Government of Kerala

Report On
Cost of Cultivation of
Important Crops in Kerala
2022-23

Department of Economics & Statistics

KERALA

2025

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Preface

Agriculture plays a significant role in Kerala's economy and society, especially in the current context of global economic uncertainty, climate change, and shifting food security concerns. The agricultural sector in Kerala has encountered considerable obstacles, such as limited land availability, elevated production costs, seasonal fluctuations, and challenges in marketing. These issues have contributed to a decline in the sector share of the State Domestic Product. To address these concerns, it is crucial to formulate effective support price policies, enhance marketing infrastructure, and assess the losses resulting from natural calamities,wildlife attacks, etc. Achieving these goals requires reliable data on crop husbandry, from sowing to harvesting.

In this regard, Department of Economics and Statistics has been conducting an annual survey on the cost of cultivation of key crops in Kerala since 1980-81. The survey is being conducted across 38 Taluks in Kerala during each agricultural year.This report is based on the survey conducted during the agricultural year 2022-23, covering key crops such as Paddy (Autumn, Winter, and Summer), Coconut, Arecanut, Pepper, Banana, Tapioca, Ginger, Turmeric, Bitter Gourd (Autumn, Winter, and Summer), Cowpea (Autumn, Winter, and Summer), Ash gourd (Autumn, Winter and Summer), Pineapple, Cardamom, Cucumber(Autumn, Winter, and Summer), Snake gourd(Autumn, Winter, and Summer), Ladies finger(Autumn, Winter, and Summer), Cabbage(Autumn, Winter, and Summer), Carrot(Autumn, Winter, and Summer), Potato(Autumn, Winter, and Summer), Beans (Autumn, Winter, and Summer), Garlic(Autumn, Winter, and Summer), Tomato(Autumn, Winter, and Summer), Beetroot.

The fieldwork of the survey was carried out by the Statistical Investigators in the Taluk Statistical Offices where the scheme is in operation. This report was prepared by the Cost of Cultivation Division of the Directorate of Economics and Statistics headed by Sri.Abhilash K, Deputy Director under the guidance and supervision by Sri. Manoj M, Additional Director (State Income). The efforts put in by all officers involved in this survey, including those who collected data from cultivators at regular intervals, supervisory officers who ensured data quality, and the data tabulation and processing team at the Directorate who contributed to the publication, are highly appreciated.

I hope the report will be useful to Planners, Policymakers, Researchers and other data users. Suggestions and feedback to improve the quality and utility of this publication are most welcome.

Thiruvananthapuram
04/02/2025

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AT A GLANCE ...

	Crop		Input cost (in Rs.per hectare)	Value of output (in Rs.per hectare)
	Paddy	Autumn	86182	121585
		Winter	78792	131600
		Summer	77261	139274
	Coconut		102256	162003
	Arecanut		149364	396410
	Tapioca		147757	463473
	Banana		243605	624307
	Pepper		103532	246405
	Ginger		210022	637842
	Turmeric		161843	380041
	Pineapple		271534	448340

		Autumn	162523	431547
	Bitter gourd	Winter	160013	467260
		Summer	154332	431623
		Autumn	154339	388859
	Cowpea	Winter	157832	401508
		Summer	150616	386758
	Cardamom		234664	433204
		Autumn	85115	207445
	Ash Gourd	Winter	94700	276150
		Summer	93615	259477
		Autumn	79768	222863
	Cucumber	Winter	103357	269466
		Summer	112311	282096
		Autumn	135244	335532
	Snake Gourd	Winter	141033	359336
		Summer	121911	468760
		Autumn	115772	272446
	Ladiesfinger	Winter	100577	306208
		Summer	113397	309081
	Cabbage	Summer	42350	49400
		Autumn	146250	239734
	Tomato	Winter	144979	219371
		Summer	183473	280698

ഒറ്റനോട്ടത്തിൽ ...

	വിള		ഉത്പാദന ചെലവ് (ഹെക്ടറിന് രൂപ നിരക്കിൽ)	ഉത്പാദന മൂല്യം (ഹെക്ടറിന് രൂപ നിരക്കിൽ)
	നെല്ല്	വിരിപ്പ്	86182	121585
		മുണ്ടകൻ	78792	131600
		പുഞ്ച	77261	139274
	തെങ്ങ്		102256	162003
	കമുക്		149364	396410
	മരച്ചീനി		147757	463473
	ഏത്തവാഴ		243605	624307
	കുരുമുളക്		103532	246405
	ഇഞ്ചി		210022	637842
	മഞ്ഞൾ		161843	380041
	പൈനാപ്പിൾ		271534	448340

		വിരിപ്പ്	162523	431547
	പാവൽ	മുണ്ടകൻ	160013	467260
		പുഞ്ച	154332	431623
		വിരിപ്പ്	154339	388859
	വള്ളിപ്പയർ	മുണ്ടകൻ	157832	401508
		പുഞ്ച	150616	386758
	ഏലം		234664	433204
		വിരിപ്പ്	85115	207445
	കുമ്പളം	മുണ്ടകൻ	94700	276150
		പുഞ്ച	93615	259477
		വിരിപ്പ്	79768	222863
	വെള്ളരി	മുണ്ടകൻ	103357	269466
		പുഞ്ച	112311	282096
		വിരിപ്പ്	135244	335532
	പടവലം	മുണ്ടകൻ	141033	359336
		പുഞ്ച	121911	468760
		വിരിപ്പ്	115772	272446
	വെണ്ട	മുണ്ടകൻ	100577	306208
		പുഞ്ച	113397	309081
	കാബേജ്	പുഞ്ച	42350	49400
		വിരിപ്പ്	146250	239734
	തക്കാളി	മുണ്ടകൻ	144979	219371
		പുഞ്ച	183473	280698

Agricultural cost ratios of various crops

Sl no.	Crop		Labour Cost ratio(percentage)	Material Cost ratio(percentage)
1.	Paddy	Autumn	54.93	36.50
		Winter	55.98	35.74
		Summer	48.61	43.26
2.	Coconut		62.91	27.46
3.	Arecanut		58.29	32.03
4.	Tapioca		51.08	40.73
5.	Banana		35.91	56.28
6.	Pepper		60.50	29.11
7.	Ginger		40.82	50.13
8.	Turmeric		40.63	50.14
9.	Pineapple		30.8	61.79
10.	Bitter gourd	Autumn	42.01	50.52
		Winter	39.31	52.99
		Summer	40.56	51.45
11.	Cowpea	Autumn	38.45	54.39
		Winter	42.46	50.03
		Summer	44.27	47.07
12.	Cardamom		50.00	41.96
13.	Ash Gourd	Autumn	41.68	50.53
		Winter	40.46	51.33
		Summer	32.56	58.60
14.	Cucumber	Autumn	39.99	51.77
		Winter	36.63	55.09
		Summer	35.81	55.33
15.	Snake Gourd	Autumn	38.55	54.16
		Winter	40.37	51.90
		Summer	40.72	51.05
16.	Ladiesfinger	Autumn	42.92	48.27
		Winter	37.63	53.51
		Summer	34.16	55.16
17.	Cabbage	Summer	44.66	48.82
18.	Tomato	Autumn	39.89	51.43
		Winter	39.45	51.77
		Summer	32.23	58.70

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CHAPTER 1

INTRODUCTION

1.1 Background

Agriculture plays a vital role in Kerala's economy and it has a significant role in the development process. Increasing profitability and reducing costs are the two main challenges that the farmers are facing. For this, it is crucial to understand how the cultivation costs change over time. For the purpose of developing and implementing agricultural sector policies, setting floor and support prices, and offering incentives to growers, a realistic evaluation of the cost of production and the value of the State's major crops is required. Also knowing the cost required to grow any crop is very useful for farmers to optimise their resource management, improve yield, and enhance the sustainability and profitability of crops.

Cost of cultivation study would also provide capital structures of the farm and input cost pertaining to cultivators for growing different crops. With this end in view, Government of Kerala in G.O (Rt) 466/76/Plg. dated. 27/10/1979 sanctioned to conduct a study on Cost of Cultivation of important crops in Kerala. The Cost of cultivation survey has been conducted in 38 selected taluks across 14 districts of Kerala since 1980-81. On the beginning, the survey has been conducted with 12 Agricultural Crops annually. As per the decision of the Technical Committee which held on 21/10/2020, 11 Vegetable Crops have been included in the Cost of Cultivation Survey for the year of 2020-21 in addition to the existing crops.

Twenty three Crops covered under the survey are given below:

Paddy (3 Seasons)	Pineapple	Beans (3 Seasons)
Coconut	Ash Gourd (3 Seasons)	Beetroot (3 Seasons)
Arecanut	Cucumber (3 Seasons)	Bitter Gourd (3 Seasons)
Tapioca	Snake Gourd (3 Seasons)	Cowpea (3 Seasons)
Banana	Ladies Finger (3 Seasons)	Cardamom
Pepper	Cabbage (3 Seasons)	Garlic (3 Seasons)
Ginger	Carrot (3 Seasons)	Tomato (3 Seasons)
Turmeric	Potato (3 Seasons)	

1.2 Objectives

The main objective of the survey is to produce reliable estimates on production cost involved in major agricultural crops in the state and to workout input cost ratio for computing state's GDP. Major perennial, annual and seasonal crops are covered in the survey with a breakup of cost incurring during various stages from sowing to harvest.

1.3 Period of the Survey

The period of the survey was the Agricultural Year (July to June) 2022-23.

1.4 Design of the Survey

The survey covered all the districts in the state by considering taluk as a stratum. From each Taluk, required numbers of investigator zones were selected using circular systematic samping method. Crop wise details and number of zones are given below.

Sl.No.	Name of Crop	Number of Zones
1	Coconut, Arecanut	4
2	Paddy, Tapioca, banana, Pepper, Ginger, Turmeric, Pineapple, Cardamom	3
3	Cowpea, Bitter Gourd, Ash Gourd, Cucumber, Snake Gourd, Ladies Finger, Cabbage, Carrot, Potato, Beans, Beetroot, Garlic, Tomato	2

1.5 Selection of cultivators:

In selected Investigator zones, list of cultivators growing paddy in the previous autumn season is prepared based on the last years Form I Diary connected with the EARAS survey. From this, 5 cultivators who are likely to be engaged in paddy cultivation during the current year are selected at random for the study for autumn paddy. Similar procedure is adopted for the selection of cultivators for winter and summer season.

In case, the cultivators who are selected for the cost of cultivation study in Autumn Paddy posses suitable number of plots and engaged in cultivation of other specified crops in stipulated area number will also be selected for the study for other crops like Coconut, Pepper, Arecanut, Banana, Tapioca etc.

If sufficient number of suitable plots of other crops is not available among the cultivators selected for the study of Autumn Paddy, the required number of plots growing crops other than paddy will be selected from the list of wet and dry land plot of the same investigator zone during the previous year. If the selected investigator zone in a taluk does

not provide the required number of plots for these crops, another Investigator zone in the same taluk will be selected at random for selection of the remaining (required) number of plots / cultivators for the study.

1.6 Number of holdings selected for each crop in a Taluk

Sl. No.	crop		Number of holdings
1	Paddy	Autumn	15 (5 holdings each from one Investigator Zone)
		Winter	
		Summer	
2	Coconut		20 (5 holdings each from one Investigator Zone)
3	Arecanut		20 (5 holdings each from one Investigator Zone)
4	Pepper		15 (Minimum 2 holdings in one Investigator Zone)
5	Banana		15 (Minimum 2 holdings in one Investigator Zone)
6	Tapioca		15 (Minimum 2 holdings in one Investigator Zone)
7	Ginger		15 (Minimum 2 holdings in one Investigator Zone)
8	Turmeric		15 (Minimum 2 holdings in one Investigator Zone)
9	Pineapple		15 (Minimum 2 holdings in one Investigator Zone)
10	Bitter Gourd	Autumn	10 (5 holdings each from one Investigator Zone)
		Winter	
		Summer	
11	Cowpea	Autumn	10 (5 holdings each from one Investigator Zone)
		Winter	
		Summer	
12	Cardamom		15 (5 holdings each from one Investigator Zone)
13	Ash Gourd	Autumn	10 (5 holdings each from one Investigator Zone)
		Winter	
		Summer	
14	Cucumber	Autumn	10 (5 holdings each from one Investigator Zone)
		Winter	
		Summer	
15	Snake Gourd	Autumn	10 (5 holdings each from one Investigator Zone)
		Winter	
		Summer	
16	Ladies Finger	Autumn	10 (5 holdings each from one Investigator Zone)
		Winter	
		Summer	

17	Cabbage	Autumn Winter Summer	10 (5 holdings each from one Investigator Zone)
18	Carrot	Autumn Winter Summer	10 (5 holdings each from one Investigator Zone)
19	Potato	Autumn Winter Summer	10 (5 holdings each from one Investigator Zone)
20	Beans	Autumn Winter Summer	10 (5 holdings each from one Investigator Zone)
21	Beetroot	Autumn Winter Summer	10 (5 holdings each from one Investigator Zone)
22	Garlic	Autumn Winter Summer	10 (5 holdings each from one Investigator Zone)
23	Tomato	Autumn Winter Summer	10 (5 holdings each from one Investigator Zone)

A holding is to be considered for the study normally if the crop coverage is at least 25 cents in the case of Paddy and Cardamom. 10 Cents for Tapioca, Banana and Pineapple and 5 cents for Ginger, Turmeric, Cowpea and Bitter Gourd. In case of perennial crops like Coconut, Arecanut and Pepper the holdings should have 25 trees/plants of which a minimum of 50% should be bearing trees/ plants in the selected holdings. The holdings are grouped under three size classes (small, medium and large) for each crop on the basis of the area under the crops in the holding as:

Size Crop	Paddy	Other Crops
Small	<0.40 hectare	<0.2 hectare
Medium	0.40 to < 2 hectare	0.20 to < 0.80 hectare
Large	≥ 2 hectare	≥ 0.80 hectare

1.7 Schedules

Schedules used for the survey:

Schedule - 1	**Selected Investigator Zone**
Schedule - 2	Summary of Form I Diary
Schedule - 3	List of Selected cultivators
Schedule - 4	General Particulars
Schedule - 5	Recorded cost incurred for growing the selected crop in each fortnight

1.8 Field work

Data collected from 38 Taluks. One Investigator/ enumerator is posted in each Taluk for this purpose. The investigators visited the selected holding/ cultivators every fortnight/three weeks/one month/two month and recorded fortnightly details of agricultural operations in schedule 5. Periodicity of visit will vary according to the type of crop. Periodicities of visit are given below.

Sl.No	Name of Crop	Periodicity
1	Cowpea, Bitter Gourd, Ash Gourd, Cucumber, Snake Gourd, Ladies Finger, Cabbage, Carrot, Potato, Beans, Beetroot, Garlic, Tomato	Fortnight
2	Paddy	Three Weeks
3	Cardamom	One month
4	Coconut, Arecanut, Pepper, Tapioca, Banana, Ginger, Turmeric, Pineapple	Two months

The field work was supervised by Taluk Statistical Officer/Statistical Inspector at the Taluk level and Deputy Director /District Officer, other District level supervisory officer at the District level.

1.9 Processing and Analysis of Data:

The data entry and tabulation sheet preparation were done at Taluk level in DESCAS software. The compilation and preparation of District tabulation sheet were done at the district office and the report preparation and analysis were done at the Directorate.

1.10 Method of Estimation

(a) Concepts of Cost:

Cost incurred for growing the selected crops are classified under, Cost 'A', Cost 'B1', Cost 'B', and Cost 'C' and the analysis of the data is made as **Cost 'A'.**

Cost 'A' : All kind of expenses (paid out costs) actually incurred by the cultivators, includes:

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

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

Cost 'B' : Cost 'B1' + Interest on Fair value of land

Cost 'C' : Cost 'B' + Imputed value of family labour

As per the recommendation of the Expert Committee for Agricultural Statistics, instead of taking interest on Land value, Fair value and land reported by the Land Revenue Department has been taken for calculating Cost B of each crop.

b) Procedure for imputation of values of owned inputs

In the production process, certain inputs from home stocks are used. In order to estimate the cost, the values of input used out of home stock are imputed. The procedures used for the imputation of values of such home stock inputs are:

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	Implement	:	Repair and maintenance charges of implements

VI	Owned seed	:	Farm produced (house 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.
X	Interest on working capital	:	Interest has been charged at the rate of 10% per annum on the working capital, cash and expenses excluding items in respect of which payments are generally made after harvest (i.e. Rent, land tax etc) incured during the period of cultivation
X	Payments	:	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 costs to different crops

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

I	Repair and maintenance charges of implements	In proporation to the area under the crop.
II	Interest on fixed capital (excluding land)	In proportion to the area under the crop
III	Interest on land value	Interest on the Fair value of land under the crop

(d) Procedure for Valuation of farm assets

I	Own farm buildings (cattle sheds, storage shed etc)	Prices prevailing in the locality
II	Implemants and other machinery	Prevalent market prices
III	Livestock (only draught animals)	Prevalent market prices

In calculating the cost of production of paddy crop in each season the interest on fair value of land at the rate of 10% per annum for the period of 6 months is taken into account. The land value is estimated at the fair value of agricultural land.

