

GOVERNMENT OF KERALA



REPORT ON
COST OF CULTIVATION OF
IMPORTANT CROPS IN KERALA
1993-94

DEPARTMENT OF ECONOMICS AND STATISTICS
THIRUVANANTHAPURAM

1999

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P R E F A C E

This report is based on the 14th round of the Survey on Cost of Cultivation of Important Crops in Kerala, conducted during 1993-94. The present survey was conducted in 38 Taluks of the State which are the predominant centres growing the crops under study. The crops covered are Paddy (3 seasons), Coconut, Arecanut, Tapioca, Pepper and Mulberry.

The tabulation and consolidation of data were done in the Cost of Cultivation section, and the report was prepared by Smt.T.Bhavana, Assistant Director under the guidance of the senior officers of the Department. The support and co-operation extended by the section as well as the district level machinery in this endeavour is highly appreciated. Suggestions for improvement are solicited.

Thiruvananthapuram,
21st December, 1999.

U.THOMAS SLEEBA
D I R E C T O R

REPORT ON THE COST OF CULTIVATION OF IMPORTANT CROPS
IN KERALA - 1993-94

CHAPTER-I - GENERAL

1.1 Introduction:-

The data relating to Cost of Cultivation of different crops at the State level is necessary for formulation and implementation of schemes in agricultural sector, fixation of floor and support prices etc. Keeping this in view Government of Kerala accorded sanction for conducting annual surveys on Cost of Cultivation of important crops in the State. The present report relates to the 14th round of the survey conducted during 1993-94.

The following crops were covered in the study:-

- i. Paddy (3 seasons)
- ii. Coconut
- iii. Arecanut
- iv. Tapioca
- v. Pepper
- vi. Mulberry

1.2 Objectives:-

The main objectives of the survey were:-

- i. to estimate the cost of cultivation per hectare of important crops
- ii. to compare the costs under different concepts, over a period.

1.3 Staff:-

The following staff were engaged for the survey.

<u>Category</u>		<u>Number</u>
Field	U.D. Investigators	14
	L.D. Investigators (4 posts were shifted to Directorate for consolidation work)	28
Head Office	Research Assistant	1
	U.D. Compiler	1

1.4 Period of the Survey:-

The period of the survey was the Agricultural Year 1993-94 (July to June).

1.5 Design of the Survey:-

The present survey was conducted in 38 taluks which were the predominant centres growing the crops under study. From each selected taluk two Investigator zones of the survey under EARAS were selected using simple random sampling method.

Selection of Paddy cultivators:-

In each selected Investigator zone a list of cultivators growing paddy in the previous Autumn season was prepared from the last years Form-I Diary of the EARAS. From this list of paddy growing cultivator plots 5 cultivators were selected at random for the current years cost of cultivation study on Autumn Paddy. Similar procedure was also adopted for the selection of cultivators for winter and summer paddy respectively by preparing a list of paddy growing plots in winter and summer of the previous EARAS round in the zone.

In case the cultivators selected, for cost of cultivation study on Autumn paddy, possess suitable number of plots with specified crops in stipulated area they were selected for the cost of cultivation study on other crops also ie. Coconut, Arecanut, Tapioca, Pepper and Mulberry.

Wherever sufficient number of suitable plots were not available with the cultivators selected for autumn paddy, the required number of plots for crops other than paddy were selected from the list of Wet and Dry land plots of the same investigator zone in the last year. If the selected investigator zone in a taluk did not provide the required number of plots for these crops another investigator zone in the taluk was selected at random for selection of the remaining required number of plots/cultivators for the study on other crops.

The number of holdings selected for each crops in a taluk were as follows:-

1. Paddy	- Autumn	- 10	(5 holdings each from one Investigator zone).
	Winter	- 10	- do -
	Summer	- 10	- do -
2. Coconut		- 10	- do -
3. Arecanut		- 10	- do -
4. Tapioca		- 5	(minimum 2 holdings in one Investigator zone).
5. Pepper		- 5	- do -
6. Mulberry		- 5	- do -

A holding was considered for the study only if it contained atleast 25 cents under the crop in the case of paddy and tapioca. In the case of perenial crops coconut, arecanut, pepper and mulberry the holdings should have 25 trees/plants with atleast 50% bearing. Mulberry was selected as minor crop for this survey.

The holding size group of a crop was determined on the basis of the area under the crop under study in the holding as shown below:

Size group	Holding size	
	Paddy	Other crops
1. Small	< 0.40 hectare	< 0.2 hectare.
2. Medium	0.40 to < 2 hectare	0.20 to < 0.80 hectare
3. Large	≥ 2 hectare	≥ 0.80 hectare

Note:- < = Less than.
 ≥ = Greater than on equal to.

1.6 Schedules

Three schedules were designed for the survey.

- Schedule I This schedule is used for listing the plots for selection of holdings and recording the details of the selected holdings.
- Schedule II This schedule is used for recording details of the cultivators, area of holdings, inventory of agricultural implements, live stock etc.
- Schedule III In this schedule the details of cultivation of a crop and its expenses incurred in each fortnight is reported

1.7 Field work:-

Field work was done by 38 investigators posted at the rate of one investigator in each taluk. The investigators visited the selected holdings every fortnight and recorded fortnightly operations and its expenditure in schedule III. The field work was supervised by Taluk Statistical Officer at the taluk level and by Deputy Director/District Officer at the district level.

1.8 Analysis:-

The compilation and tabulation were done at the district level by the investigators posted for the survey. Five compilers were posted in the Directorate for the consolidation of the data at the State level. Report was also prepared in the Directorate.

1.9 Method of estimation of cost:-

(a) Concept of Cost:- Different cost concepts, cost 'A', cost 'B1' and cost 'B' and cost 'C' have been followed in the analysis as shown below:

Cost 'A':- Cost 'A' consists of cash and kind expenses (paid out costs) actually incurred by the cultivators. This includes -

- i. Hired human labour.
- ii. Animal labour
- iii. Machine labour.
- iv. Seed/Seedlings
- v. Farmyard manure.
- vi. Chemical fertilizers
- vii. Plant protection.
- viii. Land tax.
- ix. Irrigation cess.
- x. Repair and maintenance charges of implements, machinery and buildings.
- xi. Interest on working capital
- xii. Other expenses.

