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GOVERNMENT OF KERALA

REPORT ON
COST OF CULTIVATION
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OF
IMPORTANT CROPS IN KERALA
1992-93

DEPARTMENT OF ECONOMICS & STATISTICS
THIRUVANANTHAPURAM, 1997.



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P R E F A C E

The time series data on **Cost of Cultivation of important Crops** in the State are required for administering agricultural development schemes, drawing up programmes for the diversification of cropping pattern with a view to meet the socio-economic needs of the community and to maximise the income from farming. The newly formed Agricultural Prices Board also requires data on **Cost of Cultivation of important crops** on regular basis for market intervention by fixing support prices in the event of fall in prices.

This report is based on 13th round of the Survey on Cost of Cultivation of Important Crops conducted during 1992-93. The crops covered during this round are Paddy (3 seasons), Coconut, Arecanut, Tapioca, Pepper, Pineapple and Betelwine.

The tabulation and consolidation of data were done in the "Cost of Cultivation Section" and the report was prepared by Smt.T.Bhavana, Research Officer. Suggestions for improvement are solicited.

Thiruvananthapuram,
20th November, 1995.

Dr. M. KUTTAPPAN
DIRECTOR
DEPARTMENT OF
ECONOMICS & STATISTICS

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This report is based on 13th round of the Survey on Cost of Cultivation of Important Crops conducted during 1992-93. The crops covered during this round are Paddy (2 seasons), Coconut, Aracanut, Tobacco, Pepper, Pineapple and Betelnuts.

The tabulation and consolidation of data were done in the "Cost of Cultivation Section" and the report was prepared by Smt. T. Srinivas, Research Officer. Suggestions for improvement are solicited.

Dr. M. KITTAPPAN
DIRECTOR
DEPARTMENT OF
ECONOMICS & STATISTICS

Government of Karnataka
20th November, 1992

REPORT ON THE COST OF CULTIVATION OF IMPORTANT CROPS

IN KERALA - 1992-93

Chapter-I

GENERAL

1.1 Introduction:-

Agriculture being the primary occupation of the community, maximisation of output and profit in farming is essential to meet the increased food requirement of the growing population. High yield from the cultivation depends largely on the vagaries of nature and agro-climatic conditions. The gain or loss of cultivation of a crop is also determined on the basis of the cost of various inputs used and the value of the main product and the by-products received from it. In order to chalkout various schemes in agricultural sector and for fixing the floor and support prices proper assessment of the cost of cultivation and value of product is necessary. With this end in view, Government of Kerala in G.O.(Rt) 466/79/Plg. dated 27-10-1979 sanctioned a scheme for an annual survey on Cost of Cultivation of Important crops in Kerala. The present report relates to the 13th round of survey conducted during 1992-93.

The crops covered during the period under study is given below:-

- I Paddy (3 seasons)
- II Coconut
- III Arecanut
- IV Tapioca
- V Pepper
- VI Pineapple
- VII Beta wine

1.2 Objectives:-

This survey was mainly intended for estimating the cost of cultivation per hectare of important crops and for comparing the costs under different concepts, over a period.

1.3 Staff:-

(a) Head Quarters Staff

Sl.No.	Designation of post	No. of post
1.	Research Assistant	1
2.	U.D.Compiler	1

(b) Field Staff

1. U.D. Investigator 14
2. L.D. Investigator 28
(4 posts were shifted to Directorate for consolidation of the report).

1.4 Period of the Survey:-

The period of the survey was from 1-7-1992 to 30-6-1993.

1.5 Design of the Survey:-

The survey covered all the districts of Kerala by selecting 38 taluks which are important growing centres of the different selected crops. From each selected taluk two investigator zones were selected using simple random sampling method.

Selection of Cultivators

In each selected Investigator zone a list of cultivators growing paddy in the previous autumn season will be prepared from the last years Form I Diary of the EARAS. From this list of paddy growing cultivators last Autumn seasons 5 cultivators will be selected at random for the current years cost of cultivation study on Autumn paddy. Similar procedure is 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 TRS round in the zone.

In case the cultivators selected for cost of cultivation study on Autumn paddy possess suitable number of plots with other specified crops in stipulated area they may be selected for the cost of cultivation study on other crops like Coconut, Arecanut, Tapioca etc.

If sufficient number of suitable plots are not available with the cultivators selected for autumn paddy the required number of plots for crops other than paddy will be selected from the list of wet and dry land plots of the same Investigator zone in last year. If the selected investigator zone in a taluk doesnot provide the required number of plots for these crops another investigator zone in the taluk will be 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 was 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. Pineapple 10 Holdings each from one taluk.
- 7. Betelwine 10 -do-

A holding was considered for the study only if it contained at least 25 cents under the crop in the case of paddy, tapioca and betelwine. In the case of perennial crops like coconut, arecanut and pepper the holdings should have 25 trees/plants with atleast 50% bearing. Pineapple holdings should have 50 numbers of plants. In the case of betelwine, pineapple etc. if this criteria for selection is strictly followed, it is difficult to get sufficient number of plots. In such extra-ordinary situation purposive selection is resorted to get adequate representation of such crops.

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 or 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 households, area of holdings, inventory of agricultural implements, livestock etc.

Schedule-III In this schedule the cultivation expenses incurred for a crop in each fortnight is reported.

1.7 Field Work:-

Field work was done by 38 investigators in 38 selected taluks one investigator in each taluk. The investigators visited the selected holdings every fortnight and recorded fortnightly operations 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 Processing and Analysis of Data:-

The compilation and tabulation were done at the district level by the investigators posted for the survey. The state level consolidation of the data is done at the Directorate and the report writing and analysis are done at 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. Farm yard 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 labour.

(b) Procedure for Imputation of values of owned inputs

In the production process certain inputs from homestock are used in the production process. In order to estimate 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 own stock 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 rate prevalent in the zone concerned. |
| viii. Interest on 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. |
| ix. 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 of 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.

- | | |
|--|---|
| i. Repair and maintenance charges of implements | In proportion to the area under the crop. |
| ii. Interest on own 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 crop. |

(d) Procedure for valuation of farm assets

- i. Own farm buildings (cattle sheds, storage sheds 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 6 months is taken into account. The land value is estimated at the current market rate in the different areas. There is a controversy in the assessing the land value. The land value is increasing considerably. If the actual value is taken for calculating the interest on land value, no cultivation in the state will be profitable. However, there is always a tendency to under report the land value. It is, therefore, necessary to evolve a method or criteria on to estimate the land value reasonably while calculating the cost of cultivation of a crop.

Chapter-II

RESULTS OF THE SURVEY

Paddy is cultivated in the State in three seasons viz. Autumn (Virippu), Winter (Mundakan) and Summer (Punja).

The following table gives the total cropped area and the area under the paddy crops for the 3 seasons during 1992-93.

Table-1 - Area under Paddy during 1992-93

Total cropped area (in lakh hectare)	Area under paddy (in lakh hectare)			
	Autumn	Winter	Summer	Total
30.46	2.19 (7.19)	2.44 (8.01)	0.75 (2.46)	5.38 (17.66)

Source : Agricultural Statistics of Kerala 1992-93.

(Figures in brackets give the percentage of paddy in each season to the total cropped area).

Out of the three seasons of paddy, Autumn (Virippu) and Winter (Mundakan) are the most important seasons where paddy produce yields maximum.

The following table shows the percentage distribution of area under paddy crop in each season to the total gross area under paddy.

Table-2 - Percentage of area under Paddy in each season to the gross area under paddy during 1992-93

Autumn	Percentage of area under paddy		Total
	Winter	Summer	
40.71	45.35	13.94	100

From the above table it is seen that 86% of the paddy area is in autumn and winter seasons.

The rice production of the State during the year under study stood at 10.85 lakh tonnes and its productivity for three seasons are given below.

Table-3 - Production of Rice during 1992-93 (in lakh tonnes)

Season	Production of rice (lakh tonnes)	Percentage
Autumn	4.36	40.19
Winter	4.77	43.96
Summer	1.72	15.85
Total	10.85	100.00

Table-4 - Average productivity of paddy during 1992-93

Season	Average productivity (Kg/hectare)
Autumn	1991
Winter	1955
Summer	2293

The productivity of summer paddy is higher than that of other seasons.