I.11 Terms and Definitions

- **Input cost** :- Cost A (Paid out cost)
- **Output cost**:- Product/Byproduct cost
- **Input-output cost ratio**:- This ratio indicates the return from cultivation per unit of investment as input cost. Higher the value of Input-output ratio implies the higher return from the cultivation process. It is obtained by dividing output cost by input cost.

$$\text{Input-output cost ratio}=\left(\frac{\text{Output cost}}{\text{Input cost}}\right)$$

- **Labour Cost Ratio**:- This ratio indicates the proportion of labour costs (which include human labour, animal labour and machine labour) to the total cost Cost A. It reflects the farm's dependence on labour and can provide insights into labour efficiency.

$$\text{Labour Cost Ratio}=\left(\frac{\textit{Total Hired Human Labour}+\text{Animal labour}+\text{Machine labour}}{\textit{cost A}}\right)\times 100$$

- **Costing materials used Ratio (Material cost ratio):-** This ratio represents the proportion of seed/seedlings, Manures & fertilisers, plant protection and Miscellaneous expenses to the total cost.

$$\text{Material cost Ratio}=\left(\frac{\text{seed/seedlings}+\text{Manures \& fertilisers}+\text{plant protection}+\text{other expense}}{\textit{cost A}}\right)\times 100$$

1.12 Contents of the report

This report contains two chapters and an Appendix. The main findings of the survey have been presented in chapter two after the present introductory chapter. Detailed tables are given in the Appendix.

CHAPTER 2

A COMPREHENSIVE ANALYSIS OF

COST OF CULTIVATION OF MAJOR CROPS

2.0 Introduction

One significant element influencing the profitability of agriculture in Kerala is Cost of Cultivation. The cost of Cultivation survey covers 23 crops during each agricultural year. Here we have considered the cost of cultivation and production data of 18 crops namely, Paddy (autumn, winter and summer), Coconut, Arecanut, Tapioca, Banana, Pepper, Ginger, Turmeric, Pineapple, Cardamom and Bitter gourd, Cowpea, Ash Gourd, Snake Gourd, Ladies Finger, Cucumber, Cabbage, Tomato (3 seasons) available through field-level data collection for the whole agriculture year 2022-23. The items of cost of cultivation cover both imputed cost and paid out costs (Cost A). Data was collected from a sample of 9,397 selected farmers covering a total of 3,589.54 hectares of land.

This report estimates the cost and production per hectare of the 18 selected crops and using this data, a comparison of the cost of cultivation of each crop over a period of time is also included. Along with this, agricultural cost ratios such as labour cost ratio and material cost ratio are also calculated using the data.From the data it is evident that the expense of growing pineapple (₹ 271534.) and bananas (₹ 243605) is much greater than that of other crops. Compared to other crops, vegetables are typically less expensive to grow. Autumn paddy is the most expensive, whereas summer and winter paddy farming is typically less expensive. Seasons affect the cost of growing some vegetable crops, but summer and winter expenses differ significantly, especially for crops like tomatoes, cucumbers, and snake gourds.

A comprehensive analysis of these 18 selected crops are given below .

2.1 PADDY

2.1.0 Introduction

Paddy (Oriza sativa) is one of the important cereal crops cultivated in Kerala. Paddy cultivation plays a pivotal role in agricultural economies worldwide, serving as a staple food source for millions of people. This report aims to provide a comprehensive analysis of the cost of cultivation for paddy farming, covering various input costs, output costs, and associated expenses. These findings shed light on trends, patterns, and challenges within the paddy cultivation sector, offering valuable insights for stakeholders to enhance productivity, profitability, and sustainability in paddy farming practices.

This chapter aims to provide a comprehensive overview of the key cost components involved in paddy cultivation in Kerala. It delves into essential factors such as land preparation, acquisition of planting materials, labour costs, inputs like fertilizers and pesticides, irrigation systems, and other operational expenses specific to the region.

2.1.1 PADDY-AUTUMN (VIRIPPU)

2.1.1.1 Area under Paddy-Autumn Cultivation

Details of holding selected and area coverage for this study are given below. The data collected from 445 holdings according to the size class by covering 345.46 hectares of land.

Table 2.1.1.1: Number of holdings and area under Autumn Paddy(Virippu)

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	220	48.16	13.94	**0.22**
Medium	176	143.94	41.67	**0.82**
Large	49	153.36	44.39	**3.13**
Total	445	345.46	100.00	0.78

It is observed that the average area per holding is 0.78 hectares in all classes while area per holding in large size class (ie, area more than two hectares) is 3.13 hectares. But in small size class (ie, area less than 0.40 hectare) which comprises 220 holdings, the average area per holding is only 0.22 hectare.

2.1.1.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Paddy Autumn is furnished in the below table.

Table 2.1.1.2: Cost of Cultivation per hectare (in Rs.) of Autumn Paddy(Virippu)

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	46439	38445	28970	**35353**
2	Animal labour	0	0	0	**0**
3	Machine labour	11500	11308	12794	**11995**
4	Seed /seedlings	3900	4453	3415	**3915**
5	Farmyard manure and chemical fertilizers	10509	10220	9055	**9743**
6	Plant Protection	1773	2678	3755	**3030**

7	Land tax and irrigation cess	384	340	212	**289**
8	Repair and maintenance charges of implements, machinery and building	504	481	991	**711**
9	Interest on working capital	7412	6710	5799	**6404**
10	Other expenses	10188	12894	17907	**14742**
11	**Total cost 'A'(1-10)**	**92609**	**87529**	**82899**	**86182**
12	Interest on fixed capital	1195	2276	1098	**1602**
13	**Cost 'B1'(11+12)**	**93804**	**89805**	**83996**	**87784**
14	Interest on land value	261110	298787	458964	**364640**
15	**Cost 'B'(13+14)**	**354914**	**388592**	**542960**	**452424**
16	Inputed value of household labour	16352	7700	4851	**7641**
17	**Cost 'C'(15+16)**	**371266**	**396292**	**547811**	**460066**

Figure 2.1.1.1: Percentage Distribution of Cost A per hectare of Autumn Paddy(Virippu) during 2022-23

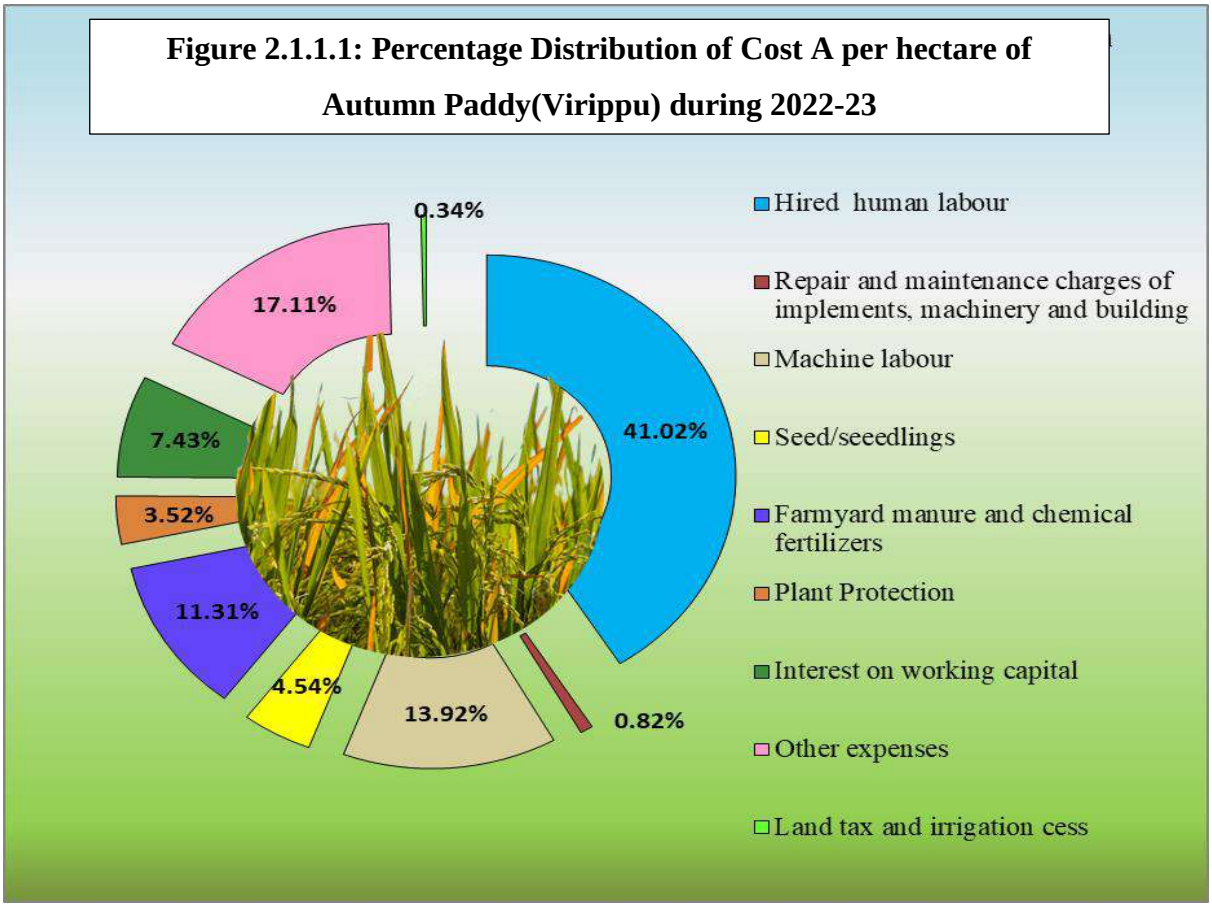


Table:2.1.1.2 and Fig.2.1.1.1 shows the total costs and Cost A percentage of Paddy farming. The Cost A of paddy autumn per hectare small works out was higher than that of the medium and large holdings. Cost A was dominated by Hired human labour. Also, Cost A is generally seen to decrease from small to large holdings across most components, but there are exceptions, such as Machine labour, Plant Protection, Other expenses, repair and maintenance charges which are higher for large holdings compared to medium ones.

Table 2.1.1.3: Percentage of hired human labour hours to total labour hours of Autumn Paddy(Virippu) during 2022 - 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	42.65	43.28	43.14	43.09
Female	38.68	41.27	44.06	40.82
Total	**81.33**	**84.55**	**87.20**	**83.91**

Here the total labour is the sum of hired human labour and household human labour. As usual proportion to hired labour, total labour input steadily increases with the increase in the size holding. It is seen that cultivators belonging to large class are seem to depend for 87.20% of their requirements on hired labour.

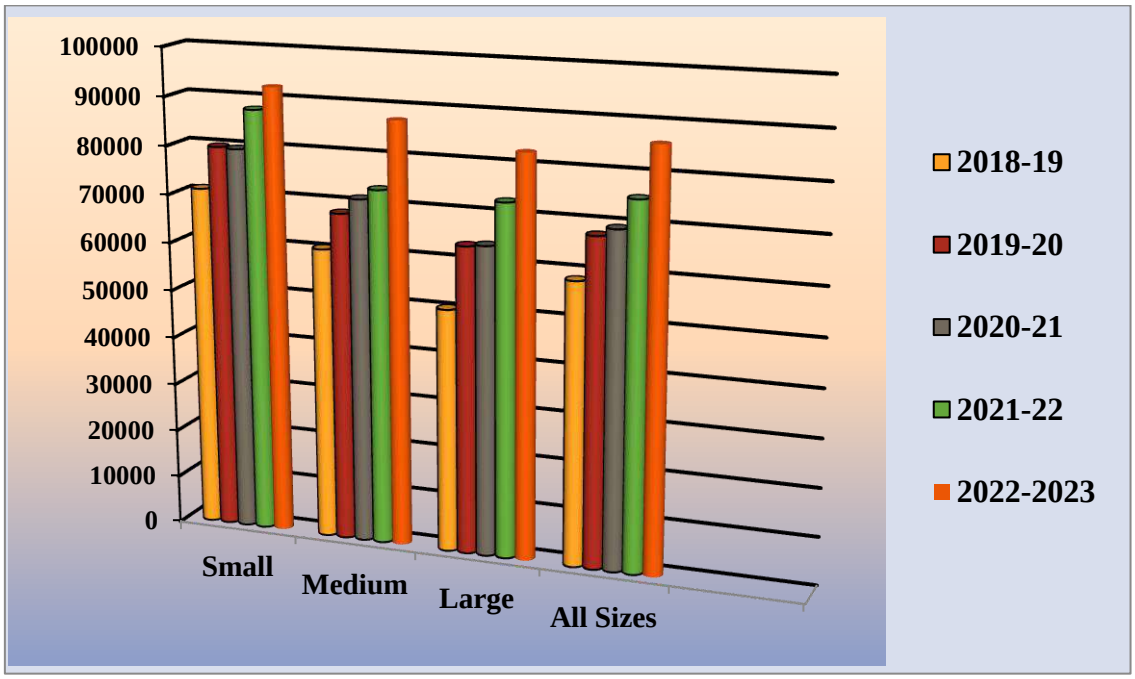
The percentage share of land tax and irrigation cess is normal, also the expenditure on repair and maintenance of implements and machinery has an increase during 2022-23.

Table 2.1.1.4: Cost of cultivation of Autumn Paddy(Virippu) per hectare (in Rs.) from 2018 -19 to 2022-23

Holding size class	Cost A(Rs.)				
	2018-19	2019-20	2020-21	2021-22	2022-2023
Small	71026	79860	79661	87849	92609
Medium	60539	68127	71318	73468	87529
Large	50452	63598	63977	72910	82899
All Sizes	58545	67722	69344	75430	86182

The last five years data shows a consistent increase in cost of paddy cultivation in all holding class during autumn season in the state. From above table it is clear that cultivators belong to small holding has higher cost as compare to other holdings. Compared to 2021-22, percentage increase in Cost A in 2022-23 is 14.25%.

Figure 2.1.1.2: Cost of cultivation of Autumn Paddy(Virippu) per hectare (in Rs.) from 2018-19 to 2022-23



2.1.1.3 Cost of production of paddy per quintal

Cost of production of paddy per quintal estimated by dividing the cost of cultivation per hectare (after deducting the value of product by product per hectare from the cost of cultivation per hectare) by the quantity of paddy produced per hectare. Details are given below:

Table 2.1.1.5 : Per Quintal Cost (In Rs.) of Production of Autumn Paddy(Virippu) during 2022 - 2023

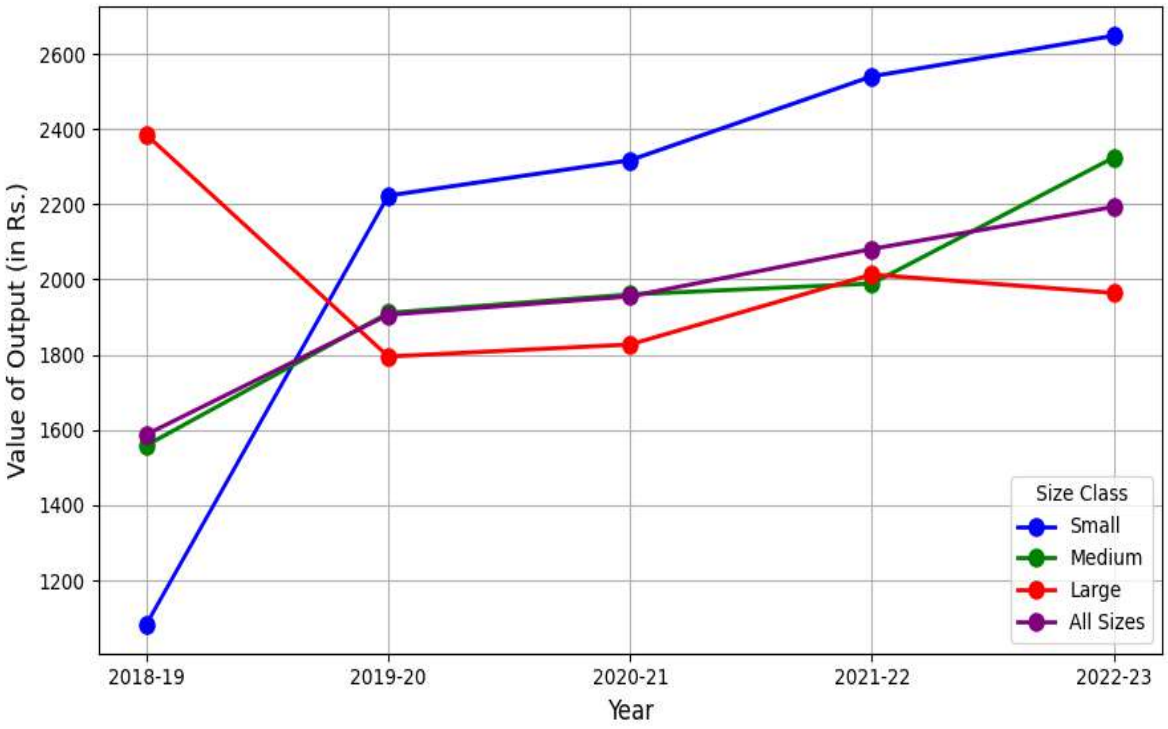
Concept of Cost	Year	Holding Size Class			
		Small	Medium	Large	All sizes
Cost A	2022-23	2648	2324	1964	2193
Cost B		10150	10319	12865	11512
Cost C		10618	10523	12980	11331

The survey results show that during 2022-23 for producing one quintal of paddy Rs.2193/- has been expended by the farmer when Cost 'A' is considered.