Cost 'B1':- Cost 'A' + Interest on fixed assets (excluding land).

Cost 'B':- Cost 'B1' + Interest on land value.

Cost 'C':- Cost 'B' + Imputed value of family labours.

(b) Procedure for Imputation of values of owned inputs.

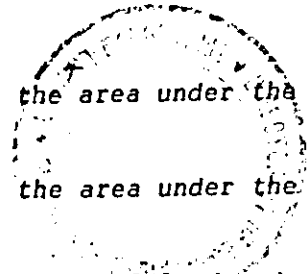
Some of the inputs from homestock are used in the production process. While computing the cost of cultivation it is necessary to impute the value of these inputs. The procedure used for the imputation of values of such homestock inputs is indicated below:

- | | | |
|-------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| i. | Family labour | Imputed on the basis of average wage rate per work hour of hired labour. |
| ii. | Owned and exchange human labour. | The rate of wages per hour for hired human labour is taken for imputing the value of owned and exchange human labour |
| iii. | Owned and exchange animal labour. | The charges paid per hour for hired animal labour is taken for imputing the value of owned and exchange animal labour. |
| iv. | Owned and exchange machine labour. | The hire charges per hour for machine labour has been taken. |
| v. | Implements. | Repair and maintenance charges of implements. |
| vi. | Owned seed. | Farm produced (home grown) seed has been imputed at the prices prevalent in the investigator zone concerned at the time of sowing. |
| vii | Farm produced manure. | Imputed at the rates prevalent in the concerned zone. |
| viii. | Interest on owned fixed capital. | Interest on the present value of fixed assets such as land, farm, building, implements, machinery, irrigation structure, equipments and livestock (only draught animals) at the rate of 10% per annum has been calculated. |
| xi. | Interest on working capital. | Interest has been charged at the rate of 10% per annum on the working capital, cash and kind expenses excluding items in respect of which payments are generally made after harvest (ie. rent, land tax etc) incurred during the period of cultivation. |
| x. | Payments in kind. | The payments in kind have been evaluated at the market prices prevalent in the locality at the time of payment. Perquisites have been included in the payments in kind calculated at the market prices. |

(c) Allocation of joint costs to different crops:-

Some of the inputs used for the cultivation of one crop are common for many other crops also. For the purpose of computing the cost share of individual crops, the cost of such inputs is apportioned in the following manner:

(5)



- i. Repair and maintenance charges of implements. In proportion to the area under the crop.
- ii. Interest on owned fixed capital (excluding land). In proportion to the area under the crop.
- iii. Interest on land value. Interest on the value of land under the crops.

(d) Procedure for valuation of farm assets:-

- i. Own farm buildings (cattle sheds, storage shed etc). Valuated at prices prevailing in the locality.
- ii. Implements and other machinery. Valuated at prevalent market prices.
- iii. Livestock (only draught animals). Valuated at prevalent market prices.

In calculating the cost of production of paddy crop in each season the interest on land value at the rate of 10% per annum for the period of Six months is taken into account. The land value is estimated at the current market rate in the different areas.

CHAPTER-II

RESULTS OF THE SURVEY

The results of the cost of cultivation survey of all the crops taken up for the year 1993-94 are discussed below. The crops selected for this round of study were Paddy (Autumn, Winter and Summer), Coconut, Arecanut, Tapioca, Pepper and Mulberry.

2.1 Paddy:-

The gross area under paddy in the State during the year 1993-94 comes to 17% of the total cropped area. The area under paddy during the three seasons are given below:

Area under Paddy during the year 1993-94

Season	Area	Area : In lakh/hectare
		% to total cropped area
Autumn	2.04	6.70
Winter	2.37	7.79
Summer	0.67	2.20
<hr/>		
Total	5.08	16.69

Source : EARAS estimate for the year 1993-94.

Area under autumn paddy and winter paddy are more or less the same.

Percentage of area under paddy in each season to the total area under paddy during 1993-94

Season	Percentage
Autumn	40.16
Winter	46.65
Summer	13.19
Total	100.00

From the above table it is seen that area of paddy in the autumn and winter seasons together covers more than 85% of the total paddy area summer paddy constitutes only about 13% of the gross paddy area.

The production is always expressed in terms of rice. The rice production during 1993-94 is as shown below:

Production of rice during 1993-94

Season	Production of rice (lakh tones)	Qty : In lakh/Tons
		Percentage
Autumn	3.98	39.68
Winter	4.61	45.96
Summer	1.44	14.36
Total	10.03	100.00

Among the three seasons the average yield rate of paddy per hectare is higher in summer season which is evident from the following table.

Average yield of paddy during 1993-94

Season	Average yield ton/hect.
Autumn	1.95
Winter	1.94
Summer	2.14

During the year 1993-94 about 54% of the total irrigated cropped area is under paddy.

Autumn (Viruppu), Winter (Mundakan) and Summer (Punja) Paddy

The total number of holdings selected for the cost of cultivation study on Autumn, Winter and Summer paddy during the year 1993-94 were 370, 380 and 370 respectively. The details are shown below:

COST OF CULTIVATION PER HECTARE OF PADDY
(AUTUMN, WINTER, SUMMER)
DURING THE YEAR 1993-94

Sl. No.	Components of different cost concepts	Cost per hectare (in Rs.)			% distribution of Cost 'A'		
		Autumn	Winter	Summer	Autumn	Winter	Summer
1	2	3	4	5	6	7	8
1.	Hired human labour	5184	5510	5563	51.54	51.47	58.45
2.	Animal labour	529	565	558	5.26	5.28	5.86
3.	Machine labour	632	590	556	6.28	5.51	5.84
4.	Seed/Seedlings	645	624	699	6.41	5.83	7.35
5.	Farmyard manure and Chemical fertilizers	2041	2025	642	20.29	18.91	6.75
6.	Plant protection	77	167	465	0.77	1.56	4.89
7.	Land tax and Irrigation cess	48	40	48	0.48	0.37	0.50
8.	Repair and maintenance charges	262	92	105	2.60	0.86	1.10
9.	Other expenses	177	589	435	1.76	5.50	4.57
10.	Interest on working capital	464	504	446	4.61	4.71	4.69
11.	Total cost 'A' (1 - 10)	10059	10706	9517	100.00	100.00	100.00
12.	Interest on fixed capital	495	403	375	-	-	-
13.	Cost 'B1' (11 + 12)	10554	11109	9892	-	-	-
14.	Interest on land value	8041	7864	6605	-	-	-
15.	Cost 'B' (13 + 14)	18595	18973	16497	-	-	-
16.	Imputed value of household labour	396	569	626	-	-	-
17.	Cost 'C' (15 + 16)	18991	19542	17123	-	-	-

Hired Human Labour:

The season-wise details of hired human labour is given below separately.

Percentage of hired human labour hours to total human labour hours

Season	Sex	Holding size class			All
		Small	Medium	Large	
Autumn	Male	24.97	23.99	15.96	22.74
	Female	63.21	69.87	79.73	69.85
	Total	88.18	93.86	95.69	92.59
Winter	Male	25.96	24.27	20.75	24.40
	Female	63.20	67.23	72.54	66.59
	Total	89.16	91.50	93.29	90.99
Summer	Male	25.00	25.00	34.00	26.00
	Female	55.00	68.00	65.00	62.00
	Total	80.00	93.00	99.00	88.00

The proportion of hired female labour to total human labour input during the three seasons steadily increased with the increase in the size of holding. Cultivators belonging to large size class are seen to depend for more than 92% of their requirements on hired labour.

Animal Labour:

The total cost of animal labour is found to be Rs.529/- in Autumn season, Rs.565/- in Winter season and Rs.558/- during Summer season. The season-wise calculation shows that the cost of animal labour steadily decreases with the increase in the size class (See appendix I to III).

Machine Labour:

The cost of machine labour is seen increasing from small to medium size of holding during the three seasons (Appendix I to III). From tables it is seen that all size class cost of machine labour is the highest in Autumn season. The per hectare cost towards machine labour in all size class accounts to Rs.632/-, Rs.590/- and Rs.556/- respectively during the Autumn, Winter and Summer seasons.

Seed/Seedlings:

Among the three seasons the cost of seed/seedlings under small and medium size classes is less in Winter season. But under large size class the same shows an increasing trend from Autumn to Winter to Summer. Also from Annexures I to III it is seen that large size class in Autumn (Rs.586/-) and in Summer (Rs.760/-) registers the lowest and the highest cost under the item seed/seedlings.

Farmyard manure and Chemical fertilizers:

During the period under report Autumn and Winter cultivators spent almost equal amount for this input. Around 20% of the cost 'A' is accounted by this item during Autumn and Winter seasons.

Area under Autumn, Winter and Summer Paddy
during 1993-94

Season	No of selected holdings				Area under the crop in the sample (ha)				Percentage				Area per holding (hectare)			
	Small	Medium	Large	Total	Small	Medium	Large	Total	Small	Medium	Large	Total	Small	Medium	Large	Total
Autumn	208	153	9	370	46.15	98.82	29.72	174.69	26.42	56.57	17.01	100.00	0.22	0.65	3.30	0.47
Winter	213	158	9	380	47.51	108.62	23.81	179.94	26.41	60.36	13.23	100.00	0.32	0.69	2.65	0.47
Summer	265	97	9	370	54.33	72.32	19.43	146.08	37.19	49.51	13.30	100.00	0.21	0.75	2.43	0.89

The average area per sample holding under study of Autumn and Winter were 0.47 hectare each and 0.89 hectare for Summer paddy.

A. Cost of Cultivation:

The estimation of Cost of Cultivation is under three different concepts (viz. Cost A, Cost B and Cost C) as explained in the previous chapter. The estimated Cost of Cultivation of different items per hectare of Autumn, Winter and Summer paddy are given below: (Please refer Appendix I to III also).

Plant protection:

The expenditure towards plant protection measures in all size class is estimated at Rs.77/-, Rs.167/- and Rs.465/- under Autumn, Winter and Summer seasons respectively during the year 1993-94. It is interesting to note that in each size class there is an increasing trend under this item of expenditure from Autumn to Winter to summer.

Land tax and Irrigation cess:

Only a small percentage of the total cost (cost 'A') is shared by this component. It is accounted to 0.48%, 0.37% and 0.50% respectively under Autumn, Winter and Summer seasons, when all size class is considered.

Repair and maintenance charges:

The expenditure incurred towards repair and maintenance of implements and machinery is estimated at Rs.262/- during Autumn season where as it decreased to Rs.105/- during Summer season. But the cost towards this item for the Winter season is only Rs.92/-. These variations may be due to the variations under the crop practices in the sample holdings.

Interest on working capital:

The average expenditure on interest payment on working capital is found to be Rs.464/- during Autumn, Rs.504/- in Winter and Rs.446/- in Summer season under all size classes. Interest has been charged at the rate of 10% per annum on the working capital.

Total Cost (Cost 'A'):

Cost 'A' gives the total cost per hectare of various items narrated above. Total cost (cost 'A') is the highest in the Winter season. Following table gives a broad idea about 'Cost A'.

Season	Small	Medium	Large	Amount : in Rs.
				All class
Autumn	10509	9954	9786	10059
Winter	11575	9976	12131	10706
Summer	10199	8988	9436	9517

Cost 'B1':

Cost 'B1' is estimated by adding the interest on fixed capital to cost 'A'. The estimated interest on fixed capital per hectare of Autumn, Winter and Summer paddy cultivation are Rs.495/-, Rs.403/- and Rs.375/- respectively. Thus cost 'B1' for "all size class" is worked out to Rs.10554/-, Rs.11109/- and Rs.9892/- respectively during the three seasons.