Out of the total irrigated cropped area 56% constitutes under paddy which is shown below.

Table-5 - Percentage of area irrigated under paddy (area in hectare)

Area irrigated	Total cropped area irrigated	Percentage
212576	376368	56.48

(i) **Autumn Paddy**

The total number of holdings selected for the cost study of Autumn paddy cultivation were 369. They were scattered in all the 38 selected taluks of the State. The number of holdings selected and the area under the crop in each holding size class viz. small, medium and large are given below.

Table-6 - Area under Autumn paddy during 1992-93

Holding Size class	No. of selected holdings	Area under the crop in the sample (hect)	Percentage	Area per holding (hect)
Small	232	50.42	32.77	0.22
Medium	135	98.87	64.26	0.73
Large	2	4.58	2.97	2.29
Total	369	153.87	100.00	0.42

The holdings under report had a total operational area of 153.87 hectare and the average size of holding was 0.42 hectare.

A. Cost of Cultivation

The estimated per hectare cost of Autumn paddy cultivation is furnished below.

Table-7 - Cost of Cultivation per hectare of paddy (Autumn) during 1992-93

Sl. No.	Component of different cost concept	Cost per hectare (in Rs.)	Percentage distribution of cost
1.	Hired human labour	4918	54.51
2.	Animal labour	610	6.76
3.	Machine labour	449	4.98
4.	Seed/seedlings	611	6.77
5.	Farmyard manure and chemical fertilizers	1636	18.12
6.	Plant protection	109	1.21
7.	Land tax and Irrigation cess	17	0.19
8.	Repair and maintenance charges of Implements, Machinery and building	164	1.82
9.	Interest on working capital	421	4.67
10.	Other expenses	88	0.97
11.	Total cost 'A' (1-10)	9023	100.00
12.	Interest on fixed capital	399	
13.	Cost 'B1' (11+12)	9422	
14.	Interest on land value	7047	
15.	Cost 'B' (13+14)	16469	
16.	Imputed value of household labour	519	
17.	Cost 'C' (15+16)	16988	

The share of hired human labour during 1992-93 to the total cost 'A' in Autumn paddy cultivation was 55%. Animal labour and machine labour constituted 7% and 5% respectively. Human labour cost which is the major component of the paddy cultivation consists of hired labour, exchange labour and family labour. Among these irrespective of the size group of holdings hired human labour formed the major portion.

The following table illustrates the percentage of hired labour hours engaged in autumn paddy cultivation to the total labour hours.

Table-8 - Percentage of hired human labour hours to total human labour hours

Sex	Holding size class			All sizes
	Small	Medium	Large	
Male	27.09	18.48	24.10	21.82
Female	62.11	72.59	71.49	68.70
Total	89.20	91.07	95.59	90.52

As usual the proportion of hired labour to total human labour input steadily increases with the increase in the size of holdings. It is seen that cultivators belonging to large class are seen to depend for more than 95% of their requirements on hired labour. The cost of hired human labour per hectare works out to Rs.4918/-.

Seed/seedlings an important input of paddy cultivation per hectare as estimated from the survey is 7% of the total cost 'A'. For paddy cultivation home produced manure chemical fertilizers are used, the cost of which was Rs.1636/- per hectare during this round. When compared to the previous year the combined cost of organic manure and chemical fertilizers per hectare is seen increased irrespective of the size of holdings. This may be due to the hike in the cost and the increase in the application of these fertilizers.

It is noted that the per hectare cost towards plant protection measures is on decreasing trend. While the cost per hectare in 1991-92 was Rs.114/- per hectare it was Rs.109/- in 1992-93. The percentage share of land tax and irrigation cess is nominal i.e. below 1%. Expenditure on repair and maintenance of implements and machinery varies from year to year and from size class to size class. It is worked out to be Rs.164/- during 1992-93. It seems to be decreasing as size class increasing. Interest on working capital was Rs.421/- per hectare and other expenses was Rs.88/- during 1992-93.

Cost 'B1'

Cost 'B1' is estimated by adding the interest on fixed capital (excluding land) to cost 'A'. The estimated interest on fixed capital for 1992-93 is Rs.399/- and cost 'B1' is Rs.9422/-.

When compared to the previous year interest on land value increased from Rs.6881/- to Rs.7047/- during this year. The size class variation is seen minimum in medium size class and maximum in large class.

Cost 'B' and Cost 'C'

Cost 'B' is estimated by adding the interest on land value to cost 'B1' and cost 'C' is estimated by adding the imputed value of household human labour to cost 'B'. The estimated value of land was Rs.7047/- and the imputed value of household labour was Rs.519/- during 1992-93. Cost 'B' estimated to be Rs.16469/- and cost 'C' is Rs.16988/- per hectare. The following table illustrates a comparison with the previous years costs and the year under study.

Table-9 - Cost of Cultivation of (Autumn) paddy in Rs./hectare for 1991-92 and 1992-93.

Concept of cost	Holdings size class				
	Year	Small	Medium	Large	All sizes
Cost 'A'	1991-92	8175	6747	6759	7156
	1992-93	10204	8416	8899	9023
Cost 'B'	1991-92	16580	13666	11508	14377
	1992-93	18082	15531	18374	16469
Cost 'C'	1991-92	17129	14020	11536	14752
	1992-93	18709	16008	18633	16988

Compared to the previous year the cost 'A' has increased by 26% during 1992-93. The percentage increase of cost 'B' and 'C' being 15% each.

B. Output

The Value of the product and by-product of Autumn paddy cultivation for the year 1992-93 is given in the following table.

Table-10 - Value of product and by-product per hectare (in Rs.) during 1992-93

Product by-product	Holding size class			
	Small	Medium	Large	All sizes
Paddy	11304	9977	9991	10090
Straw	1857	1306	2172	1500
Total	13161	13161	12163	11590

During the year 1992-93 the per hectare value of output is estimated at Rs.11590/- which is more than the value of output for 1991-92. It is worthy to note that the paid out cost of cultivation also showed almost similar scale of increase. The value of product from 1980-81 is given in the following table. The table shows that the value of product has been steadily increasing except for the years 1984-85 and 1986-87. The value of output during 1992-93 should have been higher but for the frequent flood in the various parts of the State. The cost of fertilizers was also increased during 1992-93.

Table-11 - Value of product/hectare (in Rs.)

Year	Value of product	Year	Value of product
1980-81	2262	1987-88	5189
1981-82	3446	1988-89	5254
1982-83	3937	1989-90	6690
1983-84	5012	1990-91	7259
1984-85	4368	1991-92	8139
1985-86	4801	1992-93	10090
1986-87	4618		

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.

Table-12 - Cost of production of paddy per quintal during Autumn season (in Rs.)

Concept of cost	Holding size class			
	Small	Medium	Large	All sizes
Cost 'A'	367	296	271	319
Cost 'B'	714	592	653	634
Cost 'C'	741	612	664	656

When cost 'A' is considered the cost of production of paddy per quintal Rs.319/- during the period under report. The following table illustrates the comparison of cost of production of autumn paddy with the previous year.

Table-13 - Cost of production per quintal of Autumn paddy during 1991-92 and 1992-93 (in Rs.)

Concept of cost	1991-92	1992-93	Percentage increase
Cost 'A'	264	319	21
Cost 'B'	592	634	7
Cost 'C'	609	656	8

(ii) Winter Paddy

The study on cost of cultivation of Winter paddy was conducted in 380 holdings. The sample area under Winter paddy in small, medium and large size class of holdings are given below.

Table-14 - Area under Winter paddy during 1992-93

Holding size class	No. of selected holdings	Area under the crop in the sample (hect)	Percentage	Area per holding (hect)
Small	232	52.85	32.00	0.23
Medium	145	103.97	62.97	0.72
Large	3	8.30	5.03	2.76
Total	380	165.12	100.00	0.43

The total operated area of the selected holdings is 165.12 hectares. The average size of a sample holding is 0.43 hectare.

A. Cost of Cultivation

The cost of different items per hectare of cost 'A' (percentage distribution) is given below and details are given in Appendix.