Table 2.1.1.6 : Cost of production of Autumn Paddy(Virippu) per quintal (in Rs.) from 2018-19 to 2022-2023

Holding size class	Value of Output (in Rs.)				
	2018-19	2019-20	2020-21	2021-22	2022-2023
Small	1084	2223	2317	2540	2648
Medium	1559	1911	1960	1989	2324
Large	2384	1795	1827	2013	1964
All Sizes	1588	1906	1955	2081	2193

Figure 2.1.1.3: Cost of production of Autumn Paddy(Virippu) per quintal (in Rs.) during 2018-19 to 2022-2023



The overall cost of production of paddy autumn per quintal for all sizes has been increasing steadily each year. From the graph it is observed that production cost of small holdings and medium holdings are all increased over the five years. Large holdings had fluctuations over the years.

2.1.1.4 Value of output

Details of product and by product for the year 2022-23 are given below.

Table 2.1.1.7: Value of output during the year 2022-23

Year	Holding size class	Product/Byproduct (in Rs.)		
		Paddy	Straw	Total
2022-2023	Small	98630	22096	120726
	Medium	106831	14108	120939
	Large	119290	3172	122462
	All Sizes	111218	10367	121585

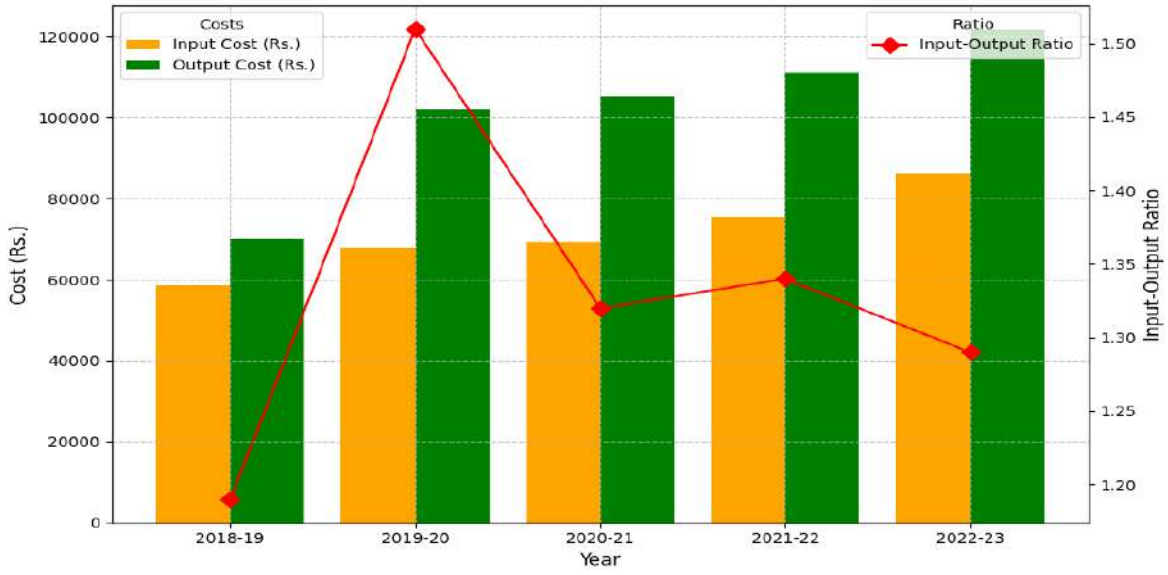
Production was higher in the large size class compared to the other size classes, while the byproduct followed the reverse trend.

Table 2.1.1.8: Input cost, output cost and Input-output ratio of Autumn Paddy(Virippu) per hectare (in Rs.) from 2018 -19 to 2022-23

Year	Components		
	Input Cost(Rs.)	Output Cost(Rs.)	Input-output ratio
2018-19	58545	70051	1.20
2019-20	67722	101978	1.51
2020-21	69344	105174	1.52
2021-22	75430	111132	1.47
2022-23	86182	121585	1.41

From the data collected it is evident that the input-output ratio has some variations and the efficiency is higher during the year 2020-21.

Figure 2.1.1.4: Input cost, output cost and Input-output ratio of Autumn Paddy(Virippu) per hectare (in Rs.) from 2018 -19 to 2022-23



2.1.1.5 Agricultural cost Ratios

1. Labour Cost Ratio:The Labour Cost Ratio is 54.93%, meaning labour expenses account for about 55% of the total cost A. This highlights that labour costs are the primary contributer to the increased Cost A.

2. Costing materials used Ratio (Material cost ratio): The Material Cost Ratio is 36.50%, indicating that material expenses constitute 36.50% of the total cost.

2.1.1.6 Key Findings

- When we compare the data with the previous years, it is seen that there is a trend in increase of paddy production compared to the previous year. Input and output costs generally increased from 2018-19 to 2022-23, with some fluctuations and this change depends upon the cultivators selected for the survey under each year.
- Also the factors like hired human labour, machine labour, fertilizer are all growing in varying proportions leading to an increase in the cost of cultivation and cost A was dominated by labour cost ratio constitute to 55% of total cost A.
- Interpreting the input-output ratio (productivity) it increased significantly from 2018-19 to 2019-20, but then decreased slightly in the following years provides insights into the efficiency of the agricultural operation in converting inputs into outputs over the years.

2.1.2 PADDY -WINTER (MUNDAKAN)

2.1.2.1 Area under Winter Paddy (Mundakan) Cultivation

The details of the holdings selected for this study and the area covered are outlined below. Data was collected from 537 holdings, spanning a total of 670.15 hectares.

Table 2.1.2.1: Number of holdings and Area under Winter Paddy (Mundakan)

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	214	49.04	7.32	**0.23**
Medium	231	192.13	28.67	**0.83**
Large	92	428.97	64.01	**4.66**
Total	537	670.15	100.00	**1.25**

On average, each holding covers 1.25 hectares across all size classes. However, holdings in the large size class (more than 2 hectares) have an average area of 4.66 hectares. In contrast, holdings in the small size class (less than 0.40 hectares), which account for 214 holdings, have a significantly smaller average area of 0.23 hectare.

2.1.2.2 Cost of cultivation

The componentwise estimated cost of cultivation per hectare of Paddy Winter is furnished in the below table.

Table 2.1.2.2: Cost of Cultivation per hectare (in Rs.) of Winter Paddy (Mundakan)

Sl. No.	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	47965	38837	26753	**31770**
2	Animal labour	0	0	0	**0**
3	Machine labour	12557	10866	12978	**12342**
4	Seed /seedlings	3518	3888	3873	**3851**
5	Farmyard manure and chemical fertilizers	11538	10168	9263	**9689**
6	Plant Protection	1375	2297	2234	**2189**
7	Land tax and irrigation cess	499	306	192	**247**
8	Repair and maintenance charges of implements, machinery and building	1092	287	200	**290**
9	Interest on working capital	7695	6606	5510	**5984**
10	Other expenses	11351	12363	12583	**12429**
11	**Total cost 'A'(1-10)**	**97589**	**85617**	**73586**	**78792**
12	Interest on fixed capital	2162	1457	1057	**1252**
13	**Cost 'B1'(11+12)**	99751	87073	74642	**80044**
14	Interest on land value	237116	217353	229983	**226884**
15	**Cost 'B'(13+14)**	336867	304427	304625	**306928**
16	Inputed value of household labour	15179	7376	4194	**5910**
17	Cost 'C'(15+16)	**352047**	**311803**	**308820**	**312838**

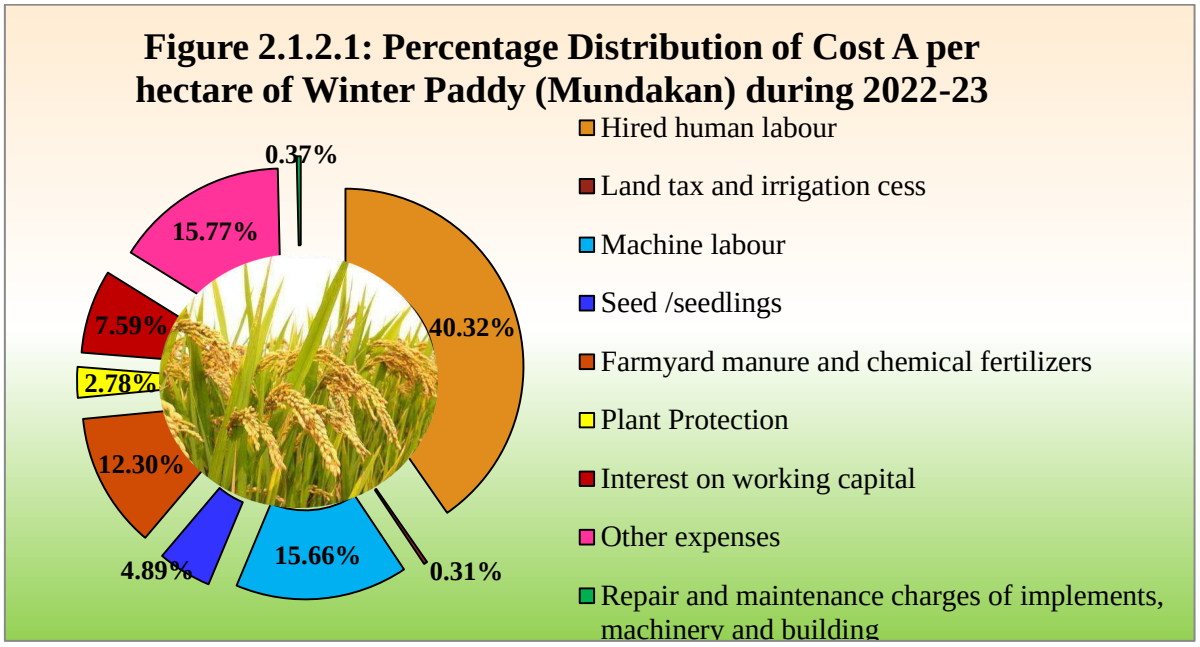


Table:2.1.2.2 and Fig.2.1.2.1 illustrate the total costs and the percentage distribution of Cost A in paddy farming. Cost A of winter paddy was dominated by hired human labour, farmyard manure and chemical fertilizers and other expenses. Notably, small holdings incurred a higher overall cost compared to medium and large holdings. Additionally, hired human labour was the dominant factor contributing to Cost A. The percentage share of land tax and irrigation cess remains typical.

Table 2.1.2.3: Percentage of hired human labour hours to total labour hours of Winter Paddy (Mundakan during 2022 - 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	32.76	37.97	42.93	40.08
Female	40.56	43.42	44.51	46.42
Total	73.32	81.39	87.44	**86.50**

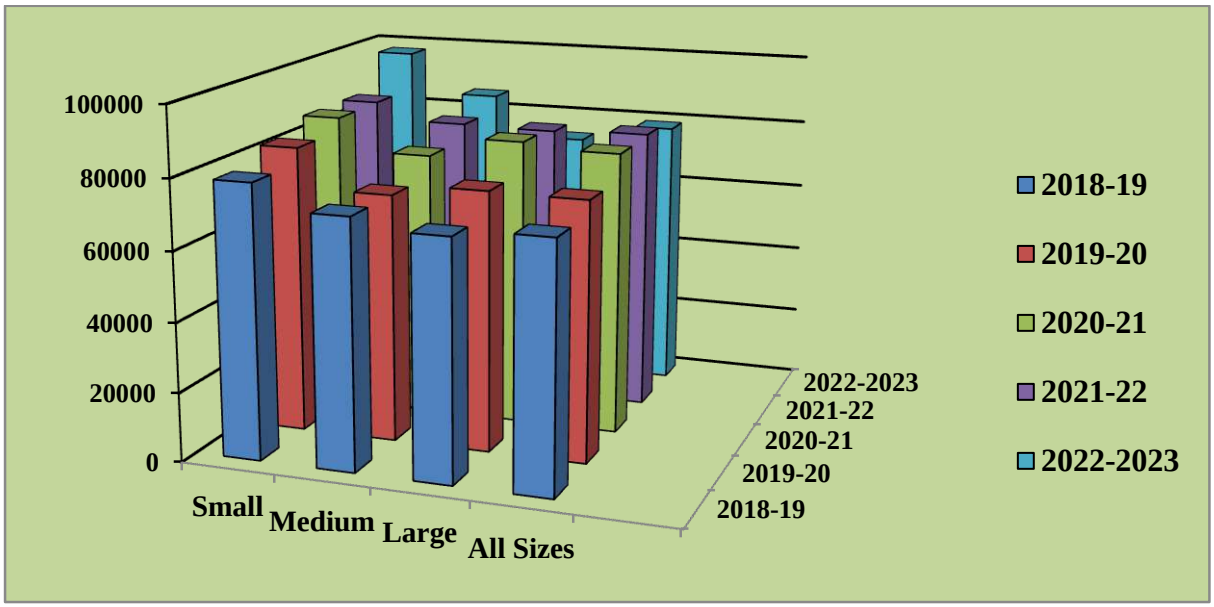
The total labour input includes both hired human labour and household human labour. As expected, the proportion of hired labour increases steadily with the size of the holding. It is observed that cultivators in the large-size class rely on hired labour for 87.44% of their total labour requirements. As usual proportion to hired labour, total labour input is higher for large

holding as compared with other holdings. Also all holdings are female-dominated in winter paddy.

Table 2.1.2.4: Cost of cultivation of Winter Paddy (Mundakan) per hectare (in Rs.) from 2018 -19 to 2022-23

Holding size class	Cost A				
	2018-19	2019-20	2020-21	2021-22	2022-2023
Small	78595	82806	86514	86589	97589
Medium	71568	71434	77149	81567	85617
Large	68523	74712	83079	81216	73586
All Sizes	70626	74401	81572	82025	78792

Figure 2.1.2.2: Cost of cultivation of Winter Paddy (Mundakan) per hectare (in Rs.) from 2018 -19 to 2022-23



The last five year data shows that there occurred fluctuations in the cost of cultivation of Winter Paddy. From the above table it is clear that cultivators belongs to small holding has higher cost as compare to other holdings.

2.1.2.3 Cost of production of Winter Paddy (Mundakan) per quintal

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

Table. 2.1.2.5 Per Quintal Cost (In Rs.) of Production of Winter Paddy (Mundakan) during 2022 - 2023

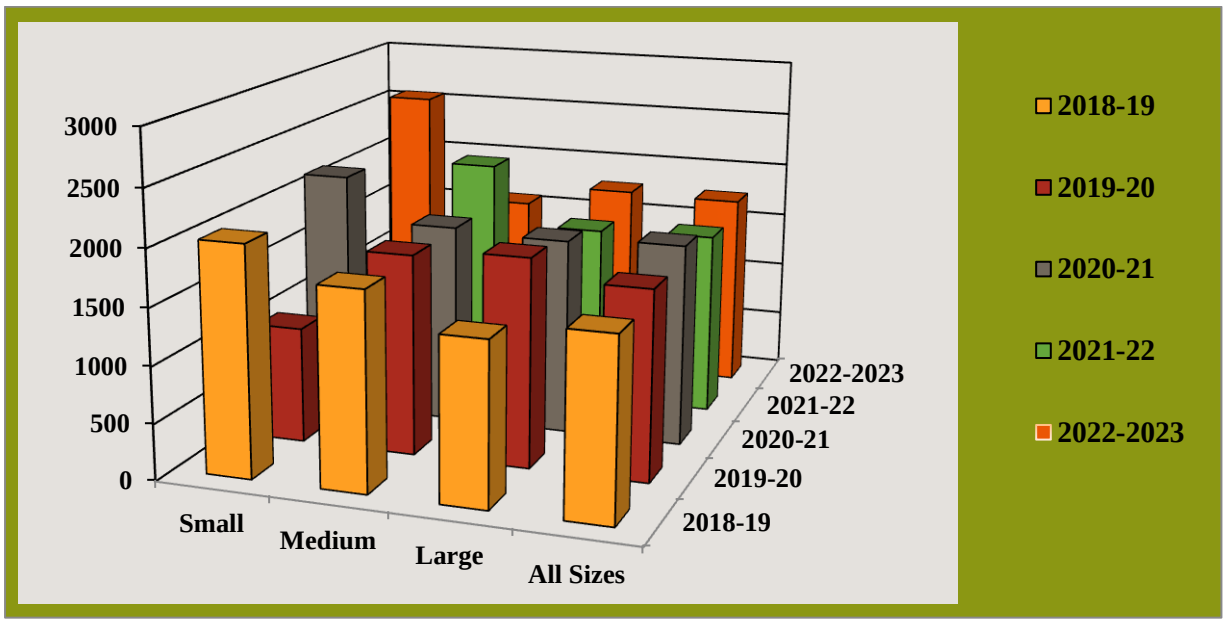
Concept of Cost	Year	Holding Size Class			
		Small	Medium	Large	All Sizes
Cost A	2022 - 2023	2560	1577	1768	1751
Cost B	2022 - 2023	8836	5606	7317	6819
Cost C	**2022 - 2023**	**9234**	**5741**	**7418**	**6950**

The survey results show that during 2022-23 for producing one quintal of paddy in winter season is Rs.1751/- has been expended by the farmer when Cost 'A' is considered.

