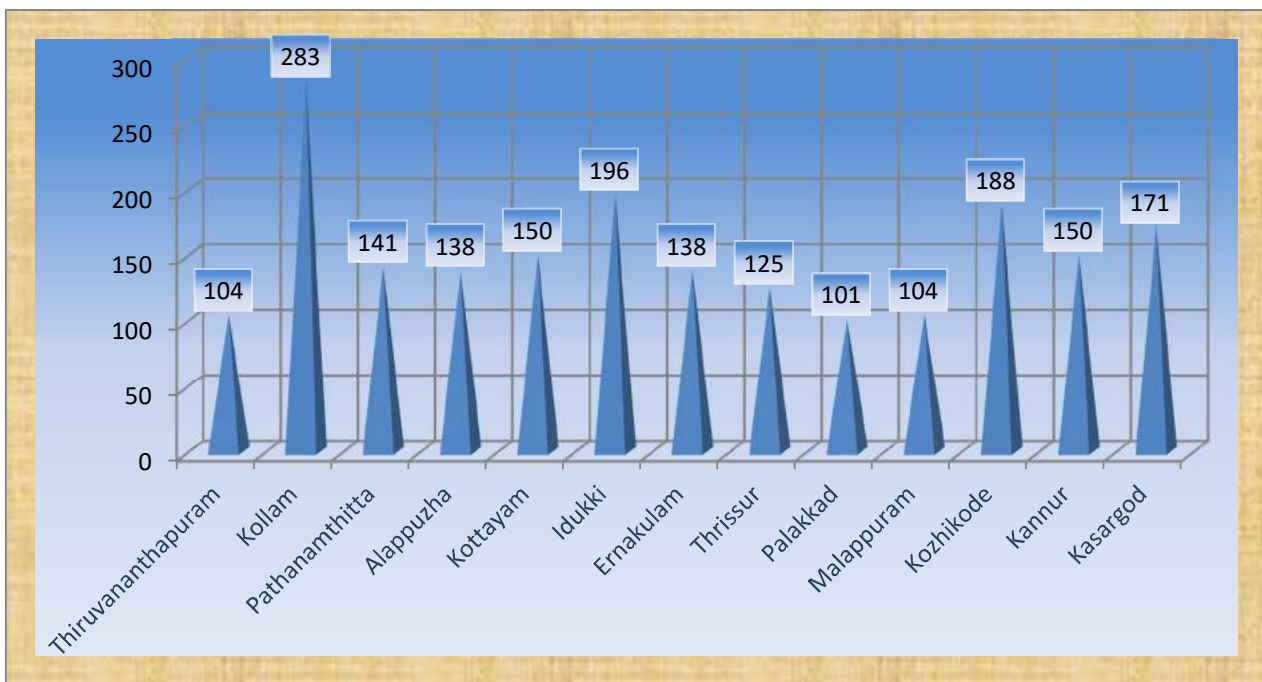


Table-1.2 Statement showing stratum wise distribution of selected beneficiaries (area in acres)

Sl no	Districts	No of schemes selected	Stratum 1		Stratum 2		Stratum 3		Stratum 4		Total	
			No:	Area	No:	Area	No:	Area	No:	Area	No:	Area
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Thiruvananthapuram	1	80	38.520	19	29.760	3	11.090	2	13.650	104	93.020
2	Kollam	1	233	87.320	46	68.380	4	12.770		0.000	283	168.470
3	Pathanamthitta	1	52	38.350	72	94.650	17	68.290		0.000	141	201.290
4	Alappuzha	2	134	21.310	4	6.040		0.000		0.000	138	27.350
5	Kottayam	1	36	21.115	88	153.725	25	93.937	1	5.167	150	273.944
6	Idukki	1	59	31.950	113	180.210	21	76.870	3	21.510	196	310.540
7	Ernakulam	2	104	58.410	33	47.240	1	3.000		0.000	138	108.650
8	Thrissur	1	28	17.770	97	188.400		0.000		0.000	125	206.170
9	Palakkad	1	7	5.657	31	76.396	28	122.731	35	295.038	101	499.822
10	Malappuram	1	39	19.790	41	75.700	16	61.810	8	59.490	104	216.790
11	Kozhikode	1	60	30.280	100	151.240	24	91.560	4	22.340	188	295.420
12	Kannur	1	48	26.920	90	128.080	11	37.810	1	5.100	150	197.910
13	Kasargod	1	51	30.020	101	158.760	16	61.350	3	17.440	171	267.570
Total		15	931	427.412	835	1358.581	166	641.218	57	439.735	1989	2866.946

Graph 1.3 District wise - Stratum wise selected beneficiaries

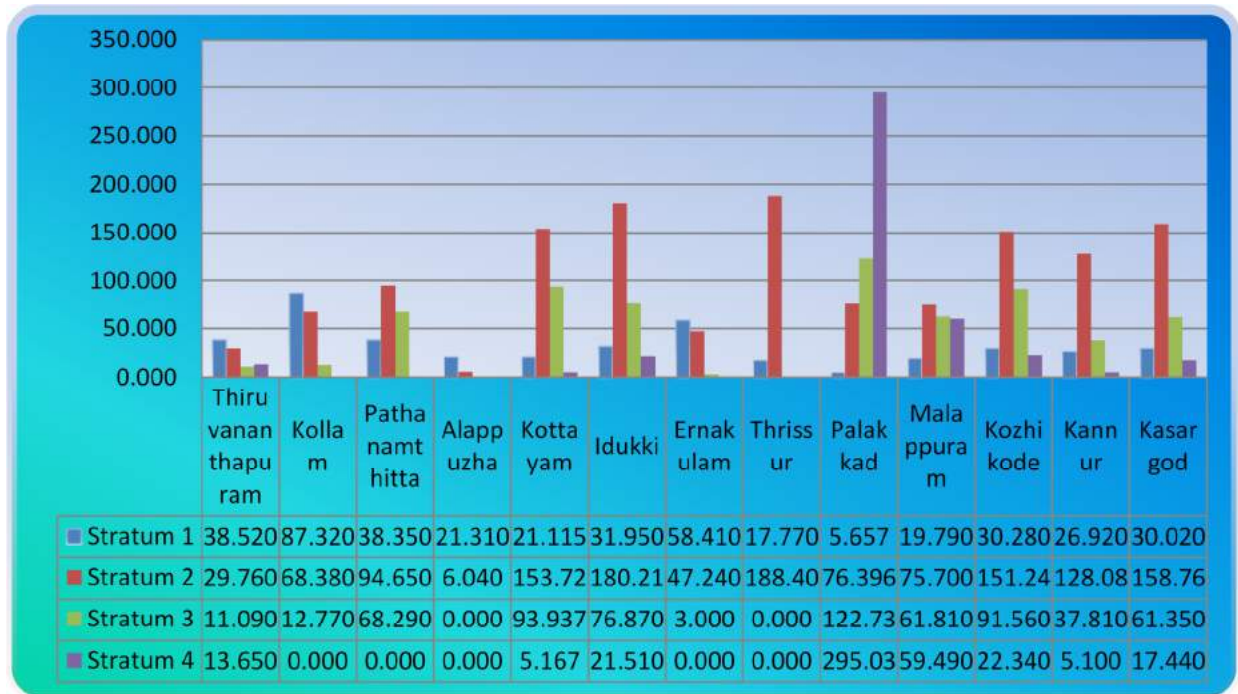
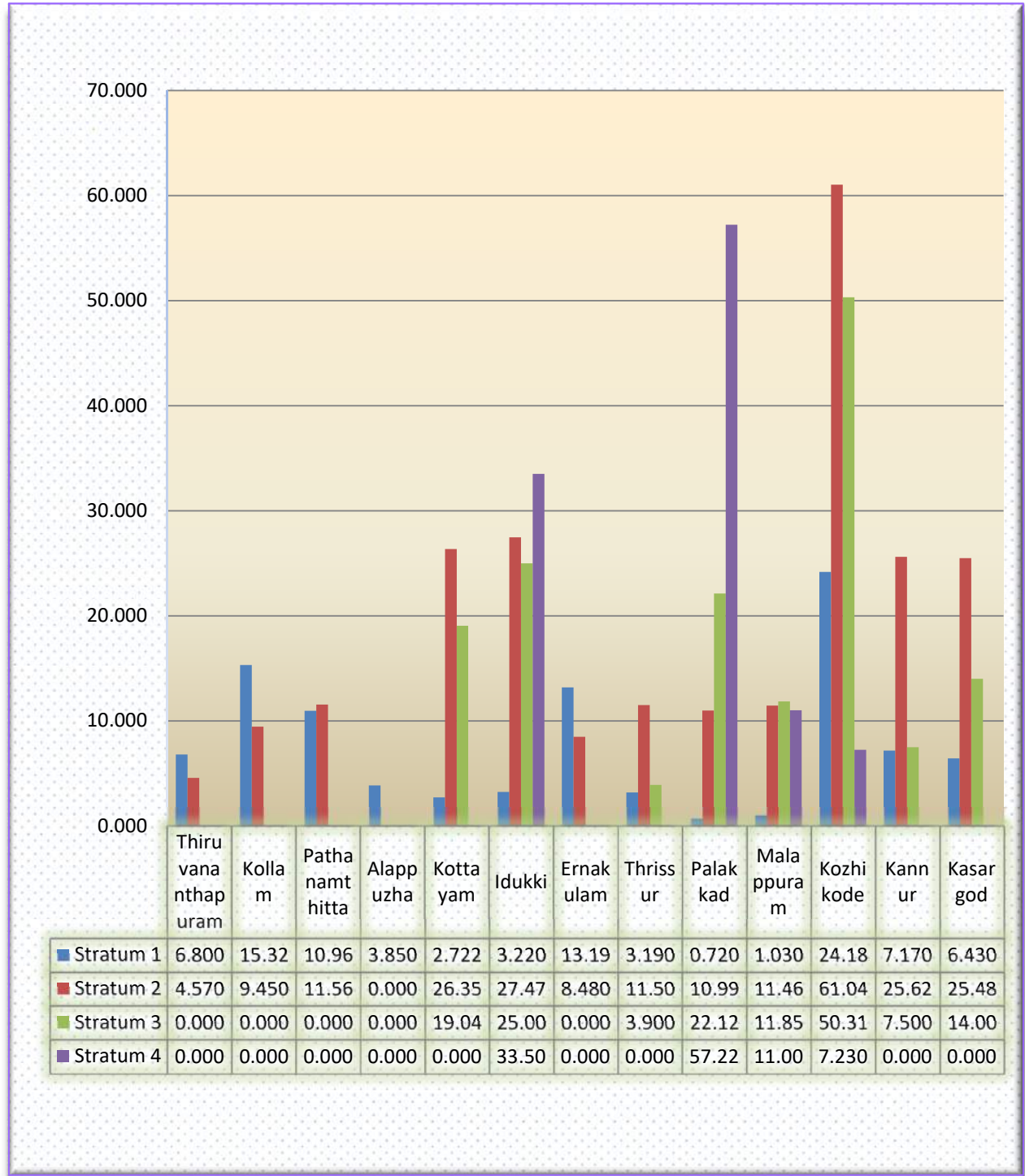


Table-1.3 Statement showing stratum wise distribution of selected Control Plots
(Area in acres)

Sl no	Districts	No of schemes selected	Stratum 1		Stratum 2		Stratum 3		Stratum 4		Total	
			No:	Area	No:	Area	No:	Area	No:	Area	No:	Area
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Thiruvananthapuram	1	17	6.800	4	4.570		0.000		0.000	21	11.370
2	Kollam	1	50	15.320	7	9.450		0.000		0.000	57	24.770
3	Pathanamthitta	1	21	10.960	7	11.560		0.000		0.000	28	22.520
4	Alappuzha	2	28	3.850	0	0.000		0.000		0.000	28	3.850
5	Kottayam	1	7	2.722	18	26.354	5	19.046		0.000	30	48.122
6	Idukki	1	8	3.220	19	27.470	7	25.000	6	33.500	40	89.190
7	Ernakulam	2	23	13.190	8	8.480		0.000		0.000	31	21.670
8	Thrissur	1	16	3.190	8	11.500	1	3.900		0.000	25	18.590
9	Palakkad	1	1	0.720	6	10.990	6	22.120	7	57.220	20	91.050
10	Malappuram	1	9	1.030	8	11.460	3	11.850	2	11.000	22	35.340
11	Kozhikode	1	11	24.180	21	61.040	5	50.310	1	7.230	38	142.760
12	Kannur	1	11	7.170	17	25.620	2	7.500		0.000	30	40.290
13	Kasargod	1	14	6.430	16	25.480	4	14.000		0.000	34	45.910
Total		15	216	98.782	139	233.974	33	153.726	16	108.950	404	595.432

Graph -1.4 Statement showing stratum wise distribution of selected Control Plots (Area in acres)



The total number of beneficiaries comes to 1989. About 46.81% of the beneficiaries are having holding less than one acre, 41.98% are having holdings one acre or more but less than 3 acres, 8.35% are having holding 3 acres or more but less than 5 acres and 2.87% of the beneficiaries are having holdings of more than 5 acres. In order to compare the benefits of the implementation of Soil Conservation Programmes, control plots were also selected. Its distribution is 53.47%, 34.41%, 8.17% and 3.96% respectively under Stratum I, II, III and IV.

Following schedules were used for collecting the details from beneficiary plots and control plots.

Schedule I	-	List of selected beneficiaries
Schedule II	-	Detailed study of the selected beneficiaries
Schedule III	-	List of control plots
Schedule IV	-	Detailed enumeration of the control plots
Table A	-	Basic facts about the area and the people in general

1.5 Problems of Soil Erosion

Unlike other parts of the country, Kerala has some unique land form related aspects such as over 90% of the geographical area is either in midland or high land category. The average rate of soil erosion in the country, to the tune of 16.3t/ha/yr – has been alarming and has to be checked. In hilly areas, the rate is much higher, i.e. about 30 to 50 t/ha/yr/, considering that about 5cm to 10 cm of the top soil (ranging from 0.05m to 0.1 m depth) is being lost every year due to lead management practices. It has been estimated 5-9 lakh hectares of cultivated land in the State is having soil erosion problems.

1.6 Responsibility for prevention of erosion

Land which is one of the precious gifts of the nature embodies soil, water and associated flora and fauna involving the total ecosystem. The topography of the land plays the most important role in soil erosion. Kerala is a narrow strip of land (width varies from 15 Km to 120 Km) situated on the Western Slopes of the Western Ghats (the Sahyadri). The very steep slopes facilitate quick runoff of the rainfall resulting in low time of concentration poor ground water recharge. This high velocity of the surface flow causes soil displacement and movement. The surface soil gets washed away along with the running water. The major portion of the state is laterite and as such is more prone to erosion. The different forms of soil erosion cause huge damage and reported casualties every year due to landslides in monsoon season.

1.7 Methods of Soil Conservation Programme

Soil Conservation practices are mainly grouped into two categories viz. Agronomical and Engineering measures. Agronomic measures are comparatively less costly such as contour ploughing / optimal fertilizing, organic farming, etc. Engineering measures include contour bunding, land leveling, construction of check dams and water harvesting structure, etc. At present various watershed programmes are being implemented in the state for effective preservation and management of the natural resources.

1.8 Land Use Particulars of the State

There has been a significant change in the land use of the state over the years. On many occasions the change is adversely affecting the environment by way of intensified

soil erosion, water logging, conversion of paddy lands, etc. are some of the examples. Cultivation of very steep lands without adopting scientific conservation practices lead to heavy soil erosion. Use of chemicals on a large scale for agricultural productions leaves dangerous quantities of the residues in the soil and the water sources.

Chapter – II

2.1 Impact of Soil Conservation Programme on Land Use and Crop Pattern

Before 1994-95, soil conservation programmes were executed by Department of Agriculture/Soil and Water conservation.. It create employment to rural people due to soil and water conservation works and increase the income of people and reduced migration of labour. Soil and water conservation structures in arable and non-arable lands reduced soil erosion, soil loss, run-off water etc. and increased rainwater infiltration, ground water table, surface storage, cropping intensity, productivity of crops, etc. As long as works were carried out based on funding by Government and subsidies provided for supporting income generating enterprises, it improve the life and lively hood of the poor .

After 1994-95, there was a proposal from the Government that people should contribute 5-10% or more towards soil and water conservation works. Farmers contributed in some of the watersheds based on the direct benefits derived from such activities.

Soil can be well maintained through bunding (mechanical and mechanical-cum-vegetative barriers), deep ploughing, levelling, smoothening etc. Bunding was accepted by farmers to strengthen existing bunds without any obstruction in their plot. Moisture conservation on measures increased yield magically.

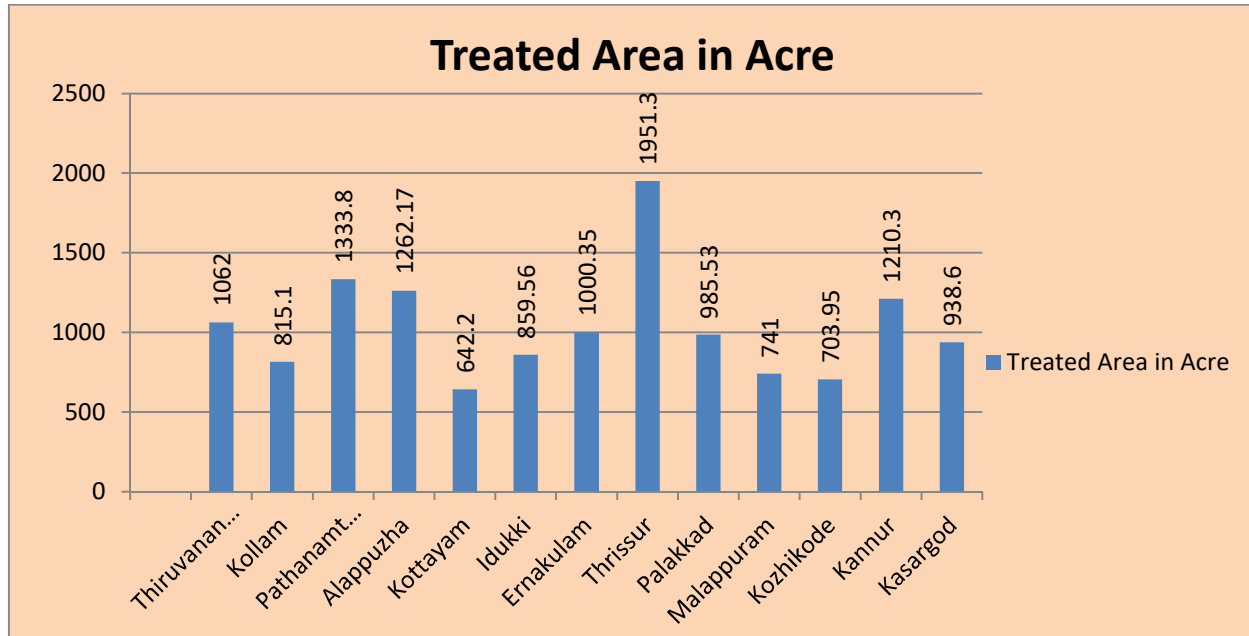
Farmers in different parts reported that the fact that the sustainability of agriculture is only possible by soil and water conservation measures. They also reported that soil erosion can be minimized and irrigation potentials can be improved through soil and water conservation measures. In addition, vegetation covering the soil is a must for minimizing soil loss even further.

Table 2.1 gives number of beneficiaries selected in each district and cost of the selected schemes. Also gives total area covered.

Table-2.1 District wise details of treated area in acres, cost and number of beneficiaries of selected schemes

Sl No:	District	Treated Area in Acres	Total cost of project work in Rs	Number of beneficiaries	
				Total	Selected
1	2	3	4	5	6
1	Thiruvananthapuram	1062.000	6342182.00	104	104
2	Kollam	815.100	5232000.00	283	283
3	Pathanamthitta	1333.800	8725540.00	141	141
4	Alappuzha	1262.170	27595672.00	138	138
5	Kottayam	642.200	9000000.00	150	150
6	Idukki	859.560	10936999.00	196	196
7	Ernakulam	1000.350	9001348.00	138	138
8	Thrissur	1951.300	4491802.00	125	125
9	Palakkad	985.530	9651156.00	101	101
10	Malappuram	741.000	7148017.00	104	104
11	Kozhikode	703.950	6000000.00	188	188
12	Kannur	1210.300	9536105.00	150	150
13	Kasargod	938.600	11247000.00	171	171
Total		13505.86	124907821	1989	1989

Graph-2.1 District wise Area of selected Scheme



2.2 Cost Benefit Analysis in the soil Conservation Programme

Cost benefit analysis is a method that can be used to evaluate the effects of goods produced by agriculture on the total welfare of the society. The effects are made to values the cost and benefits due to different policy measures in monetary terms .Improving agricultural productivity across the sectors are important in order to improve the income of the farmers.

The better productivity through the efficient utilization of resources reduce the cost and realize the fair prices for the outputs . In this study it investigates cost and benefits associated with adaptation approaches employed by farmers with various systems and methods expressing in monetary terms and identify the most effective and economic option based on general information and responses of farmers.