Table-15 - Cost of Cultivation per hectare of paddy (Winter) during the year 1992-93

Sl. No.	Component of different cost concept	Cost per hectare (in Rs.)	% distribution of cost 'A'
1.	Hired human labour	5651	53.81
2.	Animal labour	641	6.10
3.	Machine labour	545	5.19
4.	Seed/seedlings	704	6.70
5.	Farm yard manure and chemical fertilizers	2016	19.20
6.	Plant protection	195	1.86
7.	Land tax and Irrigation cess	24	0.23
8.	Repair and maintenance charges of implements, machinery and buildings	96	0.92
9.	Interest on working capital	494	4.70
10.	Other expenses	135	1.29
11.	Total cost (A (1 - 10)	10501	100.00
12.	Interest on fixed capital	450	
13.	Cost B (11 + 12)	10951	
14.	Interest on land value	7420	
15.	Cost B (13 + 14)	18371	
16.	Imputed value of household labour	414	
17.	Cost C (15 + 16)	18785	

The per hectare cost towards hired human labour in winter paddy cultivation comes to Rs.5651/- in 1992-93. It accounts to 54% of the total cost 'A'.

The percentage of hired human labour hours to the total human labour hours is given below.

Table-16 - Percentage of hired human labour hours to total human labour hours

Sex	Holding size class			
	Small	Medium	Large	All sizes
Male	29.55	27.45	14.55	27.58
Female	59.39	67.98	81.09	65.48
Total	88.94	95.43	95.64	93.06

Out of the total human labour hours employed in winter paddy cultivation 93% is accounted by hired labour. Female hired labour is more than that of the male labour hours. The ploughing and machine operated part of the work are attended by men and almost all other type of activities are being attended by women labourers and moreover this will also reduce the cost by way of wages.

The cost of animal labour is higher in the case of small cultivators whereas the machine labour cost is higher in the case of large cultivators. The cost of seed/seedlings is Rs.704/- per hectare which is 7% of the total cost 'A'. Farmyard manure and chemical fertilizers which is an important item of paddy cultivation accounts to 19%. The cost of pesticides and insecticides is estimated at Rs.195/- per hectare. The percentage share towards land tax and irrigation cess is negligible. The expenditure on repair and maintenance of implements accounts for nearly 1%. Interest on working capital is computed at Rs.494/-.

Cost 'B1' and Cost 'B'

Cost 'B1' is estimated by adding the interest on fixed capital (excluding land) to cost 'A'. It is found to be Rs.10951/-.

Cost 'B' is estimated to be Rs.18371/-. When compared to the previous round interest on land value has increased during this round.

Cost 'C'

Cost 'C' is estimated by adding the imputed value of household labour to cost 'B'. It is seen as Rs.18785/-.

The estimated cost for the winter paddy per hectare under three major concepts of cost are given below.

Table-17 - Cost of Cultivation of Winter Paddy (Rs/Hectare)

Concept of cost	Holding size class			
	Small	Medium	Large	All sizes
Cost 'A'	11469	9983	10709	10501
Cost 'B'	20487	17413	16828	18371
Cost 'C'	21248	17665	17058	18785

Cost of cultivation of winter paddy for 1991-92 and 1992-93 are given below.

Table-18 - Cost of Cultivation of Winter Paddy (Rs/Hectare) for 1991-92 and 1992-93

Concept of cost	Year	Holding size class			
		Small	Medium	Large	All sizes
Cost 'A'	1991-92	8952	8303	8441	8496
	1992-93	11469	9983	10709	10501
Cost 'B'	1991-92	16964	15363	12684	15147
	1992-93	20487	17413	16828	18371
Cost 'C'	1991-92	17709	15836	12819	15604
	1992-93	21248	17665	17058	18785

The cost of different items per hectare of cost 'A' (percentage distribution) is given below and details are given in Appendix.

B. Output

The estimates of value of paddy and straw obtained from winter paddy cultivation is given below. The unprevented flood situation in some district affected the crops which resulted in low production.

Table-19 - Value of Output (Rs/Hectare)

Product and by product	Holding size class			
	Small	Medium	Large	All sizes
Paddy	11602	11406	14390	12465
Straw	3538	2736	1831	2948
Total	15143	14242	16221	15413

C. Cost of Production of Paddy per Quintal

Cost of producing one quintal of paddy is worked out 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 yield per hectare.

Table-20 - Cost of Production of Winter Paddy (Rs/Hectare)

Concept of cost	Holding size class			
	Small	Medium	Large	All sizes
Cost 'A'	317	259	234	270
Cost 'B'	678	524	395	551
Cost 'C'	706	533	401	566

The percentage of hired human labour hours to the total human labour hours is given below.

The cost of production of winter paddy per quintal for 1991-92 and 1992-93 are presented below for comparison.

Table-21 - Cost of production of Winter paddy per quintal (in Rs.) for 1991-92 and 1992-93

Concept of cost	Year	Holding size class			
		Small	Medium	Large	All sizes
Cost 'A'	1991-92	257	218	183	216
	1992-93	317	259	234	270
Cost 'B'	1991-92	678	524	395	551
	1992-93	590	467	290	439
Cost 'C'	1991-92	621	484	293	455
	1992-93	708	533	401	566

When compared to the previous year cost of production of winter paddy per quintal relating to cost 'A', 'B' and 'C' showed an increasing trend.

(iii) Summer (Punja) Paddy

The number of holdings selected for the study on cost of cultivation of summer paddy was 370 during 1992-93. The details of then holding is given below.

Area under summer paddy during 1992-93

Holding size class	No. of selected holdings	Area under the crop in the sample (ha)	Percentage	Area per holding (ha)
Small	259	57.55	39.82	0.22
Medium	109	81.15	56.15	0.74
Large	2	5.83	4.03	2.92
Total	370	144.53	100.00	0.39

The holdings selected during the periods under report have a total operational area of 144.53 hectares. The average size of holdings was 0.39 hectare.

A. Cost of Cultivation

The cost of cultivation per hectare of summer paddy is given in the following table.

**Cost of Cultivation per hectare of Summer Paddy
for the year 1992-93**

Sl. No.	Components of different cost concept	Cost per hect(Rs)	% distribution of cost 'A'
1.	Hired human labour	5676	52.48
2.	Animal labour	642	5.94
3.	Machine labour	471	4.35
4.	Seed/Seedlings	663	6.13
5.	Farm yard manure & Chemical fertilizers	1920	17.75
6.	Plant protection	351	3.25
7.	Land tax and Irrigation cess	92	0.85
8.	Repair and maintenance charges	139	1.29
9.	Other expenses	357	3.30
10.	Interest on working capital	504	4.66
11.	Total cost 'A' (1 - 10)	10815	100.00
12.	Interest on fixed capital	447	
13.	Cost 'B1' (11 + 12)	11262	
14.	Interest on land value	6284	
15.	Cost 'B' (13 - 14)	17546	
16.	Imputed value of household labour	570	
17.	Cost 'C' (15 + 16)	18116	

From the above table it is seen that about 70% of the total cost 'A' constitutes to labour cost. When compared to the previous year hired human labour cost in large size class showed a decreasing trend. This is due to the decrease in the quantum of work done in summer paddy cultivation due to higher wage rate. The percentage of hired human labour hours engaged in the cultivation of summer paddy during 1992-93 is given below.

**Percentage of hired human labour hours engaged in
summer paddy cultivation**

Holding size class	Male	Female	Total
Small	28.66	57.48	86.14
Medium	25.90	66.62	92.52
Large	33.96	62.89	96.85
All size	27.26	62.63	89.99

During this round 90% of the total human labour hours is hired human labour. The cost of seed/seedlings per hectare is found to be Rs.663/- during this year. It is seen that 18% of the total cost 'A' accounts to farm yard manure and chemical fertilizers. The expenditure towards plant protection measures is estimated to 3% of the total cost 'A'. Only a small percentage is expended for land tax and irrigation cess. The estimated expenditure per hectare on repair and maintenance charges of implements and machinery is found to be Rs.139/- during the period under report. About 5% of the cost 'A' accounts for interest on working capital.

Cost 'B1' and Cost 'B'

Cost 'B1' is obtained by adding the interest on fixed capital (excluding land) to cost 'A'. The interest on fixed capital is estimated to Rs.447/- and cost 'B1' is found to be Rs.11262/- for summer paddy cultivation. As usual the imputed value of household labour is maximum in the case of small size class and minimum in the case of large size class. The interest on land value is found to be Rs.6284/- during this year and cost 'B' is estimated to be Rs.17546/-. Cost 'C' showed an increasing trend from Rs.16070/- to Rs.18116/- during this year.