Cost 'B':

Cost 'B' is estimated by adding the interest on land value to cost 'B1'. The interest on land value recorded a huge amount. Increase in land value may be the main reason for the rise of this component cost 'B' is worked out to Rs.18595/- during Autumn season, Rs.18973/- in Winter season and Rs.16497/- to Summer season respectively.

Cost 'C':

Cost 'C' is estimated by adding the imputed value of household labour to cost 'B'. The imputed value of household labour is estimated on the basis of average wage rate per work hour of hired labour. Imputed value of household labour decreases as the size class increases. This is due to the diminishing nature of participation of family members in cultivation on size class increases. Moreover in Kerala small holdings constitute the major share in the land holdings. Hence in most of the small holdings the agriculturist himself does the labour rather than hiring one. The per hectare cost towards this item is estimated to Rs.689/-, Rs.356/- and Rs.71/- respectively during the Autumn season.

The table below gives cost of cultivation of paddy under three seasons during 1992-93 and 1993-94.

Cost of Cultivation of Paddy (three seasons) for 1992-93 and 1993-94

Concept of cost	Year	Amount in Rs/ha.											
		Seasons/Holding size class											
		Autumn				Winter				Summer			
		Small	Medium	Large	All	Small	Medium	Large	All	Small	Medium	Large	All
Cost 'A'	1992-93	10204	8416	8899	9023	11469	9983	10709	10501	11194	10586	9761	10815
	1993-94	10509	9954	9786	10059	11575	9976	12131	10706	10199	8988	9436	9517
Cost 'B'	1992-93	18082	15531	18374	16469	20487	17413	16828	18371	19576	16337	13232	17546
	1993-94	20936	18008	17029	18595	21736	18121	17118	18973	20198	14846	11925	16497
Cost 'C'	1992-93	18709	16008	18633	16988	21248	17665	17058	18785	20351	16793	13362	18116
	1993-94	21625	18364	17100	18991	22496	18652	17468	19542	21280	15272	12002	17123

When compared to the previous year the cost of cultivation of Autumn paddy has increased to 11%, Winter paddy to 2% respectively during this year. While the cost trend of Summer paddy showed as decreasing trend during this year. When analysed it is seen that this trend is due to the shortage of the quantum of various agricultural works operated by the cultivators, during summer season.

B. Out put:

The value of the product and by-product of paddy cultivation viz. paddy and straw for the year 1993-94 is given in the following table.

Value of product and by-product per hectare during 1993-94

Season	Product/ by-product	Amount in Rs/ha			
		Small	Medium	Larrge	All sizes
Autumn	Paddy	9683	8380	12455	9417
	Straw	2276	1547	888	1627
	Total	11959	9927	13343	11044
Winter	Paddy	10111	10731	14133	11019
	Straw	3261	2559	1081	2548
	Total	13372	13290	15214	13567
Summer	Paddy	10400	11855	11517	11269
	Straw	2888	2082	836	2216
	Total	13288	13937	12353	13485

From the above table it is seen that the value of by-product decreases as size class increases. It may be due to the lower care of these cultivators for the collection and marketing of straw. The general trend of the value of product of paddy under three seasons from 1991-92 is given in the following table.

Value of product/hectare (in Rs)

Year	Seasons		
	Autumn	Winter	Summer
1991-92	8139	11113	11866
1992-93	10090	12465	12249
1993-94	9417	11019	11269

C. Cost of production of paddy per quintal:

Cost of production of paddy per quintal is estimated by dividing the cost of cultivation per hectare (after deducting the value of by-product per hectare from the cost of cultivation per hectare) by the quantity of paddy produced per hectare.

Cost of production of paddy per quintal during Autumn, Winter & Summer Season
(in Rs)

Concept of cost	Year	Seasons		
		Autumn	Winter	Summer
Cost 'A'	1992-93	319	270	275
	1993-94	351	302	230
Cost 'B'	1992-93	634	551	492
	1993-94	707	608	244
Cost 'C'	1992-93	656	566	510
	1993-94	724	629	512

The comparison of cost of production of paddy per quintal under three seasons during the year 1992-93 and 1993-94 showed different trend. During autumn and winter seasons it showed an increasing trend when compared to the previous year. While during summer season it showed a negative trend.

2.2 Coconut:

During 1993-94, coconut covers about 8.81 lakh hectare in the State. The area and average yield per hectare is given in the following table.

Area and average yield of Coconut 1993-94

Area under coconut (ha)	Average yield (Nuts/ha)
881640	6336

Selected holdings:

380 holdings were selected during 1993-94 for the study on cost of cultivation of coconut. The size class wise area covered under coconut is given below:

Number of holdings and area under Coconut

Holding size class	No. of holdings	Area under coconut in the sample (ha)	Percentage	Area per holding (ha)
Small	108	15.48	9.81	0.14
Medium	233	95.83	60.72	0.41
Large	39	46.51	29.47	1.19
All size	380	157.82	100.00	0.42

The average area per sample holding is 0.42 hectare.

No. of bearing and non-bearing trees in the selected holdings:

In the selected holdings the average number of bearing trees per hectare is found to be 152 and non-bearing trees 78 during this year.

Number of bearing and non-bearing trees in the selected holdings

In the selected holdings the average number of bearing trees per hectare is found to be 152 and non-bearing trees 78 during this year.

Number of bearing and non-bearing trees per hectare

Type of trees	No. of trees per hectare	Percentage
Bearing	152	66.08
Non-bearing	78	33.92
Total	230	100.00

Cost of Cultivation:

As in the case of paddy, cost of cultivation of coconut is also estimated under three different concepts of cost. Details are given below:

COST OF CULTIVATION PER HECTARE OF COCONUTDURING THE YEAR 1993-94

		(in Rs)	
Sl. No.	Component of different cost concept	Cost per hectare in Rs.	% distribution of cost 'A'
1	2	3	4
1.	Hired human labour	3718	46.46
2.	Animal labour	43	0.54
3.	Machine labour	94	1.17
4.	Seed/Seedlings	19	0.24
5.	Farmyard manure and Chemical fertilizers	2867	35.83
6.	Plant protection	17	0.21
7.	Land tax & Irrigation cess	33	0.41
8.	Repair & maintenance charge	87	1.09
9.	Interest on working capital	717	8.96
10.	Other expenses	407	5.09
11.	Total cost 'A' (1 to 10)	8002	100.00
12.	Interest on fixed capital	934	-
13.	Cost 'B1' (11 + 12)	8936	-
14.	Interest on land value	61868	-
15.	Cost 'B' (13 + 14)	70804	-
16.	Imputed value of household labour	552	-
17.	Cost 'C' (15 + 16)	71356	-