Table 2.1.2.6: Cost of production of Winter Paddy (Mundakan) per quintal (in Rs.) from 2018 -19 to 2022-23

Holding size class	Value of Output (in Rs.) per quintal				
	2018-19	**2019-20**	**2020-21**	**2021-22**	**2022-23**
Small	2031	1029	2172	967	2560
Medium	1745	1778	1786	2148	1577
Large	1436	1846	1749	1610	1768
All Sizes	1585	1675	1793	1635	1751

Figure 2.1.2.3: Cost of production of Winter Paddy (Mundakan) per quintal (in Rs.) from 2018 -19 to 2022-23



2.1.2.4 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.1.2.7: Value of output during the year 2022-23

Year	Holding size class	Product/Byproduct (in Rs.)		
		Paddy	Straw	Total
2022-2023	Small	107017	26416	133433
	Medium	117486	17625	135111
	Large	117229	12589	129818
	All Sizes	116555	15045	131600

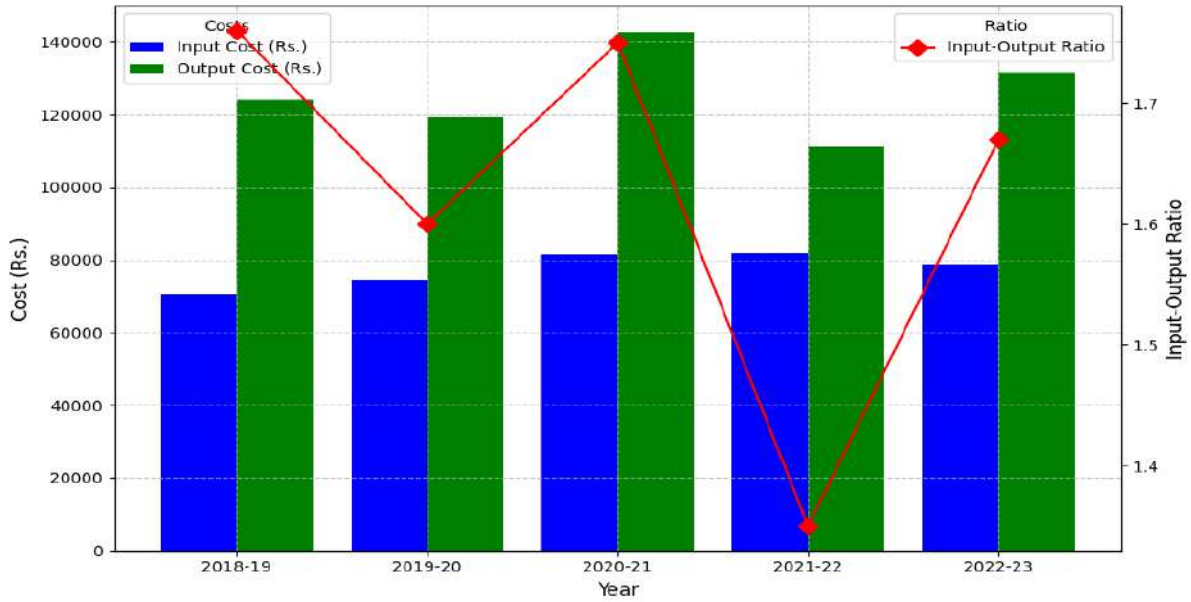
The medium holding size class shows a slight change in production levels compared to the small and large size classes for both paddy and straw.

Table.2.1.2.8 Input cost, Out put cost and Input-output ratio of Winter Paddy (Mundakan) per hectare (in Rs.) from 2018-19 to 2022-23

Year	Components		
	Input Cost	Output Cost	Input-output ratio
2018-19	70626	124083	1.76
2019-20	74401	119186	1.60
2020-21	81572	142677	1.75
2021-22	82025	120113	1.46
2022-23	78792	131600	1.67

From the data collected it is observed that there occur fluctuations in the input -output ratio and also the efficiency is higher during the year 2018-19.

Figure 2.1.2.4: Input cost, output cost and Input-output ratio of Winter Paddy (Mundakan) per hectare (in Rs.) from 2018 -19 to 2022-23



2.1.1.5 Agricultural cost Ratios

1.**Labour Cost Ratio**: The labour cost ratio shows that labour expenses account for approximately 55.98% of the total Cost A. This highlights that the primary contributor to the increase in Cost A is the labour cost.

2. **Costing materials used Ratio (Material cost ratio):** The material cost ratio indicates that material expenses, including seeds or seedlings, manures and fertilizers, plant protection, and other related costs, account for 35.74% of the total Cost A.

2.1.1.6 Key Findings

- When comparing the data to previous years, a clear trend of increased paddy production is observed. Input and output costs generally rise from 2018-19 to 2022-23, with some fluctuations and this change depends upon the cultivators selected for the survey under each year.
- Factors such as hired human labour, machine labour, and fertilizer have all increased at varying rates, contributing to the rise in the cost of cultivation. Labour costs dominate Cost A, making up 56% of the total.
- The input-output ratio (productivity) fluctuated between 2018-19 and 2019-20. This fluctuation provides insights into the efficiency of agricultural operations in converting inputs into outputs over time. Higher values indicate better efficiency in utilizing inputs to generate outputs, while lower values suggest less efficient utilization.

2.1.3 PADDY-SUMMER (PUNCHA)

2.1.3.1 Area under Summer Paddy (Puncha) Cultivation

The details of the holdings selected and the area covered for this study are as follows. Data was collected from 452 holdings, covering a total area of 807.37 hectares. The average area per holding across all size classes is 1.79 hectares. In the large-size class (more than two hectares), the average area per holding is 6.27 hectares. Conversely, in the small-size class (less than 0.40 hectare), which includes 179 holdings, the average area per holding is just 0.22 hectare.

Table 2.1.3.1: Area and number of holdings under Summer Paddy (Puncha)

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	179	38.86	4.81	**0.22**
Medium	176	160.48	19.88	**0.91**
Large	97	608.03	75.31	**6.27**
Total	**452**	**807.37**	**100.00**	**1.79**

2.1.3.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Summer Paddy (Puncha) is furnished in the following table.

Table 2.1.3.2: Cost of Cultivation per hectare (in Rs.) of Summer Paddy (Puncha)

Sl.No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	43636	33348	21269	**24747**
2	Animal labour	0	0	0	**0**
3	Machine labour	13880	11525	13080	**12809**
4	Seed /seedlings	3654	3597	4587	**4345**
5	Farmyard manure and chemical fertilizers	12617	9443	8768	**9087**
6	Plant Protection	1960	2453	1732	**1886**
7	Land tax and irrigation cess	533	406	296	**330**
8	Repair and maintenance charges of implements, machinery and building	559	2165	273	**662**
9	Interest on working capital	7575	6037	4944	**5287**
10	Other expenses	10490	14703	19492	**18107**
11	**Total cost 'A'(1-10)**	**94903**	**83677**	**74440**	**77261**
12	Interest on fixed capital	2209	2918	1614	**1902**
13	**Cost 'B1'(11+12)**	**97112**	**86595**	**76054**	**79163**
14	Interest on land value	268830	243669	160943	**182579**
15	**Cost 'B'(13+14)**	**365942**	**330264**	**236998**	**261743**
16	Inputed value of household labour	20754	9428	3063	**5180**
17	**Cost 'C'(15+16)**	**386696**	**339692**	**240061**	**266922**

Figure 2.1.3.1 : Cost of Cultivation per hectare (in Rs.) of Summer Paddy (Puncha)

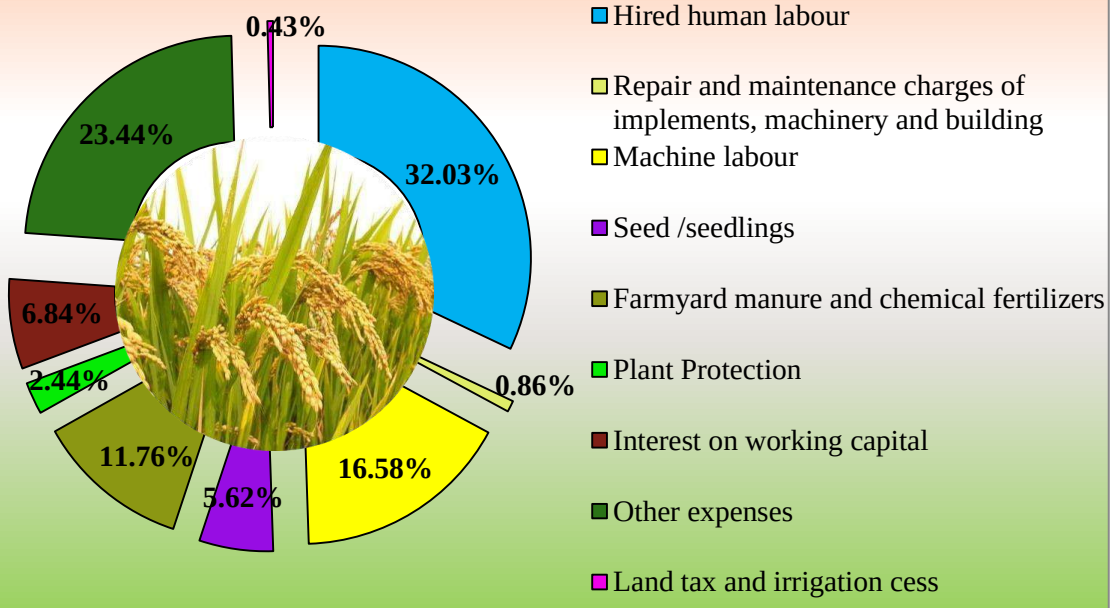


Table:**2.1.3.2** and Fig.**2.1.3.1** illustrate the total costs and the percentage of Cost A in paddy farming. The Cost A per hectare for paddy summer in small holdings is higher compared to medium and large holdings, showing a decreasing trend as the size of the holdings increases. Labour costs, particularly hired human labour, dominate Cost A, followed by machine labour and other expenses. For medium-sized holdings, the costs for plant protection and repair and maintenance of implements, machinery, and buildings have seen a significant increase compared to other holding sizes. Additionally, other expenses are on an upward trend across all holding sizes. Overall, there are fluctuations in costs across various components and holding sizes during 2022-23.

Table 2.1.3.3: Percentage of hired human labour hours to total labour hours of Summer Paddy (Puncha) during 2022 - 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	33.78	46.57	45.87	**44.91**
Female	34.59	36.98	44.46	**39.42**
Total	**68.37**	**83.55**	**90.33**	**84.33**

The total labour input is the sum of hired human labour and household human labour. As expected, the proportion of hired labour increases steadily with the size of the holding. It is

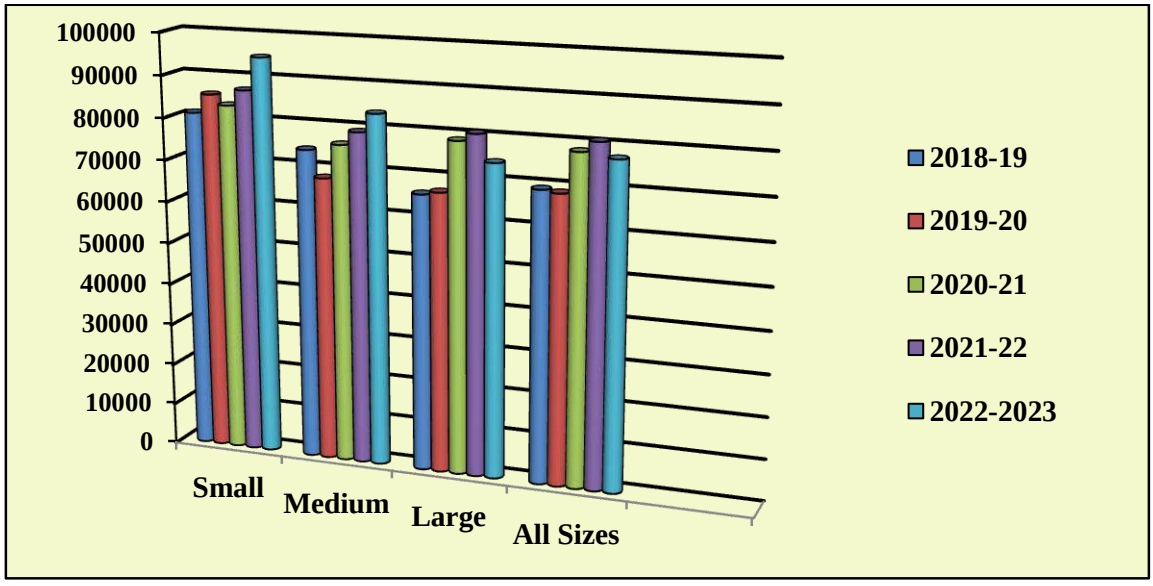
observed that cultivators in the large-size class depend on hired labour for 90.33% of their total labour requirements.

Table 2.1.3.4:Cost of cultivation of Summer Paddy (Puncha) per hectare(in Rs.)from 2018 -19 to 2022-23

Holding size class	Cost A (Rs.)				
	2018-19	2019-20	2020-21	2021-22	2022-2023
Small	81071	85604	83295	87069	94903
Medium	74220	67893	75978	79174	83677
Large	65971	66740	78813	80687	74440
All Sizes	69235	68703	78285	80802	77261

From the above table, it is observed that there have been fluctuations in the Cost A of paddy summer over the last five years. It is also evident that cultivators with small holdings incur higher costs compared to those with larger holdings. When comparing with 2021-22, there is a decrease in Cost A across all holding sizes, primarily due to a reduction in costs within the large holdings.

Figure 2.1.3.2: Cost of cultivation of Summer Paddy (Puncha) per hectare (in Rs.) from 2018 -19 to 2022-23



2.1.3.3 Cost of production of paddy per quintal

Cost of production of paddy per quintal estimated by dividing the cost of cultivation per hectare (after deducting the value of product by product per hectare from the cost of

cultivation per hectare) by the quantity of paddy produced per hectare.

Table 2.1.3.5 Per Quintal Cost (In Rs.) of Production of Summer Paddy (Puncha) during 2022 - 2023

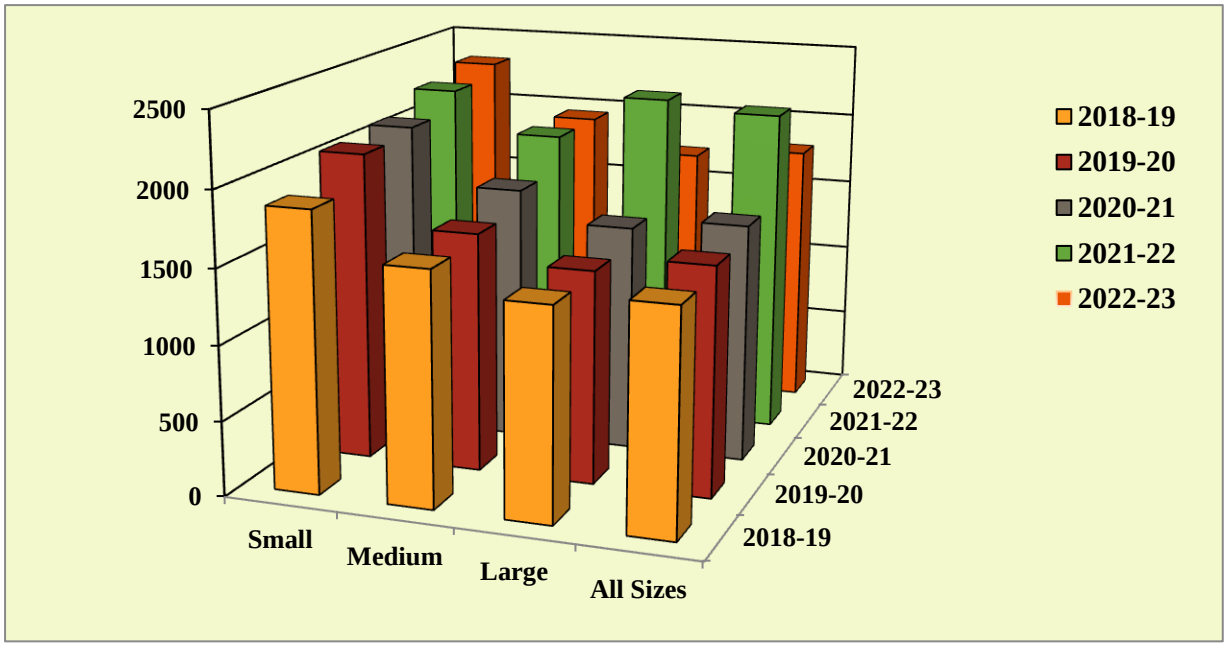
Concept of Cost	Year	Holding Size Class			
		Small	Medium	Large	All Sizes
CostA	2022 - 2023	2315	1946	1724	**1795**
CostB	2022 - 2023	8928	7679	5488	**6081**
CostC	**2022 - 2023**	**9434**	**7898**	**5559**	**5780**

The survey results show that during 2022-23 for producing one quintal of paddy in summer season is Rs.1795/- has been expended by the farmer when Cost 'A' is considered.