The comparison of the various concepts of cost with previous year is given in the following table.

Cost of Cultivation of Summer paddy Rs./Hectare for 1991-92 to 1992-93

Concept of cost	Year	Holding size class			
		Small	Medium	Large	All sizes
Cost 'A'	1991-92	9620	9287	9346	9412
	1992-93	11194	10586	9761	10815
Cost 'B'	1991-92	17454	14910	12537	15550
	1992-93	19576	16337	13232	17546
Cost 'C'	1991-92	18526	15190	12609	16070
	1992-93	20351	16793	13362	18116

When compared to the previous year the cost 'A' has increased to 15%, cost 'B' by 12.83% and cost 'C' by 12.73%.

B. Output

The estimated value of paddy and straw obtained from summer paddy cultivation is given below.

Value of product and by-product per hectare for 1992-93

Product by-product	Holding size class			
	Small	Medium	Large	All sizes
Paddy	12831	13145	13758	12249
Straw	2656	2099	1454	2295
Total	13487	15244	15212	14544

C. Cost of production of paddy per quintal

Cost of producing one quintal of paddy is got 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 yield per hectare.

Cost of production of summer paddy per quintal

Concept of cost	Holding size class			
	Small	Medium	Large	All sizes
Cost 'A'	316	250	219	275
Cost 'B'	627	419	310	492
Cost 'C'	655	432	313	510

A comparison between the cost of production during 1991-92 and 1992-93 is given in the following table.

Cost of production of paddy per quintal during 1991-92 and 1992-93

Concept of cost	1991-92	1992-93
Cost 'A'	229	275
Cost 'B'	428	492
Cost 'C'	445	510

2.2 Coconut

Coconut, an important tree crop of the State which is cultivated in 8.77 lakh hectares during 1992-93. The total area under coconut and the average yield per hectare during the period under report is given below.

Area and average yield of Coconut 1992-93

Area under Coconut (Ha)	Percentage to total cropped area	Average yield per hectare (No. of nuts)
877012	28.79	5843

From the above table it is seen that the percentage of area under coconut cultivation to total cropped area is 29% and the average yield per hectare is 5843 numbers.

For the survey on cost of cultivation of 380 numbers of coconut holdings were selected for the year 1992-93. The details of these holdings according to size class viz. small, medium and large are 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	95	13.38	7.73	0.14
Medium	233	90.45	52.29	0.39
Large	52	69.15	39.98	1.33
All sizes	380	172.98	100.00	0.45

The selected holdings had a total 172.98 hectare of operational area during 1992-93. The average size of holding was 0.45 hectare.

Number of bearing trees in the selected plots:

Out of the total coconut trees in the selected plots 0.66% was found to be bearing and the remaining non-bearing. The number of bearing and non-bearing trees per hectare for the year 1992-93 is given below.

Number of bearing and non-bearing trees per hectare

Type of trees	No. of trees per head	Percentage
Bearing	149	65.93
Non-bearing	77	34.07
Total	226	100.00

A. Cost of Cultivation

The cost of cultivation of coconut is estimated under the four different concepts of cost (viz. Cost 'A', 'B1', 'B' and 'C').

Cost 'A' consists of cash and other kind expenses and is worked out to Rs.6028/- per hectare during 1992-93. The estimated cost under different items of expenditure per hectare and the percentage distribution of these items to total cost 'A' are given in the following table.

Cost of Cultivation per hectare of Coconut during the year 1992-93

Sl. No.	Components of different cost concepts	Cost per hect.(Rs)	% distribution of cost 'A'
1	2	3	4
1.	Hired human labour	3062	45.37
2.	Animal labour	20	0.30
3.	Machine labour	12	0.18
4.	Seed/Seedlings	39	0.58
5.	Farm yard manure and chemical fertilizers	2601	38.54

1	2	3	4
6.	Plant protection	10	0.15
7.	Land tax and irrigation cess	21	0.31
8.	Repair and maintenance charges	103	1.52
9.	Other expenses	279	4.13
10.	Interest on working capital	602	8.92
11.	Total cost 'A' (1 - 10)	6749	100.00
12.	Interest on fixed capital	871	
13.	Cost 'B1' (11 - 12)	7620	
14.	Interest on land value	57658	
15.	Cost 'B' (13 - 14)	65278	
16.	Imputed value of household labour	470	
17.	Cost 'C' (15 + 16)	65748	

Labour cost is the major component of cost 'A' which includes hired human labour, animal labour and machine labour. It works out to Rs.3094/-. The percentage distribution of hired human labour participation in coconut cultivation to the total labour hours is given below for males and females separately.

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

Sex	Holding size class			
	Small	Medium	Large	All sizes
Male	58.99	72.24	86.32	75.92
Female	10.31	7.78	7.78	8.39
Total	69.30	80.02	94.10	84.31

When compared to the paddy cultivation female participation is lowest in coconut cultivation. About 85% of the total human labour hours has been shared by hired human labour. For planting new seed/seedlings Rs.39/- is spent. Application of farm yard manure and chemical fertilizers constitutes a major share i.e. 39% of the total cost 'A'. Cost towards plant protection, land tax and irrigation cess accounts only a nominal percentage. Repair and maintenance charges to nearly 2% of the total cost 'A'. Per hectare interest on working capital is estimated to Rs.602/-.

Cost 'B1' and Cost 'B'

Cost 'B1' is estimated by adding the interest on fixed capital (excluding land) to cost 'A'. It is found to be Rs.7620/-.

Interest on land value is increased from Rs.47307/- to Rs.57658/- during this round.

Cost 'C'

Cost 'C' is estimated by adding the imputed value of household labour to cost 'B'. It is estimated to be Rs.65748/-.

**Cost of Cultivation of Coconut per hectare during
1991-92 and 1992-93**

Concept of cost	Cost per hectare (in Rs.)		Percentage increase
	1991-92	1992-93	
Cost 'A'	6028	6747	11.93
Cost 'B'	53824	65278	21.28
Cost 'C'	54149	65748	21.42

B. Value of Product

The total value of output per hectare is seen as Rs.18318/- during 1992-93.

Value of Output/Hectare

Output	Value (in Rs.)
Product	17631
By-product	687
Total	18318

2.3 Arecanut

In Kerala arecanut palm grows under different climatic and soil conditions. The total area under arecanut cultivation during 1992-93 was 63929 hectares. The details of arecanut cultivation is given in the following table.

Area and average yield of Arecanut

Total cropped area (in hect)	Area under Arecanut (in hect)	Average yield per hectare (Nos.)	Percentage of area under arecanut to total cropped area
3046471	63929	218998	2.09

From the above table it is seen that 2% of the total cropped area is under arecanut cultivation.

Selected holdings

For the cost of cultivation of arecanut 375 holdings were selected during 1992-93. The details of these holdings in each size class is as follows.

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Area under Arecanut during 1992-93

Holding size class	No. of selected holdings	Area under the crop in the sample(hect)	Percentage	Area per holding (hect)
Small	343	15.55	57.96	0.05
Medium	31	10.25	38.20	0.33
Large	1	1.03	3.84	1.03
Total	375	26.83	100.00	0.07

The total operational area of the selected holdings studied for the period under report was 26.83 hectares. The average size of holding was 0.07 hectare.

A. Cost of Cultivation

The estimated cost of cultivation of arecanut under different cost concepts are given below.

Cost of Cultivation per hectare of Arecanut during the year 1992-93

Sl. No.	Components of different cost concepts	Cost per hect (Rs.)	% distribution of Cost 'A'
1.	Hired human labour	4591	43.74
2.	Animal labour	8	0.08
3.	Machine labour	579	5.52
4.	Seed/seedlings	43	0.41
5.	Farm yard manure and chemical fertilizers	3478	33.15
6.	Plant protection	300	2.86
7.	Land tax and Irrigation cess	74	0.70
8.	Repair and maintenance charges of implements machinery and buildings	83	0.79
9.	Other expenses	398	3.79
10.	Interest on working capital	940	8.96
11.	Total cost 'A' (1 - 10)	10494	100.00
12.	Interest on fixed capital	902	
13.	Cost 'B1' (11 + 12)	11396	
14.	Interest on land value	62452	
15.	Cost 'B' (13 + 14)	73848	
16.	Imputed value of household labour	1338	
17.	Cost 'C' (15 + 16)	75186	

Labour cost accounts to a major component of cost 'A' in arecanut cultivation as in other crops. The per hectare cost estimated under this item is Rs.4591/- during 1992-93. The percentage of hired human labour hours engaged in arecanut cultivation to total labour hours is given below for males and females respectively.