- Compared to the paddy cultivation the female participation is very low in coconut cultivation. The details are given below:

Percentage distribution of hired human labour hours to the total human labour hours

Sex	Holding size class			All size
	Small	Medium	Large	
Male	59.20	72.83	74.58	71.69
Female	8.22	9.25	20.06	12.42
Total	67.42	82.08	94.64	84.11

From the above table it is seen that 84% of the total human labour hours has been constituted by hired human labours. Seed/seedlings cost accounts to Rs.19/-. The expenditure towards farmyard manure and chemical fertilizers per hectare applied for coconut cultivation during 1993-94 is Rs.2867/-. Plant protection cost share is only Rs.17/- ie. 0.21% of the cost 'A'.

When compared to the previous year the per hectare cost of coconut cultivation has increased during this round and the percentage increase are 19%, 8% and 9% respectively. Details are given below:

Cost of cultivation of coconut per hectare during 1992-92 and 1993-94

Concept of cost	Cost per hectare (in Rs)		Percentage increase
	1992-93	1993-94	
Cost 'A'	6747	8002	18.60
Cost 'B'	65278	70804	8.47
Cost 'C'	65748	71356	8.53

Value of product:

The per hectare total value of output received from coconut cultivation is seen to be Rs.16995/- during 1993-94.

Value of output/hectare

Output	Value (in Rs)
Product	16163
By-product	832
Total	16995

2.3 Arecanut:

The area and production of arecanut in the State are given below:

Area and average yield of Arecanut

Area (hectare)	Average yield (Nos)
69153	222073

Selected holdings:

During the year under report 190 holdings were selected for studying cost of cultivation of arecanut crop.

The details are as follows:

No. of holdings and area under Arecanut in the sample

Holding size class	No. of holdings	Area in the sample (ha)	Percentage	Area per holding (ha)
Small	176	8.55	62.32	0.05
Medium	14	5.17	37.68	0.37
Large	-	-	-	-
Total	190	13.72	100.00	0.07

The average size of per sample holding is 0.07 hectare.

The percentage distribution of hired human labour hours engaged in arecanut cultivation to the total labour hours is given below:

Percentage distribution of hired human labour hours

Sex	Size class			All size
	Small	Medium	Large	
Male	55.90	64.42	-	56.94
Female	7.79	3.67	-	7.29
Total	63.69	68.09	-	64.23

Cost of Cultivation:

The details of per hectare cost of cultivation of arecanut is as follows:

COST OF CULTIVATION PER HECTARE OF ARECANUT**DURING THE YEAR 1993-94**

		(in Rs)	
Sl. No.	Component of different cost concept	Cost per hectare in Rs.	% distribution of cost 'A'
1	2	3	4
1.	Hired human labour	5067	47.20
2.	Animal labour	5	0.05
3.	Machine labour	402	3.74
4.	Seed/Seedlings	254	2.37
5.	Farmyard manure and Chemical fertilizers	3415	31.81
6.	Plant protection	161	1.50
7.	Land tax & Irrigation cess	36	0.34
8.	Repair & maintenance charge	74	0.67
9.	Interest on working capital	966	9.00
10.	Other expenses	356	3.32
11.	Total cost 'A' (1 to 10)	10736	100.00
12.	Interest on fixed capital	793	-
13.	Cost 'B1' (11 + 12)	11529	-
14.	Interest on land value	44967	-
15.	Cost 'B' (13 + 14)	56496	-
16.	Imputed value of household labour	1038	-
17.	Cost 'C' (15 + 16)	57534	-

The two major cost component in arecanut cultivation are labour cost and farmyard manure and chemical fertilizers. Labour cost accounts to 63% of the cost 'A'. The percentage share of farmyard manure and chemical fertilizers is estimated to 20% during the period under review.

Value of output:

The value of output from arecanut cultivation during 1993-94 is Rs.32283/- while it was Rs.28954/- during 1992-93.

2.4 Tapioca:

Tapioca is extensively cultivated in Kerala through out the year. The total area under tapioca cultivation and the average yield per hectare are given below:

Area and average yield of Tapioca during 1993-94

Area under tapioca (ha)	Average yield per hectare (tonnes)
130987	19.87

Selected holdings:

180 holdings in various size classes were selected for estimation of the cost of cultivation of tapioca.

Area and No. of holdings selected during 1993-94

Size class	No. of holdings selected	Area under tapioca in the sample (ha)	% to total area	Area per holding (ha)
Small	124	15.08	43.80	0.12
Medium	54	17.12	49.72	0.32
Large	2	2.23	6.48	1.11
All size	180	34.43	100.00	0.19

Cost of Cultivation of Tapioca:

The cost of cultivation of tapioca is estimated under different concepts of cost as stated in the method of estimation.

Labour cost is the major component of cost 'A'. It may be noted that 52% of the total cost 'A' comes under hired human labour cost.

Percentage distribution of hired human labour hours

Sex	Holding size class			All size
	Small	Medium	Large	
Male	60.55	58.87	86.82	61.47
Female	13.73	25.15	11.55	19.58
Total	74.28	84.02	98.37	81.05

Seed/Seedlings:

The cuttings used for the cultivation of tapioca are both home-grown and purchased. The average expenditure of cuttings per hectare of tapioca is Rs.374/-.

Farmyard manure and chemical fertilizers:

The expenditure per hectare under this item is estimated at Rs.2576/- during 1993-94.

The following table illustrates a comparison between the cost of cultivation of tapioca during 1992-93 and 1993-94.