Graph-2.2 District wise details of Cost in Rupees for selected schemes

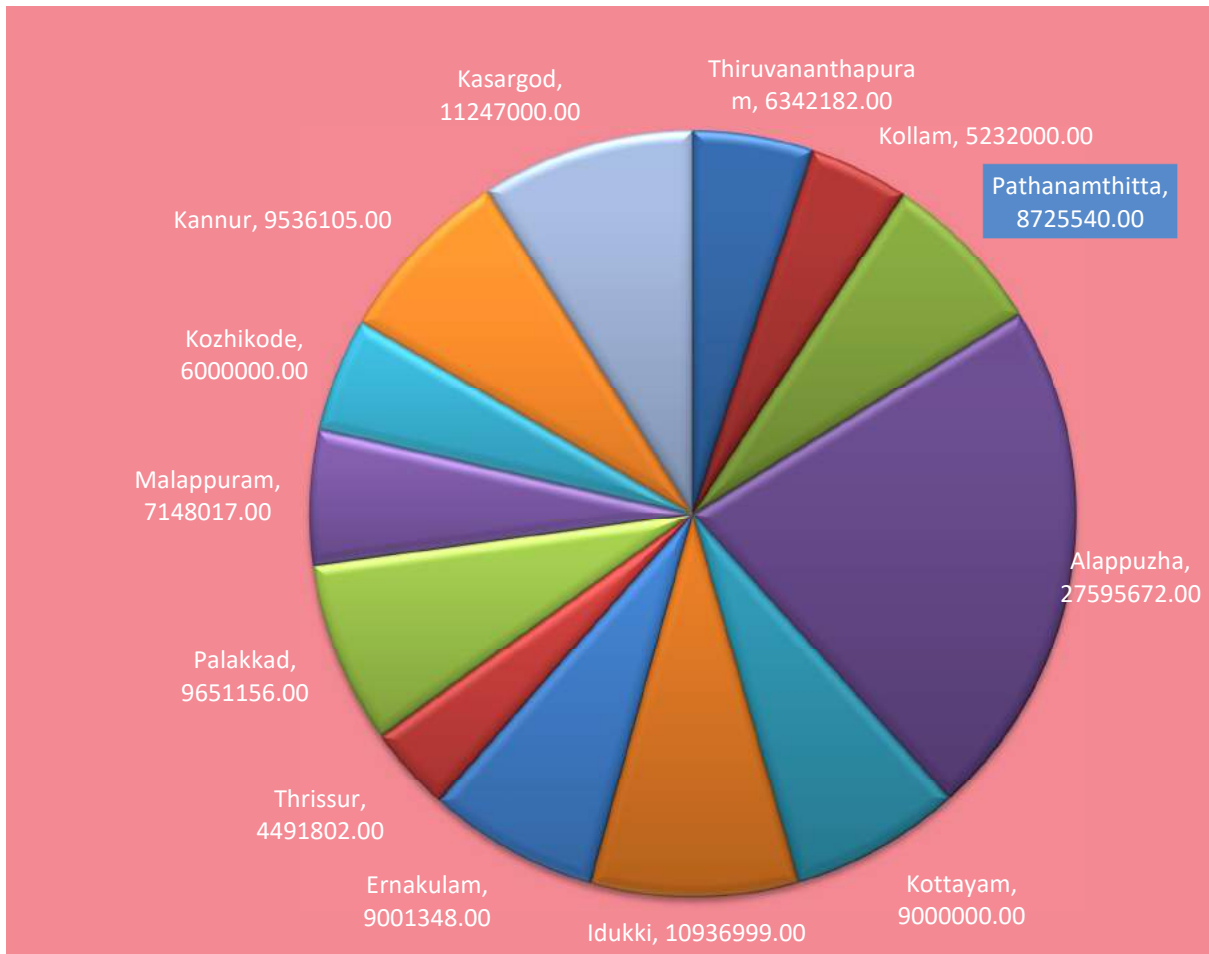


Table-2.2 District wise details of number of beneficiaries in General, SC & ST Separating APL & BPL in scheme area and number of farmers in control plot

Sl No	District	upper/middle lower layer	scheme area										control plots									
			General		SC		ST		Total		General		SC		ST		Total					
			APL	BPL	APL	BPL	APL	BPL	APL	BPL	APL	BPL	APL	BPL	APL	BPL	APL	BPL				
1	Thiruvananthapuram	1	39	2	0	1	1	0	40	3	4	0	0	0	0	0	4	0				
		2	35	4	0	0	0	0	35	4	8	1	0	0	0	0	8	1				
		3	20	2	0	0	0	0	20	2	6	2	0	0	0	0	6	2				
2	Kollam	1	3	1	0	0	0	3	1	0	0	0	0	0	0	0	0	0				
		2	198	64	0	17	0	0	198	81	30	17	0	10	0	0	30	27				
		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
3	Pathanamthitta	1	6	4	0	0	0	6	4	0	0	0	0	0	0	0	0	0				
		2	39	34	3	4	2	35	44	73	20	5	0	1	0	2	20	8				
		3	10	3	0	1	0	0	10	4	0	0	0	0	0	0	0	0				
4	Alappuzha	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
		3	45	60	3	20	0	0	48	80	0	13	2	6	0	0	2	19				
5	Kottayam	1	49	4	0	0	0	49	4	11	0	0	0	0	0	0	11	0				
		2	62	3	0	0	0	62	3	10	3	0	0	0	0	0	10	3				
		3	29	3	0	0	0	29	3	4	2	0	0	0	0	0	4	2				
6	Idukki	1	32	35	1	8	0	33	43	11	6	0	0	0	0	0	11	6				
		2	65	43	0	12	0	0	65	55	17	6	0	0	0	0	17	6				
		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7	Ernakulam	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
		3	58	9	2	4	0	2	60	15	0	0	0	0	0	0	0	0				
8	Thrissur	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
		2	117	8	0	0	0	0	117	8	16	7	0	2	0	0	16	9				
		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
9	Palakkad	1	26	1	0	0	0	26	1	7	1	0	0	0	0	0	7	1				
		2	71	2	0	0	0	0	71	2	12	0	0	0	0	0	12	0				
		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
10	Malappuram	1	12	27	0	0	0	12	27	5	3	0	0	0	0	0	5	3				
		2	21	34	0	1	0	0	21	35	2	9	0	0	0	0	2	9				
		3	5	4	0	0	0	0	5	4	2	1	0	0	0	0	2	1				
11	Kozhikode	1	71	0	0	0	0	71	0	12	0	0	0	0	0	0	12	0				
		2	107	0	0	0	0	0	107	0	21	3	0	0	0	0	21	3				
		3	1	4	0	3	0	1	1	8	1	1	0	0	0	0	1	1				
12	Kannur	1	18	62	0	0	0	18	62	4	12	0	0	0	0	0	4	12				
		2	14	56	0	0	0	0	14	56	3	11	0	0	0	0	3	11				
		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
13	Kasargod	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
		2	136	33	0	0	0	2	136	35	0	0	0	0	0	0	0	0				
		3	0	0	0	0	0	0	0	0	27	7	0	0	0	0	27	7				

Table-2.3 Details of Water Resources collected from beneficiaries

District Name	Scheme Name	Number of Ponds	Number of Wells
Thiruvananthapuram	Thannimoodu watershed project	2	82
Kollam	MannayemWatershec project RIDF XV	0	162
Pathanamthitta	Arayanjilimannu Watershed	0	121
Alappuzha	pallippuramthycattusseryvellakkettunivaranaprojct phase 1&2	0	69
Kottayam	Nelloor Watershed-1	1	74
Idukki	ValliyankavuNeerthada Scheme	5	54
Ernakulam	Attuvelikuzhithodu watershed project&kalamboorthodu flood control&and trainage protection scheme	12	26
Thrissur	Mallankuzhy Watershed RIDF 1X	10	123
Palakkad	Chulliyur Watershed 20 B 39 S scheme	0	51
Malappuram	AmmanamChola RIDF 17	2	100
Kozhikode	Anayode watershed project	8	125
Kannur	Malur watershed RIDF XIV	6	145
Kasargod	Paramba watershed Scheme	18	89
TOTAL		64	1221

Table-2.4 Water level in wells (in Meters) during April/May of beneficiaries in scheme area

District	Before			After			Control Plot		
	Below 0.5m	0.5-1	1-2m	Below 0.5m	0.5-1m	1-2m	Below 0.5m	0.5-1m	1-2m
Thiruvananthapuram	56	26	0	33	49	0	8	1	4
Kollam	158	4	0	52	110	0	26	4	0
Pathanamthitta	113	8	0	107	14	0	15	23	0
Alappuzha	21	43	5	19	44	6	13	4	5
Kottayam	59	15	0	27	43	4	20	0	0
Idukki	34	20	0	22	32	0	16	9	0
Ernakulam	14	10	2	10	14	2	10	2	7
Thrissur	100	23	0	100	23	0	15	0	0
Palakkad	31	20	0	20	30	1	8	7	0
Malappuram	81	18	1	67	14	19	14	3	1
Kozhikode	47	60	18	31	49	45	28	0	0
Kannur	86	57	2	62	68	15	23	4	0
Kasargod	43	41	5	15	58	16	20	1	0

Table 2.4 Illustrates the water level in wells that have increased remarkably after the soil conservation Scheme. In Thiruvananthapuram, 26 wells were in the level of 0.5 to 1m and after the Soil Conservation work water level improved i.e.; 49 wells shows the same water level as 0.5 to 1m. Remarkable changes seen in all districts i.e.; 0.5, 0.5 to 1m and 1 to 2 meters.

Table-2.5 Scarcity of water in scheme area & in control plot during survey period

District	Before			After			Control Plot		
	0-1 month	1-2 month	>2	0-1 month	1-2 month	>2	0-1	1-2	>2
Thiruvananthapuram	39	1	42	48	1	33	7	1	5
Kollam	64	12	86	96	14	52	14	2	14
Pathanamthitta	21	3	97	49	8	64	19	1	18
Alappuzha	31	0	38	42	2	25	20	2	0
Kottayam	8	15	51	22	9	43	12	5	3
Idukki	12	10	32	21	15	18	18	7	0
Ernakulam	6	3	17	8	4	14	10	5	4
Thrissur	35	18	70	42	23	58	12	3	0
Palakkad	12	2	37	16	8	27	12	1	2
Malappuram	40	12	48	49	23	28	15	1	2
Kozhikode	67	12	46	69	18	38	28	0	0
Kannur	34	8	103	47	22	76	23	4	0
Kasargod	22	16	51	32	21	36	13	0	8

The table 2.5 describes the scarcity of water in scheme area and in control plots. Changes can be seen considerable change in the duration of months affecting water scarcity in the scheme area.

2.3. Land use particulars of beneficiary plots

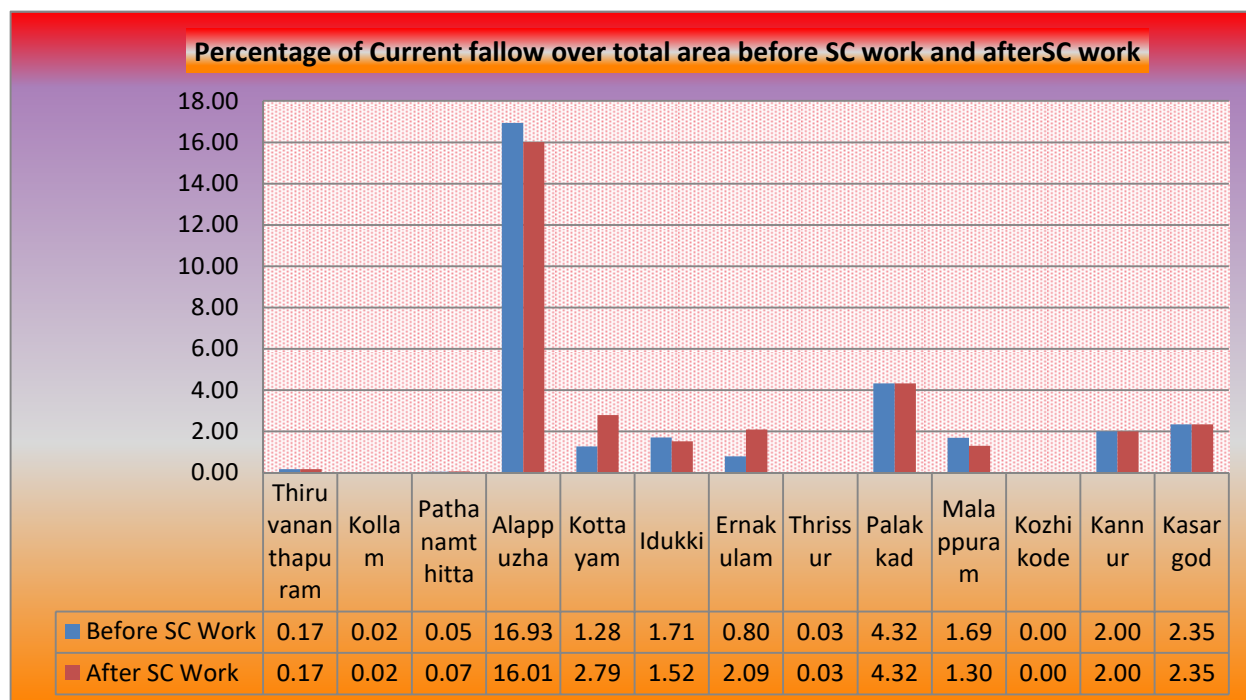
Table 2.6 shows the land use particulars of beneficiary plots. In the case area of cultivation, nominal change can be seen in most of the districts. Thiruvananthapuram, Kollam, Trissur, Palakkad, Kozhikode, Kannur, Kasaragod shows no change. Alappuzha, Idukki and Malappuram data shows more area used for cultivation after soil conservation works.

Current fallow remains same in Thiruvananthapuram (0.160), Kollam (0.040), Trissur(0.060) , Palakkad(21.583), Kozhikode (Nil), Kannur(3.950), Kasaragod (6.300). A small change can be seen in Alappuzha, Idukki and Malappuram. This current fallow increased in Pathanamthitta, Ernakulam, Kottayam district. While considering the other use of land Thiruvananthapuram, Kollam, Pathanamthitta, Alappuzha, Kottayam, Ernakulam, Trissur, Palakkad, Malappuram Kozhikode, Kannur and Kasaragod keep the same land use pattern without any change. Slight variation only in Idukki district.

Table 2.6 Land use particulars of Beneficiary Plots (Area in acres)

Sl No	Districts	Area Cultivated				Current fallow				Other use				Area not Cultivated				Total			
		Before SC Work		After SC Work		Before SC Work		After SC Work		Before SC Work		After SC Work		Before SC Work		After SC Work		Before SC Work		After SC Work	
		Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	Thiruvananthapuram	90.410	97.19	90.410	97.19	0.160	0.17	0.160	0.17	2.450	2.63	2.450	2.63	0.000	0.00	0.000	0.00	93.020	100.00	93.020	100.00
2	Kollam	161.910	96.11	161.910	96.11	0.040	0.02	0.040	0.02	6.520	3.87	6.520	3.87	0.000	0.00	0.000	0.00	168.470	100.00	168.470	100.00
3	Pathanamthitta	201.030	99.87	200.990	99.85	0.100	0.05	0.140	0.07	0.160	0.08	0.160	0.08	0.000	0.00	0.000	0.00	201.290	100.00	201.290	100.00
4	Alappuzha	12.740	46.58	12.990	47.50	4.630	16.93	4.380	16.01	9.200	33.64	9.200	33.64	0.780	2.85	0.780	2.85	27.350	100.00	27.350	100.00
5	Kottayam	254.371	92.86	250.227	91.34	3.500	1.28	7.644	2.79	8.350	3.05	8.350	3.05	7.720	2.82	7.720	2.82	273.944	100.00	273.944	100.00
6	Idukki	206.523	66.50	217.430	70.02	5.320	1.71	4.720	1.52	64.523	20.78	60.000	19.32	34.174	11.00	28.390	9.14	310.540	100.00	310.540	100.00
7	Ernakulam	103.630	95.38	102.230	94.09	0.870	0.80	2.270	2.09	4.150	3.82	4.150	3.82	0.000	0.00	0.000	0.00	108.650	100.00	108.650	100.00
8	Thrissur	188.710	91.53	188.710	91.53	0.060	0.03	0.060	0.03	17.000	8.25	17.000	8.25	0.400	0.19	0.400	0.19	206.170	100.00	206.170	100.00
9	Palakkad	468.435	93.72	468.435	93.72	21.583	4.32	21.583	4.32	5.244	1.05	5.244	1.05	4.560	0.91	4.560	0.91	499.822	100.00	499.822	100.00
10	Malappuram	195.620	90.23	196.470	90.63	3.670	1.69	2.820	1.30	12.610	5.82	12.610	5.82	4.890	2.26	4.890	2.26	216.790	100.00	216.790	100.00
11	Kozhikode	275.440	93.24	275.440	93.24	0.000	0.00	0.000	0.00	3.960	1.34	3.960	1.34	16.020	5.42	16.020	5.42	295.420	100.00	295.420	100.00
12	Kannur	181.700	91.81	181.700	91.81	3.950	2.00	3.950	2.00	3.590	1.81	3.590	1.81	8.670	4.38	8.670	4.38	197.910	100.00	197.910	100.00
13	Kasargod	254.310	95.04	254.310	95.04	6.300	2.35	6.300	2.35	6.960	2.60	6.960	2.60	0.000	0.00	0.000	0.00	267.570	100.00	267.570	100.00
Total		2594.829	90.51	2601.252	90.73	50.183	1.75	54.067	1.89	144.717	5.05	140.194	4.89	77.214	2.69	71.430	2.49	2866.946	100.00	2866.946	100.00

Graph 2.3 Percentage of Current fallow over total area before SC work and after SC work



Graph 2.4 Percentage of area cultivated over total area before SC work and after SC work

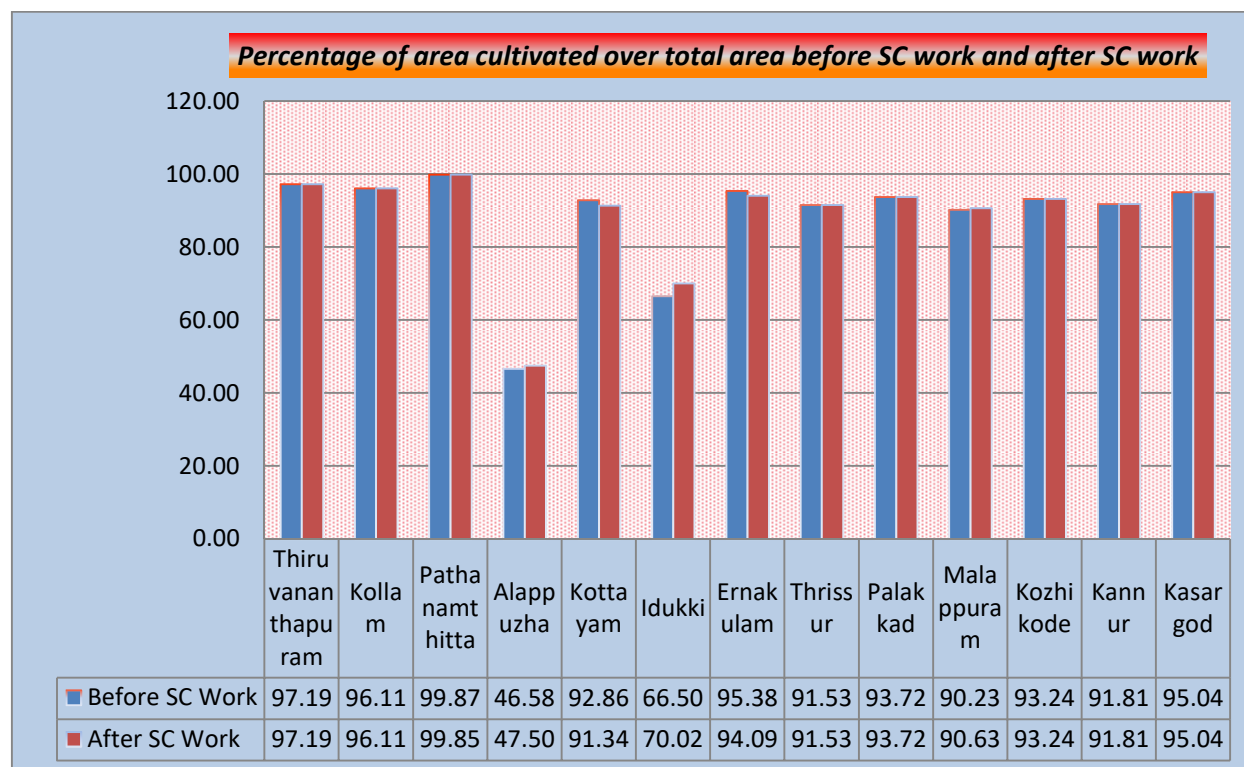
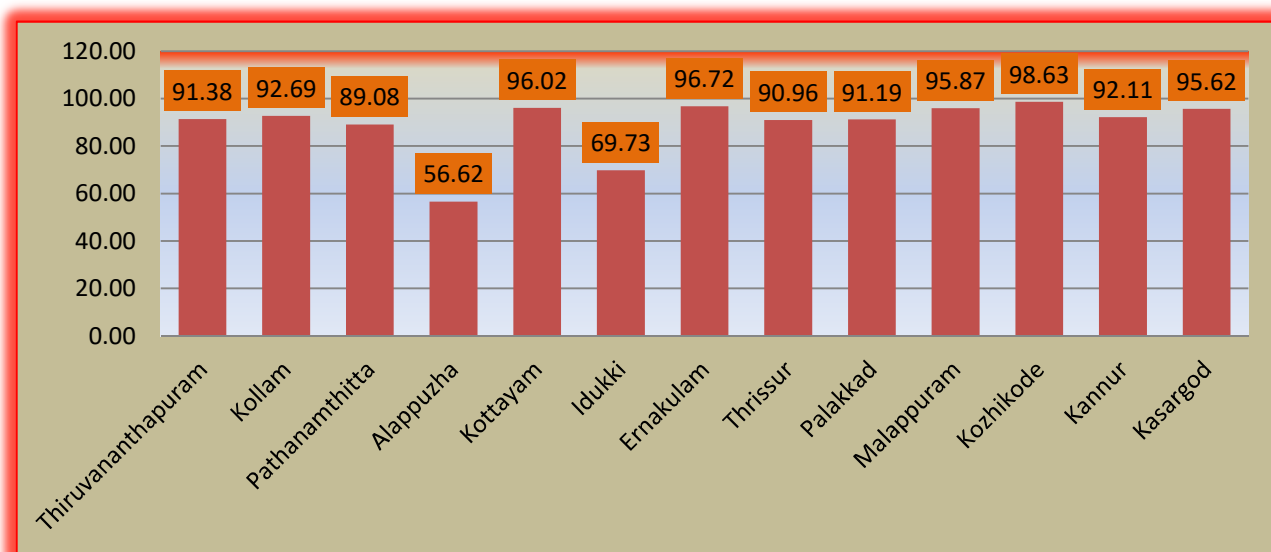


Table-2.7 Land use particulars of Control Plots (area in acres)

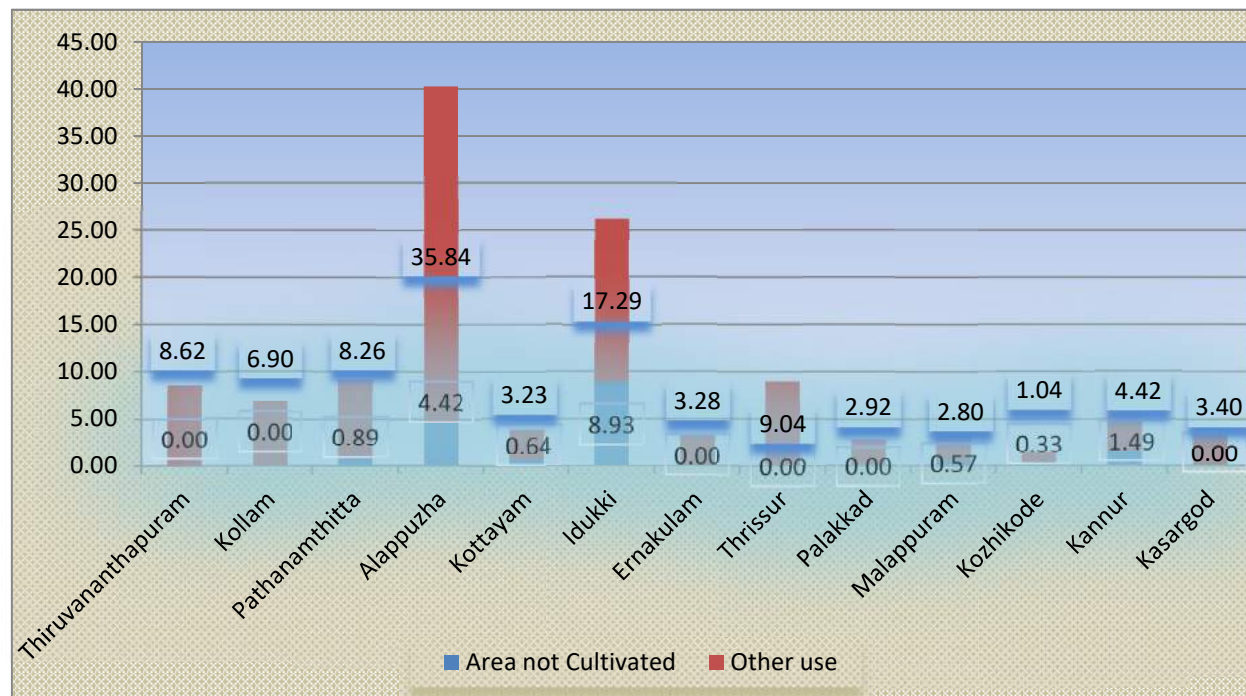
Sl No	Districts	Area Cultivated		Current fallow		Other use		Area not Cultivated		Total	
		Area	%	Area	%	Area	%	Area	%	Area	%
1	2	3	4	5	6	7	8	9	10	11	12
1	Thiruvananthapuram	10.390	91.38	0.000	0.00	0.980	8.62	0.000	0.00	11.370	100.00
2	Kollam	22.960	92.69	0.100	0.40	1.710	6.90	0.000	0.00	24.770	100.00
3	Pathanamthitta	20.060	89.08	0.400	1.78	1.860	8.26	0.200	0.89	22.520	100.00
4	Alappuzha	2.180	56.62	0.120	3.12	1.380	35.84	0.170	4.42	3.850	100.00
5	Kottayam	46.207	96.02	0.050	0.10	1.555	3.23	0.310	0.64	48.122	100.00
6	Idukki	62.189	69.73	3.614	4.05	15.423	17.29	7.964	8.93	89.190	100.00
7	Ernakulam	20.960	96.72	0.000	0.00	0.710	3.28	0.000	0.00	21.670	100.00
8	Thrissur	16.910	90.96	0.000	0.00	1.680	9.04	0.000	0.00	18.590	100.00
9	Palakkad	83.030	91.19	5.360	5.89	2.660	2.92	0.000	0.00	91.050	100.00
10	Malappuram	33.880	95.87	0.270	0.76	0.990	2.80	0.200	0.57	35.340	100.00
11	Kozhikode	140.810	98.63	0.000	0.00	1.480	1.04	0.470	0.33	142.760	100.00
12	Kannur	37.110	92.11	0.800	1.99	1.780	4.42	0.600	1.49	40.290	100.00
13	Kasargod	43.900	95.62	0.450	0.98	1.560	3.40	0.000	0.00	45.910	100.00
Total		540.586	90.79	11.164	1.87	33.768	5.67	9.914	1.67	595.432	100.00

Table 2.7 shows the land use particulars of control plots which describes the area cultivated current fallow, other use of land and the area not cultivated. It indicates there is no significant change compared to the area treated with Soil Conservation works in the case of land use.