Percentage distribution of hired human labour hours

Sex	Holding size class			
	Small	Medium	Large	All size
Male	60.24	56.52	58.79	58.77
Female	10.97	14.30	17.79	12.50
Total	71.21	70.82	76.58	71.27

The proportion of hired human labour hours to total human labour hours is highest in large size class and lowest in medium size class cultivators belonging to large size of holdings depend 77% of their requirement of labour on hired human labour.

The per hectare expenditure incurred towards the cost of seed/seedlings for the new plantation is Rs.43/-. The cost towards farm yard manure accounts to 30% while chemical fertilizers cost is 3% of the total cost 'A'. The item of plant protection measures is Rs.300/- per hectare. Only a small percentage of total cost 'A' is accounted towards irrigation cess and land tax.

The estimated expenditure on repair and maintenance charges of implements, machinery and buildings work out to Rs.83/-. Interest on working capital and other expenses constitutes to 9% and 4% respectively.

Cost 'B1' and 'B'

Cost 'B1' is estimated by adding the interest on fixed capital to cost 'A'. It works out to Rs.11396/- during 1992-93.

As in other crops interest on land value for arecanut cultivation also decreases as size class increases. It is seen Rs.62452/- per hectare.

Cost 'B' is estimated by adding the interest on land value to cost 'B1' and it is worked out to Rs.73848/-.

When compared to other crops the per hectare cost of imputed value of household labour is higher in arecanut cultivation.

Cost 'C'

Cost 'C' is estimated by adding the imputed value of household labour to cost 'B'. It is estimated as Rs.75186/- during 1992-93.

B. Value of Output

The value of output per hectare from arecanut cultivation is found to be Rs.28954/- during 1992-93.

2.4 Tapioca

Tapioca, yet another food item of Keralatias extensively cultivated in the State. The total area under tapioca cultivation and the average yeidl per hectare for the year 1992-93 are given in the following table.

Area and average yield of Tapioca during 1992-93

Total cropped area (hect)	Area under tapioca (hect)	Average yield per hectare (tonnes)	Percentage of area under tapioca to total cropped area.
3046471	135033	19.47	4.43

About 5% of the total cropped area was under tapioca cultivation during the period 1992-93. The yield per hectare of tapioca was 19.47 tonnes.

Selected holdings

During 1992-93 for the estimation of the cost of cultivation of tapioca holdings were selected. The details of these holdings in each size class is given in the following table.

Area and number of holdings selected

Size class	Area under the crop in the sample (hectare)	Percentage to total area of selected holdings	No. of selected holdings	Area per holding
Small	14.15	35.38	116	0.12
Medium	18.81	47.02	58	0.32
Large	7.04	17.60	6	0.85
All sizes	40.00	100.00	180	0.22

The selected holdings had a total operational area of 40 hectares. The average size of holdings is 0.22 hectare.

A. Cost of Cultivation of Tapioca

As in other crops the cost of cultivation of tapioca is also estimated under three different concepts of cost (viz. cost 'A', cost 'B' and cost 'C'). The estimated cost of different items per hectare and their percentage distribution to the total cost 'A' is given in the following table.

Cost of Cultivation per hectare of Tapioca during the year 1992-93

Sl. No.	Components of different cost concepts	Cost per hect(Rs.)	% distribution of cost 'A'
1.	Hired human labour	4559	55.99
2.	Animal labour	18	0.22
3.	Machine labour	57	0.70
4.	Seed/seedlings	270	3.31
5.	Farm yard manure and chemical fertilizers	2252	27.66
6.	Plant protection	9	0.11
7.	Land tax and irrigation cess	26	0.32
8.	Repair and maintenance charges	114	1.40
9.	Other expenses	110	1.35
10.	Interest on working capital	728	8.94
11.	Cost 'A'	8143	100.00
12.	Interest on fixed capital	814	
13.	Cost 'B1' (11 + 12)	8957	
14.	Interest on land value	39993	
15.	Cost 'B' (13 + 14)	48950	
16.	Imputed value of household labour	784	
17.	Cost 'C' (15 + 16)	49734	

From the above table it is seen that an important component of cost 'A' is the labour cost which accounts to 57 percent when compared to paddy cultivation the proportion of labour cost to total cost 'A' is lower in the case of tapioca cultivation. The percentage of hired human labour hours engaged in tapioca cultivation to the total labour hours is given below for males and females separately for each size group of holdings.

Percentage distribution of hired human labour hours

Sex	Holding size class			All sizes
	Small	Medium	Large	
Male	61.31	63.45	52.91	60.53
Female	12.77	26.24	41.59	24.95
Total	74.08	89.69	94.50	85.48

The above table reveals that the proportion of hired human labour to total human labour input steadily increases with the increase in the size of holdings.

The cost towards seedlings/seed account to 3% and 28% is spent for farm yard manure and chemical fertilizers. In tapioca cultivation the cost towards plant protection measures and land tax and irrigation cess accounts to below 1% each. The expenditure incurred for repair and maintenance charges comes to 1% of the total cost 'A'. The interest on working capital is estimated at Rs.728/- per hectare. The miscellaneous expenses comes to Rs.110/- per hectare.

An interest is calculated for fixed capital and it comes to Rs.814/- during the period under review. Cost 'B1' and 'B' showed increasing trend while imputed value of household labour showed a decreasing trend during this year. Cost 'C' is estimated to Rs.49734/- per hectare.

The per hectare cost of cultivation estimated under different cost concepts is as follows:-

Estimated Cost of Cultivation

Concept of cost	Cost per hectare (Rs.)
Cost 'A'	8143
Cost 'B'	48950
Cost 'C'	49734

The following table illustrates a comparison between the cost of cultivation of tapioca during

Cost of Tapioca cultivation per hectare during 1991-92 and 1992-93

Concept of cost	Cost per hectare (Rs.)		% increase in cost of cultivation
	1991-92	1992-93	
Cost 'A'	8242	8143	1.20
Cost 'B'	40410	48950	21.13
Cost 'C'	41385	49734	20.17

The calculation of cost 'B' for tapioca is unscientific. While the paid cost (cost 'A') per hectare was only Rs.8143/- the interest on land (cost 'B') was Rs.48950/- six times more than the cost 'A'. So, it is better to dispense with the costs in the computation of cost of cultivation of tapioca.

B. Output

The per hectare value of output of tapioca during 1992-93 is found to be increased from Rs.13146/- to Rs.15171/-.

2.5 Pepper

Pepper an important foreign exchange earner is largely produced from Kerala. The total area under pepper and the average yield per hectare during the year 1992-93 are given in the following table.

Area and average yield of Pepper

Area under pepper (in hectare)	Average yield of pepper in Kg. per hectare	Percentage of area under pepper to the total cropped area
183478	271	6.02

It is seen that 6% of the gross area under crops in the State is under pepper cultivation.

Selected holdings

During this round 190 holdings were selected for studying the cost of cultivation of pepper during 1992-93. The details are given below.

Area under Pepper in the sample

Holding size class	No. of selected holdings	Total area under the crop(hect)	Percentage to total area of selected holdings	Area per holding
Small	173	7.67	55.10	0.04
Medium	16	5.44	39.08	0.34
Large	1	0.81	5.82	0.81
All sizes	190	13.92	100.00	0.07

The operational area under the crop in the selected holdings is 13.92 hectares.

A Cost of Cultivation of Pepper

The per hectare cost incurred under different components are given in the following table.