Table 2.1.3.6: Cost of production of Summer Paddy (Puncha) per quintal (in Rs.) from 2018 -19 to 2022-23

Holding size class	Value of output (Rs.)				
	2018-19	**2019-20**	**2020-21**	**2021-22**	**2022-2023**
Small	1869	2068	2107	2235	2315
Medium	1558	1600	1725	1953	1946
Large	1406	1424	1526	2262	1724
All Sizes	1479	1528	1604	2199	1795

Figure 2.1.3.3: Cost of production of Summer Paddy (Puncha) per quintal (in Rs.) from 2018 -19 to 2022-23



The overall production cost for all holding sizes has been steadily increasing up to the year 2021-22, but a sudden decrease is observed in the year 2022-23. From the graph, it is evident that the value of output for small holdings has consistently increased over the five years, compared to other holding sizes. However, medium and large holdings experienced a sudden decrease in output during 2022-23.

2.1.3.4 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.1.3.7: Value of output during the year 2022-23

Year	Holding size class	Product/Byproduct (in Rs.)		
		Paddy	Straw	Total
2022-23	Small	114963	20203	135166
	Medium	121205	15433	136638
	Large	121902	18330	140232
	All Sizes	121430	17844	139274

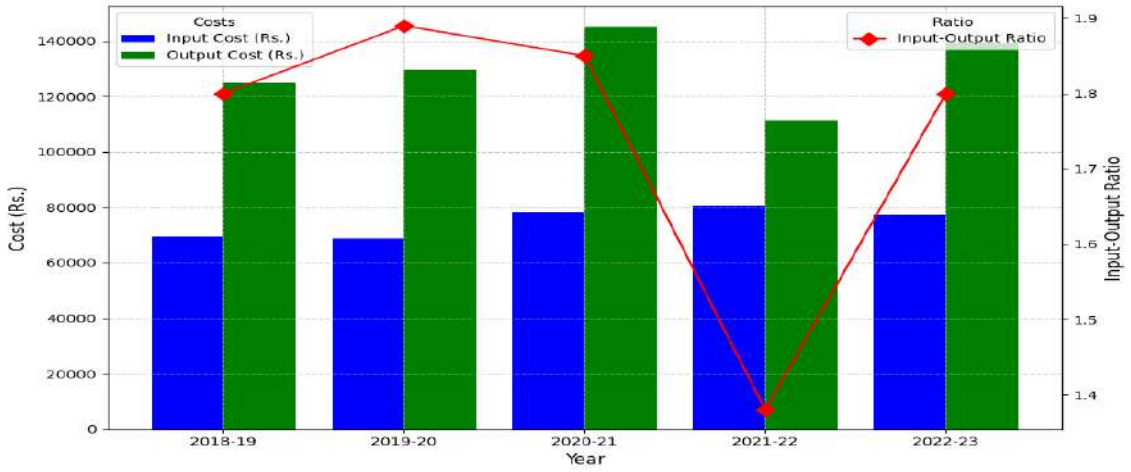
The Large holding size class consistently demonstrates higher production levels compared to the small and medium classes for both Paddy and Straw.

Table 2.1.3.8: Input cost, output cost and Input-output ratio of Summer Paddy (Puncha) per hectare (in Rs.) from 2018 -19 to 2022-23

Year	Components		
	Input Cost(Rs.)	Output Cost(Rs.)	Input-output ratio
2018-19	69235	125068	1.81
2019-20	68703	129568	1.89
2020-21	78285	145188	1.85
2021-22	80802	111351	1.38
2022-23	77261	139274	1.80

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2019-20.

Figure 2.1.3.4: Input cost, output cost and Input-output ratio of Summer Paddy (Puncha) per hectare (in Rs.) from 2018 -19 to 2022-23



2.1.3.5 Agricultural cost Ratios

1.Labour Cost Ratio: The labour cost ratio indicates that labour expenses account for approximately 48.61% of the total Cost A. This highlights that the primary contributor to the increase in Cost A is the labour cost.

2. Costing materials used Ratio (Material cost ratio): The material cost ratio accounts for approximately 43.26% of the total Cost A. This indicates that material costs also play a significant role in contributing to the increase in Cost A.

2.1.3.6 Key Findings

- When comparing the data from 2022-23 with previous years, it is evident that fluctuations occurred in both input and output costs for paddy and this change depends upon the cultivators selected for the survey under each year.
- Factors such as hired human labour, machine labour, and fertilizer have been increasing at varying rates, leading to higher cultivation costs. In 2022-23, labour costs dominated, accounting for 49% of the total Cost A.
- Regarding the input-output ratio (productivity), there was a significant increase from 2021-22 to 2022-23, with slight fluctuations observed in the years prior. This ratio offers valuable insights into the efficiency of agricultural operations in converting inputs into outputs over time.

2.2 COCONUT

2.2.0 Introduction

Coconut (Cocos nucifera) is an essential crop in Kerala, renowned for its cultural significance and economic impact. Kerala's unique agro-climatic conditions, including its warm temperatures, high humidity, and abundant rainfall, provide an ideal environment for coconut cultivation. The state's rich, well-drained soil further enhances the growth and productivity of coconut palms.

This chapter aims to provide a comprehensive overview of the key cost components involved in coconut cultivation in Kerala. It delves into essential factors such as land preparation, acquisition of planting materials, labour costs, inputs like fertilizers and pesticides, irrigation systems, and other operational expenses specific to the region.

2.2.1 Area under Coconut cultivation during 2022-23

The details of holdings selected and area coverage for this study on coconut cultivation in Kerala are outlined below. Data was collected from 760 holdings across different size classes, covering a total of 316.38 hectares of land.

Table 2.2.1: : Number of holdings and area under Coconut

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	277	39.70	12.55	**0.14**
Medium	372	138.51	43.78	**0.37**
Large	111	138.17	43.67	**1.24**
Total	760	316.38	100.00	0.42

It was observed that the average area per holding is 0.42 hectares overall. In the large size class, which includes holdings of more than 0.80 hectares, the average area per holding is 1.24 hectares. Conversely, the small size class, consisting of holdings less than 0.20 hectares, has an average area per holding of only 0.14 hectares.

2.2.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Coconut is furnished in the below table.

Table 2.2.2: Cost of Cultivation per hectare (in Rs.) of Coconut

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	57245	64796	63327	**63207**
2	Animal labour	0	0	0	**0**
3	Machine labour	445	1105	1327	**1119**
4	Seed /seedlings	348	341	305	**326**
5	Farmyard manure and chemical fertilizers	20020	21447	23359	**22103**
6	Plant Protection	99	167	108	**133**
7	Land tax and irrigation cess	749	818	891	**841**

8	Repair and maintenance charges of implements, machinery and building	646	290	264	**323**
9	Interest on working capital	7816	8786	8843	**8689**
10	Other expenses	5765	6060	4895	**5514**
11	Total cost 'A'(1-10)	93134	103810	103319	**102256**
12	Interest on fixed capital	6100	4851	5568	**5321**
13	Cost 'B1'(11+12)	99234	108661	108887	**107577**
14	Interest on land value	895261	925136	726648	**834702**
15	Cost 'B'(13+14)	994494	1033797	835535	**942280**
16	Inputed value of household labour	19600	11368	6248	**10165**
17	Cost 'C'(15+16)	1014094	1045166	841783	**952445**

Figure 2.2.1 : Cost of Cultivation per hectare (in Rs.) of Coconut

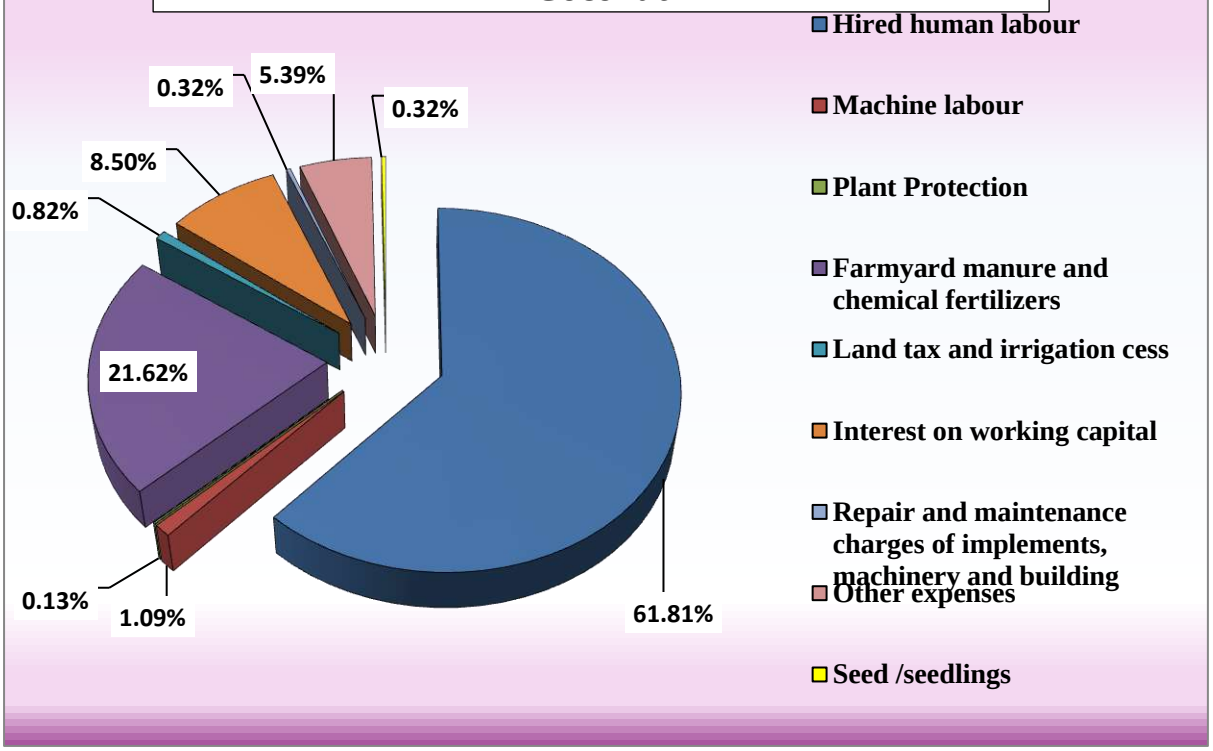


Table:**2.2.2** and Fig.**2.2.1** illustrate the componentwise cost of cost A and percentage each component of Cost A associated with coconut farming in Kerala. Medium farms incur higher total costs primarily due to increased expenses in hired human labour and other expenses. While smaller farms have slightly higher per-unit costs for seeds compared to medium and large holdings, they generally maintain lower overall costs. Additionally, smaller farms benefit from lower costs for farmyard manure and chemical fertilizers compared to larger holdings.

Table 2.2.3: Percentage of hired human labour hours to total labour hours of Coconut during 2022 - 2023

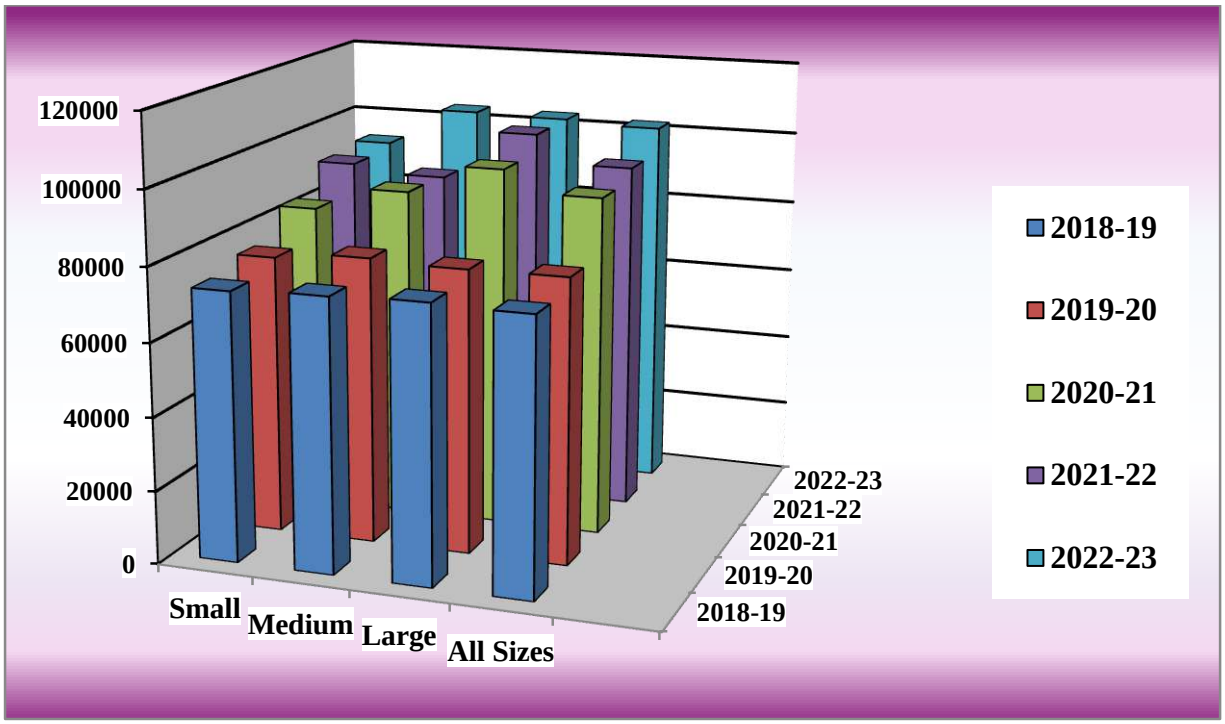
Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	65.83	74.07	76.42	**74.10**
Female	9.03	18.07	9.54	**7.15**
Total	74.86	92.14	85.96	**81.25**

The table presents the percentage distribution of hired human labour hours to total labour hours across small, medium, and large coconut holdings during 2022-2023, segmented by gender. Males contribute a significantly higher percentage of labour hours in all size classes, with their share increasing notably in the large size class compared to small and medium classes. The medium holdings account for a more significant share of total labour hours.

Table 2.2.4: Cost of cultivation of Coconut per hectare (in Rs.) from 2018 -19 to 2022-23

Holding size class	Cost A(Rs.)				
	2018- 2019	2019- 2020	2020 - 2021	2021 - 2022	2022 - 2023
Small	73347	76187	84037	91694	93134
Medium	74291	78153	90579	89611	103810
Large	75067	77388	98578	103405	103319
All Sizes	74536	77584	92727	95758	102256

Figure 2.2.2: Cost of cultivation of Coconut per hectare (in Rs.) from 2018 -19 to 2022-23



The data indicates a consistent increase in costs across all holding size classes over the five-year period. Compared to 2021-22, the percentage increase in Cost A for 2022-23 is 1.5%, highlighting the rising expenses associated with coconut cultivation.