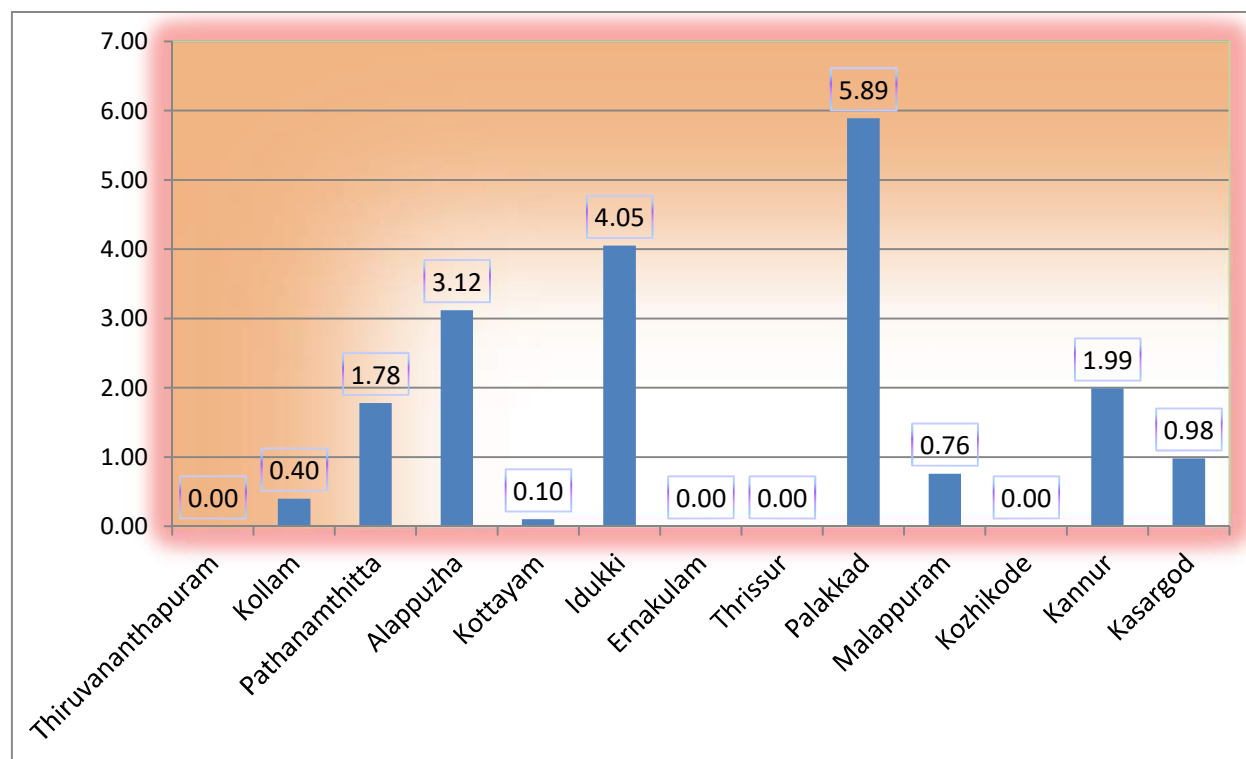
Graph 2.5 Percentage of area cultivated over total area in control plots



Graph 2.6 percentage of Area not cultivated and other use over total area in control plots



Graph 2.7 Percentage of Current fallow over total area in control plots



2.4 Crop Pattern

In order to reduce the soil loss an appropriate cropping pattern is essential. The selection of suitable vegetation that form good canopy can reduce erosion since soil loss is governed by the extent of exposed land surface. The binding force of the roots also offers good resistance to erosion. Grass roots have excellent soil binding property. Legumes are also good soil binders. The grasses, legumes and tree crops are classified as erosion preventing or soil conserving crops while cereals, tapioca, ginger, etc. are erosion permitting/erosion favoring crops.

Depending upon the capability class to which a land belongs and the socio-economic needs of the people, the appropriate crops can be selected to achieve maximum conservation of soil and water.

2.5 Contour Farming

Contour farming refers to village practices of applying all treatments along contour; i.e. across the direction of the slope. The crops are cultivated along contour ridges and furrows. In regions of low rainfall contour farming helps in the conservation of rainwater and in human areas it reduces soil loss and increases recharge of aquifers. This practice can minimize the effects of flash floods and droughts.

Mixed farming, intercropping, mixed cropping, multi-storage cropping, etc. are also beneficial in controlling soil erosion.

The growing of perennial horticultural crops, including plantation crops will give a permanent protective cover for the soil. In high rainfall areas of the humid tropics this higher level tree cover for the soil helps in reducing the erosive action of highly intensive rainfall.

Consequent in the introduction of the soil conservation Programmes significant changes in the cropping pattern occurred which favours perennial crops. In Table- 2.8 the area under perennial crops has decreased from 2370.884 acres to 2370.120 acres. It showed decrease of 0.03%. At the same

time the percentage change occurred in the cultivation of seasonal crops increased as 3.16%.

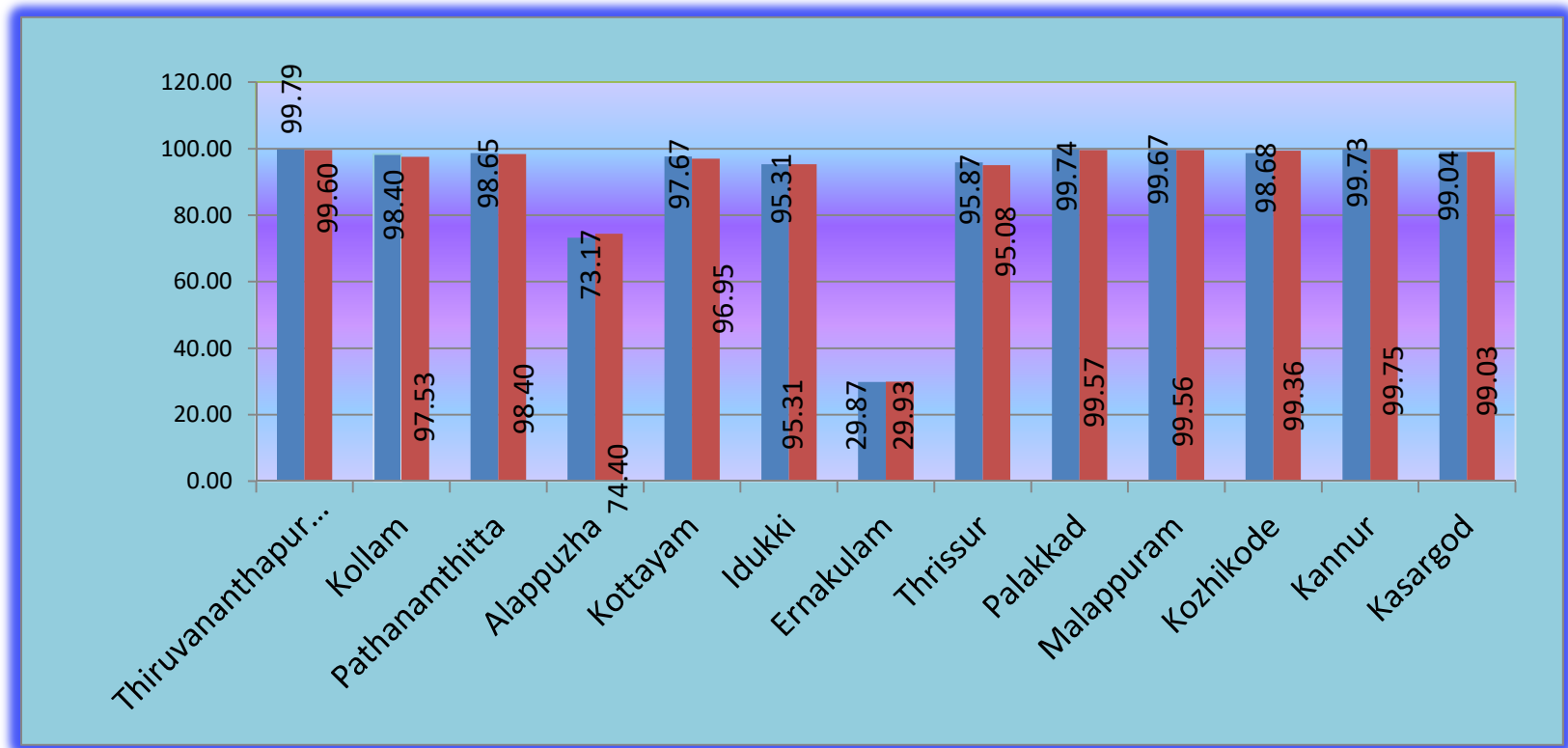
The figures in the table reveals that after the introduction of soil conservation programmes, the area of perennial crops like Pepper, Nutmeg, Mango Coffee and Rubber shows a positive increase. These are 6.55%,0.14%, 2.85% ,2.16 % and 0.16% respectively. While the variation of area under Coconut,Arecanut, Cashew, Jack, Papaya have decreased to 0.01%, 9.16% 3.57%, 9.97% and 5.88. % respectively after the soil conservation programme..

In seasonal crops, the cultivation of Plantain, Tapioca, Cheera, chenai, Elephant foot Yam Ginger, Pineapple area increased considerably. The respective percentage changes recorded as 19.91%, 27.96%, 42.86%, 14.29% , 72.14%, 5.38%, 0.01%. While the variation of area under Banana, Paddy, and Colacasia have decreased to 4.69 %, 3.83%, 0.45 % respectively after the soil conservation programme.

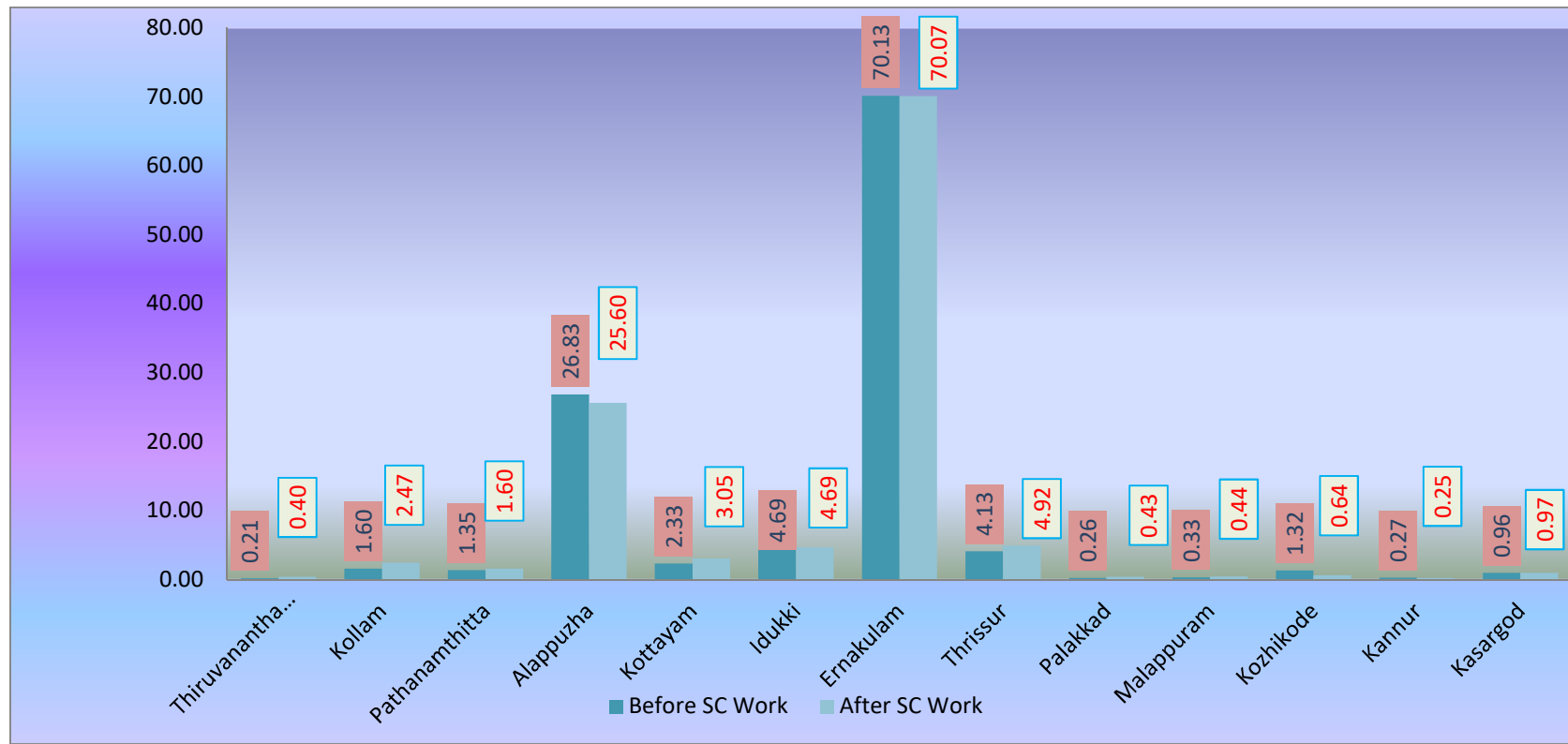
Table 2.8 Area wise Crop Pattern before and after SC work (Area in Acres)

Sl No:	Districts	Perennial Crops				Seasonal Crops				Total Gross area cropped			
		Before SC Work		After SC Work		Before SC Work		After SC Work		Before SC Work		After SC Work	
		Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Thiruvananthapuram	89.062	99.79	91.266	99.60	0.190	0.21	0.367	0.40	89.252	100.00	91.633	100.00
2	Kollam	164.503	98.40	165.916	97.53	2.676	1.60	4.207	2.47	167.179	100.00	170.123	100.00
3	Pathanamthitta	244.467	98.65	240.510	98.40	3.350	1.35	3.920	1.60	247.817	100.00	244.430	100.00
4	Alappuzha	9.665	73.17	10.250	74.40	3.544	26.83	3.527	25.60	13.209	100.00	13.777	100.00
5	Kottayam	274.334	97.67	267.915	96.95	6.538	2.33	8.439	3.05	280.872	100.00	276.354	100.00
6	Idukki	195.709	95.31	207.190	95.31	9.620	4.69	10.194	4.69	205.329	100.00	217.384	100.00
7	Ernakulam	31.199	29.87	30.677	29.93	73.261	70.13	71.810	70.07	104.460	100.00	102.487	100.00
8	Thrissur	163.164	95.87	165.759	95.08	7.022	4.13	8.575	4.92	170.186	100.00	174.334	100.00
9	Palakkad	328.071	99.74	313.414	99.57	0.865	0.26	1.365	0.43	328.936	100.00	314.779	100.00
10	Malappuram	192.966	99.67	204.197	99.56	0.637	0.33	0.898	0.44	193.603	100.00	205.095	100.00
11	Kozhikode	275.823	98.68	264.448	99.36	3.702	1.32	1.715	0.64	279.525	100.00	266.163	100.00
12	Kannur	150.733	99.73	158.608	99.75	0.401	0.27	0.401	0.25	151.134	100.00	159.009	100.00
13	Kasargod	251.188	99.04	249.970	99.03	2.438	0.96	2.438	0.97	253.626	100.00	252.408	100.00
	Total	2370.884	95.40	2370.120	95.26	114.244	4.60	117.856	4.74	2485.128	100.00	2487.976	100.00

Graph 2.8 Percentage of Area under Perennial Crops Before and After SC Work



Graph 2.9 Percentage of Area under Seasonal Crops Before and After SC Work



After the introduction of Soil Conservation works area under perennial crops increases in Thiruvananthapuram (89.062 to 91.266), Kollam(164.503 to 165.916), Alappuzha(9.665 to 10.250), Idukki (195.709 to 207.190), Malappuram (192.966to 204.197), Kannur (150.733 to 158.608) and Thrissur (163.164to 165.759)districts.

Similarly seasonal crops are increased in 8 districts. Thiruvananthapuram, Kollam, Alappuzha etc.

Table 2.9 – Area Under Selected Perennial Crops before and after SC work with percentage of variation.

Sl no	Districts	pepper			Rubber			coconut			Arecanut		
		Before SC work	After SC work	% change	Before SC work	After SC work	% change	Before SC work	After SC work	% change	Before SC work	After SC work	% change
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Thiruvananthapuram	1.111	1.204	8.37	82.996	84.577	1.90	4.106	4.577	11.47	0.036	0.035	-2.78
2	Kollam	0.877	1.037	18.24	140.070	140.243	0.12	16.398	16.528	0.79	0.152	0.152	0.00
3	Pathanamthitta	2.184	2.180	-0.18	231.026	227.036	-1.73	8.765	8.846	0.92	0.301	0.306	1.66
4	Alappuzha	0.102	0.102	0.00				8.772	9.264	5.61	0.235	0.280	19.15
5	Kottayam	9.756	9.714	-0.43	218.387	212.298	-2.79	33.480	33.257	-0.67	1.065	1.062	-0.28
6	Idukki	28.842	31.268	8.41	122.541	129.705	5.85	22.659	24.453	7.92	0.711	0.724	1.83
7	Ernakulam	0.540	0.110	-79.63	22.832	22.802	-0.13	4.249	4.189	-1.41	0.633	0.631	-0.32
8	Thrissur	0.337	0.365	8.31	105.606	106.106	0.47	43.667	44.795	2.58	12.614	13.553	7.44
9	Palakkad	0.033	0.033	0.00				169.003	153.326	-9.28	1.088	1.102	1.29
10	Malappuram	1.657	1.660	0.18	136.119	136.498	0.28	49.704	60.740	22.20	3.317	3.238	-2.38
11	Kozhikode	3.394	4.192	23.51	142.667	144.747	1.46	107.403	100.319	-6.60	16.603	10.827	-34.79
12	Kannur	1.155	1.156	0.09	94.019	95.764	1.86	6.900	14.806	114.58	0.590	0.590	0.00
13	Kasargod	5.262	5.849	11.16	149.393	148.123	-0.85	70.226	70.178	-0.07	20.420	19.973	-2.19
	Total	55.250	58.870	6.55	1445.656	1447.899	0.16	545.332	545.278	-0.01	57.765	52.473	-9.16

Table 2.9–Contd.....

Sl No	District	Jack			Mango			Cashew		
		Before SC work	After SC work	% change	Before SC work	After SC work	% change	Before SC work	After SC work	% change
		15	16	17	18	19	20	21	22	23
1	Thiruvananthapuram	0.530	0.560	5.66	0.240	0.270	12.50	0.032	0.032	0.00
2	Kollam	4.250	2.230	-47.53	2.680	5.650	110.82	0.076	0.076	0.00
3	Pathanamthitta	1.490	1.490	0.00	0.060	0.060	0.00	0.352	0.363	3.13
4	Alappuzha	0.250	0.280	12.00	0.120	0.130	8.33	0.110	0.110	0.00
5	Kottayam	2.770	2.760	-0.36	0.440	0.440	0.00	0.777	0.777	0.00
6	Idukki	2.810	2.810	0.00	1.240	1.240	0.00			
7	Ernakulam	1.320	1.320	0.00	0.190	0.190	0.00	0.022	0.022	0.00
8	Thrissur	0.240	0.240	0.00	0.120	0.120	0.00	0.432	0.432	0.00
9	Palakkad				132.784	133.790	0.76			
10	Malappuram	0.710	0.730	2.82	0.480	0.460	-4.17	0.540	0.432	-20.00
11	Kozhikode	0.360	0.370	2.78	0.120	0.120	0.00	0.360	0.360	0.00
12	Kannur	0.100	0.100	0.00	0.050	0.000	-100.00	47.919	46.192	-3.60
13	Kasargod	5.030	4.990	-0.80				0.464	0.464	0.00
Total		19.86	17.880	-9.97	138.524	142.470	2.85	51.084	49.260	-3.57

Table 2.9–Contd.....

Sl No	District	Nutmeg			Tamarind			coffee		
		Before SC work	After SC work	% change	Before SC work	After SC work	% change	Before SC work	After SC work	% change
		24	25	26	27	28	29	30	31	32
1	Thiruvananthapuram				0.011	0.011	0.00			
2	Kollam									
3	Pathanamthitta							0.104	0.104	0.00
4	Alappuzha	0.065	0.073	12.31	0.011	0.011	0.00			
5	Kottayam	1.119	1.119	0.00	0.055	0.055	0.00	1.389	1.388	-0.07
6	Idukki							9.880	9.964	0.85
7	Ernakulam	1.226	1.226	0.00						
8	Thrissur	0.148	0.148	0.00						
9	Palakkad	2.430	2.430	0.00						
10	Malappuram	0.370	0.370	0.00	0.044	0.044	0.00			
11	Kozhikode	0.482	0.482	0.00				0.203	0.370	82.27
12	Kannur									
13	Kasargod	0.082	0.082	0.00						
Total		5.922	5.930	0.14	0.121	0.121	0.00	11.576	11.826	2.16

Table 2.9–Contd.....