Cost of Cultivation per hectare of Pepper during the year 1992-93

Sl. No.	Components of different cost	Cost per hect(Rs.)	% distribution of cost 'A'
1	2	3	4
1.	Hired human labour	3667	57.55
2.	Animal labour	-	-
3.	Machine labour	61	0.96
4.	Seed/Seedlings	73	1.14
5.	Farm yard manure and chemical fertilizers	1586	24.89
6.	Plant protection	72	1.13
7.	Land tax and irrigation cess	21	0.33
8.	Repair and maintenance charges	137	2.15

1	2	3	4
9. Other expenses		190	2.98
10. Interest on working capital		565	8.87
11. Total cost 'A' (1 - 10)		6372	100.00
12. Interest on fixed capital		897	
13. Cost 'B1' (11 + 12)		7269	
14. Interest on land value		36334	
15. Cost 'B' (13 + 14)		43693	
16. Imputed value of household labour		1165	
17. Cost 'C' (15 + 16)		44858	

Hired human labour cost, a major component of cost under pepper cultivation accounts to 58% of the total cost 'A' during this round. It showed an increasing trend. The percentage of hired human labour hours engaged in pepper cultivation to the total labour hours is given below.

Percentage distribution of hired human labour hours to total human hours

Sex	Holding size class			
	Small	Medium	Large	All sizes
Male	56.42	74.57	76.92	66.11
Female	5.50	8.83	15.39	7.94
Total	61.92	83.40	92.31	74.05

The percentage share of hired human labour hours to total human hours increased as size class increased. About 74% of the total human labour hours constituted for hired human labour and the remaining towards household and exchange human labour hours. Female hired human labour is low in the case of pepper cultivation.

For planting new plants Rs.73/- is spent. About 25% of the total cost 'A' is accounted for farm yard manure and chemical fertilizers. Plant protection yet another important item of cost shares to only 1%. Land tax and irrigation cess, repair and maintenance charges etc constitutes to 0.33% and 2.15% respectively. The per hectare cost towards interest on working capital is Rs.565/- and to other expenses is Rs.190/-.

Cost 'B1'

Cost 'B1' is estimated by adding the interest on fixed capital (excluding land) to cost 'A'. It is Rs.7269/- during 1992-93. Interest on land value showed an increasing trend which is worked out to Rs.36334/-.

Cost 'B' and Cost 'C'

Cost 'B' is estimated by adding the interest on land value to cost 'B1' and cost 'C' is estimated by adding the imputed value of household labour to cost 'B'. During this round cost 'B' is Rs.43693/- and cost 'C' is Rs.44858/-. The imputed value of household labour is Rs.1165/- per hectare.

B Value of Output

The value of pepper is found to be Rs.19839/- per hectare during 1992-93.

2.6 Pineapple

Pineapple cultivation occupies an important place in the recent cropping pattern of the State. The area under this crop and its average yield per hectare is given in the following table.

Area and average yield of Pineapple

Total cropped area (in lakh/hect)	Area under pineapple	Average yield Kg/hect	Percentage of area under pineapple to the total cropped area
30.46	5033	9280	0.16

The total area under pineapple cultivation during 1992-93 was 5033 hectares. The average yield per hectare was 9280 Kg. The percentage of area under pineapple cultivation to the total cropped area comes to nearly 1%.

Selected holdings

The number of holdings selected for cost study is given below.

No. of holdings under Pineapple cultivation

Holding size class	No. of selected holdings	Area under pineapple (Ha)	Percentage to total area	Area per holding (hectares)
Small	144	4.54	7.95	0.03
Medium	38	16.13	28.24	0.42
Large	16	36.44	63.81	2.27
All sizes	198	57.11	100.00	0.29

The total number of holdings selected for pineapple cultivation during the year 1992-93 were 198. These holdings cover an area of 57.11 hectares. The average area per holding was 0.29 hectare.

A. Cost of Cultivation

The per hectare cost of cultivation details under different components of cost are as follows:

Cost of Cultivation per hectare of Pineapple during the year 1992-93

Sl. No.	concepts	Cost per hect(Rs)	% distribution of cost 'A'
1.	Hired human labour	8776	30.50
2.	Animal labour	-	-
3.	Machine labour	26	0.09
4.	Seed/Seedlings	7728	26.86
5.	Farm yard manure and chemical fertilizers	5619	19.53
6.	Plant protection	64	0.22
7.	Land tax and irrigation cess	41	0.14
8.	Repair and maintenance charges	51	0.18
9.	Other expenses	3861	13.42
10.	Interest on working capital	2607	9.06
11.	Total cost 'A' (1 - 10)	28773	
12.	Interest on fixed capital	565	
13.	Cost 'B1' (11 - 12)	29338	
14.	Interest on land value	36981	
15.	Cost 'B' (13 + 14)	66319	
16.	Imputed value of household labour	873	
17.	Cost 'C' (15 + 16)	67192	

The per hectare cost towards pineapple cultivation constituted about 31% of the total cost 'A'. Animal labour is not seen in pineapple cultivation. Machine labour is utilised only in large cultivators. The per hectare cost towards this item is negligible i.e. only 0.09% of the cost 'A'. Seed/seedlings an important input of the pineapple cultivation accounts to 27% of the total cost 'A'. Farm yard manure and chemical fertilizers yet another input comes to 19% of the total cost 'A'. Cost incurred under plant protection, land tax, irrigation, repair and maintenance charges etc. accounts to only below 1% each. Expenditure towards interest on working capital shares to 9% of the total cost 'A'.

The percentage of hired human labour hours engaged in the pineapple cultivation during 1992-93 is given below:

Percentage of hired human labour hours engaged in Pineapple cultivation

Handling size class	Male	Female	Total
Small	42.85	20.60	63.45
Medium	42.00	47.88	89.88
Large	34.98	53.40	88.36
All sizes	37.02	50.73	87.75

From the above table it is seen that about 88% of the total human labour hours is hired human labour. The composition of work participation rate is also different from that of paddy cultivation etc.

Cost 'B1' and Cost 'B'

Cost 'B' is obtained by adding the interest on fixed capital (excluding land) to cost 'A' and it is seen as Rs.28773/-. Interest on land value is maximum in the case of small holdings size class and minimum in the case of medium size class. Considering this cost 'B' is estimated as Rs.66319/- during 1992-93. The participation of household labour is maximum in small size class and minimum in the case medium size class.

The estimated per hectare cost of cultivation of pineapple during 1992-93 is given below:

Cost of Cultivation of Pineapple Rs/Hectare for 1992-93

Concept of cost	Holding size class			
	Small	Medium	Large	All sizes
Cost 'A'	12465	26661	31871	28773
Cost 'B'	75858	59726	67967	66319
Cost 'C'	77180	60487	68735	67192

B Output

The value of output is seen as Rs.63006/- per hectare for pineapple cultivation. The details for the different holding size class are given as follows:

Value of product and by-product per hectare for 1992-93

Product/ by product	Holding size class			
	Small	Medium	Large	All sizes
Pineapple	38004	41025	68224	58139
Kanni	413	4191	5722	4867
Total	38417	45216	73946	63006

2.7 Betelwine

Betel leaves is considered to be as a symbol of our culture and civilization. For every "muhurthoms" and festivals it is a must. It occupies an important place in the day today habits of our people. Every Indians especially Keralites cannot remember a life without betel leaves. Besides social significance economically also this is an important crop. The present survey high lights the importance of this crop in our cropping pattern.

The total area under betel leaves cultivation and the average yield per hectare during 1992-93 is given in the following table.

Table - Area and average yield of Betel leaves

Total cropped area (in lakh hectare)	Area under betel leaves (in hectare)	% of area under betel leaves to the total cropped area
30.46	951	0.03

Selected holdings

For the cost study of betel leaves a total of 171 holdings were selected. The details of these holdings in each size class (viz. small medium, large) of holdings are given below:

Table - Area under Betel leaves in the sample

Holding size class	No. of selected holdings	Area under the crop in the sample (ha)	Percentage	Area per holding (hect.)
Small	169	7.21	94.74	0.04
Medium	2	0.40	5.26	0.20
Large	-	-	-	-
Total	171	7.61	100.00	0.04

The average area per sample holding under study is 0.04 hectare.

A Cost of Cultivation

The estimated cost of cultivation of different items per hectare of betel leaves is given below. The details of estimated cost according to size classes are given in appendix.