2.2.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.2.5: Value of output during the year 2022-23

Year	Holding size class	Product/Byproduct (in Rs.)		
		Product	Byproduct	Total
2022-23	Small	175348	2725	178073
	Medium	165993	3551	169544
	Large	144318	5508	149826
	All Sizes	157701	4302	162003

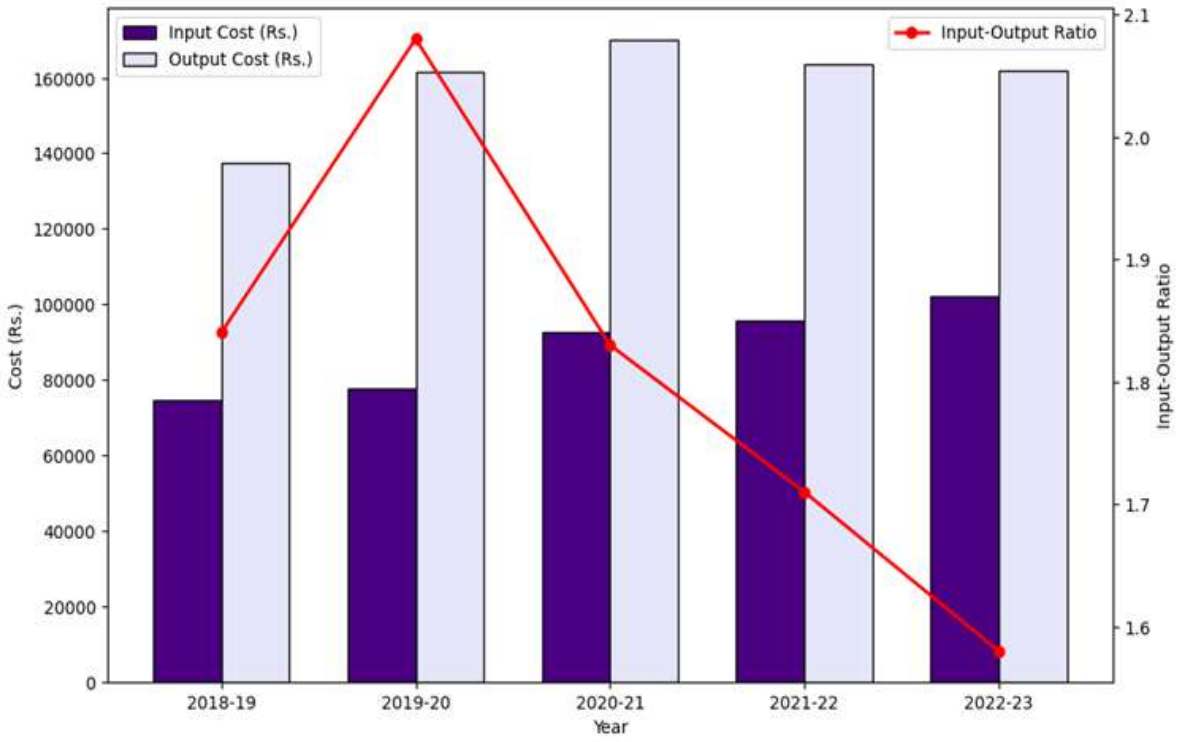
Table 2.2.5 displays the value of output during the year 2022-23 across different holding size classes. The small size class had the highest total production, exceeding both the medium and large size classes. The large size class reported the highest byproduct output.

Table 2.2.6: Input cost, output cost and Input-output ratio of Coconut per hectare (in Rs.) from 2018 -19 to 2022-23

Year	Components		
	Input Cost(Rs.)	Output Cost(Rs.)	Input-output ratio
2018-19	74536	137470	1.84
2019-20	77584	161620	2.08
2020-21	92727	169947	1.83
2021-22	95758	163550	1.71
2022-23	102256	162003	1.58

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2019-20.

Figure 2.2.3: Input cost, output cost and Input-output ratio of Coconut per hectare (in Rs.) from 2018 -19 to 2022-23



2.2.4 Agricultural cost Ratios

1.Labour Cost Ratio: The labour expenses make up about 62.91% of total cost A. This indicates that major contribution to an increased Cost A is the labour cost.

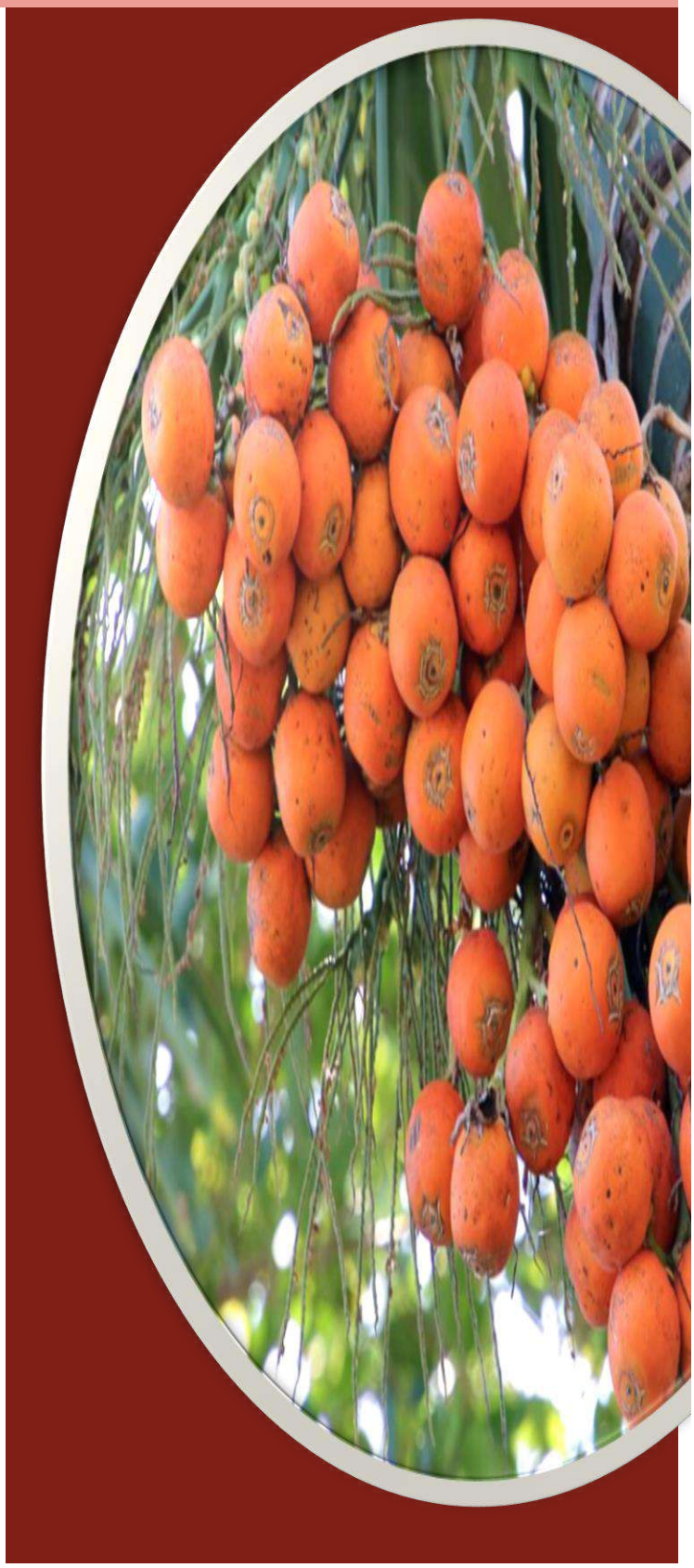
2. Costing materials used Ratio(Material cost ratio): The material cost ratio accounts for about 27.46% of total Cost A during the year 2022-23.

2.2.5 Key Finding

When analysing coconut production data over recent years, a fluctuating trend emerges.

- Input costs generally increased, driven by rising expenses for labour, fertilizers, and other inputs.
- Notably, the labour cost ratio constitutes approximately 62.91% of total Cost A, indicating a significant reliance on labour and making it a major contributor to production costs.
- In contrast, the material cost ratio accounts for about 27.46% of total Cost A. The input-output ratio has shown variability, reflecting changes in productivity and efficiency.

2.3 ARECANUT



2.3.0 Introduction

Arecanut(Areca catechu L) is cultivated as a garden crop in Kerala, except in Kasargod and kannur districts and it is grown in almost all the tracts of land adjoining the paddy fields or coconut gardens. Adequate and regular supply of plant nutrients is essential for the proper growth and yield of Arecanut. The Arecanut palm thrives well in areas with heavy rainfall with a well marked dry season. Arecanut cultivation in Kerala reflects a blend of traditional agricultural practices with modern techniques aimed at improving yield and sustainability. The crop plays a vital role in the cultural and economic landscape of the state, providing livelihoods to many farmers.

This chapter includes a detailed, component-wise analysis of the cost of cultivation of Arecanut. It also includes a comparative analysis of input costs and output costs, benchmarking them against previous years to identify trends and changes over time.

2.3.1 Area under Arecanut cultivation

Details of holding selected and area coverage for this study are given below. The data collected from 760 holdings according to the size class by covering 120.84 hectares of land.

Table 2.3.1: Number of holdings and area for Arecanut

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	610	35.21	29.14	0.06
Medium	112	38.12	31.55	0.34
Large	38	47.51	39.32	1.25
Total	**760**	**120.84**	**100.00**	0.16

It is observed that the average area per holding is 0.16 hectares in all classes while area per holding in large size class, ie more than 0.80 hectares is 1.25 hectares. But in small size class, ie, less than 0.20 hectare which comprises 610 holdings, the average area per holding is only 0.06 hectare.

2.3.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Arecanut is furnished in the below table.

Table 2.3.2: Cost of Cultivation per hectare (in Rs.) of Arecanut

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	71246	92696	87105	**84248**
2	Animal labour	0	0	0	**0**
3	Machine labour	379	2544	4857	**2822**
4	Seed /seedlings	332	170	555	**369**
5	Farmyard manure and chemical fertilizers	29814	44641	46083	**40887**
6	Plant Protection	0	0	0	**0**
7	Land tax and irrigation cess	841	1051	1149	**1028**
8	Repair and maintenance charges of implements, machinery and building	1024	285	485	**579**
9	Interest on working capital	10177	14005	13860	**12833**
10	Other expenses	8080	6548	5539	**6598**
11	Total cost 'A'(1-10)	**121894**	**161941**	**159633**	**149364**
12	Interest on fixed capital	12821	10967	6768	**9856**

13	Cost 'B1'(11+12)	**134714**	**172908**	**166400**	**159220**
14	Interest on land value	746808	478283	415180	**531717**
15	Cost 'B'(13+14)	**881522**	**651191**	**581580**	**690937**
16	Inputed value of household labour	33290	18204	8347	**18724**
17	Cost 'C'(15+16)	**914813**	**669394**	**589927**	**709661**

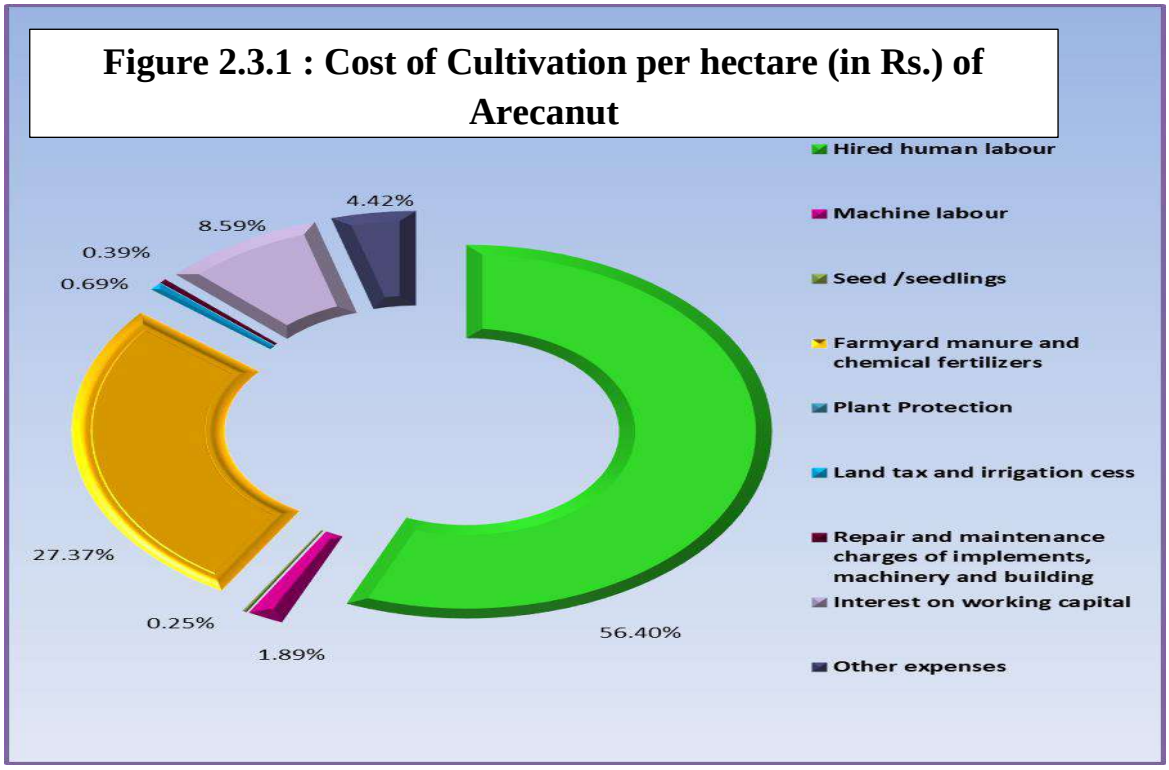


Table:2.3.2 and Fig.2.3.1 shows the total costs and Cost A percentage of Arecanut farming. The Cost A of Arecanut for medium per hectare works out was higher than that of the small and large holdings. Costs are generally seen to increase from small to large holdings across most components, but there are exceptions, such as repair and maintenance of implements, Other expenses. The percentage share of land tax and irrigation cess is normal. Also the expenditure on machine labour has an increase from small to large holdings.

Table 2.3.3: Percentage of hired human labour hours to total labour hours of Arecanut during 2022 - 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	54.45	64.79	69.38	**63.23**
Female	14.68	30.27	20.51	**14.84**
Total	**69.13**	**95.06**	**89.89**	78.07

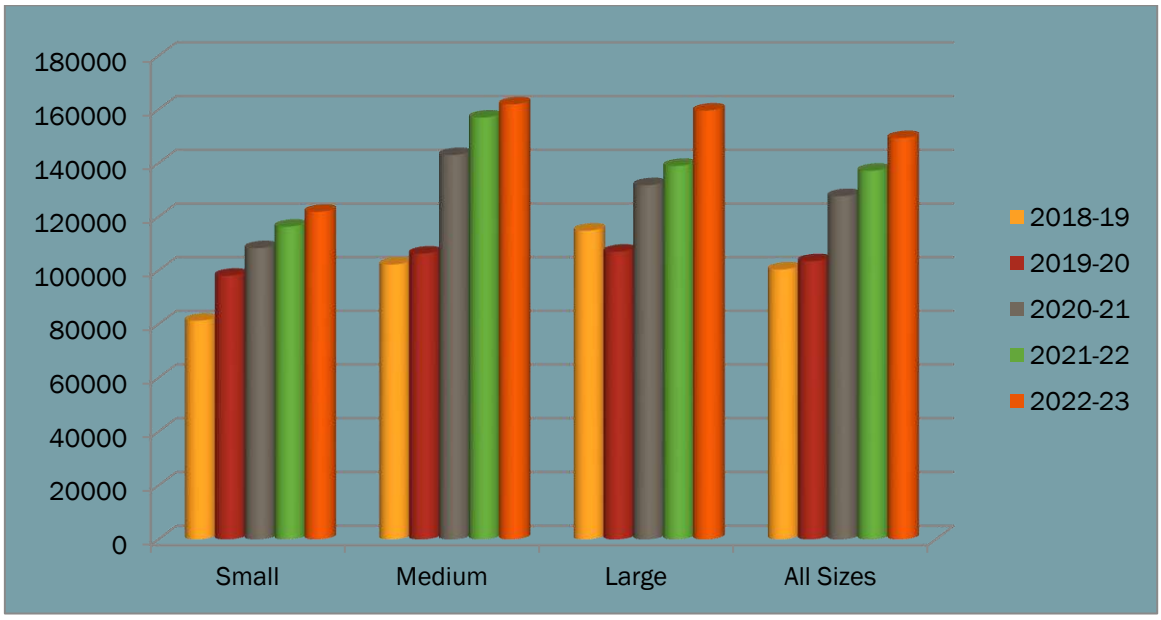
Here the total labour is the sum of hired human labour and household human labour. Also the holdings are primarily male-dominated, with women participating at a lower rate. Generally, cultivators belonging to large class are seemed to depend more of their requirements on hired labour during 2022-23.

Table 2.3.4: Cost of cultivation of Arecanut per hectare (in Rs.) from 2018-19 to 2022-23

Holding size class	Cost A(Rs.)				
	2018-19	2019-20	2020-21	2021-22	2022-23
Small	81305	98042	108323	116324	121894
Medium	102220	106313	143024	157025	161941
Large	114869	106986	131789	138989	159633
All Sizes	100395	103454	127718	137182	149364

The last five year data shows in Small Holdings consistently have the lowest costs, but they have also seen steady increases over the years. Medium Holdings shows the largest increase in 2020-2021. Large Holdings shows the highest increase in 2022-2023. All Sizes shows an overall upward trend, with medium and large holdings contributing the most to this increase.