Sl No.	District	Papaya			Others			Total		
		Before SC work	After SC work	% change	Before SC work	After SC work	% change	Before SC work	After SC work	% change
		33	34	35	36	37	38	39	40	41
1	Thiruvananthapuram				0.000	0.000	NaN	89.062	91.266	2.47
2	Kollam				0.000	0.000	NaN	164.503	165.916	0.86
3	Pathanamthitta				0.185	0.125	-32.43	244.467	240.510	-1.62
4	Alappuzha				0.000	0.000	NaN	9.665	10.250	6.05
5	Kottayam	0.060	0.055	-8.33	5.036	4.990	-0.91	274.334	267.915	-2.34
6	Idukki				7.026	7.026	0.00	195.709	207.190	5.87
7	Ernakulam				0.187	0.187	0.00	31.199	30.677	-1.67
8	Thrissur				0.000	0.000	NaN	163.164	165.759	1.59
9	Palakkad				22.733	22.733	0.00	328.071	313.414	-4.47
10	Malappuram	0.025	0.025	0.00	0.000	0.000	NaN	192.966	204.197	5.82
11	Kozhikode				4.231	2.661	-37.11	275.823	264.448	-4.12
12	Kannur				0.000	0.000	NaN	150.733	158.608	5.22
13	Kasargod				0.311	0.311	0.00	251.188	249.970	-0.48
Total		0.085	0.080	-5.88	39.709	38.033	-4.22	2370.884	2370.120	-0.03

Table 2.9 shows the area under some major perennial crops such as, Pepper, Rubber, Coconut, Arecanut, Mango, Jack, Cashew etc before and after Soil Conservation works .In case of area of Pepper major increase can be seen in Kollam (18.24%), Kozhikode (23.51%) & Kasargod (11.16%).

Table 2.10 - Area Under Selected Seasonal Crops before and after SC work with percentage of variation.

Sl.No	District	Plantain			Banana			Pineapple		
		Before SC Work	After SC Work	% change	Before SC Work	After SC Work	% change	Before SC Work	After SC Work	% change
1	Thiruvananthapuram	0.120	0.118	-1.67	0.050	0.149	198.00			
2	Kollam	0.804	1.043	29.73	0.412	0.711	72.57			
3	Pathanamthitta	0.920	1.100	19.57	0.110	0.130	18.18			
4	Alappuzha	0.379	0.452	19.26	0.005	0.005	0.00			
5	Kottayam	0.896	1.240	38.39	3.356	4.224	25.86	0.016	0.015	-6.25
6	Idukki	3.958	4.313	8.97	1.851	2.032	9.78	3.076	3.076	0.00
7	Ernakulam	0.573	0.672	17.28	4.078	4.078	0.00	4.600	4.600	0.00
8	Trissur	5.148	6.666	29.49	0.074	0.099	33.78			
9	Palakkad				0.865	0.865	0.00			
10	Malappuram	0.458	0.527	15.07	0.121	0.111	-8.26	0.008	0.010	25.00
11	Kozhikkode	0.438	0.591	34.93	2.494	0.334	-86.61			
12	Kannur	0.284	0.284	0.00	0.092	0.092	0.00			
13	Kasaragod	1.228	1.228	0.00	0.962	0.962	0.00	0.248	0.248	0.00
Total		15.206	18.234	19.91	14.470	13.792	-4.69	7.948	7.949	0.01

Table 2.10 –Contd.....

Sl.No	District	Tapioca			Cheera			Paddy		
		Before SC Work	After SC Work	% change	Before SC Work	After SC Work	% change	Before SC Work	After SC Work	% change
1	Thiruvananthapuram	0.020	0.100	400.00						
2	Kollam	1.020	1.862	82.55						
3	Pathanamthitta	0.930	1.210	30.11	0.010	0.010	0.00	0.010	0.010	0.00
4	Alappuzha	0.020	0.040	100.00	0.040	0.020	-50.00	2.520	2.520	0.00
5	Kottayam	1.640	2.310	40.85						
6	Idukki	0.735	0.773	5.17						
7	Ernakulam	5.150	5.950	15.53	0.000	0.050	Infinity	58.360	55.960	-4.11
8	Thrissur	0.000	0.010	Infinity				1.800	1.800	0.00
9	Palakkad									
10	Malappuram									
11	Kozhikkode	0.330	0.350	6.06	0.020	0.020	0.00			
12	Kannoor	0.025	0.025	0.00						
13	Kasaragod									
Total		9.870	12.630	27.96	0.070	0.100	42.86	62.690	60.290	-3.83

Table 2.10 –Contd.....

SlNo.	District	Ginger			Chenai			Elephant Foot Yam		
		Before SC Work	After SC Work	% change	Before SC Work	After SC Work	% change	Before SC Work	After SC Work	% change
1	Thiruvananthapuram									
2	Kollam	0.180	0.230	27.78				0.070	0.171	144.29
3	Pathanamthitta	0.620	0.640	3.23	0.020	0.030	50.00	0.010	0.010	0.00
4	Alappuzha	0.010	0.010	0.00						
5	Kottayam	0.470	0.470	0.00				0.010	0.010	0.00
6	Idukki									
7	Ernakulam									
8	Trissur									
9	Palakkad									
10	Malappuram									
11	Kozhikkode	0.020	0.020	0.00	0.050	0.050	0.00	0.050	0.050	0.00
12	Kannur									
13	Kasaragod									
Total		1.300	1.370	5.38	0.070	0.080	14.29	0.140	0.241	72.14

Table 2.10 –Contd.....

Sl No.	District	Colacasia			Turmeric			Greengram		
		Before SC Work	After SC Work	% change	Before SC Work	After SC Work	% change	Before SC Work	After SC Work	% change
1	Thiruvananthapuram									
2	Kollam				0.190	0.190	0.00			
3	Pathanamthitta	0.030	0.030	0.00						
4	Alappuzha	0.110	0.020	-81.82				0.300	0.300	0.00
5	Kottayam				0.150	0.150	0.00			
6	Idukki									
7	Ernakulam									
8	Trissur									
9	Palakkad									
10	Malappuram									
11	Kozhikkode	0.300	0.300	0.00						
12	Kannur									
13	Kasaragod									
Total		0.440	0.350	-20.45	0.340	0.340	0.00	0.300	0.300	0.00

Table 2.10 –Contd.....

SINo.	District	Others			Total		
		Before SC Work	After SC Work	% change	Before SC Work	After SC Work	% change
1	Thiruvananthapuram				0.190	0.367	93.16
2	Kollam				2.676	4.207	57.21
3	Pathanamthitta	0.690	0.750	8.70	3.350	3.920	17.01
4	Alappuzha	0.160	0.160		3.544	3.527	-0.48
5	Kottayam		0.020		6.538	8.439	29.08
6	Idukki		0.000		9.620	10.194	5.97
7	Ernakulam	0.500	0.500		73.261	71.810	-1.98
8	Trissur		0.000		7.022	8.575	22.12
9	Palakkad		0.500		0.865	1.365	57.80
10	Malappuram	0.050	0.250	400.00	0.637	0.898	40.97
11	Kozhikkode				3.702	1.715	-53.67
12	Kannur				0.401	0.401	
13	Kasaragod				2.438	2.438	
Total		1.400	2.180	55.71	114.244	117.856	3.16

Table 2.11 –Details of Crop wise production and Value of Perennial Crops.

District	Name of crops	Units	Before SC Work		After SC Work		Value at Constant Price	% Change over Production
			Production	Value	Production	Value		
Thiruvananthapuram	pepper(Pepper dry)	Quintal	0.570	32866.44	0.760	29640.00	43821.92	33.333
	pepper(Pepper green)	Quintal	6.700	121437.50	10.120	158125.00	183425.00	51.045
	Rubber(Rubber ungarbled)	Quintal	619.800	6598824.73	721.500	8171709.00	7681594.05	16.409
	coconut(With husk)	Number	11170.000	194916.50	11785.000	221204.45	205648.25	5.506
	Arecanut	Number	1295.000	2369.85	1665.000	3146.85	3046.95	28.571
	mango	Quintal	17.550	49359.39	24.600	116850.00	69187.50	40.171
	Cashew	Quintal	0.120	864.75	0.150	1875.00	1080.94	25.000
	Tamarind(Tamarind without seed and husk)	Quintal	0.200	1612.50	0.240	0.00	1935.00	20.000
	Total							
				7002251.66		8702550.30	8189739.61	

Table 2.11–Contd.....

District	Name of crops	Units	Before SC Work		After SC Work		Value at Constant Price	% Change over Production
			Production	Value	Production	Value		
Kollam	pepper(Pepper dry)	Quintal	0.360	20605.71	0.416	18015.71	23811.05	15.556
	pepper(Pepper green)	Quintal	8.955	208949.98	9.935	136526.75	231816.63	10.944
	Rubber(Rubber ungarbled)	Quintal	734.720	8171210.56	955.750	11136399.00	10629402.30	30.084
	Coconut(With husk)	Number	29948.000	626512.16	32193.000	813195.18	673477.56	7.496
	Coconut(With out husk)	Number	352.000	7360.32	368.000	9303.04	7694.88	4.545
	Arecanut	Number	16938.000	28117.08	17758.000	35338.42	29478.28	4.841
	Jack	Quintal	141.330	117224.76	151.940	306614.92	126025.11	7.507
	mango	Quintal	2.930	6359.95	3.130	8394.66	6794.07	6.826
	Cashew	Quintal	0.370	2912.72	0.420	5576.76	3306.33	13.514
	Total					9189253.24		12469364.44

Table 2.11–Contd.....

District	Name of crops	Units	Before SC Work		After SC Work		Value at Constant Price	% Change over Production
			Production	Value	Production	Value		
Pathanamthitta	pepper(Pepper green)	Quintal	24.280	458082.70	34.640	364863.12	653541.45	42.669
	Rubber(Rubber ungarbled)	Quintal	629.750	6682170.25	713.400	8002207.80	7569766.12	13.283
	coconut(With husk)	Number	15231.000	262430.13	17464.000	326052.88	300904.72	14.661
	Arecanut	Number	3238.000	5731.26	4120.000	7539.60	7292.40	27.239
	Coco(with husk)	Quintal	0.700	3285.85				-100.000
	Total			7411700.19		8700663.40	8531504.69	
Alappuzha	pepper(Pepper dry)	Quintal	0.360	0.00	0.520	24700.00	0.00	44.444
	coconut(With husk)	Number	32240.000	495851.20	32734.000	609179.74	503448.92	1.532
	Arecanut	Number	30750.000	55723.50	33945.000	62119.35	62119.35	10.390
	Jack	Quintal	14.230	0.00	16.700	17985.90	0.00	17.358
	mango	Quintal	2.100	4200.00	2.240	6063.68	4480.00	6.667
	Cashew	Quintal	0.960	0.00	1.150	10493.75	0.00	19.792
	Nutmeg	Quintal	0.410	0.00	0.500	7423.50	0.00	21.951
	Tamarind(Tamarind without seed and husk)	Quintal	0.040	0.00	0.050	855.20	0.00	25.000
	Total			555774.70		738821.12	570048.27	

Table 2.11–Contd....

District	Name of crops	Units	Before SC Work		After SC Work		Value at Constant Price	% Change over Production
			Production	Value	Production	Value		
Kottayam	Pepper(Pepper dry)	Quintal	59.290	3720633.10	69.100	2760614.10	4336241.28	16.546
	Rubber(Rubber garbled)	Quintal	1118.590	13365282.42	1712.850	21304428.30	20465697.04	53.126
	Coconut(With husk)	Number	67674.000	1082784.00	89876.000	1700453.92	1438016.00	32.807
	Arecanut	Number	172839.000	290369.52	200420.000	360756.00	336705.60	15.958
	Jack	Quintal	143.290	0.00	198.350	114051.25	0.00	38.426
	Mmango	Quintal	0.240	426.67	2.050	3989.30	3644.45	754.167
	Cashew	Quintal	0.068	0.00	0.102	920.55	0.00	50.000
	Nutmeg	Quintal	10.554	281000.25	14.338	238684.69	381749.25	35.854
	Coco(without husk)	Quintal	19.480	99429.27	23.380	81432.54	119335.49	20.021
	Coffee(Dry Robusta)	Quintal	16.600	118275.00	19.820	146053.58	141217.50	19.398
	Total			18958200.23		26711384.23	27222606.62	

Table 2.11–Contd.....

District	Name of crops	Units	Before SC Work		After SC Work		Value at Constant Price	% Change over Production
			Production	Value	Production	Value		
Idukki	pepper(Pepper dry)	Quintal	57.910	3641010.68	66.260	2660339.00	4166005.40	14.419
	Rubber(Rubber garbled)	Quintal	894.740	10739984.75	928.000	11199104.00	11139220.16	3.717
	Rubber(Rubber ungarbled)	Quintal	12.000	129833.28	12.100	132507.10	130915.22	0.833
	coconut(With out husk)	Number	50731.000	1007010.35	55650.000	1113000.00	1104652.50	9.696
	Arecanut	Number	90350.000	112937.50	94204.000	57464.44	117755.00	4.266
	Jack	Quintal	322.610	0.00	330.810	241160.49	0.00	2.542
	mango	Quintal	139.350	0.00	146.790	220185.00	0.00	5.339
	coco(with husk)	Quintal	211.400	189600.44	221.930	174880.84	199044.58	4.981
	coffee(Dry robusta)	Quintal	149.450	1074274.97	155.650	1013437.15	1118841.77	4.149
	Total							

Table 2.11–Contd.....

District	Name of crops	Units	Before SC Work		After SC Work		Value at Constant Price	% Change over Production
			Production	Value	Production	Value		
Ernakulam	pepper(Pepper dry)	Quintal	0.450	27728.44	0.675	26516.39	41592.66	50.000
	Rubber(Rubber ungarbled)	Quintal	181.715	2007420.14	202.375	2225113.13	2235652.81	11.369
	coconut(With husk)	Number	12615.000	202218.45	16554.000	308069.94	265360.62	31.225
	Arecanut	Number	67493.000	66143.14	77973.000	84990.57	76413.54	15.528
	Jack	Quintal	18.650	10425.35	25.250	32667.20	14114.75	35.389
	mango	Quintal	5.400	11480.40	7.700	28528.50	16370.20	42.593
	Cashew	Quintal	0.440	3004.83	0.520	5856.86	3551.17	18.182
	Nutmeg	Quintal	21.200	562987.20	25.060	438950.96	665493.36	18.208
	coco(without husk)	Quintal	3.940	17954.34	4.800	22230.01	21873.31	21.827
	Total			2909362.29		3172923.56	3340422.42	
Thrissur	pepper(Pepper dry)	Quintal	1.080	64878.84	1.410	55314.30	84702.93	30.556
	Rubber(Rubber garbled)	Quintal	656.200	7925071.77	777.100	9661684.30	9385207.66	18.424
	coconut(With out husk)	Number	89865.000	1258110.00	122935.000	2222664.80	1721090.00	36.800
	Arecanut	Number	320400.000	637596.00	483600.000	768924.00	962364.00	50.936
	Jack	Quintal	14.000	7112.00	15.900	15900.00	8077.20	13.571
	mango	Quintal	1.700	3902.90	2.050	7453.80	4706.45	20.588
	Total			9905790.01		12744973.17	12178146.11	

Table 2.11 –Contd.....

District	Name of crops	Units	Before SC Work		After SC Work		Value at Constant Price	% Change over Production		
			Production	Value	Production	Value				
Palakkad	pepper(Pepper dry)	Quintal	0.130	7924.99	0.150	5804.10	9144.22	15.385		
	coconut(With husk)	Number	1007390.000	13237104.60	1091010.000	19310877.00	14335871.40	8.301		
	Arecanut	Number	154900.000	198272.00	176000.000	327360.00	225280.00	13.622		
	mango	Quintal	11405.000	19281635.15	12623.000	38904086.00	21340822.49	10.680		
	Nutmeg	Quintal	9.050	252838.90	11.600	205412.80	324080.80	28.177		
	coco(without husk)	Quintal	100.120	450540.00	111.000	1533909.00	499500.00	10.867		
	Total					33428315.64		60287448.90	36734698.91	
Malappuram	Pepper(Pepper dry)	Quintal		3.795		229067.79	4.410	170777.25	266189.45	16.206
	Rubber(Rubber ungarbled)	Quintal		1446.010		16061006.63	1573.980	17773382.16	17482384.74	8.850
	coconut(With out husk)	Number		221872.000		2516028.48	257531.000	3605434.00	2920401.54	16.072
	Arecanut	Number		356204.000		484437.44	404360.000	525668.00	549929.60	13.519
	Jack	Quintal		206.300		0.00	176.500	176500.00	0.00	-14.445
	Mango	Quintal		20.800		27456.00	25.950	80185.50	34254.00	24.760
	Cashew	Quintal		3.000		21712.50	3.200	38745.60	23160.00	6.667
	Nutmeg	Quintal		4.000		106860.00	4.800	87345.60	128232.00	20.000
	Tamarind(Tamarind with seed and husk)	Quintal		0.650		1706.25	0.960	5333.76	2520.00	47.692
	Total					24621999.87		23743880.34	25169024.68	

Table 2.11 –Contd....

District	Name of crops	Units	Before SC Work		After SC Work		Value at Constant Price	% Change over Production
			Production	Value	Production	Value		
Kozhikode	pepper(Pepper dry)	Quintal	8.158	478546.07	9.867	378883.00	578795.46	20.949
	Rubber(Rubber garbled)	Quintal	82.700	993376.68	96.750	1199603.25	1162142.62	16.989
	Rubber(Rubber ungarbled)	Quintal	769.950	8386041.28	1531.750	18042483.25	16683315.52	98.941
	coconut(With out husk)	Number	384982.000	4654432.38	418786.000	6700576.00	5063122.74	8.781
	Arecanut	Number	1107768.000	1152078.72	1153087.000	1475951.36	1199210.48	4.091
	mango	Quintal	0.400	1071.12	0.400	0.00	1071.12	0.000
	Cashew	Quintal	3.520	24170.67	4.241	49971.70	29121.55	20.483
	Nutmeg	Quintal	1.460	37767.28	1.560	29256.24	40354.08	6.849
	coco(without husk)	Quintal	15.330	65770.01	18.390	67472.91	0.00	19.961
	coffee(Dry plantation)	Quintal	2.300	16111.50	2.610	17011.98	18283.05	13.478
	coffee(Dry robusta)	Quintal	0.300	2220.00	0.400	2446.80	2960.00	33.333
	Total			15811585.71		27963656.49	24778376.61	
Kannur	pepper(Pepper dry)	Quintal	3.610	217509.72	4.820	182355.06	290414.64	33.518
	Rubber(Rubber ungarbled)	Quintal	362.700	3789206.68	501.350	5679292.80	5237713.75	38.227
	coconut(With husk)	Number	18785.000	216778.90	20835.000	354195.00	240435.90	10.913
	Arecanut	Number	66100.000	111709.00	72800.000	131040.00	123032.00	10.136
	Cashew	Quintal	77.950	600526.80	84.590	1121409.63	651681.36	8.518
	Total			4935731.10		7468292.49	6543277.65	

Table 2.11 –Contd.....

District	Name of crops	Units	Before SC Work		After SC Work		Value at Constant Price	% Change over Production
			Production	Value	Production	Value		
Kasargod	pepper(Pepper dry)	Quintal	52.685	3185245.53	57.490	2216360.21	3475747.67	9.120
	Rubber(Rubber ungarbled)	Quintal	1988.770	21644380.49	2073.300	23126002.86	22564345.89	4.250
	coconut(With husk)	Number	346940.000	4579608.00	367481.000	5879696.00	4850749.20	5.921
	Arecanut	Number	4488332.000	6418314.76	4624902.000	7677337.32	6613609.86	3.043
	Cashew	Quintal	1.250	10109.38	1.500	20081.25	12131.25	20.000
	Nutmeg	Quintal	1.950	59800.65	2.000	32626.00	61334.00	2.564
	coco(without husk)	Quintal	7.650	37676.25	8.190	33402.18	40335.75	7.059
	Total							
				35935135.06		38985505.82	37618253.62	

Table 2.11 –Contd.....

	Name of crops	Units	Before SC Work		After SC Work		Value at Constant Price	% Change over Production
			Production	Value	Production	Value		
KERALA	pepper(Pepper dry)	Quintal	188.398	11626017.31	215.878	8529319.12	13316466.67	14.586
	pepper(Pepper green)	Quintal	39.935	788470.18	54.695	659514.87	1068783.08	36.960
	Rubber(Rubber garbled)	Quintal	2752.230	33023715.62	3514.700	43364819.85	42152267.48	27.704
	Rubber(Rubber ungarbled)	Quintal	6745.415	73470094.04	8285.505	94289097.10	90215090.41	22.832
	coconut(With husk)	Number	1541993.000	20898203.94	1679932.000	29522924.11	22813912.57	8.946
	coconut(With out husk)	Number	747802.000	9442941.53	855270.000	13650977.84	10816961.66	14.371
	Arecanut	Number	6876607.000	9563799.77	7344834.000	11517635.91	10306237.06	6.809
	Jack	Quintal	860.410	134762.11	915.450	904879.76	148217.06	6.397
	mango	Quintal	11595.470	19385891.58	12837.910	39375736.44	21481330.28	10.715
	Cashew	Quintal	88.178	666897.15	96.543	1263497.05	728850.57	9.486
	Nutmeg	Quintal	48.824	1306777.28	60.118	1044165.81	1608423.39	23.132
	Tamarind(Tamarind without seed and husk)	Quintal	0.240	1612.50	0.290	855.20	1935.00	20.833
	Tamarind(Tamarind with seed and husk)	Quintal	0.650	1706.25	0.960	5333.76	2520.00	47.692
	coco(with husk)	Quintal	212.100	192886.29	221.930	174880.84	199044.58	4.635
	coco(without husk)	Quintal	146.520	671369.87	165.760	1738446.64	681044.56	13.131
	coffee(Dry plantation)	Quintal	2.300	16111.50	2.610	17011.98	18283.05	13.478
	coffee(Dry robusta)	Quintal	166.350	1194769.97	175.870	1161937.53	1263019.27	5.723
		Total			182386026.89		247221033.81	216822386.69

The crop wise yield and value as per the year 2018-19 is calculated in Table 2.11. In Thiruvananthapuram most of all perennial crops shows hike in quantity and price after Soil Conservation works.

In Kollam which illustrates high value of quantity and value of price in all perennial crops mentioned in the table. Rubber shows as 30% of rise.

Pepper, Rubber, Arecanut & Coconut are indicated in Pathanamthitta district which expresses an increase in quantity and value as well. Among these, rubber points to 13.28% of rise.

Alappuzha, Idukki, Eranakulam, Thrissur, Kannur and Kasargod show an increase in all crops.

Table 2.12- Crop wise yield and value of Seasonal crops.