Cost of Cultivation per hectare of Betel leaves during the year 1992-93

Sl. No.	Components of different cost concepts	Cost per hect (Rs)	% distribution of cost 'A'
1	2	3	4
1.	Hired human labour	18545	18.28
2.	Animal labour	-	-
3.	Machine labour	2493	2.46
4.	Seed/seedlings	6489	6.40
5.	Farm yard manure of chemical fertilizers	40878	40.29
6.	Plant protection	210	0.21
7.	Land tax and irrigation cess	98	0.10
8.	Repair and maintenance charges	569	0.56

	2	3	4
9. Other expenses		22996	22.67
10. Interest on working capital		9160	9.03
11. Total cost 'A' (1 + 10)		101438	
12. Interest on fixed capital		1224	
13. Cost 'B1' (11 + 12)		102662	
14. Interest on land value		50963	
15. Cost 'B' (13 + 14)		153625	
16. Imputed value of household labour		45411	
17. Cost 'C' (15 + 16)		199036	

From the above table it is seen that total cost 'A' of cultivation of betel leaves per hectare works out to Rs.101438/-. The percentage share towards farm yard manure and chemical fertilizers accounts to 40%. Hired human labour cost is found to be 18% of the cost 'A'. Machine labour cost shares to 2%. Plant protection measures and land tax and irrigation cess accounted for only a small percentage ie. 0.21 and 0.10% respectively. For seed/seedlings 6% of the cost 'A' is accounted. The percentage share for repair and maintenance of implements and machinery comes to about 1%. The average expenditure on interest on working capital and other expenses is found to be 9% and 23% respectively.

Cost 'B1'

Cost 'B1' is estimated by adding the interest on fixed capital (excluding land) to cost 'A'. It works out to Rs.102662/- during 1992-93. Interest on land value is maximum in the case of small size class and minimum in the case of medium size class.

Cost 'B' and Cost 'C'

Cost 'B' is estimated by adding the interest on land value to cost 'B1' and cost 'C' is estimated by adding the imputed value of household human labour to cost 'B'. Cost 'B' is found to be Rs.153625/- and cost 'C' is Rs.199036/-.

The percentage of hired human labour hours and household labour hours engaged in betel leaves cultivation to the total labour hours is shown here under.

Percentage distribution of hired human labour hours and household labour hours to total human labour hours

Size class	Hired			Household		
	Male	Female	Total	Male	Female	Total
Small	19.68	4.80	24.48	64.31	11.03	75.34
Medium	-	-	-	-	-	-
Large	-	-	-	-	-	-
Total	19.68	4.80	24.48	64.31	11.03	75.34

It is seen that 25% of the total human labour hours accounted for hired human labour and the remaining towards household human labour hours. When compared to other crops the type of labour participation ratio exhibits certain peculiarities. Most of our major crops absorbs large share of hired human labour force in various cultivation practices. But in the case of betel leaves cultivation it absorbs major share as household labour when compared to the hired labour. This has certain implications. For the betel leave cultivation participation of the household labour is more than that of the hired labour i.e. the cultivators are actually engaged in the cultivation practices. It provides an employment and means of livelihood to them.

B. Output

The value of the product and by-product of betel leaves cultivation is given in the following table.

**Value of Product and By-product per hectare (in Rs.)
during 1992-93**

Product by-product	Holding size class			
	Small	Medium	Large	All size
Betel leaves	220535	196765	-	219286
Kodithala	2685	-	-	2543

The value of output per hectare is found to be Rs.221829/-.

Chapter-III

SUMMARY OF FINDINGS

The data furnished in this report are collected through the Cost of Cultivation Survey 1992-93. The crops covered in this report are Paddy (Autumn, Winter and Summer), Coconut, Arecanut, Tapioca, Pepper, Pineapple and Betelwine. The summary of findings are discussed below:

1. Autumn Paddy

The per hectare cost of cultivation when considered to cost 'A' during 1992-93 is Rs.9023/-. Compared to the previous year the cost 'A' has increased to 26% during this year. The percentage increase of cost 'B' and cost 'C' being 15% each.

2. Winter Paddy

The estimated per hectare cost of cultivation of Winter paddy is Rs.10501/- during the period under review when cost 'A' is considered. Hired human labour cost constitutes to 54% of the total cost 'A'. Cost 'B' and cost 'C' during 1992-93 is estimated to be Rs.18371/- and Rs.18785/- respectively.

3. Summer Paddy

The component of cost 'A' relating to the Summer paddy cultivation is Rs.10815/-. When compared to the previous year the cost 'A' has increased to 15%, cost 'B' and cost 'C' by 13% each.

4. Coconut

The per hectare cost of cultivation of coconut is Rs.6749/- (cost 'A'), Rs.65278/- (cost 'B') and Rs.65748/- (cost 'C') respectively. Hired human labour cost constitutes to 45% to the total cost 'A'.

5. Arecanut

The per hectare cost for arecanut cultivation is Rs.10494/- (cost 'A'). The value of output per hectare from arecanut cultivation is found to be Rs.28954/- during 1992-93.

6. Tapioca

The cash and other kind expenses incurred for tapioca cultivation is Rs.8143/- (cost 'A'). Out of this hired human labour cost shares to 56%. The per hectare value of output of tapioca during 1992-93 is found to be increased from Rs.13146/- to Rs.15171/-.

7. Pepper

During this round 190 holdings were selected for studying the cost of cultivation of pepper during 1992-93. The cost ('A') per hectare comes to Rs.6372/-. The percentage share of hired human labour cost is 58%. The value of pepper is found to be Rs.19839/- per hectare during the year under review.

8. Pineapple

The total number of holdings selected for pineapple cultivation were 198. The per hectare cost for pineapple cultivation is Rs.28773/- (cost 'A'). The value of output is seen as Rs.63006/- per hectare for pineapple cultivation.

9. Betelwine

For the cost study of betelwine cultivation 171 holdings were selected during 1992-93. The per hectare cost of cultivation ('A') betelwine is Rs.101438/-. The value of output per hectare is found to be Rs.221829/-.

Appendix-1

Cost of Cultivation per hectare (in Rs.) of Paddy (Autumn) during the year 1992-93

Sl. No.	Components of different cost concept	Holding size class			
		Small	Medium	Large	All size
1	2	3	4	5	6
1.	Hired human labour	5721	4527	4523	4918
2.	Animal labour	763	510	1083	610

1	2	3	4	5	6
3.	Machine labour	395	478	393	449
4.	Seed/seedlings	606	617	518	611
5.	Farm yard manure and chemical fertilizers	1790	1549	1831	1636
6.	Plant protection	115	111	-	109
7.	Land tax and irrigation cess	19	30	11	17
8.	Repair & maintainance charges	230	115	8	164
9.	Other expenses	91	85	109	88
10.	Interest on working capital	474	394	423	421
11.	Total cost 'A' (1 -10)	10204	8416	8899	9023
12.	Interest on fixed capital	433	376	308	399
13.	Cost 'B1' (11 + 12)	10637	8792	9207	9422
14.	Interest on land value	7445	6739	9167	7047
15.	Cost 'B' (13 + 14)	18082	15531	18374	16469
16.	Imputed value of household labour	627	477	259	519
17.	Cost 'C' (15 + 16)	18709	16008	18633	16988

Appendix-2

Cost of Cultivation per hectare (in Rs.) of Paddy (Winter) during the year 1992-93

Sl. No.	Components of different cost concept	Holding size class			
		Small	Medium	Large	All size
1	2	3	4	5	6
1.	Hired human labour	6051	5464	5429	5651
2.	Animal labour	888	545	278	641
3.	Machine labour	525	543	702	545
4.	Seed/seedlings	757	677	697	704
5.	Farm yard manure and chemical fertilizers	2282	1846	2417	2016
6.	Plant protection	156	187	538	195
7.	Land tax & irrigation cess	21	26	39	24
8.	Repair & maintenance charges	109	89	5	96
9.	Other expenses	140	136	96	135
10.	Interest on working capital	540	470	508	494
11.	Total cost 'A' (1 - 10)	11469	9983	10709	10501
12.	Interest on fixed capital	522	396	446	450
13.	Cost 'B1' (11 + 12)	11991	10379	11155	10951
14.	Interest on land value	8496	7034	5673	7420
15.	Cost 'B' (13 + 14)	20487	17413	16828	18371
16.	Imputed value of household labour	761	252	230	414
17.	Cost 'C' (15 + 16)	21248	17665	17058	18785