Cost of Tapioca cultivation per hectare during 1992-93 & 1993-94

Concept of cost	Cost per hectare (Rs.)		% increase in cost of cultivation
	1992-93	1993-94	
Cost 'A'	8143	8928	9.64
Cost 'B'	48950	54221	10.77
Cost 'C'	49734	55439	11.47

When compared to the previous year cost of tapioca cultivation increased during 1993-94. The percentage increase is 10% in an average.

Output:

The per hectare value of output of tapioca during 1993-94 is found increased from Rs.15171/- in 1992-93 to Rs.18129/- in 1993-94.

COST OF CULTIVATION PER HECTARE OF TAPIOCA**DURING THE YEAR 1993-94**

Sl. No.	Component of different cost concept	Cost per hectare in Rs.	% distribution of cost 'A'
1.	Hired human labour	4647	52.05
2.	Animal labour	22	0.25
3.	Machine labour	47	0.53
4.	Seed/Seedlings	374	4.19
5.	Farmyard manure & Chemical fertilizers	2576	28.84
6.	Plant protection	12	0.13
7.	Land tax & Irrigation cess	23	0.26
8.	Repairs & maintenance charges	65	0.73
9.	Interest on working capital	804	9.01
10.	Other expenses	358	4.01
11.	Cost 'A' (1 to 10)	8928	100.00
12.	Interest on fixed capital	701	-
13.	Cost 'B1' (11 + 12)	9629	-
14.	Interest on land value	44592	-
15.	Cost 'B' (13 + 14)	54221	-
16.	Imputed value of household labour	1218	-
17.	Cost 'C' (15 + 16)	55439	-

2.5 Pepper:

Pepper is one of the major export oriented commodity in which the State has its own monopoly. Area, production and productivity of pepper in the State during 1993-94 are given in the following table.

Area, production & productivity of Pepper during 1993-94

<u>Area under pepper (in ha)</u>	<u>Production ('000 Tone)</u>	<u>Productivity (Kg/ha)</u>
184410	49.55	269

Selected holdings:

During 1993-94 about 190 pepper holdings were selected for estimating cost of cultivation. The details of the holdings in each size class is given in the following table.

Area under Pepper in the sample

<u>Holding size class</u>	<u>No. of selected holdings</u>	<u>Total area under the crop (ha)</u>	<u>% to total area of selected holdings</u>	<u>Area per holding</u>
Small	176	8.55	62.32	0.05
Medium	14	5.17	37.68	0.37
Large	-	-	-	-
All size	190	13.72	100.00	0.07

The operational area under the crop in the selected holdings is about 14 hectare and the average area per holding is 0.07 hectare during the period.

Cost of Cultivation of Pepper:

The per hectare cost estimated for pepper cultivation during 1993-94 is given below:

COST OF CULTIVATION PER HECTARE OF PEPPERDURING THE YEAR 1993-94

Sl. No.	Component of different cost concept	Cost per hectare in Rs.	% distribution of cost 'A'
1.	Hired human labour	3810	56.93
2.	Animal labour	-	-
3.	Machine labour	89	1.33
4.	Seed/Seedlings	132	1.97
5.	Farmyard manure	1493	22.31
6.	Chemical fertilizers	262	3.92
7.	Plant protection	59	0.88
8.	Land tax	24	0.36
9.	Irrigation	1	0.01
10.	Repair and maintenance charges	52	0.78
11.	Interest on working capital	601	8.98
12.	Other expenses	169	2.53
13.	Cost 'A' (1 to 12)	6692	100.00
14.	Interest on fixed capital	770	-
15.	Cost 'B' (13 + 14)	7462	-
16.	Interest on land value	53619	-
17.	Cost 'B' (15 + 16)	61081	-
18.	Imputed value of household labour	1667	-
19.	Cost 'C' (17 + 18)	62748	-

During the year under report the per hectare cost of cultivation of pepper is worked out to Rs.6692/- which is 5% more than compared to that of the previous year.

While analysing the participation of hired human labour in pepper cultivation it is seen that female participation is less when compared to male participation. The details are given below:

Percentage distribution of hired human labour hours to total human hours

Sex	Holding size class			All size
	Small	Medium	Large	
Male	55.90	64.42	-	56.94
Female	7.79	3.67	-	7.29
Total	63.69	68.09	-	64.23

Value of output:

The value of pepper is found to be Rs.18538/- per hectare during the period under study.

2.6 Mulberry:

In spite of the highly suited natural endowments of Kerala, mulberry cultivation is not yet received a good beginning in the State. Reliable statistical data of this crop is not available. During 1993-94 a study was conducted in selected taluks of the State for estimating the cost of cultivation of this crop. The details collected through this survey is given below:

Area under Mulberry during 1993-94

Holding size class	No. of selected holdings	Area under the crop in the sample (ha)	Percentage	Area per holding (ha)
Small	55	7.94	6.97	0.14
Medium	206	79.47	69.72	0.39
Large	27	26.58	23.31	0.98
Total	288	113.99	100.00	0.40

For the cost study of mulberry cultivation a total of 288 holdings were selected during 1993-94. The average area per sample holding under study is 0.40 hectare.

A. Cost of Mulberry cultivation:

The cost of cultivation of mulberry is worked out under different cost concepts, cost 'A', cost 'B1', cost 'B' and cost 'C'. Cost 'A' consists of cash and kind expenses (paid out costs) actually incurred by the cultivators. The estimated value under different components of cost 'A' per hectare is given below:

COST OF CULTIVATION PER HECTARE OF MULBERRY
DURING THE YEAR 1993-94

Sl. No.	Component of different cost concept	Cost per hectare in Rs.	% distribution of cost 'A'
1.	Hired human labour	4506	41.78
2.	Animal labour	15	0.14
3.	Machine labour	457	4.24
4.	Seed/Seedlings	92	0.85
5.	Farmyard manure & Chemical fertilizers	4224	39.16
6.	Plant protection	40	0.37
7.	Land tax & Irrigation cess	22	0.20
8.	Repair and maintenance charge	180	1.67
9.	Other expenses	288	2.67
10.	Interest of working capital	962	8.92
11.	Total cost 'A' (1 to 10)	10786	100.00
12.	Interest on fixed capital	1034	-
13.	Cost 'B1' (11 + 12)	11820	-
14.	Interest on land value	53953	-
15.	Cost 'B' (13 + 14)	65773	-
16.	Imputed value of household labour	2790	-
17.	Cost 'C' (15 + 16)	68563	-

Labour cost:

The cost per hectare of mulberry cultivation towards hired labour (human + animal + machine) works out to Rs.4978/- during the year under study. Around 46% of the total cost 'A' accounts for labour cost.