District	Name of crops	Units	Before SC Work		After SC Work		Value at Constant Price	% Change over Production
			Production	Value	Production	Value		
Thiruvananthapuram	plantain	Quintal	7.500	11878.85	7.420	20427.26	11752.17	-1.067
	banana	Quintal	4.060	14330.54	9.210	42412.05	32508.44	126.847
	Tapioca(Tapioca raw)	Quintal	2.500	2313.80	9.950	15263.30	9208.92	298.000
	Total			28523.19		78102.61	53469.54	
Kollam	plantain	Quintal	51.060	97056.38	71.030	168554.19	135015.95	39.111
	banana	Quintal	26.240	108666.40	49.230	237288.60	203873.74	87.614
	Tapioca(Tapioca raw)	Quintal	56.290	0.00	246.900	270355.50	0.00	338.621
	Ginger(Ginger green)	Quintal	11.060	78817.87	12.490	65884.75	89008.61	12.929
	Elephant Foot yam	Quintal	4.000	9433.20	14.840	44297.40	34997.17	271.000
	Turmeric (Turmeric green)	Quintal	6.340	14053.70	7.525	17811.68	16680.44	18.691
	Total			308027.55		804192.12	479575.92	

Table –2.12 Contd...

District	Name of crops	Units	Before SC Work		After SC Work		Value at Constant Price	% Change over Production
			Production	Value	Production	Value		
Pathanamthitta	plantain	Quintal	16.450	22406.22	22.680	38828.16	30891.97	37.872
	banana	Quintal	2.060	7022.90	2.630	10996.03	8966.12	27.670
	Tapioca(Tapioca raw)	Quintal	4.550	6049.58	9.150	16561.50	12165.66	101.099
	Total			35478.70		66385.69	52023.75	
Alappuzha	plantain	Quintal	21.260	33810.78	25.580	52259.94	40681.15	20.320
	banana	Quintal	0.400	1472.22	0.500	2242.50	1840.28	25.000
	Tapioca(Tapioca raw)	Quintal	2.600	3277.98	6.050	8687.80	7627.60	132.692
	cheera	Quintal	1.000	4467.86	0.450	1944.45	2010.54	-55.000
	Paddy(Paddy High yeild)	Quintal	36.360	66902.40	37.460	86270.38	68926.40	3.025
	Ginger(Ginger green)	Quintal	0.300	2142.86	0.360	1859.40	2571.43	20.000
	Colocasia	Quintal	12.350	41548.98	14.400	67089.60	48445.78	16.599
	Cowpea	Quintal	1.600	7294.40	2.550	13158.00	11625.45	59.375
	Vazhuthana	Quintal	0.480	1290.00	0.300	818.10	806.25	-37.500
	Ladies finger	Quintal	1.800	4320.00	1.900	6750.70	4560.00	5.556
	Bittergourd	Quintal	0.900	3311.67	0.900	4309.20	3311.67	0.000
	Chillies green	Quintal	0.800	3200.00	0.900	0.00	3600.00	12.500
Total				173039.15		245390.07	196006.54	

Table –2.12Contd...

District	Name of crops	Units	Before SC Work		After SC Work		Value at Constant Price	% Change over Production
			Production	Value	Production	Value		
Kottayam	plantain	Quintal	49.690	72878.87	75.360	148986.72	110528.25	51.660
	banana	Quintal	172.550	590264.20	244.750	992706.00	837248.14	41.843
	pineapple	Quintal	1.010	1764.35	1.350	2632.50	2358.29	33.663
	Tapioca(Tapioca raw)	Quintal	521.700	592833.75	824.070	967458.18	936431.94	57.959
	Ginger(Ginger green)	Quintal	6.140	29271.59	8.000	29744.00	38138.88	30.293
	Elephant Foot yam	Quintal	0.240	550.90	0.300	804.30	688.63	25.000
	Cowpea	Quintal	0.200	722.75	0.450	1899.90	1626.19	125.000
	Turmeric (Turmeric green)	Quintal	5.330	10660.00	7.300	13665.60	14600.00	36.961
	Total					1298946.41		2157897.20
Idukki	plantain	Quintal	404.890	636786.66	447.200	794227.20	703329.33	10.450
	banana	Quintal	180.930	539773.86	202.030	707913.12	602722.16	11.662
	pineapple	Quintal	166.100	224235.00	171.000	299250.00	230850.00	2.950
	Tapioca(Tapioca raw)	Quintal	351.350	397830.09	376.650	522036.90	426477.03	7.201
	Total			1798625.61		2323427.22		1963378.52

Table –2.12 Contd...

District	Name of crops	Units	Before SC Work		After SC Work		Value at Constant Price	% Change over Production
			Production	Value	Production	Value		
Ernakulam	plantain	Quintal	55.040	82537.99	71.820	389879.89	107701.27	30.487
	banana	Quintal	304.870	980053.39	329.780	1256303.50	1060130.57	8.171
	pineapple	Quintal	125.730	259409.89	152.990	326124.19	315653.56	21.681
	Tapioca(Tapioca raw)	Quintal	475.290	487500.20	609.500	754707.28	625158.06	28.237
	cheera	Quintal	0.000	0.00	2.000	3297.22	2831.82	Infinity
	Paddy(Paddy High yeild)	Quintal	1515.900	2367835.80	1565.420	3238853.98	2445186.04	3.267
	Cowpea	Quintal	1.000	3709.44	1.500	7580.41	5564.16	50.000
	Ashgourd	Quintal	2.000	2299.84	3.000	4130.64	3449.76	50.000
	Bittergourd	Quintal	4.500	14130.32	6.000	24220.86	18840.42	33.333
	Snake gourd	Quintal	7.000	11421.06	9.000	19013.40	14684.22	28.571
	Total				4208897.93		6024111.37	4599199.88

Table –2.12 Contd...

District	Name of crops	Units	Before SC Work		After SC Work		Value at Constant Price	% Change over Production
			Production	Value	Production	Value		
Thrissur	plantain	Quintal	200.200	256422.12	315.200	558849.60	403717.62	57.443
	banana	Quintal	6.000	20057.52	8.100	32327.10	27077.65	35.000
	Tapioca(Tapioca raw)	Quintal			1.000	1750.00	1342.00	
	Paddy(Paddy High yeild)	Quintal	31.000	56374.12	31.700	66601.70	57647.08	2.258
	Total			332853.76		659528.40	489784.35	
Palakkad	Banana	Quintal	66.500	186088.95	67.200	243264.00	188047.78	1.053
	Cowpea	Quintal	0.000	0.00	9.600	37459.20	23280.00	
	Total			186088.95		280723.20	211327.78	
Malappuram	Plantain	Quintal	50.490	71737.69	64.830	144181.92	92112.41	28.402
	banana	Quintal	12.000	34398.36	13.000	46488.00	37264.89	8.333
	pineapple	Quintal	0.400	820.00	0.500	0.00	1025.00	25.000
	Cowpea	Quintal	0.200	508.92	0.350	1261.40	890.60	75.000
	Cucumber	Quintal	0.000	0.00	0.200	253.40	154.47	Infinity
	Snake gourd	Quintal	0.000	0.00	0.200	400.60	230.64	Infinity
	Total			107464.97		192585.32	131678.01	

Table -2.12 Contd...

District	Name of crops	Units	Before SC Work		After SC Work		Value at Constant Price	% Change over Production
			Production	Value	Production	Value		
Kozhikode	Plantain	Quintal	32.240	53845.34	46.430	84688.32	77544.60	44.014
	Banana	Quintal	212.535	674945.30	27.385	47595.13	86966.27	-87.115
	Tapioca(Tapioca raw)	Quintal	11.100	13231.30	12.900	20536.80	15376.93	16.216
	Cheera	Quintal	0.140	210.00	0.140	247.66	210.00	0.000
	Ginger(Ginger green)	Quintal	0.400	1801.67	0.500	980.00	2252.09	25.000
	Elephant Foot yam	Quintal	2.000	3866.65	2.350	5170.00	4543.33	17.500
	Colocasia	Quintal	5.940	17999.41	7.110	16680.06	21544.79	19.697
	Total			765899.67		175897.97	208438.00	
Kannur	Plantain	Quintal	10.600	21369.27	11.050	22376.25	22276.47	4.245
	Banana	Quintal	4.000	12752.76	4.250	16966.00	13549.81	6.250
	Tapioca(Tapioca raw)	Quintal	4.800	6133.34	5.000	9160.00	6388.90	4.167
	Total			40255.37		48502.25	42215.18	
Kasargod	plantain	Quintal	39.088	73615.60	43.618	116314.83	82147.09	11.589
	banana	Quintal	90.780	264585.57	98.580	38651542.14	287319.30	8.592
	pineapple	Quintal	8.800	21120.00	9.300	24296.25	22320.00	5.682
	Total			359321.17		38792153.22	391786.38	

Table –2.12 Contd...

	Name of crops	Units	Before SC Work		After SC Work		Value at Constant Price	% Change over Production
			Production	Value	Production	Value		
KERALA	plantain	Quintal	938.508	1434345.77	1202.218	2539574.28	1817698.28	28.099
	banana	Quintal	1082.925	3434411.97	1056.645	42288044.17	3387515.15	-2.427
	pineapple	Quintal	302.040	507349.24	335.140	652302.94	572206.85	10.959
	Tapioca(Tapioca raw)	Quintal	1430.180	1509170.04	2101.170	2586517.26	2040177.04	46.916
	cheera	Quintal	1.140	4677.86	2.590	5489.33	5052.36	127.193
	Paddy(Paddy High yeild)	Quintal	1583.260	2491112.32	1634.580	3391726.06	2571759.52	3.241
	Ginger(Ginger green)	Quintal	17.900	112033.99	21.350	98468.15	131971.01	19.274
	Elephant Foot yam	Quintal	6.240	13850.75	17.490	50271.70	40229.12	180.288
	Colocasia	Quintal	18.290	59548.39	21.510	83769.66	69990.57	17.605
	Cowpea	Quintal	3.000	12235.51	14.450	61358.91	42986.40	381.667
	Vazhuthana	Quintal	0.480	1290.00	0.300	818.10	806.25	-37.500
	Cucumber	Quintal	0.000	0.00	0.200	253.40	154.47	Infinity
	Ladies finger	Quintal	1.800	4320.00	1.900	6750.70	4560.00	5.556
	Ashgourd	Quintal	2.000	2299.84	3.000	4130.64	3449.76	50.000
	Bittergourd	Quintal	5.400	17441.99	6.900	28530.06	22152.09	27.778
	Snake gourd	Quintal	7.000	11421.06	9.200	19414.00	14914.86	31.429
	Chillies green	Quintal	0.800	3200.00	0.900	0.00	3600.00	12.500
	Turmeric (Turmeric green)	Quintal	11.670	24713.70	14.825	31477.28	31280.44	27.035
	Total				9643422.43		51848896.64	10760504.16

Table-2.13 Quantity and Value of Selected perennial and seasonal crops

	Name of crops	Units	Before SC Work		After SC Work		Value at Constant Price	% Change over production	
			production	Value	production	Value			
Perennial	Pepper(Pepper dry)	Quintal	188.398	11626017.31	215.878	8529319.12	13316466.67	14.586	
	Pepper(Pepper green)	Quintal	39.935	788470.18	54.695	659514.87	1068783.08	36.960	
	Rubber(Rubber garbled)	Quintal	2752.230	33023715.62	3514.700	43364819.85	42152267.48	27.704	
	Rubber(Rubber ungarbled)	Quintal	6745.415	73470094.04	8285.505	94289097.10	90215090.41	22.832	
	Coconut(With husk)	Number	1541993.000	20898203.94	1679932.000	29522924.11	22813912.57	8.946	
	Coconut(With out husk)	Number	747802.000	9442941.53	855270.000	13650977.84	10816961.66	14.371	
	Arecanut	Number	6876607.000	9563799.77	7344834.000	11517635.91	10306237.06	6.809	
	Jack	Quintal	860.410	134762.11	915.450	904879.76	148217.06	6.397	
	Mango	Quintal	11595.470	19385891.58	12837.910	39375736.44	21481330.28	10.715	
	Cashew	Quintal	88.178	666897.15	96.543	1263497.05	728850.57	9.486	
	Nutmeg	Quintal	48.824	1306777.28	60.118	1044165.81	1608423.39	23.132	
	Tamarind(Tamarind without seed and husk)	Quintal	0.240	1612.50	0.290	855.20	1935.00	20.833	
	Tamarind(Tamarind with seed and husk)	Quintal	0.650	1706.25	0.960	5333.76	2520.00	47.692	
	Coco(with husk)	Quintal	212.100	192886.29	221.930	174880.84	199044.58	4.635	
	Coco (without husk)	Quintal	146.520	671369.87	165.760	1738446.64	681044.56	13.131	
	Coffee(Dry plantation)	Quintal	2.300	16111.50	2.610	17011.98	18283.05	13.478	
	Coffee (Dry robusta)	Quintal	166.350	1194769.97	175.870	1161937.53	1263019.27	5.723	
		Total			182386026.89		247221033.81	216822386.69	

Table –2.13 Contd...

	Name of crops	Units	Before SC Work		After SC Work		Value at Constant Price	% Change over production
			production	Value	production	Value		
Seasonal	Plantain	Quintal	938.508	1434345.77	1202.218	2539574.28	1817698.28	28.099
	Banana	Quintal	1082.925	3434411.97	1056.645	42288044.17	3387515.15	-2.427
	Pineapple	Quintal	302.040	507349.24	335.140	652302.94	572206.85	10.959
	Tapioca(Tapioca raw)	Quintal	1430.180	1509170.04	2101.170	2586517.26	2040177.04	46.916
	Cheera	Quintal	1.140	4677.86	2.590	5489.33	5052.36	127.193
	Paddy(Paddy High yeild)	Quintal	1583.260	2491112.32	1634.580	3391726.06	2571759.52	3.241
	Ginger(Ginger green)	Quintal	17.900	112033.99	21.350	98468.15	131971.01	19.274
	Elephant Foot yam	Quintal	6.240	13850.75	17.490	50271.70	40229.12	180.288
	Colocasia	Quintal	18.290	59548.39	21.510	83769.66	69990.57	17.605
	Cowpea	Quintal	3.000	12235.51	14.450	61358.91	42986.40	381.667
	Vazhuthana	Quintal	0.480	1290.00	0.300	818.10	806.25	-37.500
	Cucumber	Quintal	0.000	0.00	0.200	253.40	154.47	
	Ladies finger	Quintal	1.800	4320.00	1.900	6750.70	4560.00	5.556
	Ashgourd	Quintal	2.000	2299.84	3.000	4130.64	3449.76	50.000
	Bittergourd	Quintal	5.400	17441.99	6.900	28530.06	22152.09	27.778
	Snake gourd	Quintal	7.000	11421.06	9.200	19414.00	14914.86	31.429
	Chillies green	Quintal	0.800	3200.00	0.900	0.00	3600.00	12.500
	Turmeric (Turmeric green)	Quintal	11.670	24713.70	14.825	31477.28	31280.44	27.035
		Total				9643422.43	51848896.64	10760504.16
	All Crops				192029449.32	299069930.45	227582890.84	

Table-2.14 Total Income, Expenditure and Net Income of beneficiaries (Rs)

Sl No	Name of District	Income (Rs)		Expenditure (Rs)						Net Income (Rs)	
		Before SC Work	After SC Work	Before SC Work	After SC Work					Before SC Work	After SC Work
					Wages	Fertilizers	Pesticides	Others	Total		
1	2	3	4	5	6	7	8	9	10	11	12
1	Thiruvananthapuram	7030774.85	8780652.91	3430425.00	3260840.00	608350.00	80250.00	309030.00	4258470.00	3600349.85	4522182.91
2	Kollam	9497280.79	13273556.56	4195768.00	4737400.00	807570.00	15300.00	127040.00	5687310.00	5301512.79	7586246.56
3	Pathanamthitta	7447178.89	8767049.09	5379700.00	4015225.00	1079100.00	14650.00	719900.00	5828875.00	2067478.89	2938174.09
4	Alappuzha	728813.85	984211.19	383500.00	400900.00	28200.00	3000.00	12360.00	444460.00	345313.85	539751.19
5	Kottayam	20257146.64	28869281.43	8285649.00	10229022.00	938674.00	54270.00	852439.00	12074405.00	11971497.64	16794876.43
6	Idukki	18693277.58	19135505.24	8791899.00	6595019.00	1433304.00	33530.00	1621495.00	9683348.00	9901378.58	9452157.24
7	Ernakulam	7118260.22	9197034.93	3833450.00	2637050.00	510670.00	93280.00	1415485.00	4656485.00	3284810.22	4540549.93
8	Thrissur	10238643.77	13404501.57	4419500.00	5682400.00	55500.00	400.00	73800.00	5812100.00	5819143.77	7592401.57
9	Palakkad	33614404.59	60568172.10	15603550.00	12259050.00	2654499.00	2872200.00	4162670.00	21948419.00	18010854.59	38619753.10
10	Malappuram	19555740.06	22655957.19	8319600.00	5900300.00	494151.00	18300.00	2748820.00	9161571.00	11236140.06	13494386.19
11	Kozhikode	16577485.38	28139554.46	7492770.00	9390250.00	1445450.00	45100.00	950450.00	11831250.00	9095417.05	16308304.46
12	Kannur	4975986.47	7516794.74	2488750.00	2823800.00	153850.00	12250.00	344050.00	3333950.00	2487236.47	4182844.74
13	Kasargod	36294456.23	77777659.04	10547596.00	9914320.00	2435908.00	0.00	0.00	12350228.00	25746860.23	65427431.04
State		192029449.32	299069930.45	83172157.00	77845576.00	12645226.00	3242530.00	13337539.00	107070871.00	108867993.99	191999059.45

Graph -2.10 Net Income of beneficiaries Before and After SC Work

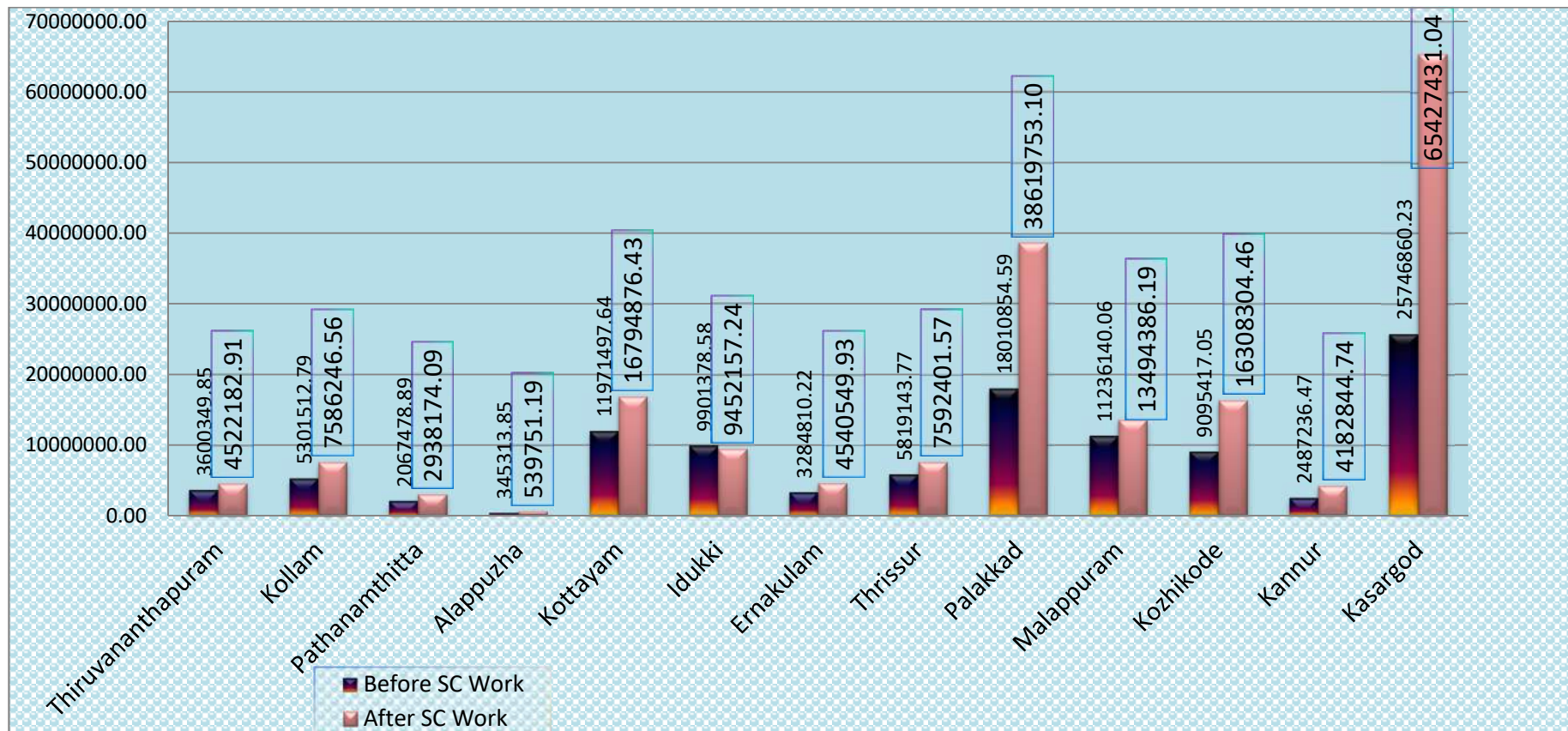
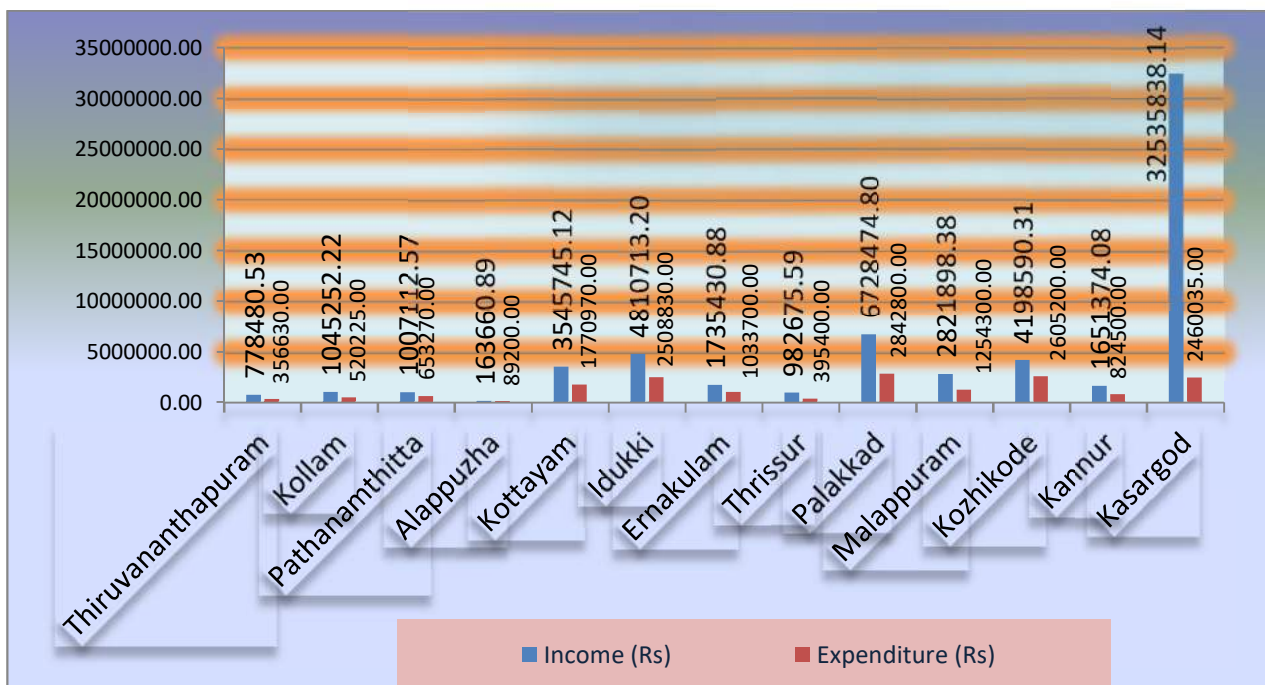