Appendix-3

**Cost of Cultivation per hectare (in Rs.) of Paddy (Summer)
during the year 1992-93**

Sl. No.	Components of different cost concept	Holding size class			
		Small	Medium	Large	All size
1	2	3	4	5	6
1.	Hired human labour	5663	5769	4510	5676
2.	Animal labour	785	564	309	642
3.	Machine labour	487	470	342	471
4.	Seed/seedlings	648	662	780	663
5.	Farm yard manure and chemical fertilizers	2228	1693	2024	1920
6.	Plant protection	352	312	881	351
7.	Land tax & irrigation cess	93	64	473	80
8.	Repair & maintenance charges	184	85	-	139
9.	Other expenses	234	470	-	357
10.	Interest on working capital	520	497	442	504
11.	Total cost 'A' (1 + 10)	11194	10586	9761	10815
12.	Interest on fixed capital	509	383	126	447
13.	Cost 'B1' (11 + 12)	11703	10969	9887	11262
14.	Interest on land value	7873	5368	3345	6284
15.	Cost 'B' (13 + 14)	19576	16337	13232	17546
16.	Imputed value of household labour	775	456	130	570
17.	Cost 'C' (15 + 16)	20351	16793	13362	18116

Appendix-4

**Cost of Cultivation per hectare of Coconut during the
year 1992-93**

Sl. No.	Components of different cost concept	Holding size class			
		Small	Medium	Large	All size
1	2	3	4	5	6
1.	Hired human labour	3290	3016	3078	3062
2.	Animal labour	-	13	33	20
3.	Machine labour	-	8	18	12
4.	Seed/seedlings	28	38	41	39
5.	Farm yard manure and chemical fertilizers	3159	2771	2280	2601
6.	Plant protection	12	16	2	10
7.	land tax & irrigation cess	18	22	23	21
8.	Repair & maintenance charges	73	115	68	103
9.	Other expenses	772	271	194	279
10.	Interest on working capital	726	613	565	602
11.	Total cost 'A' (1 - 10)	8078	6883	6322	6749
12.	Interest on fixed capital	1185	865	682	871
13.	Cost 'B1' (11 + 12)	9263	7748	7004	7620
14.	Interest on land value	54117	50441	67783	57658
15.	Cost 'B' (13 + 14)	63380	58189	74787	65278
16.	Imputed value of household labour	1078	565	228	470
17.	Cost 'C' (15 + 16)	64458	58754	75015	65748

Appendix-5

Cost of Cultivation per hectare of Arecanut during the year 1992-93

Sl. No.	Components of different cost concept	Holding size class			
		Small	Medium	Large	All size
1	2	3	4	5	6
1.	Hired human labour	4811	4245	4703	4591
2.	Animal Labour	14	-	-	8
3.	Machine labour	402	790	1163	579
4.	Seed/seedlings	58	8	204	43
5.	Farm yard manure and chemical fertilizer	3312	3980	1000	3478
6.	Plant protection	114	545	680	300
7.	Land tax & irrigation cess	67	90	25	74
8.	Repair & maintenance charges	90	55	154	83
9.	Interest on working capital	898	1020	775	940
10.	Other expenses	272	632	-	398
11.	Total cost 'A' (1 - 10)	10038	11365	8704	10494
12.	Interest on fixed capital	869	1024	894	902
13.	Cost 'B1' (11 + 12)	10907	12389	9598	11396
14.	Interest on land value	80771	38508	24757	62452
15.	Cost 'B' (13 + 14)	91678	50897	34355	73848
16.	Imputed value of household labour	1462	1194	920	1338
17.	Cost 'C' (15 + 16)	93140	52091	35275	75186

Appendix-6

Cost of Cultivation per hectare of Tapioca during the year 1992-93

Sl. No.	Components of different cost concept	Holding size class			
		Small	Medium	Large	All size
1	2	3	4	5	6
1.	Hired human labour	4477	4577	4680	4559
2.	Animal labour	23	5	43	18
3.	Machine labour	25	103	-	57
4.	Seed/seedlings	210	322	249	270
5.	Farm yard manure and chemical fertilizers	2337	2068	2574	2252
6.	Plan protection	12	2	19	9
7.	Land tax & irrigation cess	18	30	33	26
8.	Repair & maintenance charges	161	65	75	114
9.	Interest on working capital	715	724	761	728
10.	Other expenses	69	164	47	110
11.	Total cost 'A' (1 - 10)	8047	8060	8481	8143
12.	Interest on fixed capital	779	981	389	814
13.	Cost 'B1' (11 + 12)	8826	9041	8870	8957
14.	Interest on land value	42959	32660	42259	39993
15.	Cost 'B' (13 + 14)	51785	41701	51129	48950
16.	Imputed value of household labour	1359	513	352	784
17.	Cost 'C' (15 + 16)	53144	42214	51481	49734

Appendix-7

Cost of Cultivation per hectare of Pepper during the year 1992-93

Sl. No.	Components of different cost concept	Holding size class			
		Small	Medium	Large	All size
1	2	3	4	5	6
1.	Hired human labour	2857	4185	7858	3667
2.	Animal labour	-	-	-	-
3.	Machine labour	67	62	-	61
4.	Seed/seedlings	31	145	-	73
5.	Farm yard manure and chemical fertilizers	1686	1446	1574	1586
6.	Plant protection	52	111	-	72
7.	Land tax & irrigation cess	16	27	49	21
8.	Repair & maintenance charges	145	75	223	137
9.	Interest on working capital	484	618	970	565
10.	Other expenses	149	235	271	190
11.	Total cost 'A' (1 - 10)	5487	6904	10945	6372
12.	Interest on fixed capital	815	1435	1304	897
13.	Cost 'B1' (11 + 12)	6302	8339	12249	7269
14.	Interest on land value	45898	25503	18519	36334
15.	Cost 'B' (13 + 14)	52200	33842	30768	43693
16.	Imputed value of household labour	1460	829	630	1165
17.	Cost 'C' (15 + 16)	53660	34671	31398	44858

Appendix-8

Cost of Cultivation per hectare of Pineapple during the year 1992-93

Sl. No.	Components of different cost concept	Holding size class			
		Small	Medium	Large	All size
1	2	3	4	5	6
1.	Hired human labour	3089	9298	9351	8776
2.	Animal labour	-	-	-	-
3.	Machine labour	-	-	41	26
4.	Seed/seedlings	4049	7400	8332	7728
5.	Farm yard manure and chemical fertilizers	3687	5436	5940	5619
6.	Plant protection	-	214	5	64
7.	Land tax & irrigation cess	34	39	42	41
8.	Repair & maintenance charges	24	89	63	51
9.	Interest on working capital	1128	2412	2888	2607
10.	Other expenses	454	1773	5209	3861
11.	Total cost 'A' (1 - 10)	12465	26661	31871	28773
12.	Interest on fixed capital	695	526	352	565
13.	Cost 'B1' (11 + 12)	13160	27187	32223	29338
14.	Interest on land value	62698	32539	35744	36981
15.	Cost 'B' (13 + 14)	75858	59726	67967	66319
16.	Imputed value of household labour	1322	761	768	873
17.	Cost 'C' (15 + 16)	77180	60487	68735	67192

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Appendix-9

**Cost of Cultivation per hectare of Betelwine during
the year 1992-93**

Sl. No.	Components of different cost concept	Holding size class			
		Small	Medium	Large	All size
1	2	3	4	5	6
1.	Hired human labour	19573	-	-	18545
2.	Animal labour	-	-	-	-
3.	Machine labour	2631	-	-	2493
4.	Seed/seedlings	6835	250	-	6489
5.	Farm yard manure and chemical fertilizers	39918	58166	-	40878
6.	Plant protection	210	-	-	210
7.	Land tax & irrigation cess	103	-	-	98
8.	Repair & maintenance charges	575	-	-	569
9.	Interest on working capital	9123	6473	-	9160
10.	Other expenses	22065	6318	-	22996
11.	Total cost 'A' (1 - 10)	101033	71207	-	101438
12.	Interest on fixed capital	1234	283	-	1224
13.	Cost 'B1' (11 + 12)	102267	71490	-	102662
14.	Interest on land value	52403	25000	-	50963
15.	Cost 'B' (13 + 14)	154670	96490	-	153625
16.	Imputed value of household labour	47931	-	-	45411
17.	Cost 'C' (15 + 16)	202601	96490	-	199036

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