Figure 2.3.2: Cost of cultivation of Arecanut per hectare (in Rs.) from 2018 -19 to 2022-23



2.3.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.3.5: Value of output during the year 2022-23

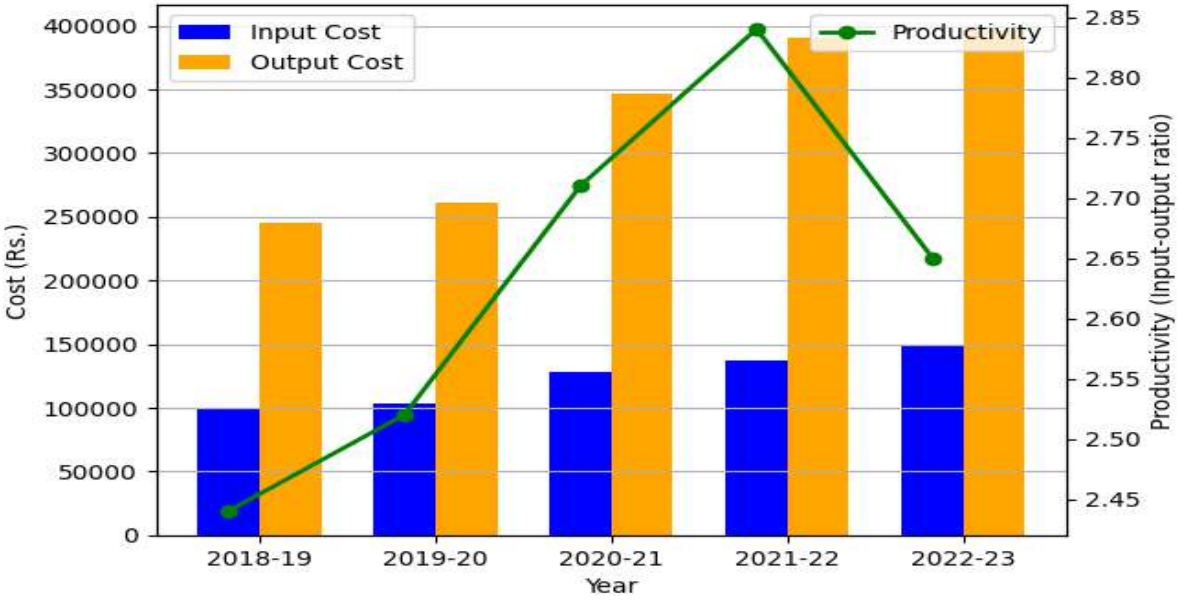
Year	Holding size class	Product/Byproduct (in Rs.)
2022-2023	Small	320315
	Medium	435903
	Large	421119
	All Sizes	396410

In medium size class more production occurred as compared to other size classes. As the by product has a slight variation. The medium holding size class consistently demonstrates higher production levels compared to the Small and large classes for Product/Byproduct.

Table 2.3.6: Input cost, output cost and Input-output ratio of Arecanut per hectare (in Rs.) from 2018 -19 to 2022-23

Year	Components		
	Input	Output Cost	Input-output ratio
2018-19	100395	245169	2.44
2019-20	103454	260726	2.52
2020-21	127718	345986	2.71
2021-22	137182	390168	2.84
2022-23	149364	396410	2.65

Figure 2.3.3: Input cost, output cost and input - output cost ratio of Arecanut per hectare (in Rs.) from 2018 -19 to 2022-23



There occur variations in the input-output ratio over the years and the efficiency higher during the year 2021-22.

2.3.4 Agricultural cost Ratios

1.Labour Cost Ratio: Labour expenses make up about 58.29% of total cost A. This indicates that major contribution to an increased Cost A is the labour cost.

2. Costing materials used Ratio(Material cost ratio): Material cost ratio make up about 32.03% of total cost A.

2.3.5 Key Findings

- Labour costs (58.29%) account for a significantly larger share of total costs compared to material costs (32.03%). This highlights the importance of labour efficiency in reducing overall expenses.
- Although material costs are notable, they represent a secondary factor in the total cost structure. While the farm could consider optimizing material use, the primary opportunity for cost reduction lies in enhancing labour efficiency, given that material costs are less than half of labour costs.
- The Input-Output Ratio showed a consistent increase up until 2021-22. However, in 2022-23 this ratio declined, suggesting that while input costs continued to rise, the output failed to do so.

2.4

TAPIOCA

2.4.0 Introduction

Tapioca (Manihot esculenta) commonly known as cassava, holds significant agricultural importance in Kerala. Tapioca is the most important tropical root crop. Proper land preparation, planting techniques, and nutrient management is require for the successful cultivation of tapioca. Tapioca thrives better in poor soils than any other major food plant. As a result, fertilization is rarely necessary. Tapioca cultivation in Kerala is well-suited to the region's climate and soil conditions, and with proper management practices, it can be a profitable and sustainable agricultural activity.

This chapter includes various components of the Cost of Cultivation and the comparative analysis of input cost, output cost with previous years of Tapioca.

2.4.1 Area under Tapioca Cultivation during 2022-23

Details of holding selected and area coverage of Tapioca for this study are given below.

Table 2.4.1: Number of holdings and area of Tapioca

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	383	32.84	29.31	**0.09**
Medium	159	48.25	43.07	**0.30**
Large	23	30.94	27.62	**1.35**
Total	**565**	**112.03**	**100.00**	**0.20**

The data collected from 565 holdings according to the size class by covering 112.03 hectare of land. It is observed that the average area per holding is 0.20 hectare in all classes while area per holding in large size class, ie more than 0.80 hectare is 1.35 hectares. But in small size class, ie, less than 0.20 hectare which comprises 383 holdings, the average area per holding is only 0.09 hectare.

2.4.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Tapioca is furnished in the below table.

Table 2.4.2: Cost of Cultivation per hectare (in Rs.) of Tapioca

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	71850	75331	64941	**71441**
2	Animal labour	0	0	0	**0**
3	Machine labour	2036	4455	5503	**4035**
4	Seed /seedlings	12076	8870	8992	**9844**
5	Farmyard manure and chemical fertilizers	33288	25647	16978	**25493**
6	Plant Protection	1138	943	1442	**1138**
7	Land tax and irrigation cess	522	382	171	**364**
8	Repair and maintenance charges of implements, machinery and building	1030	488	82	**535**

9	Interest on working capital	12039	11525	9786	**11195**
10	Other expenses	13530	17988	43445	**23712**
11	**Total cost 'A'(1-10)**	**147509**	**145628**	**151339**	**147757**
12	Interest on fixed capital	5388	1183	234	**2154**
13	**Cost 'B1'(11+12)**	**152897**	**146811**	**151574**	**149910**
14	Interest on land value	677590	469545	307317	**485732**
15	**Cost 'B'(13+14)**	**830487**	**616356**	**458891**	**635643**
16	Inputed value of household labour	67616	33350	17796	**39100**
17	**Cost 'C'(15+16)**	**898104**	**649705**	**476688**	**674743**

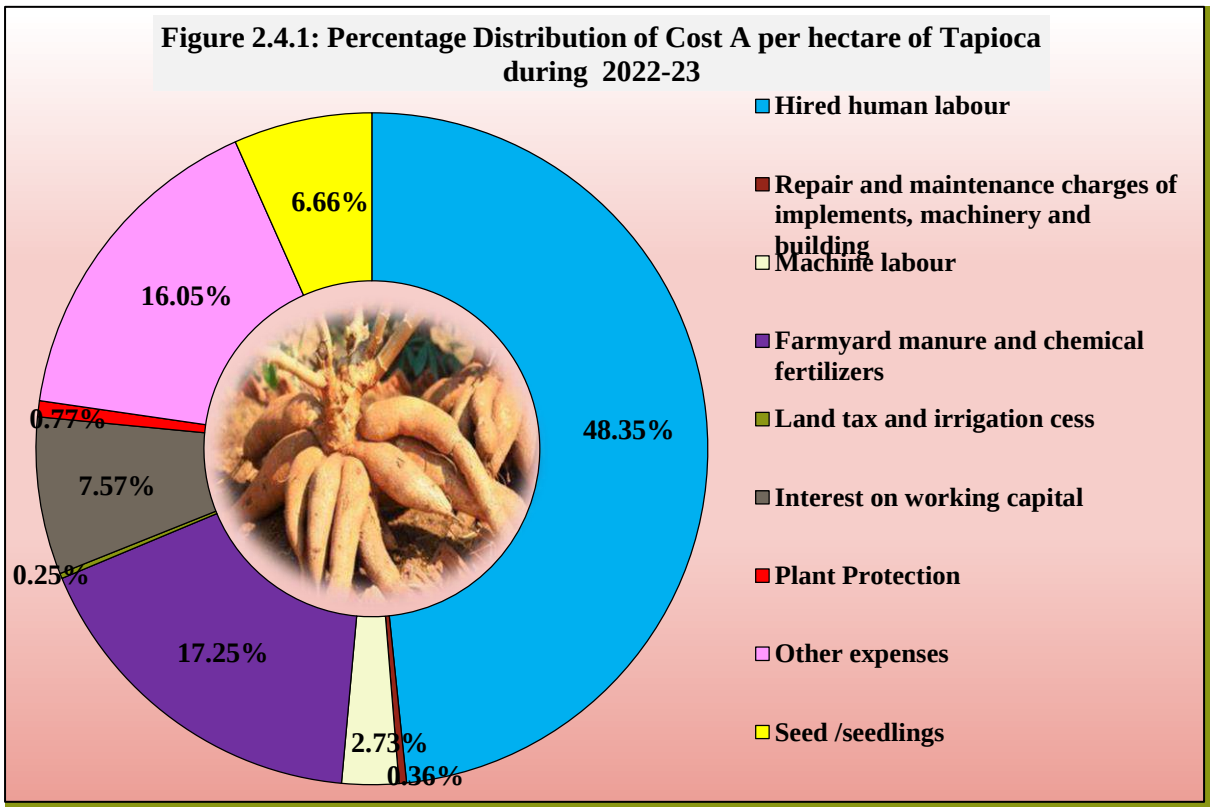


Table:2.4.2 and Fig.2.4.1 shows the total costs and Cost A percentage of Tapioca farming. Cost A of Tapioca was dominated by hired human labour and also farmyard manure and other expense occupies a major portion. The cost of machine labour increases with the size of the holding, which might reflect higher usage or necessity of machines in larger holdings. Costs for repair and maintenance decrease significantly with larger holdings. Plant protection and land tax and irrigation cess is very less when compared with other components. Also, the inputed value of household labour is higher for small holdings since human labour is more in small holdings. Overall, large holdings contribute more to the total cost.

Table 2.4.3: Percentage of hired human labour hours to total labour hours of Tapioca during 2022-2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	41.69	62.55	72.00	55.93
Female	6.28	14.28	15.59	5.11
Total	47.97	76.83	87.59	61.04

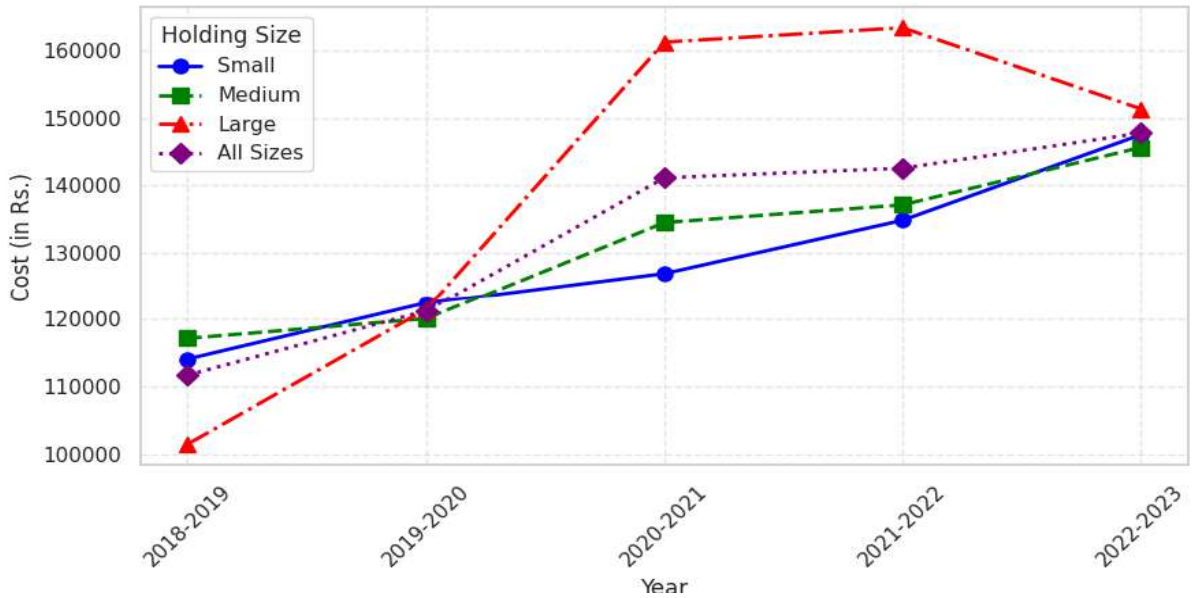
The proportion of hired labour increases steadily with the size of the holding. It is observed that cultivators in the larger holding size class tend to rely more on hired labour for their requirements. Additionally, male make up a higher percentage of the labour hour in each holding size class compared to females.

Table 2.4.4: Cost of cultivation of Tapioca per hectare (in Rs.) from 2018 -19 to 2022-23

Holding size class	Cost A (in Rs.)				
	2018- 2019	2019- 2020	2020 - 2021	2021 - 2022	2022 - 2023
Small	114078	122440	126904	134828	147509
Medium	117134	120085	134484	137109	145628
Large	101455	121482	161235	163368	151339
All Sizes	111688	121258	141117	142547	147757

The last five year data shows a consistent increase in the cost of cultivation of Tapioca in all holding classes. Compared to 2021-22, percentage increase in Cost A is 3.65% in 2022-23, but there occur a decrease of cost in large holdings.

Figure 2.4.2: Cost of cultivation of Tapioca per hectare (in Rs.) from 2018 -19 to 2022-23



2.4.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.4.5: Value of output during the year 2022-23

Year	Holding size class	Product/Byproduct (in Rs.)		
		Product	Byproduct	Total
2022-2023	Small	513093	7106	520199
	Medium	464402	4166	468568
	Large	391691	3621	395312
	All Sizes	458596	4877	463473

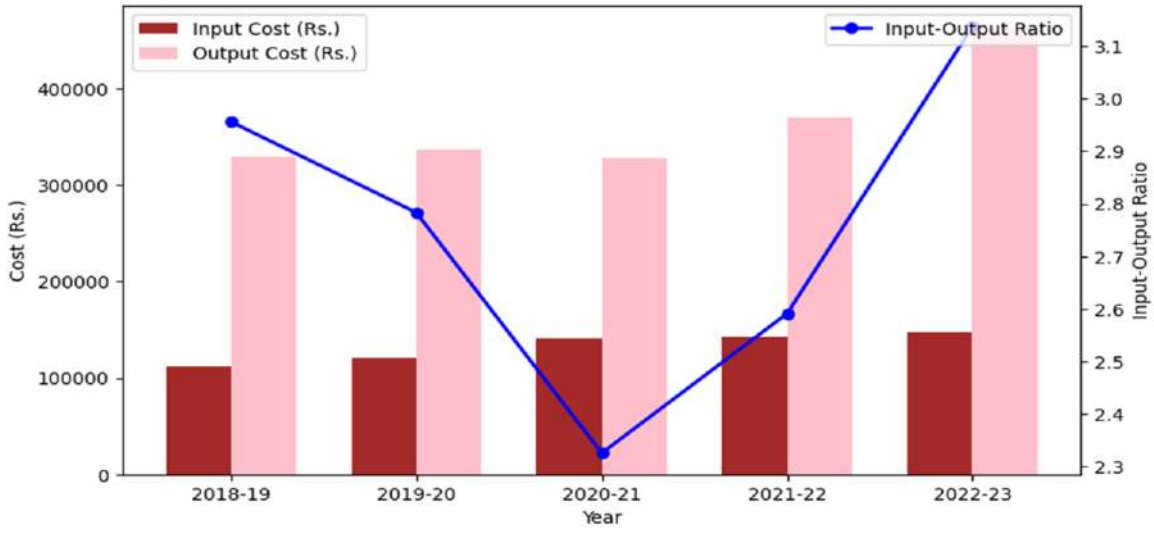
It is clear from the above data that small holding size class consistently demonstrates higher production levels compared to the medium and large classes in both product and byproduct.

Table 2.4.6: Input cost, output cost and Input-output ratio of Tapioca per hectare (in Rs.) from 2018 -19 to 2022-23

Year	Components		
	Input Cost(Rs.)	Output Cost(Rs.)	Input-output ratio
2018-19	111688	330144	2.96
2019-20	121258	337498	2.78
2020-21	141117	328218	2.33
2021-22	142547	369376	2.59
2022-23	147757	463473	3.14

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2022-23.

Figure 2.4.3: Input cost, output cost and Input-output ratio of Tapioca per hectare (in Rs.) from 2018 -19 to 2022-23



2.4.4 Agricultural cost Ratios

1.Labour Cost Ratio: The labour cost ratio indicates that labour expenses account for approximately 51.08% of the total Cost A. This highlights that the primary contributor to the increase in Cost A is the labour cost.

2. Material cost Ratio: Material cost ratio make up about 40.73% of total cost A. This indicates that Material cost Ratio also have a contribution to an increased Cost A.

2.4.5 Key Findings

- From 2018-19 to 2022-23, there has been an increasing trend in both input and output costs and this change depends upon the cultivators selected for the survey under each year.
- The cost of cultivating tapioca has risen, mainly due to higher input costs. However, the efficiency of converting inputs into output has fluctuated over the years.
- In 2022-23, the labour cost ratio is higher than the material cost ratio, meaning that labour costs account for the largest portion of cost A in tapioca cultivation. Together, labour and material costs comprise over 91% of total costs. This suggests that efforts to improve cost efficiency should target both labour and material inputs.
- Tapioca farming can be both profitable and sustainable if farmers focus on improving yield per hectare, optimizing input usage, and responding effectively to market trends.