Table-2.15 Income, Expenditure and Net Income of Control Plots

SI No:	Name of District	Total area (in acres)	Income (Rs)	Expenditure (Rs)	Net Income (Rs)
1	Thiruvananthapuram	11.370	778480.53	356630.00	421850.53
2	Kollam	24.770	1045252.22	520225.00	525027.22
3	Pathanamthitta	22.520	1007112.57	653270.00	353842.57
4	Alappuzha	3.850	163660.89	89200.00	74460.89
5	Kottayam	48.122	3545745.12	1770970.00	1774775.12
6	Idukki	89.190	4810713.20	2508830.00	2301883.20
7	Ernakulam	21.670	1735430.88	1033700.00	701730.88
8	Thrissur	18.590	982675.59	395400.00	587275.59
9	Palakkad	91.050	6728474.80	2842800.00	3885674.80
10	Malappuram	35.340	2821898.38	1254300.00	1567598.38
11	Kozhikode	142.760	4198590.31	2605200.00	1593390.31
12	Kannur	40.290	1651374.08	824500.00	826874.08
13	Kasargod	45.910	32535838.14	2460035.00	30075803.14
	State	595.432	62005246.71	17315060.00	44690186.71

Graph -2.11 Income & Expenditure of Control Plots in rupees



Graph -2.12 Net Income of Control Plot in Rupees

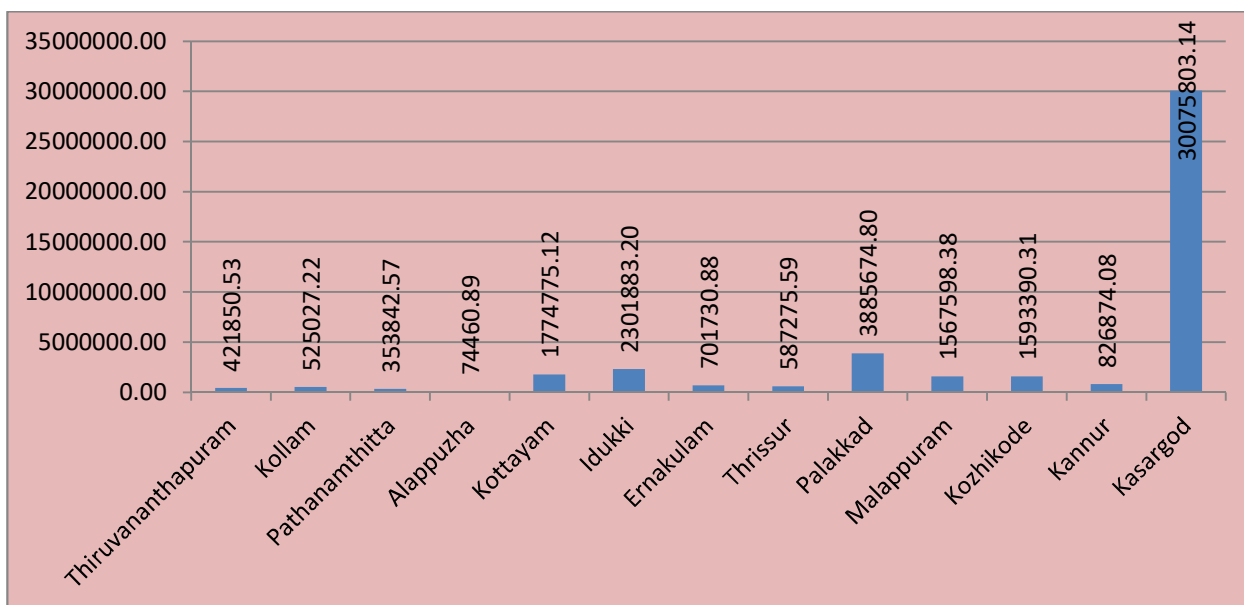
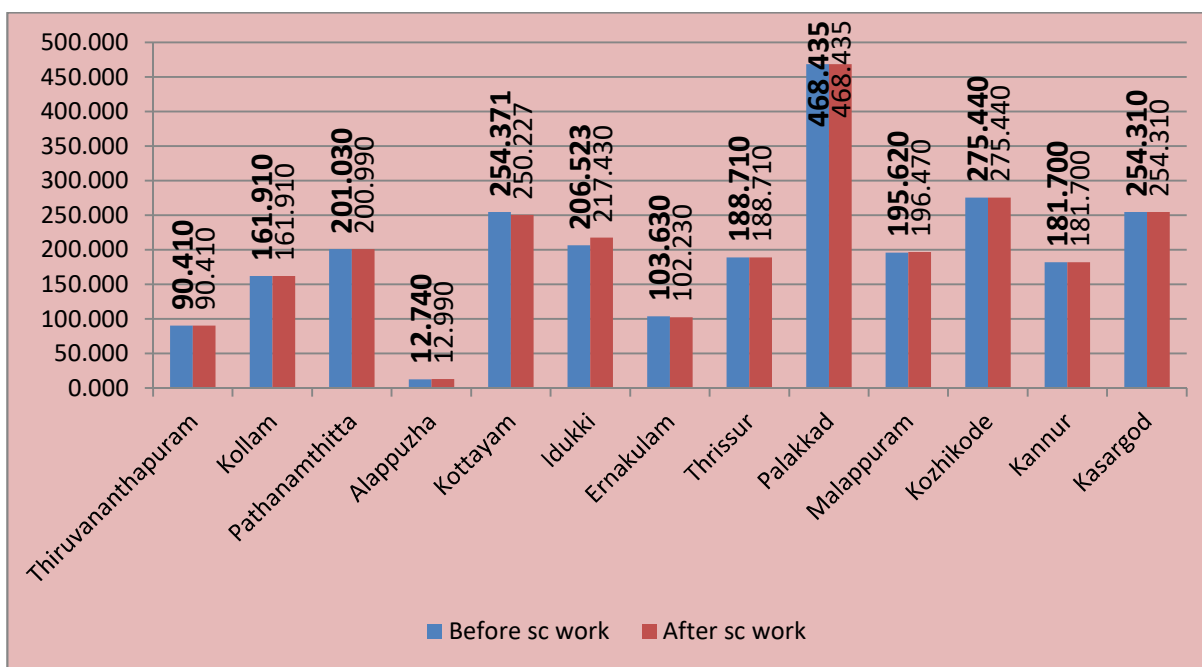


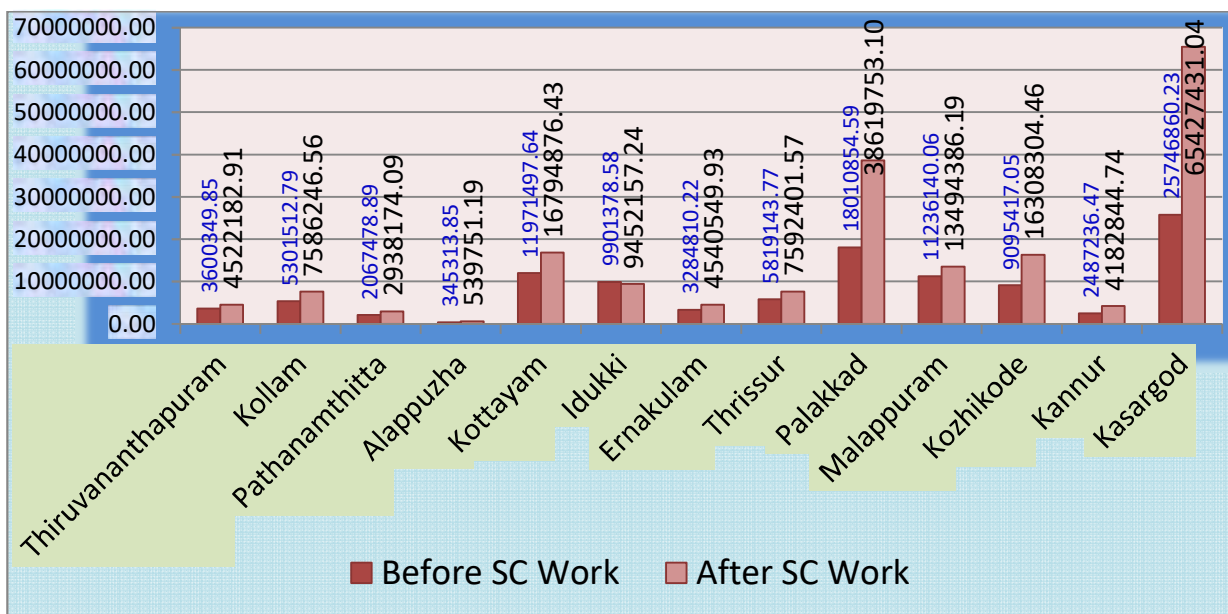
Table-2.16 Net income per acre before and after soil conservation programme

Sl No	Name of District	Before SC Work			After SC Work		
		cultivated area in acre	Net Income (Rs)	Net Income per Acre (Rs)	Area in acre	Net Income (Rs)	Net Income per Acre (Rs)
1	2	3	4	5	6	7	8
1	Thiruvananthapuram	90.410	3600349.85	39822.47	90.410	4522182.91	50018.61
2	Kollam	161.910	5301512.79	32743.58	161.910	7586246.56	46854.71
3	Pathanamthitta	201.030	2067478.89	10284.43	200.990	2938174.09	14618.51
4	Alappuzha	12.740	345313.85	27104.70	12.990	539751.19	41551.28
5	Kottayam	254.371	11971497.64	47063.14	250.227	16794876.43	67118.56
6	Idukki	206.523	9901378.58	47943.22	217.430	9452157.24	43472.19
7	Ernakulam	103.630	3284810.22	31697.48	102.230	4540549.93	44415.04
8	Thrissur	188.710	5819143.77	30836.44	188.710	7592401.57	40233.17
9	Palakkad	468.435	18010854.59	38448.99	468.435	38619753.10	82444.21
10	Malappuram	195.620	11236140.06	57438.61	196.470	13494386.19	68684.21
11	Kozhikode	275.440	9095417.05	33021.41	275.440	16308304.46	59208.19
12	Kannur	181.700	2487236.47	13688.70	181.700	4182844.74	23020.61
13	Kasargod	254.310	25746860.23	101242.03	254.310	65427431.04	257274.31
State		2594.829	108867993.99	41955.75	2601.252	191999059.45	73810.25

Graph -2.13 Cultivated Area in Acre Before and After SC Work



Graph -2.14 Net Income in Rupees Before and After SC Work



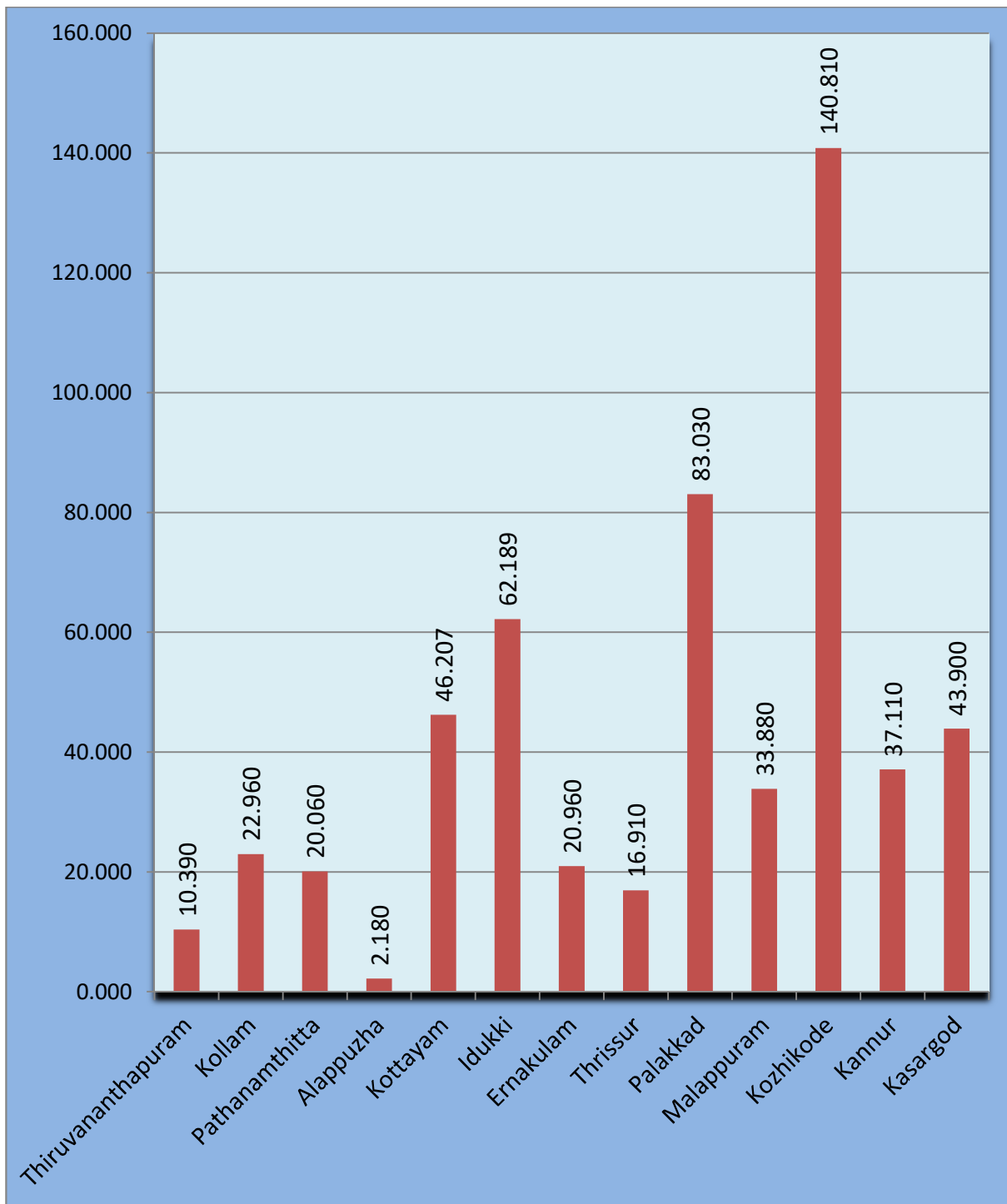
Graph -2.15 Net Income per Acre in Rupees Before and After SC Work



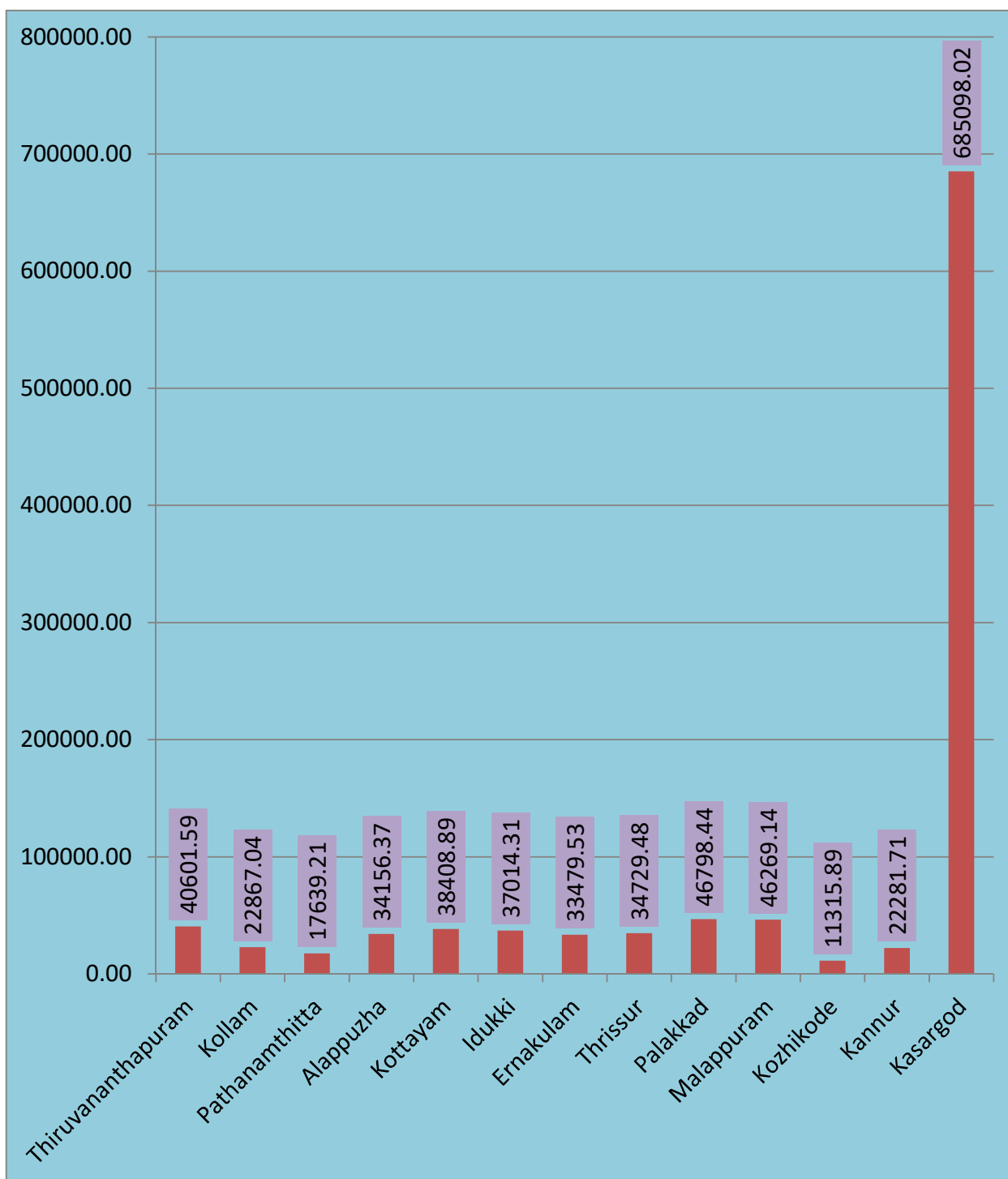
Table 2.17 Income per acre in the Control Plots

Sl No:	Name of District	Area cultivated in acre	Net Income (Rs)	Net Income per Acre (Rs)
1	2	3	4	5
1	Thiruvananthapuram	10.390	421850.53	40601.59
2	Kollam	22.960	525027.22	22867.04
3	Pathanamthitta	20.060	353842.57	17639.21
4	Alappuzha	2.180	74460.89	34156.37
5	Kottayam	46.207	1774775.12	38408.89
6	Idukki	62.189	2301883.20	37014.31
7	Ernakulam	20.960	701730.88	33479.53
8	Thrissur	16.910	587275.59	34729.48
9	Palakkad	83.030	3885674.80	46798.44
10	Malappuram	33.880	1567598.38	46269.14
11	Kozhikode	140.810	1593390.31	11315.89
12	Kannur	37.110	826874.08	22281.71
13	Kasargod	43.900	30075803.14	685098.02
State		540.586	44690186.71	82669.83

Graph-2.16 District Wise cultivated Area in Acres in the ControlPlots



Graph -2.17 District wise Net Income per Acre in Rupees in control plots



2.6 Cost Benefit Analysis of Soil Conservation Programme

Productive benefits are the direct returns from the programmes implemented. In regular agricultural lands, increase in the yield provides the productive benefits. In addition, production from degraded land, which are cultivated after the soil conservation measures are also taken into consideration.

Protective benefits are the intangible benefits derived from implementation of soil conservation programme. These benefits are more stable and provide base for the continued prosperity in the area. In the case of agricultural land, protective benefits are assessed in terms of these increased values because of the prevention of further soil erosion and its increased productive potentialities.

In the light of the present study an attempt is made for cost benefit analysis with the collected data. Total cost incurred for the soil conservation works, including maintenance work for the year 2018-19 is Rs.124907821/-.

The total area under cultivation after soil conservation work was 2601.252 acres. The value of crops before the soil conservation programme comes to Rs.192029449.32. The value of crops after the implementation of soil conservation programme has also been calculated as Rs.299069930.45/-. It is estimated that the value at constant price as Rs.227582890.84/-

Several benefits flow from the soil conservation programme implementation, three of them, which derive special attentions are taken up for consideration.

They are:

- a. Extension of area under cultivation
- b. Increase in productivity
- c. Diversification of cropping pattern

a) Extension of area under cultivation

The study revealed that 6.423 (the difference between the area of cultivation before and after sc work) acres of land has been additionally brought under cultivation after soil conservation programme . This benefit is achieved only due to the implementation of soil conservation programme.

b) Increase in Production

Production also increased due to the implementation of soil conservation programme. In the case of perennial crops production of Nutmeg 23.13 %, Coco (with husk) 4.64%, Mango 10.72%, Pepper dry 14.59%, Rubber (garbled) 27.70%, Coco (without husk)13.13%, Pepper (green) 36.96.% increased. In the case of seasonal crops, percentage increase in production elephant foot Yam 180.29%, Colocasia 17.61 %, Pineapple 10.96.% , Plantain 28.10 % and Ginger 19.27 % respectively.

c) Diversification of cropping pattern

Soil Conservation Programmes increased the soil capacity and which facilitates the cultivation of more remunerative crops. This advantage can be reaped in full, only if the conservation programmes are followed properly, i.e. the dissemination of new techniques of production, adequate provision of inputs and service which will promote the land to improve production.. The conservation programmes will lead to the growing of seasonal crops will accelerate conservation of soil more effectively and potentially.

Chapter III

3.1 General Observations

The distribution of holdings of the selected beneficiaries of the soil conservation programmes reveal that 46.81% of the beneficiary holding belongs to less than one acre, 41.98 % have holding area between one acre to 3 acres. And above 3 acre were 8.17% and up to 5 acres were 2.87% respectively.

25% of the beneficiaries reported that contour bunds effectively controlled soil erosion while about 75% were on the view that it moderately controlled soil erosion.

About the fertility of the soil 4% were of the view that the conservation measures have improved the fertility of the soil remarkably controlled while 96% reported that the fertility of the soil has improved moderately and 0.5 % opinioned that it has no effect on the fertility of the soil.