The percentage of hired human labour hours engaged in mulberry cultivation to the total labour hours seems to be 59 in mulberry cultivation.

Seed:

The cost towards seed used by the cultivators is seen as Rs.92/-.

Farmyard manure & Chemical fertilizers:

The per hectare expenditure for this input is estimated as Rs.4224/-. About 40% of the cost 'A' accounts for this item.

Plant protection:

It is seen that Rs.40/- is spent for plant protection measures.

Value of product:

The value of product per hectare is found to be Rs.12996/- from mulberry cultivation.

C H A P T E R - IIIS U M M A R Y O F F I N D I N G S

The cost of cultivation of important crops viz. Paddy (autumn, winter and summer), Coconut, Arecanut, Tapioca and Mulberry are worked out by analysing the data collected through the survey 1993-94.

(i) Paddy:-

Eventhough the cost of cultivation per hectare of autumn paddy and winter paddy in 1993-94 has increased from 1992-93, the value of output showed a decreasing trend compared to that of the previous year. During the autumn season it decreased from Rs.11590/- in 1992-93 to Rs.11044/- in 1993-94 and in winter season it recorded Rs.14544/- and Rs.13485/- respectively in 1992-93 and 1993-94. The cost as well as the value of product of summer paddy showed a decreasing trend. It is reported from the field that this is due to the adverse climatic conditions and to the shortage of the quantum of various agricultural works operated by the cultivators.

(ii) Coconut:-

The cost 'A', 'B' and 'C' per hectare of coconut cultivation has increased during this round and the percentage increase are 19%, 8% and 9% respectively.

(iii) Arecanut:-

During the year under report 190 holdings were selected for studying cost of cultivation of arecanut. Cost 'A' works out to Rs.10736/- per hectare during 1993-94.

(iv) Tapioca:-

When compared to the previous year cost of tapioca cultivation increased during 1993-94. The percentage increase is on an average 10%.

(v) Pepper:-

During this round the per hectare cost of cultivation of pepper is worked out to Rs.6692/- which is 5% more than that of the previous year.

(vi) Mulberry:-

During 1993-94 a study was conducted in 288 number of selected holdings of the State for estimating the cost of cultivation of this crop. Area under the crop in the sample holding was 113.99 hectares. The per hectare cost of cultivation of this crop works out to Rs.10786/-.

Appendix ICost of Cultivation per Hectare of Autumn Paddy 1993-94

(in Rs)

Sl. No.	Component of different cost concept	Holding size class			
		Small	Medium	Large	Total
1.	Hired human labour	5633	4966	5209	5184
2.	Animal labour	768	527	167	529
3.	Machine labour	523	698	578	632
4.	Seed/Seedlings	693	639	586	645
5.	Farmyard manure & chemical fertilizers	2080	1939	2314	2041
6.	Plant protection	88	84	36	77
7.	Land tax and Irrigation cess	88	40	12	48
8.	Repair and maintenance charges of implements machinery & boiling etc.	88	449	1	262
9.	Interest on working capital	492	451	465	464
10.	Other expenses	56	161	418	177
11.	Total cost 'A' (1 + 10)	10509	9954	9786	10059
12.	Interest on fixed capital	458	523	501	495
13.	Cost 'B1'	10967	10477	10287	10554
14.	Interest on land value	9969	7531	6742	8041
15.	Cost 'B'	20936	18008	17029	18595
16.	Imputed value of household labour	689	356	71	396
17.	Cost 'C'	21625	18364	17100	18991

Appendix IICost of Cultivation per Hectare of Winter Paddy 1993-94

(in Rs)

Sl. No.	Component of different cost concept	Holding size class			
		Small	Medium	Large	Total
1.	Hired human labour	6284	5270	5064	5510
2.	Animal labour	790	538	238	565
3.	Machine labour	554	652	382	590
4.	Seed/Seedlings	651	606	651	624
5.	Farmyard manure & chemical fertilizers	2319	1920	1918	2025
6.	Plant protection	154	146	287	167
7.	Land tax and irrigation cess	24	48	36	40
8.	Repair and maintenance charges	161	59	3	92
9.	Interest on working capital	542	457	576	504
10.	Other expenses	96	280	2976	589
11.	Cost 'A' (1 to 10)	11575	9976	12131	10706
12.	Interest on fixed capital	469	365	376	403
13.	Cost 'B1' (11 + 12)	12044	10341	12507	11109
14.	Interest on land value	9692	7780	4611	7864
15.	Cost 'B' (13 + 14)	21736	18121	17118	18973
16.	Imputed value of household labour	760	531	368	569
17.	Cost 'C' (15 + 16)	22496	18652	17468	19542

Appendix IIICost of Cultivation per Hectare of Summer Paddy 1993-94

(in Rs)

Sl. No.	Component of different cost concept	Holding size class			
		Small	Medium	Large	Total
1.	Hired human labour	5742	5386	5718	5563
2.	Animal labour	844	430	233	558
3.	Machine labour	500	626	457	556
4.	Seed/Seedlings	694	688	760	699
5.	Farmyard manure & chemical fertilizers	1036	508	41	642
6.	Plant protection	398	466	653	465
7.	Land tax and Irrigation cess	69	35	37	48
8.	Repair and maintenance charges	140	64	8	105
9.	Interest on working capital	476	424	447	446
10.	Other expenses	300	361	1082	435
11.	Cost 'A' (1 to 10)	10199	8988	9436	9517
12.	Interest on fixed capital	420	342	125	375
13.	Cost 'B1' (11 + 12)	10619	9330	9561	9892
14.	Interest on land value	9571	5516	2364	6605
15.	Cost 'B' (13 + 14)	20190	14846	11925	16497
16.	Imputed value of household labour	1090	426	77	626
17.	Cost 'C' (15 + 16)	21280	15272	12002	17123