Similarly regarding the moisture retention 2% reported that the scheme has substantially controlled moisture retention while 98% reported that the scheme has caused moisture retention moderately only 0.7% reported that there is no effect. Details are presented in Table No.3.1

Table-3.1 Opinion of beneficiaries about effectiveness of bunds, Fertility of the soil and Moisture retention

Sl No	Name of District	Effectiveness of Bunds			Fertility of soil			Moisture Retention			Total
		Effective	Moderately Effective	No Effect	Remarkably Improved	Moderately Improved	No Improvement	Substantially Increased	Moderately Increased	No Change	
1	2	3	4	5	6	7	8	9	10	11	12
1	Thiruvananthapuram	0	104	0	0	104	0	0	104	0	104
2	Kollam	0	283	0	0	283	0	0	283	0	283
3	Pathanamthitta	1	140	0	1	140	0	0	141	0	141
4	Alappuzha	67	71	0	0	138	0	0	134	4	138
5	Kottayam	34	116	0	0	150	0	0	150	0	150
6	Idukki	193	2	1	7	189	0	1	195	0	196
7	Ernakulam	128	10	0	34	104	0	12	126	0	138
8	Thrissur	0	125	0	0	125	0	0	125	0	125
9	Palakkad	0	101	0	0	101	0	0	100	1	101
10	Malappuram	0	101	3	0	101	3	0	101	3	104
11	Kozhikode	24	164	0	2	186	0	1	187	0	188
12	Kannur	1	149	0	0	150	0	1	149	0	150
13	Kasargod	50	119	2	25	140	6	17	149	5	171
	state	498	1485	6	69	1911	9	32	1944	13	1989

Table-3.2 Opinion of beneficiaries about Conditions of Bund

Sl No	Name of District	Bund Condition			Total
		Good	Partially damaged	Seriously damaged	
1	2	3	4	5	6
1	Thiruvananthapuram	104	0	0	104
2	Kollam	274	9	0	283
3	Pathanamthitta	141	0	0	141
4	Alappuzha	92	46	0	138
5	Kottayam	150	0	0	150
6	Idukki	91	105	0	196
7	Ernakulam	138	0	0	138
8	Thrissur	113	12	0	125
9	Palakkad	52	49	0	101
10	Malappuram	100	4	0	104
11	Kozhikode	170	17	1	188
12	Kannur	145	5	0	150
13	Kasargod	169	1	1	171
State		1739	248	2	1989

Table 3.3 Opinion of beneficiaries about the Scheme Area

District	Side walls of canals conserved		Water level content increased		Level of soil erosion decreased	
	before SC work	after SC work	before SC work	after SC work	before SC work	after SC work
Thiruvananthapuram	1	104	82	104	5	104
Kollam	4	4	241	244	5	264
Pathanamthitta	2	4	10	20	2	46
Alappuzha	3	137	136	136	89	135
Kottayam	0	0	40	150	1	146
Idukki	0	0	51	129	4	184
Ernakulam	4	70	6	79	4	71
Thrissur	1	15	39	39	3	122
Palakkad	0	12	34	69	8	99
Malappuram	21	91	30	96	1	102
Kozhikode	8	33	157	162	6	95
Kannur	98	148	30	132	53	150
Kasargod	1	58	0	124	0	163

Table 3.4 Number of beneficiaries having awareness on soil and water conservation schemes.

District	SCHEME	No. of Beneficiaries	awareness on soil & water conservatio	awareness on watershed	implemented schemes of soil and	satisfaction with the scheme implemented in own
Thiruvananthapuram	Thannimoodu watershed project	104	104	104	104	104
Kollam	Mannayem Watershec project RIDF XV	283	282	282	282	280
Pathanamthitta	Arayanjilimannu Watershed	141	81	92	140	140
Alappuzha	pallippuramthycattuseryvellakkettunivarana projrct phase 1&2	138	135	136	131	132
Kottayam	Nelloor Watershed-1	150	148	148	148	150
Idukki	ValliyankavuNeerthada Scheme	196	190	173	190	185
Ernakulam	Attuvelikuzhithodu watershed project&kalamboorthodu flood control& and trainage protection scheme	138	126	126	51	51
Thrissur	Mallankuzhy Watershed RIDF 1X	125	125	125	125	125
Palakkad	Chulliyur Watershed 20 B 39 S scheme	101	81	74	100	96
Malappuram	AmmanamChola RIDF 17	104	104	104	103	101
Kozhikode	Anayode watershed project	188	186	174	185	184
Kannur	Malur watershed RIDF XIV	150	150	135	55	52
Kasargod	Paramba watershed Scheme	171	170	169	155	151

Table 3.5 Potentiality of Land in Scheme Area

District	Before SC work						After SC work					
	cultivable land	Dryland	Soil Erosion	Rocky land	Marshy land	Non-cultivable land	cultivable land	Dryland	Soil Erosion	Rocky land	Marshy land	Non-cultivable land
Thiruvananthapuram	9	16	97	1	0	0	93	4	1	1	0	0
Kollam	282	93	274	0	0	3	282	91	170	0	0	4
Pathanamthitta	141	135	135	2	0	0	140	62	21	1	0	0
Alappuzha	135	2	8	0	0	0	132	1	4	0	0	0
Kottayam	36	5	83	1	0	0	146	6	1	1	0	0
Idukki	91	176	193	56	0	17	127	134	129	55	0	16
Ernakulam	132	3	135	0	0	0	138	2	2	0	0	0
Thrissur	125	81	119	4	0	0	125	81	1	4	0	0
Palakkad	70	88	95	7	0	4	85	41	13	6	0	5
Malappuram	102	95	103	102	0	0	104	7	3	100	0	0
Kozhikode	183	71	115	2	0	2	186	53	8	2	0	2
Kannur	41	1	109	100	0	0	140	1	11	78	0	0
Kasargod	22	163	163	34	0	1	117	4	2	27	0	1

Table 3.6 Potentiality of Land in Control Plots

District	Cultivable land	Dry land	Soil Errosion	Rocky land	Marshy land	Non cultivable land
Thiruvananthapuram	12	14	5	1	0	0
Kollam	49	31	57	0	0	0
Pathanamthitta	28	28	28	0	0	0
Alappuzha	28	0	0	0	0	0
Kottayam	30	9	26	0	0	0
Idukki	16	39	40	3	0	1
Ernakulam	31	1	31	0	0	0
Thrissur	25	13	0	0	0	0
Palakkad	13	20	20	5	0	1
Malappuram	22	22	22	22	0	0
Kozhikode	35	30	38	0	0	0
Kannur	5	4	28	25	0	0
Kasargod	31	33	34	7	0	0

Table 3.7 Occupational Profile of beneficiaries in the Scheme Area (nos).

SI No:	Name of District	Occupation				Total
		Agriculture	Non-Agriculture	Agriculture Labourers	Non-Agriculture Labourers	
1	Thiruvananthapuram	2	85	2	15	104
2	Kollam	55	117	11	100	283
3	Pathanamthitta	55	86	0	0	141
4	Alappuzha	0	81	16	41	138
5	Kottayam	67	77	0	6	150
6	Idukki	101	47	30	18	196
7	Ernakulam	27	66	7	38	138
8	Thrissur	115	10	0	0	125
9	Palakkad	72	29	0	0	101
10	Malappuram	28	65	9	2	104
11	Kozhikode	77	106	4	1	188
12	Kannur	22	33	58	37	150
13	Kasargod	141	20	10	0	171
State		762	822	147	258	1989

Table-3.8 Occupational Profile of beneficiaries in the Control Plots (nos)

SI No	Name of District	Occupation				Total
		Agriculture	Non-Agriculture	Agriculture Labourers	Non-Agriculture Labourers	
1	Thiruvananthapuram	1	7	5	8	21
2	Kollam	12	13	7	25	57
3	Pathanamthitta	4	24	0	0	28
4	Alappuzha	0	14	2	12	28
5	Kottayam	12	17	1	0	30
6	Idukki	23	13	3	1	40
7	Ernakulam	6	22	1	2	31
8	Thrissur	9	13	3	0	25
9	Palakkad	17	3	0	0	20
10	Malappuram	11	4	6	1	22
11	Kozhikode	18	17	2	1	38
12	Kannur	11	7	9	3	30
13	Kasargod	24	9	1	0	34
State		148	163	40	53	404

3.2 Occupational Profile

The occupational profile of the selected beneficiaries revealed that 38.31% engaged in agriculture, 41.32% were depend on non-agriculture, 7.39 % agricultural labourer s and 12.97 % categorized as non-agricultural labourers.

3.3 Summary of Findings

The data furnished in this report were collected through the Evaluation study on soil conservation programmes conducted during 2018-19. The entire districts except Wayanad were covered in this study. The methodology of this study was stratified sampling method on the basis of the area of the holding. For the study purpose schemes implemented by the Soil Survey and Soil Conservation Department and other Local Self Government were included. For the purpose of comparison control plots were also selected from the scheme area where the soil conservation works not carried out under any scheme. In the light of the present study, an attempt is made for the cost benefit analysis with the collected data.

The particulars relating to income and expenditure of beneficiary plots reveals that after implementation of soil conservation programme net income of the beneficiaries of the scheme area increased . It is estimated that the percentage increase of net income per acre in beneficiary plots of the scheme area 75.92%.

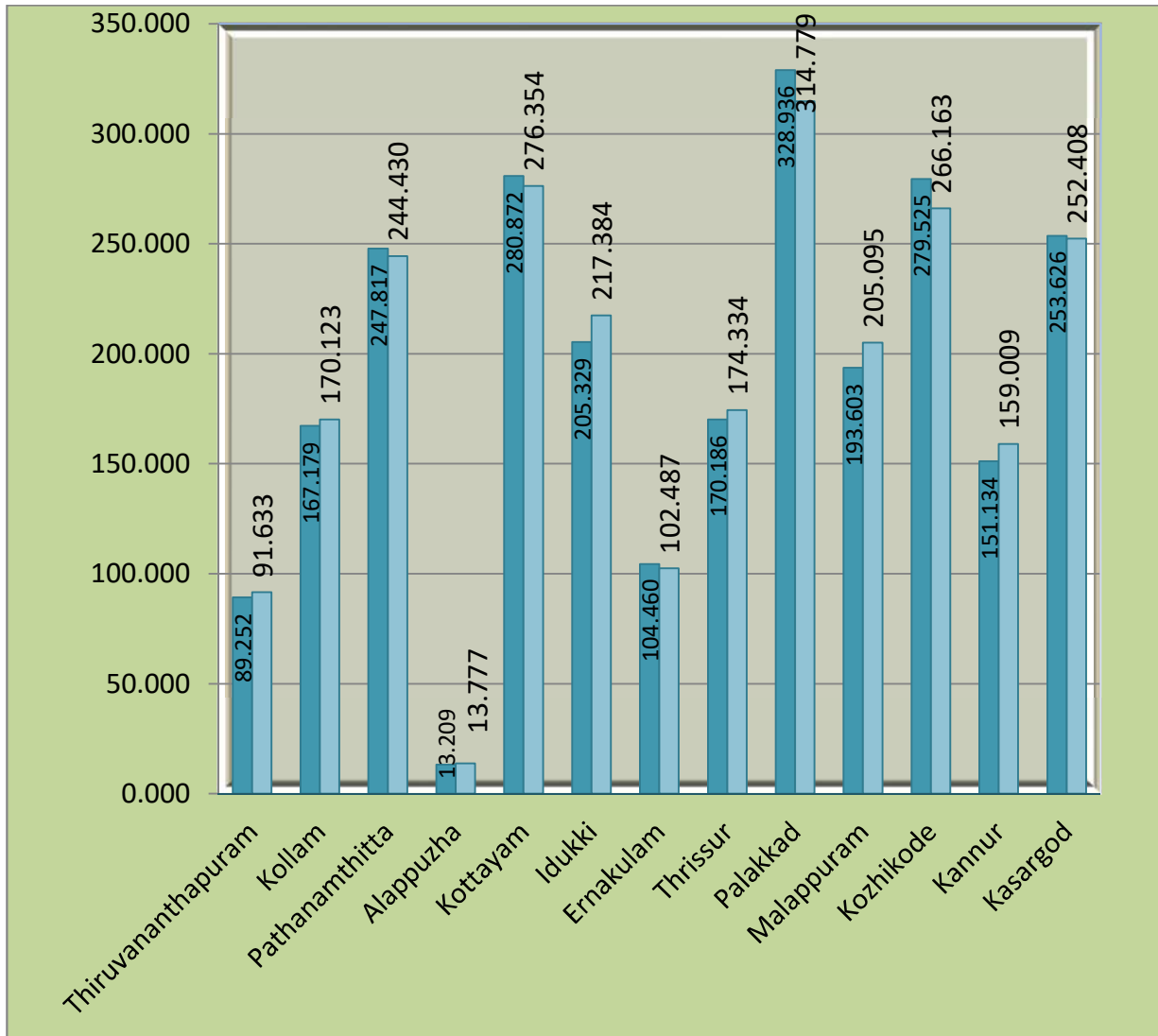
Table 3.9 Cropping Intensity in Scheme Area

Sl No	District	Area Cultivated		Total Area Cropped		Intensity of Cropping (%)	
		Before SC Work	After SC Work	Before SC Work	After SC Work	Before SC Work	After SC Work
1	2	3	4	5	6	7	8
1	Thiruvananthapuram	90.410	90.410	89.252	91.633	98.720	101.350
2	Kollam	161.910	161.910	167.179	170.123	103.250	105.070
3	Pathanamthitta	201.030	200.990	247.817	244.430	123.270	121.610
4	Alappuzha	12.740	12.990	13.209	13.777	103.680	106.060
5	Kottayam	254.371	250.227	280.872	276.354	110.420	110.440
6	Idukki	206.523	217.430	205.329	217.384	99.420	99.980
7	Ernakulam	103.630	102.230	104.460	102.487	100.800	100.250
8	Thrissur	188.710	188.710	170.186	174.334	90.180	92.380
9	Palakkad	468.435	468.435	328.936	314.779	70.220	67.200
10	Malappuram	195.620	196.470	193.603	205.095	98.970	104.390
11	Kozhikode	275.440	275.440	279.525	266.163	101.480	96.630
12	Kannur	181.700	181.700	151.134	159.009	83.180	87.510
13	Kasargod	254.310	254.310	253.626	252.408	99.730	99.250
	State	2594.829	2601.252	2485.128	2487.976	95.772	95.645

3.4 Cropping Intensity

Productivity of the land to a certain extent influenced the cropping pattern of a locality. District wise details are presented in Table No.3.9

Graph 3.1 Total Area Cropped Before and After SC Work



Conclusion

The concepts of Watershed Management has been well recognized among the people in the scheme area. The effectiveness of the activities in the treated area may be analyzed during and after the implementation of the project. Evaluation Study will be a solution to find the effectiveness of the scheme.

Watershed Management implies the wise use of the soil, water and other bio-resources in a scheme area to obtain optimum production with minimum disturbance to the environment. As we know water and soil interdependent; both of them should be conserved through these schemes. For judicious utilization and development of all lands; the overall objective of Watershed programme includes recognition of Watershed as a basic unit. The land is to be treated according to the capability and requirement by adopting suitable scientific and adequate methods that will control soil erosion, to conserve water, improve the income from farming, to control flood and droughts etc.

മണ്ണു സംരക്ഷണ പദ്ധതി പഠന സർവ്വേ- 2018-19

ഭക്ഷണം, പാർപ്പിടം, ജലം എന്നിവയ്ക്ക് മനുഷ്യനുൾപ്പെടെയുള്ള സസ്യജന്തുജാലങ്ങൾ മണ്ണിനെ ആശ്രയിക്കുന്നു. വർഷപാതം സ്വീകരിച്ച് സുരക്ഷിതമായി സംഭരിച്ച് വച്ച് അരുവിയായും, പുഴയായും, ഉറവകളായും പുനർജനിച്ച് വേനലിന്റെ ദാഹമകറ്റാൻ മണ്ണിന് മാത്രമേ കഴിയൂ. ഒരു പ്രദേശത്തിന്റെ ഘടനയുടെ വ്യത്യാസം അനുസരിച്ച് മഴയുടെയും മറ്റ് പ്രകൃതിക്ഷോഭങ്ങളുടെയും ഫലമായി ആ പ്രദേശത്തെ ഫലഭൂയിഷ്ടമായ മണ്ണ് നഷ്ടമാകുന്ന അവസ്ഥയാണ് മണ്ണൊലിപ്പ്കൊണ്ട് അർത്ഥമാക്കുന്നത്. വലിയതോതിലുള്ള മണ്ണൊലിപ്പ് ആ പ്രദേശത്തിലെ മണ്ണിന്റെ ഫലഭൂയിഷ്ടതയും ജലാംശത്തിന്റെ അളവും കുറയ്ക്കുന്നു. അതിലൂടെ കാർഷികവിളകളുടെ ഉല്പാദനം കുറയുകയും ചെയ്യുന്നു. സർക്കാർ മണ്ണൊലിപ്പ് തടയുന്നതിന് മണ്ണ് സംരക്ഷണ വകുപ്പ് മുഖേനയും മറ്റ് വകുപ്പുകൾ വഴിയും വിവിധ പദ്ധതികൾ ആവിഷ്കരിച്ച് നടപ്പിലാക്കി വരുന്നു. ഈ വിധത്തിൽ മണ്ണുസംരക്ഷണ വകുപ്പ് നടത്തുന്ന പ്രവർത്തനങ്ങളുടെ ഫലമായി മണ്ണിന്റെ ഫലഭൂയിഷ്ടി, ജലസംഭരണശേഷി എന്നിവ വർദ്ധിക്കുന്നു. ഇത് മികച്ച വിളവ് ലഭ്യമാക്കുന്നതിന് സഹായിക്കുന്നു. ആയതിനാൽ മണ്ണ് സംരക്ഷണ പദ്ധതി അനിവാര്യമാണ്. പ്രാദേശികമായി ലഭിക്കുന്ന വസ്തുക്കൾകൊണ്ട് വെള്ളത്തിന്റെ നീരൊഴുക്ക് നിയന്ത്രിച്ചും സസ്യജാലങ്ങളെ സംരക്ഷിച്ചും വരൾച്ചയെ പ്രതിരോധിച്ചുമുള്ള സമഗ്രവും സുസ്ഥിരവുമായ വികസനമാണ് നീർത്തട സംരക്ഷണ പ്രവർത്തികൾ കൊണ്ട് ഉദ്ദേശിക്കുന്നത്. ഇത്തരം പ്രവർത്തനങ്ങളെ വിലയിരുത്തുകയാണ് മണ്ണ് സംരക്ഷണ സർവ്വേ കൊണ്ട് ലക്ഷ്യമാക്കുന്നത്.

സോയിൽ കൺസർവേഷൻ വകുപ്പ് എല്ലാ ജില്ലകളിലും നടപ്പിലാക്കിയ മണ്ണ് സംരക്ഷണ നീർത്തട വികസന പദ്ധതികളെക്കുറിച്ചുള്ള പഠനമാണ് സാമ്പത്തിക സ്ഥിതിവിവര കണക്ക് വകുപ്പ് ഈ സർവ്വേയിലൂടെ നടത്തി വരുന്നത്. മണ്ണ് സംരക്ഷണ വകുപ്പ് നടപ്പിലാക്കുന്ന വാട്ടർ ഷെഡ് / ഫ്ലഡ് പ്രൊട്ടക്ഷൻ എന്നിവയിൽ ഏതെങ്കിലും ഒരു പദ്ധതി തെരഞ്ഞെടുത്ത് അതിൽ ഉൾപ്പെടുന്ന മുഴുവൻ ഗുണഭോക്താക്കളെയും

ഉൾപ്പെടുത്തിയാണ് സർവ്വേ നടത്തുന്നത്. മൂന്ന് വർഷം മുൻപ് പൂർത്തീകരിച്ച പദ്ധതികളിൽ നിന്നും ഓരോ കാർഷിക വർഷവും സിമിൾ റാൻ്റെ സാസ്റ്റിംഗ് വഴി മണ്ണ് സംരക്ഷണ പഠന സർവ്വേയ്ക്കായി ഒരു സ്കീം തെരഞ്ഞെടുക്കുന്നു. താരതമ്യ പഠനത്തിനായി പദ്ധതി പ്രദേശത്തിന് ചുറ്റുമുള്ള പ്രദേശത്ത് നിന്നും 20% കൺട്രോൾ പ്ലോട്ടുകൾ തെരഞ്ഞെടുത്ത് സർവ്വേ നടത്തി അവരുടെ ഇപ്പോഴത്തെ കാർഷിക വിളകളുടെ വിസ്തൃതി, ഉല്പാദനം,

3 വർഷം മുൻപുള്ള കാർഷിക വിളകളുടെ വിസ്തൃതി, ഉല്പാദനം ഇവ തമ്മിൽ താരതമ്യ പഠനം നടത്തുകയാണ് ചെയ്യുന്നത്. പദ്ധതി പ്രദേശത്തിൻ്റെ ജലലഭ്യത, ഫലഭൂയിഷ്ഠത തുടങ്ങി മറ്റ് പുരോഗതികളും കണ്ടെത്തി റിപ്പോർട്ട് ചെയ്യുന്നു. മണ്ണ് സംരക്ഷണ വകുപ്പ് നടപ്പിലാക്കിയ പദ്ധതി എത്രത്തോളം കർഷകന് പ്രയോജനപ്പെടുന്നു, പദ്ധതിയ്ക്ക് ശേഷം പ്രസ്തുത പ്രദേശത്ത് വന്നിട്ടുള്ള മാറ്റം എന്നിവ പഠന വിഷയമാക്കുന്നു. പഠനശേഷം തയ്യാറാക്കുന്ന റിപ്പോർട്ട് മണ്ണ് സംരക്ഷണ വകുപ്പിന് കൈമാറുന്നു.

ഓരോ ജില്ലയിലും തെരഞ്ഞെടുക്കുന്ന ഗുണഭോക്താക്കളുടെ മൊത്തം ഭൂവിസ്തൃതിയെ സ്ട്രാറ്റങ്ങളായി തിരിച്ചാണ് വിലയിരുത്തൽ പഠനം നടത്തുന്നത്. സ്ട്രാറ്റം 1 - ഒരു ഏക്കറിന് താഴെയുള്ള വിസ്തൃതിയുള്ളവ സ്ട്രാറ്റം 2 - 1 ഏക്കർ മുതൽ 3 ഏക്കറിന് താഴെ വരെ വിസ്തീർണ്ണമുള്ളവ സ്ട്രാറ്റം 3- 3 ഏക്കർ മുതൽ 5 ഏക്കറിന് താഴെ വരെ വിസ്തീർണ്ണമുള്ളവ സ്ട്രാറ്റം 4 - 5 ഏക്കറിന് മുകളിൽ വിസ്തീർണ്ണമുള്ളവ

ടെറസിംഗ്, നീർക്കുഴികൾ, ജൈവവേലി, പുൽവരമ്പ് നിർമ്മാണം, ആവരണ വിളകൾ, പുതയിടീൽ, കൊണ്ടൂർ ബണ്ടിംഗ്, ചെക്ക് ഡാം നിർമ്മാണം, തണ്ണീർതട സംരക്ഷണ പ്രവർത്തനങ്ങൾ എന്നിങ്ങനെ വിവിധങ്ങളായ പദ്ധതികളാണ് ഈ സ്കീമിൽ ഉൾപ്പെടുത്തി നടപ്പിലാക്കുന്നത്.

ടെറസിംഗ് (തട്ടുതിരിയ്ക്കൽ)

12 മുതൽ 45 ശതമാനം വരെ ചരിവുള്ള പ്രദേശങ്ങളിൽ തട്ടുതിരിക്കലാണ് മണ്ണ്-ജല സംരക്ഷണത്തിന് അനുയോജ്യം. ലഭ്യമായ മേൽ മണ്ണിൻ്റെ പകുതിയിൽ കൂടുതൽ ആഴത്തിൽ

മാറ്റി നിരപ്പാക്കാൻ ഉപയോഗിക്കുന്നത് മേൽ മണ്ണിനു മുകളിൽ ഫലഭൂയിഷ്ഠി കുറഞ്ഞ അടിമണ്ണ് കലരാൻ കാരണമാകുന്നു എന്നതാണ് ഈ രീതിയുടെ പരിമിതി.

നീർക്കുഴികൾ (Contour trenching)

ഇടനാടൻ പ്രദേശങ്ങളിൽ കൃഷിവിളകൾക്കിടയിലും കൃഷിയോഗ്യമല്ലാത്ത തരിശുകളിലുമാണ് പൊതുവിൽ നീർക്കുഴികൾ നിർമ്മിക്കുന്നത്.

ജൈവവേലി

ആടലോടകം, ചെമ്പരത്തി, ശീമക്കൊന്ന, തുടങ്ങിയ മരങ്ങൾ വരിയായി നട്ട് ഒരു വേലി കണക്ക് ഇത് മാറുന്നു. ഇതിനെ ജൈവവേലി എന്നു പറയുന്നു.

ആവരണ വിളകൾ

പയർവർഗ്ഗത്തിലുള്ളതും ഇടതൂർന്ന് വളരുന്നതുമായ വിളകളുടെ ഒരു ആവരണം മണ്ണിൽ സൃഷ്ടിച്ച് ഒരു ജൈവ പുതപ്പാക്കലാണ് ആവരണ വിളകൾ ചെയ്യുന്നത്. പയർ വർഗ്ഗ ചെടികളായതിനാൽ അന്തരീക്ഷ നൈട്രജൻ വലിച്ചെടുത്ത് മണ്ണിന്റെ ഫലഭൂയിഷ്ഠി വർദ്ധിപ്പിക്കുവാനും ആവരണ വിളകൾ സഹായിക്കുന്നു.

പുതയിടിൽ

ബാഷ്പീകരണം മൂലമുള്ള മണ്ണിലെ ജലനഷ്ടം കുറയ്ക്കാനും, മഴത്തുള്ളി മണ്ണിലുണ്ടാക്കുന്ന ആഘാതമില്ലാതാക്കി മണ്ണൊലിപ്പ് കുറയ്ക്കുവാനും മഴവെള്ളത്തെ ആഗിരണം ചെയ്ത് മണ്ണിൽ കിനിഞ്ഞിറങ്ങുവാനും സഹായിക്കുന്നു.

ജൈവാവശിഷ്ടങ്ങൾ മണ്ണിനാവരണമായി കിടന്നാൽ വെയിലേറ്റ് മണ്ണ് വരണ്ട് പോകുന്നില്ല. മഴക്കാലത്ത് മണ്ണിലുഴുകി ചേരുന്ന ജൈവവസ്തുക്കൾ മൺതരികളെ പരസ്പരം ഒട്ടിപ്പിടിക്കാൻ സഹായിക്കുകയും അങ്ങനെ മണ്ണിലെ സൂക്ഷ്മ സൂക്ഷിരങ്ങൾ വർദ്ധിപ്പിച്ച് മണ്ണിലുടനീളം വായു സഞ്ചാരവും വർദ്ധിപ്പിക്കുകയും വെള്ളം കിനിഞ്ഞിറങ്ങുവാനും, ഈർപ്പം പിടിച്ചുനിർത്താനുമുള്ള മണ്ണിന്റെ ശേഷി വർദ്ധിപ്പിക്കുകയും ചെയ്യും. ചെറുതോ വലുതോ ആയ

ഏതൊരു ജലസ്രോതസ്സിനും അതിലേയ്ക്ക് വെള്ളം ഒഴുകിയെത്തുന്ന ഒരു ഭൂവിഭാഗത്തിനു ചുറ്റുമായി കുന്നിൻ്റെ നെറുക മുതൽ ജലസ്രോതസ്സിൻ്റെ ബഹിർഗമന സ്ഥാനം വരെ നീളുന്ന ആ ഭൂവിഭാഗത്തെ ഒന്നാകെയാണ് ആ ജലസ്രോതസ്സിൻ്റെ നീർത്തടം എന്ന് പറയുന്നത്.

കേരളത്തിൻ്റെ ആകെ വിസ്തൃതിയുടെ 48% വരുന്ന മലനാട് പ്രദേശവും ഉൾനാടൻ കുന്നിൽ പ്രദേശങ്ങളും കൂടി ചേർത്താൽ കേരളത്തിൻ്റെ കൃഷി ഭൂമിയുടെ ഭൂരിഭാഗവും ചരിവോരങ്ങളായിരിയ്ക്കും. ഇത്തരം ഭൂമിയിൽ കൃഷി ചെയ്യാൻ മണ്ണ് സംരക്ഷണ സംവിധാനങ്ങൾ ഏർപ്പെടുത്തേണ്ടതുമാണ്. ഇതിനായി ജൈവമുറകളോടൊപ്പം നിർമ്മിതികൾ കൂടി പ്രാവർത്തികമാക്കേണ്ടത് അനിവാര്യമാണ്.

2018-2019 വർഷത്തെ ഇവാല്യൂവേഷൻ സർവ്വേയ്ക്കായി 2015-16 ന് മുമ്പ് നടപ്പിലാക്കിയ സ്കീമുകൾ മണ്ണ് സംരക്ഷണ വകുപ്പ് ജില്ലാ ഓഫീസുകളിൽ നിന്നും ശേഖരിച്ച് അതിൽ നിന്നും ഒരു സ്കീം “സിമ്പിൾ റാൻ്റെ സാസ്സിംഗ് മെത്തേഡ്” വഴി തെരഞ്ഞെടുക്കുന്നു. തെരഞ്ഞെടുത്ത സ്കീമിൽ 100 ഗുണഭോക്താക്കൾ ഇല്ല എങ്കിൽ ഒന്നിലധികം സ്കീമുകൾ തെരഞ്ഞെടുക്കണം.

വയനാട് ജില്ല ഒഴികെ മറ്റ് 13 ജില്ലകളിൽ 2018-19 വർഷത്തെ സർവ്വെ പഠന വിധേയമാക്കിയിട്ടുണ്ട്. തിരുവനന്തപുരം ജില്ലയിൽ താനിമുട് വാട്ടർഷെഡ് പദ്ധതിയാണ് സർവ്വേയ്ക്കായി തെരഞ്ഞെടുത്തത്. പദ്ധതി നടപ്പിലാക്കിയ 430 ഹെക്ടർ ഭൂമിയിൽ 104 ഗുണഭോക്താക്കൾ ഉൾപ്പെടുന്നു. കൊല്ലം ജില്ലയിലെ മന്നയം വാട്ടർ ഷെഡ് പദ്ധതിയ്ക്കായി 330 ഹെക്ടർ ഭൂമി ഏറ്റെടുത്തുണ്ട്. ഇതിൽ 283 ഗുണഭോക്താക്കൾ ഉൾപ്പെടുന്നു. റാന്നി താലൂക്കിൽ സ്ഥിതിചെയ്യുന്ന അരയാഞ്ഞിലിമൺ വാട്ടർഷെഡ് പദ്ധതിയാണ് പത്തനംതിട്ട ജില്ലയിൽ സർവ്വേയ്ക്കായി തെരഞ്ഞെടുത്തത്. 540 ഹെക്ടർ ഭൂമിയിലായി വ്യാപിച്ച് കിടക്കുന്നു. ടി പദ്ധതിയിൽ 141 ഗുണഭോക്താക്കൾ ഉൾപ്പെടുന്നു. ആലപ്പുഴ ജില്ലയിൽ സർവ്വേയ്ക്കായി തെരഞ്ഞെടുത്ത സ്കീമിൽ 100-ൽ താഴെ ഗുണഭോക്താക്കൾ ഉൾപ്പെട്ടതിനാൽ രണ്ട് സ്കീമുകൾ സർവ്വേയ്ക്കായി തെരഞ്ഞെടുത്തു. പള്ളിപ്പുറം തൈയ്ക്കാട്ടുശ്ശേരി വെള്ളക്കെട്ട് നിവാരണപദ്ധതി ഘട്ടം I & II പദ്ധതികളിലായി 138 ഗുണഭോക്താക്കൾ ഉൾപ്പെടുന്നു.

കോട്ടയം ജില്ലയിൽ 300 ഹെക്ടർ ഭൂമിയിലായി വ്യാപിച്ച് കിടക്കുന്ന നെല്ലൂർ വാട്ടർ ഷെഡ് പദ്ധതിയാണ് സർവെയ്ക്കായി തിരഞ്ഞെടുത്തത്. 150 ഗുണഭോക്താക്കൾ ടി പദ്ധതിയിൽ ഉൾപ്പെടുന്നു. വള്ളിയൻകാവ് നീർത്തട പദ്ധതിയാണ് ഇടുക്കി ജില്ലയിൽ തിരഞ്ഞെടുത്തത്. പ്രസ്തുത പ്രദേശം 348 ഹെക്ടറിലായി വ്യാപിച്ച് കിടക്കുന്നു. 196 ഗുണഭോക്താക്കൾ ഉൾപ്പെടുന്നു. ആറ്റുവേലിക്കുഴിത്തോട് വാട്ടർഷെഡ്, കളമ്പൂർതോട് ഫ്ലഡ് കൺട്രോൾ ആന്റ് ഡ്രെയിനേജ് പ്രൊട്ടക്ഷൻ എന്നിങ്ങനെ രണ്ട് സ്കീമുകളാണ് എറണാകുളം ജില്ലയിൽ തിരഞ്ഞെടുത്തത്. രണ്ട് സ്കീമുകളിലുമായി 138(63+ 75) ഗുണഭോക്താക്കൾ ഉൾപ്പെടുന്നു. തൃശ്ശൂർ ജില്ലയിൽ തിരഞ്ഞെടുത്ത പദ്ധതിയായ മല്ലാൻകുഴി നീർത്തട പദ്ധതിയിൽ 125 ഗുണഭോക്താക്കൾ ഉൾപ്പെടുന്നു. 1050 ഹെക്ടർ ഭൂമിയിൽ പ്രസ്തുത പദ്ധതി വ്യാപിച്ച് കിടക്കുന്നു. ചുള്ളിയാർ വാട്ടർ ഷെഡ് പദ്ധതിയാണ് പാലക്കാട് ജില്ലയിൽ തിരഞ്ഞെടുത്തത്. പ്രസ്തുത പദ്ധതിയിൽ 101 ഗുണഭോക്താക്കൾ ഉൾപ്പെടുന്നു.

മലപ്പുറം ജില്ലയിൽ സർവെയ്ക്കായി തിരഞ്ഞെടുത്തത് അമ്മാനം ചോല വാട്ടർഷെഡ് പദ്ധതിയാണ്. 350 ഹെക്ടറിലായി വ്യാപിച്ച് കിടക്കുന്ന പ്രസ്തുത പദ്ധതിയിൽ 104 ഗുണഭോക്താക്കൾ ഉൾപ്പെടുന്നു. കോഴിക്കോട് ജില്ലയിൽ തിരഞ്ഞെടുത്ത പദ്ധതിയായ ആനയോട് നീർത്തട പദ്ധതി 285 ഹെക്ടർ ഭൂമിയിലായി 188 ഗുണഭോക്താക്കൾ ഉൾപ്പെടുന്നു. കണ്ണൂർ ജില്ലയിലെ സർവെയ്ക്കായി മാലൂർ നീർത്തട പദ്ധതി തിരഞ്ഞെടുത്തു. പദ്ധതി പ്രദേശം 490 ഹെക്ടർ ഭൂമിയിലായി വ്യാപിച്ച് കിടക്കുന്നു. ഇതിൽ 150 ഗുണഭോക്താക്കൾ ഉൾപ്പെടുന്നു. പഠമ്പ നീർത്തട പദ്ധതിയാണ് കാസർഗോഡ് ജില്ലയിലെ സർവെയ്ക്കായി തിരഞ്ഞെടുത്തത്. പ്രസ്തുത പദ്ധതി പ്രദേശം 380 ഹെക്ടർ ഭൂമിയിലായി 171 ഗുണഭോക്താക്കൾ ഉൾപ്പെടുന്നു. 2018-19 വർഷത്തെ സർവെയിൽ ആകെ 1989 ഗുണഭോക്താക്കൾ ഉൾപ്പെടുന്നു. 404 കൺട്രോൾ പ്ലോട്ടുകളും ഉൾപ്പെടുന്നു. സ്റ്റാറ്റം 1 - ൽ 931, സ്റ്റാറ്റം- 2 ൽ 835, സ്റ്റാറ്റം 3 ൽ 166, സ്റ്റാറ്റം 4 ൽ 57 എന്നിങ്ങനെയാണ് ഗുണഭോക്താക്കളുടെ എണ്ണം. ആകെ 2866.946 ഹെക്ടർ ഭൂമിയിലാണ് സർവെ നടത്തിയത്. കൺട്രോൾ പ്ലോട്ടിൽ സ്റ്റാറ്റം 1 ൽ 216, സ്റ്റാറ്റം 2 ൽ 139, സ്റ്റാറ്റം 3 ൽ 33, സ്റ്റാറ്റം 4 ൽ 16 എന്നിങ്ങനെ

ഗുണഭോക്താക്കൾ ഉൾപ്പെടുന്നു. ആകെ 595.432 ഹെക്ടർ ഭൂമിയാണ് സർവ്വെയായി തിരഞ്ഞെടുത്തത്.

ആകെ ഗുണഭോക്താക്കളുടെ 46.81% ഒരേക്കറിൽ താഴെ ഭൂമിയുള്ളവരാണ്. 41.98% ഗുണഭോക്താക്കൾ 1 ഏക്കർ മുതൽ 3 ഏക്കറിൽ താഴെവരെ ഭൂമിയുള്ളവരാണ്. 8.35% 3 ഏക്കർ മുതൽ 5 ഏക്കറിൽ താഴെവരെ ഭൂമിയുള്ളവരാണ്. 2.87% 5 ഏക്കറിൽ കൂടുതൽ ഭൂമിയുള്ളവരിൽ ഉൾപ്പെടുന്നു. കൺട്രോൾ പ്ലോട്ടിൽ 53.47% ഗുണഭോക്താക്കൾ സ്റ്റാറ്റം ഒന്നിലും, 34.41% ഗുണഭോക്താക്കൾ സ്റ്റാറ്റം രണ്ടിലും, 8.17% ഗുണഭോക്താക്കൾ സ്റ്റാറ്റം മൂന്നിലും, 3.96% ഗുണഭോക്താക്കൾ സ്റ്റാറ്റം നാലിലും എന്നിങ്ങനെ ഉൾപ്പെടുന്നു.

മണ്ണുസംരക്ഷണ പദ്ധതി നടപ്പിലാക്കിയതിന് ശേഷം പദ്ധതി പ്രദേശത്ത് കിണറുകളിൽ വെള്ളത്തിന്റെ ലെവലിൽ വർദ്ധനവ് വന്നതായി സർവ്വെ റിപ്പോർട്ടിൽ കാണുന്നു. ഉദാഹരണമായി തിരുവനന്തപുരം ജില്ലയിൽ പദ്ധതിയ്ക്ക് മുൻപ് 0.5 - 1 മീറ്റർ വെള്ളമുള്ള 26 കിണർ ഉണ്ടായിരുന്നു. എന്നാൽ പദ്ധതിയ്ക്ക് ശേഷം അത് 49 എണ്ണമായി ഉയർന്നു. മറ്റ് ജില്ലകളിലും സമാനമായ മാറ്റങ്ങൾ ഉണ്ടായതായി റിപ്പോർട്ടിൽ കാണാൻ കഴിയുന്നു. തിരുവനന്തപുരം, കൊല്ലം, തൃശ്ശൂർ, പാലക്കാട്, കോഴിക്കോട്, കണ്ണൂർ, കാസർഗോഡ് എന്നീ ജില്ലകളിൽ കൃഷി ചെയ്യുന്ന ഭൂമിയുടെ വിസ്തൃതിയ്ക്ക് പദ്ധതിയ്ക്ക് ശേഷം മാറ്റമുണ്ടായിട്ടില്ല. ആലപ്പുഴ, ഇടുക്കി, മലപ്പുറം ജില്ലകളിൽ പദ്ധതിയ്ക്ക് ശേഷം കൃഷി ചെയ്യുന്ന ഭൂമിയുടെ വിസ്തൃതി വർദ്ധിച്ചിട്ടുണ്ട്.

തിരുവനന്തപുരം, കൊല്ലം, തൃശ്ശൂർ, പാലക്കാട്, കോഴിക്കോട്, കണ്ണൂർ, കാസർഗോഡ് ജില്ലകളിൽ പദ്ധതിയ്ക്ക് മുൻപും ശേഷവും തൽക്കാല തരിശ് ഭൂമിയുടെ വിസ്തൃതിയ്ക്ക് മാറ്റം വന്നിട്ടില്ല. എന്നാൽ പത്തനംതിട്ട, കോട്ടയം, എറണാകുളം ജില്ലകളിൽ പദ്ധതിയ്ക്ക് ശേഷം വർദ്ധനവ് വന്നിട്ടുണ്ട്. മറ്റ് ഭൂപ്രയോഗങ്ങളുടെ വിസ്തൃതിയിലും തിരുവനന്തപുരം, കൊല്ലം, പത്തനംതിട്ട, ആലപ്പുഴ, കോട്ടയം, എറണാകുളം, തൃശ്ശൂർ, പാലക്കാട്, മലപ്പുറം, കോഴിക്കോട്, കണ്ണൂർ, കാസർഗോഡ് ജില്ലകളിൽ പദ്ധതിയ്ക്ക് മുൻപും ശേഷവും വ്യത്യാസം വന്നിട്ടില്ല.

മണ്ണുസംരക്ഷണ പദ്ധതി നടപ്പിലാക്കിയതിന് ശേഷം ദീർഘകാല വിളയുടെ വിസ്തൃതിയിൽ തിരുവനന്തപുരം, കൊല്ലം, ആലപ്പുഴ, ഇടുക്കി, മലപ്പുറം, കണ്ണൂർ, തൃശൂർ ജില്ലകളിൽ വർദ്ധനവ് ഉണ്ടായി. ഹ്രസ്വകാല വിളകളുടെ വിസ്തൃതിയിൽ 3.10% ന്റെ വർദ്ധനവ് സൂചിപ്പിക്കുന്നു. 114.244 ഏക്കറിൽ നിന്നും 117.856 ഏക്കർ വിസ്തൃതിയായി വർദ്ധിച്ചു. തിരുവനന്തപുരം, കൊല്ലം, പത്തനംതിട്ട, കോട്ടയം, ഇടുക്കി, തൃശൂർ, പാലക്കാട്, മലപ്പുറം, എന്നീ ജില്ലകളിൽ ഹ്രസ്വകാല വിളകളുടെ വിസ്തൃതി പദ്ധതിയ്ക്ക് ശേഷം വർദ്ധനവ് ഉണ്ടായി. ദീർഘകാല വിളകളായ കുരുമുളക്, ജാതി, മാവ്, കോഫി, റബ്ബർ എന്നിവയ്ക്ക് യഥാക്രമം 6.55%, 0.14%, 2.85%, 2.16%, 0.16% എന്നിങ്ങനെ വിളഭൂമി വിസ്തൃതിയിൽ വർദ്ധനവ് ഉണ്ടായി. എന്നാൽ തെങ്ങ്, അടയ്ക്ക, കശുമാവ്, പ്ലാവ്, പപ്പായ എന്നീ വിളകളുടെ വിസ്തൃതി 0.01%, 9.16%, 3.5%, 9.97%, 5.88% എന്നിങ്ങനെ കുറവ് കാണപ്പെടുന്നു.

ഹ്രസ്വകാല വിളകളായ വാഴ, മരച്ചീനി, ചീര, ചേന, ഇഞ്ചി, പൈനാപ്പിൾ എന്നിവയുടെ വിസ്തൃതിയിൽ 19.91%, 27.96%, 42.86%, 14.29%, 5.38%, 0.01% എന്നിങ്ങനെ വർദ്ധനവ് ഉണ്ടായി. മഞ്ഞൾ, ചെറുപയർ, എന്നിവയുടെ വിസ്തൃതി പദ്ധതിയ്ക്ക് മുൻപും ശേഷവും വ്യത്യാസപ്പെട്ടിട്ടില്ല. ദീർഘകാല വിളകളായ കുരുമുളക് കൊല്ലം ജില്ലയിൽ 18.24%, കോഴിക്കോട് 23.51%, കാസറഗോഡ് 11.16% എന്നിങ്ങനെ വിസ്തൃതിയിൽ പദ്ധതിയ്ക്ക് ശേഷം വർദ്ധനവ് ഉണ്ടായി. കോട്ടയം, പത്തനംതിട്ട, കൊല്ലം, കോഴിക്കോട്, മലപ്പുറം ജില്ലകളിലെ പ്രധാന വിളയായി റബ്ബർ രേഖപ്പെടുത്തിയിരിക്കുന്നു.

പ്രധാന ദീർഘകാല വിളകളുടെ അളവിൽ എല്ലാ ജില്ലകളിലും പദ്ധതിയ്ക്ക് ശേഷം വർദ്ധനവ് സൂചിപ്പിക്കുന്നു. ഹ്രസ്വകാലവിളകളായ ഏത്തവാഴ, വഴുതന എന്നീ വിളകളുടെ അളവ് പദ്ധതിയ്ക്ക് ശേഷം കുറഞ്ഞുവന്നു. ഇടുക്കി ഒഴികെ മറ്റെല്ലാ ജില്ലകളിലും പദ്ധതിയ്ക്ക് ശേഷമുള്ള ആകെ വരുമാന വർദ്ധനവ് റിപ്പോർട്ട് ചെയ്തിട്ടുണ്ട്.

മണ്ണ് സംരക്ഷണ പ്രവർത്തനങ്ങൾക്കായി ആകെ 124907821/- രൂപ ചെലവായതായി സർവ്വെ റിപ്പോർട്ട് ചെയ്യുന്നു. മണ്ണ് സംരക്ഷണ പ്രവർത്തനങ്ങൾക്ക് മുൻപുള്ള വിളകളുടെ

മൂല്യം 192029449.32/-രൂപ ആയിരുന്നു. എന്നാൽ പദ്ധതിക്ക് ശേഷം വിളകളുടെ മൂല്യം 299069930.45/-ആയി വർദ്ധിച്ചു. മണ്ണ് സംരക്ഷണ പ്രവർത്തനങ്ങളുടെ ഫലമായി ഉണ്ടായ പ്രയോജനങ്ങളിൽ പ്രധാനപ്പെട്ട മൂന്നു കാര്യങ്ങൾ (1) വിളകളുടെ വിസ്തൃതിയിൽ വർദ്ധന (2) ഉല്പാദനക്ഷമതയുടെ വർദ്ധനവ്. (3) വിളർത്തിയുടെ വൈവിധ്യവത്കരണം എന്നിവയാണ്. ദീർഘകാല വിളകളായ ജാതി, കൊക്കോ, മാങ്ങ, കുരുമുളക്, റബ്ബർ ഹ്രസ്വകാലവിളകളായ വാഴ, ഇഞ്ചി, ചേമ്പ്, പൈനാപ്പിൾ, ചേന മുതലായവയുടെ ഉത്പാദനം കൂടിയതായി സർവ്വ സൂചിപ്പിക്കുന്നു. മണ്ണ് സംരക്ഷണ പ്രവർത്തനങ്ങൾ നടപ്പിലാക്കിയതുവഴി മണ്ണിന്റെ ഫലഭൂയിഷ്ഠത വർദ്ധിക്കുകയും കൂടുതൽ ലാഭകരമായ വിളകൾ കൃഷിയിറക്കാൻ കർഷകർക്ക് സഹായകരമാകുകയും ചെയ്യുന്നു.



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