Appendix IVCost of Cultivation per Hectare of Coconut 1993-94

(in Rs)

Sl. No.	Component of different cost concept	Holding size class			
		Small	Medium	Large	Total
1.	Hired human labour	3554	3401	4425	3718
2.	Animal labour	4	36	71	43
3.	Machine labour	58	106	84	94
4.	Seed/Seedlings	50	20	8	19
5.	Farmyard manure & chemical fertilizers	2742	2670	3346	2867
6.	Plant protection	34	22	2	17
7.	Land tax and Irrigation cess	43	31	34	33
8.	Repair and maintenance charges	87	110	25	87
9.	Interest on working capital	697	667	830	717
10.	Other expenses	523	411	360	407
11.	Cost 'A' (1 to 10)	7792	7474	9185	8002
12.	Interest on fixed capital	794	1073	715	934
13.	Cost 'B' (11 + 12)	8586	8547	9900	8936
14.	Interest on land value	48242	56412	77646	61868
15.	Cost 'B' (13 + 14)	56828	64959	87546	70804
16.	Imputed value of household labour	1343	592	208	552
17.	Cost 'C' (15 + 16)	58171	65551	87754	71356

Appendix VCost of Cultivation per Hectare of Arecanut 1993-94

Sl. No.	Component of different cost concept	(in Rs)			
		Holding size class			Total
		Small	Medium	Large	
1.	Hired human labour	4729	5632	2930	5067
2.	Animal labour	-	10	-	5
3.	Machine labour	270	535	368	402
4.	Seed/Seedlings	229	306	-	254
5.	Farmyard manure & chemical fertilizers	3579	3230	3628	3415
6.	Plant protection	96	217	236	161
7.	Land tax and Irrigation cess	44	28	27	36
8.	Repairs and maintenance charges	79	58	53	74
9.	Interest on working capital	933	1026	716	966
10.	Other expenses	424	328	-	356
11.	Cost 'A' (1 to 10)	10383	11370	7958	10736
12.	Interest on fixed capital	741	1020	679	793
13.	Cost 'B' (11 + 12)	11124	12390	8637	11529
14.	Interest on land value	51470	37285	32500	44967
15.	Cost 'B' (13 + 14)	62594	49675	41137	56496
16.	Imputed value of household labour	1575	604	148	1038
17.	Cost 'C' (15 + 16)	64169	50279	41285	57534

Appendix VICost of Cultivation per Hectare of Tapioca 1993-94

Sl. No.	Component of different cost concept	(in Rs)			
		Holding size class			Total
		Small	Medium	Large	
1.	Hired human labour	4695	4563	4961	4647
2.	Animal labour	10	8	202	22
3.	Machine labour	18	78	-	47
4.	Seed/Seedlings	360	409	211	374
5.	Farmyard manure & Chemical fertilizers	2599	2530	2727	2576
6.	Plant protection	21	1	36	12
7.	Land tax and Irrigation cess	23	26	-	23
8.	Repair and maintenance charges	74	50	22	65
9.	Interest on working capital	811	795	821	804
10.	Other expenses	408	359	74	358
11.	Cost 'A' (1 to 10)	9019	8819	9054	8928
12.	Interest on fixed capital	709	699	524	701
13.	Cost 'B' (11 + 12)	9728	9518	9578	9629
14.	Interest on land value	48422	41769	40359	44592
15.	Cost 'B' (13 + 14)	58150	51287	49937	54221
16.	Imputed value of household labour	1542	1075	125	1218
17.	Cost 'C' (15 + 16)	59692	52362	50062	55439

Appendix VIICost of Cultivation per Hectare of Pepper 1993-94

Sl. No.	Component of different cost concept	Holding size class			
		Small	Medium	Large	Total
					(in Rs)
1.	Hired human labour	3115	3000	-	3810
2.	Animal labour	-	-	-	-
3.	Machine labour	79	106	-	89
4.	Seed/Seedlings	26	308	-	132
5.	Farmyard manure	1337	1702	-	1493
6.	Chemical fertilizers	272	244	-	262
7.	Plant protection	71	40	-	59
8.	Land tax	27	20	-	24
9.	Irrigation	2	-	-	1
10.	Repair and maintenance charges	53	48	-	52
11.	Interest on working capital	510	552	-	601
12.	Other expenses	200	117	-	169
13.	Cost 'A' (1 to 10)	5692	6137	-	6692
14.	Interest on fixed capital	794	592	-	770
15.	Cost 'B' (13 + 14)	6486	6729	-	7462
16.	Interest on land value	62159	39497	-	53619
17.	Cost 'B' (15 + 16)	68645	46226	-	61081
18.	Imputed value of household labour	1881	793	-	1667
19.	Cost 'C' (17 + 18)	70526	47019	-	62748

Appendix VIIICost of Cultivation per Hectare of Mulberry 1993-94

Sl. No.	Component of different cost concept	Holding size class			
		Small	Medium	Large	Total
					(in Rs)
1.	Hired human labour	-	-	-	4506
2.	Animal labour	-	-	-	15
3.	Machine labour	-	-	-	457
4.	Seed/Seedlings	-	-	-	92
5.	Farmyard manure & Chemical fertilizers	-	-	-	4224
6.	Plant protection	-	-	-	40
7.	Land tax and Irrigation cess	-	-	-	22
8.	Repair and maintenance charges	-	-	-	180
9.	Other expenses	-	-	-	288
10.	Interest on working capital	-	-	-	962
11.	Total cost 'A' (1 to 10)	-	-	-	10786
12.	Interest on fixed capital	-	-	-	1034
13.	Cost 'B' (11 + 12)	-	-	-	11820
14.	Interest on land value	-	-	-	53953
15.	Cost 'B' (13 + 14)	-	-	-	65773
16.	Imputed value of household labour	-	-	-	2790
17.	Cost 'C' (15 + 16)	-	-	-	68563

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