2.5 BANANA

2.5.0 Introduction

Banana (Musa Paradisiaca Linn) is one of the most important and widely cultivated fruit crops globally, known for its nutritional value, versatility, and economic significance. It is cultivated widely in Kerala. The soil condition, especially laterite soil of Kerala, is suitable for cultivation of banana. Good irrigation facilities, physiological characteristics, climatic conditions like warm temperature, adequate rainfall etc are apt for growth of banana tree.

This chapter provides a comprehensive overview of the cost components involved in banana cultivation, including land preparation, planting material, labour, fertilizers, pesticides, irrigation, and other operational expenses. This chapter includes various components of the Cost of Cultivation and the comparative analysis of input cost, output cost of banana with previous years.

2.5.1 Area under Banana Cultivation during 2022-23

Details of holding selected and area coverage for this study are given below. The data collected from 558 holdings according to the size class by covering 139.93 hectare of land.

Table 2.5.1: Number of holdings and area for Banana

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	335	31.5	22.51	**0.09**
Medium	180	60.06	42.92	**0.33**
Large	43	48.38	34.57	**1.13**
Total	558	139.94	100	0.25

It is observed that the average area per holding is 0.25 hectare in all classes while average area per holding in large size class (holdings having area more than 0.80 hectares) is 1.13 hectare. But in small size class (holdings having area less than 0.20 hectare) which comprises 335 holdings, the average area per holding is only 0.09 hectare.

2.5.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of banana is furnished in the below table.

Table 2.5.2: Cost of Cultivation per hectare (in Rs.) of Banana

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	**All Sizes**
1	Hired human labour	79960	81664	88516	**83650**
2	Animal labour	0	0	0	**0**
3	Machine labour	2275	2400	6621	**3831**
4	Seed /seedlings	33899	31440	29452	**31306**
5	Farmyard manure and chemical fertilizers	55641	50451	66439	**57147**
6	Plant Protection	4444	3201	2961	**3398**
7	Land tax and irrigation cess	740	352	428	**466**
8	Repair and maintenance charges of implements, machinery and building	1090	590	385	**632**
9	Interest on working capital	17622	16916	19399	**17933**
10	Other expenses	33196	39203	60583	**45242**
11	Total cost 'A'(1-10)	228869	226217	274786	**243605**

12	Interest on fixed capital	17014	3901	2797	**6471**
13	Cost 'B1'(11+12)	245883	230118	277583	**250076**
14	Interest on land value	679581	475349	371863	**485544**
15	Cost 'B'(13+14)	925464	705467	649446	**735620**
16	Inputed value of household labour	89683	56599	19917	**51365**
17	Cost 'C'(15+16))	101514	762066	669363	**786985**

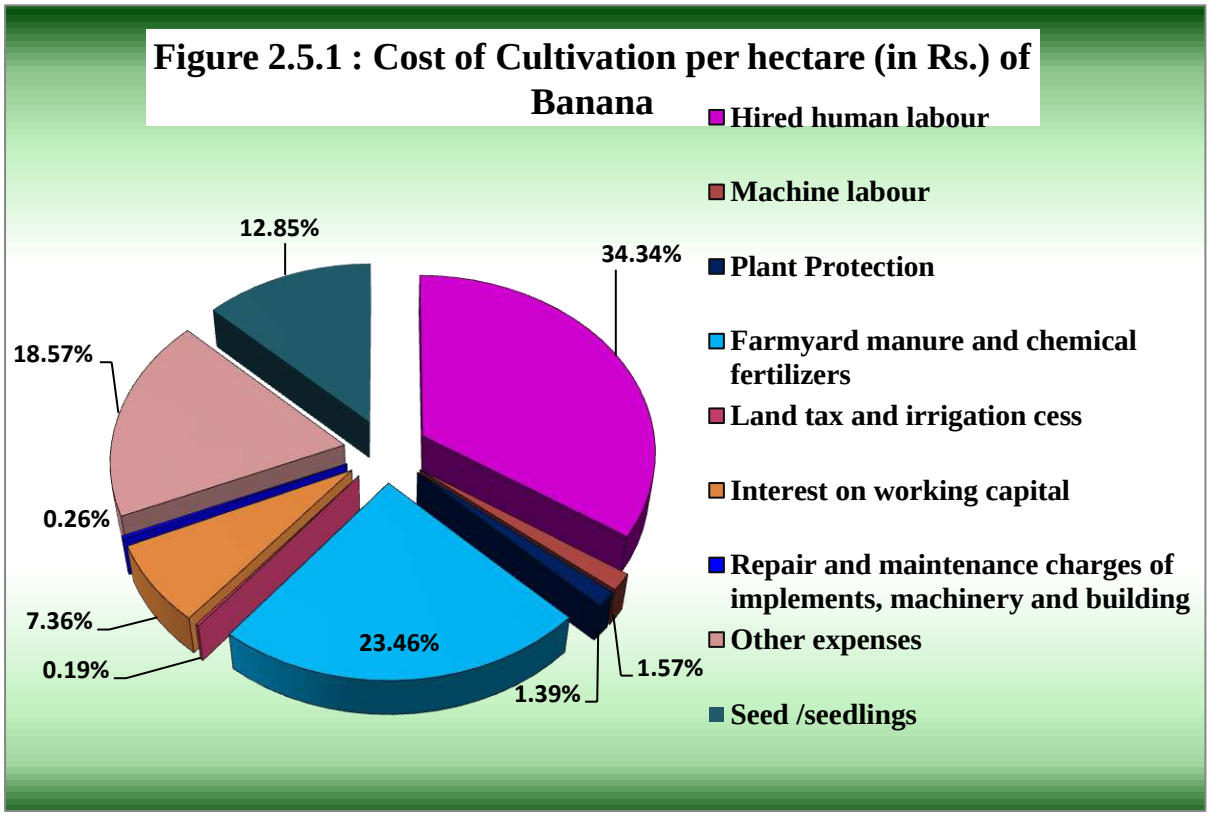


Table:2.5.2 and Fig.2.5.1 shows the componentwise cost and percentage of Cost A of banana farming. Larger farms incur higher total costs due to increased expenses in hired human labour, machinery, and other operational factors. While smaller farms face higher per-unit costs for inputs like seeds and pesticides, they generally have lower overall costs compared to large farms.

Table 2.5.3: Percentage of hired human labour hours to total labour hours of Banana during 2022 - 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	42.77	56.08	76.91	**58.12**
Female	6.52	6.69	14.57	**3.6**
Total	49.29	62.77	91.48	**61.72**

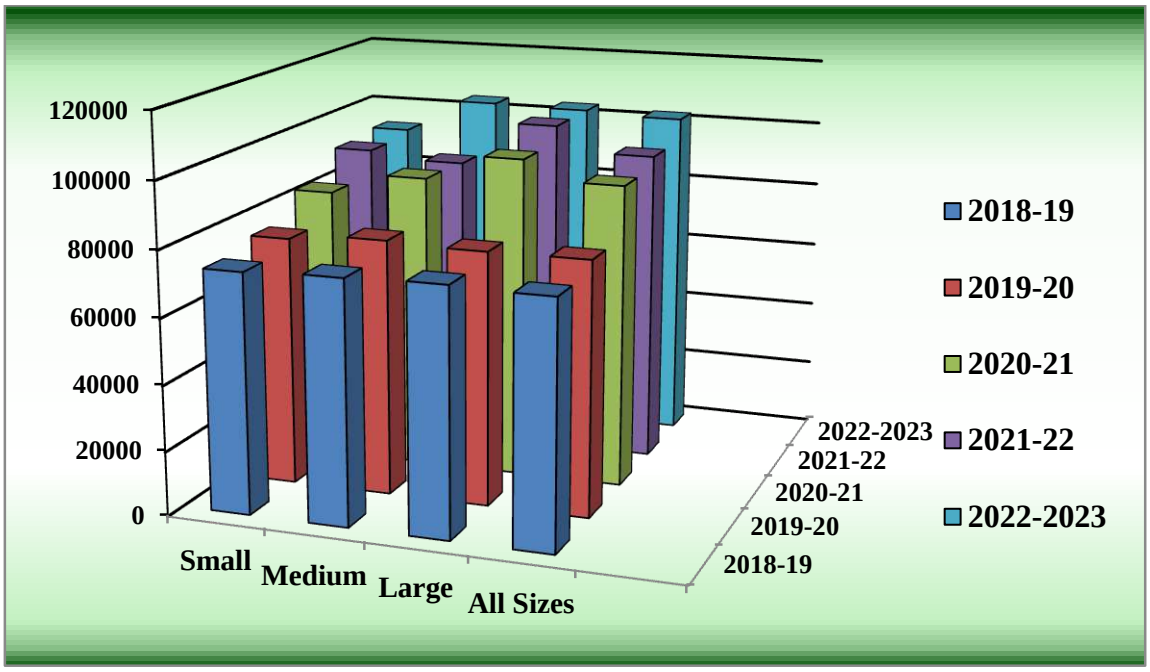
The table presents the percentage distribution of hired human labour hours to total labour hours across small, medium and large size classes, segmented by gender, and also includes overall percentages. Males contribute a significantly higher percentage of labour hours in all size classes compared to females. Specifically, male's percentage of labour hours is much higher in the large size class than in the small or medium classes. Females have a smaller percentage of labour hours in each size class, with their contribution being lower, especially in the large size class.The overall average percentage reflects that the larger size classes account for a greater share of labour hours.

Table 2.5.4: Cost of cultivation of Banana per hectare (in Rs.) from 2018 -19 to 2022-23

Holding size class	Cost A(Rs.)				
	2018- 2019	2019- 2020	2020 - 2021	2021 - 2022	2022 - 2023
Small	203664	215424	226676	213395	228869
Medium	228718	212897	228648	220130	226217
Large	209297	233637	250014	282862	274786
All Sizes	216796	219792	234710	241320	243605

The last five years data shows an increase in cost of cultivation of banana in all holding size class. From above table it is clear that cultivators belongs to large holding has higher cost as compare to other holdings. Compared to 2021-22, percentage increase in Cost A in 2022-23 is 0.95%.

Figure 2.5.2: Cost of cultivation of Banana per hectare (in Rs.) from 2018 -19 to 2022-23



2.5.3 Value of output

Details of product and byproduct for the year 2022-23 is given below.

Table 2.5.5: Value of output during the year 2022-23

Year	Holding size class	Product/Byproduct (in Rs.)		
		Product	Byproduct	Total
2022-23	Small	651680	14669	666349
	Medium	587416	12190	599606
	Large	619726	7873	627599
	All Sizes	613052	11256	624307

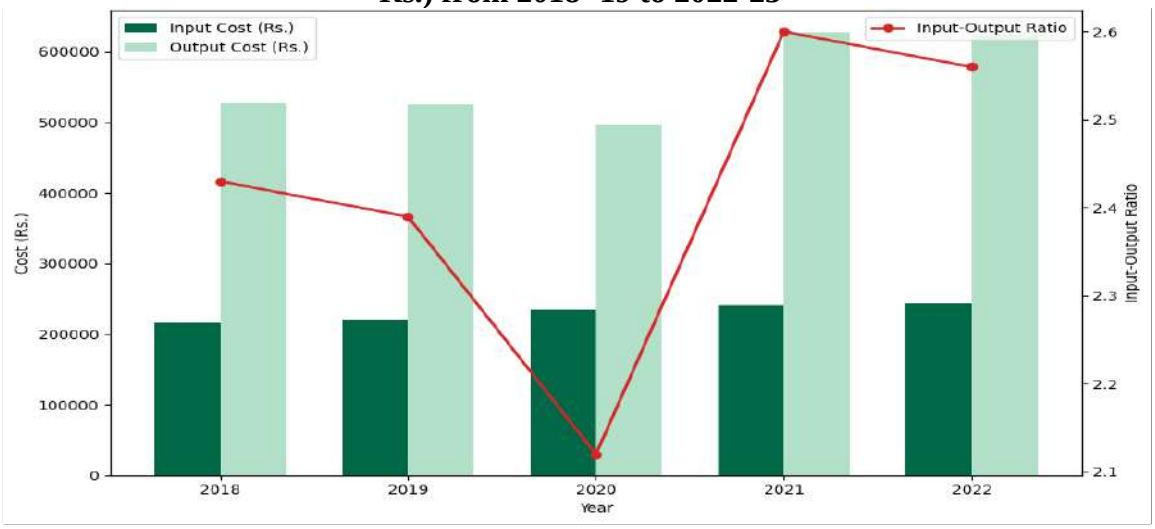
The small size class had the highest total production, surpassing the medium and large size classes. In contrast, the large size class had the lowest byproduct output. Production was relatively consistent across medium and large size classes, while the small size class shows an increase.

Table 2.5.6: Input cost, output cost and Input-output ratio of Banana per hectare (in Rs.) from 2018 -19 to 2022-23

Year	Components		
	Input Cost(Rs.)	Output Cost(Rs.)	Input-output ratio
2018-19	216796	526421	2.43
2019-20	219792	525063	2.39
2020-21	234710	497306	2.12
2021-22	241320	626820	2.60
2022-23	243605	624307	2.56

From the data collected it is evident that the input-output ratio has some variations over the years and the efficiency is higher during the year 2021-22.

Figure 2.5.3: Input cost, output cost and Input-output ratio of Banana per hectare (in Rs.) from 2018 -19 to 2022-23



2.5.4 Agricultural cost Ratios

1.Labour Cost Ratio: Labour expenses makeup about 35.91% of total cost A. This indicates that major contribution to an increased Cost A is the labour cost.

2. Costing materials used Ratio(Material cost ratio): Cost A was dominated by material cost ratio which constitute to 56.28% of total cost A.

2.5.5 Key Findings

- When we compare the data with the previous years, it is seen that there is a fluctuating trend in banana production.
- Compared to the previous year, input costs generally increased from 2018-19 to 2022-23, while output costs showed a decreasing trend, except in 2021-22 and the changes depend upon the cultivators selected for this survey in each year.
- Also the factors like hired human labour, machine labour, fertilizers are all growing in varying proportions leading to an increase in the cost of cultivation.
- Interpreting the input-output ratio (productivity) it decreased significantly from 2018-19 to 2019-20, then showed an exponential increase in 2021-2022 and then in 2022-2023 it again decreased. Higher values suggest better efficiency in utilizing inputs to generate output, while lower values indicate less efficient utilization. So 2022-2023 shows less efficient utilization than 2021-2022.

2.6 PEPPER

2.6.0 Introduction

Black pepper (Pipernigrum L) commonly known as 'King of Spices' and 'Black gold' is one of the earliest known spice and medicinal crops of India originated from Western Ghats of our country which has been produced and traded worldwide. It is grown under varied agro-ecologies in the state ranging from sea-level to High Ranges. Kerala is one of the major Pepper growing and producing state in India. It is cultivated mostly by small and marginal holders grown as a mixed crop with coconut, arecanut, coffee, cardamom etc. and their livelihood has crucial bearing on this crop. Monocropping in pepper is limited to very small area in Kerala. Idukki and Wayanad are the two major pepper producer districts in Kerala.

This chapter includes various components of the Cost of Cultivation and the comparative analysis of input cost, output cost with previous years of Pepper.

2.6.1 Area under Pepper Cultivation during 2022-23

Details of holding selected and area coverage of Pepper for this study are given below. The data collected from 546 holdings according to the size class by covering 55.48 hectares of land.

Table 2.6.1: Number of holdings and area under Pepper

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	473	25.80	46.50	**0.05**
Medium	60	18.13	32.68	**0.30**
Large	13	11.56	20.84	**0.89**
Total	**546**	**55.48**	**100.00**	**0.10**

It is observed that the average area per holding is 0.10 hectares in all classes while area per holding in large size class, ie more than 0.80 hectares is 0.89 hectares. But in small size class, ie, less than 0.20 hectare which comprises 473 holdings, the average area per holding is only 0.05 hectare.

2.6.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Pepper is furnished in the below table.

Table 2.6.2: Cost of Cultivation per hectare (in Rs.) of Pepper

Sl. No.	Components	Holding Size Class			
		Small	**Medium**	**Large**	**All Sizes**
1	Hired human labour	61760	66648	58129	**62601**
2	Animal labour	0	0	0	**0**
3	Machine labour	0	51	104	**38**
4	Seed /seedlings	2167	3911	4114	**3142**
5	Farmyard manure and chemical fertilizers	21912	21793	25736	**22670**
6	Plant Protection	302	1119	2302	**986**
7	Land tax and irrigation cess	770	1068	1059	**928**
8	Repair and maintenance charges of implements, machinery and building	1149	663	635	**883**
9	Interest on working capital	8614	9352	9039	**8944**
10	Other expenses	4438	2868	1628	**3340**
11	Total cost 'A'(1-10)	**101114**	**107474**	**102746**	**103532**

12	Interest on fixed capital	16808	8737	6251	**11973**
13	Cost 'B1'(11+12)	**117922**	**116211**	**108998**	**115505**
14	Interest on land value	864777	569561	286996	**647969**
15	Cost 'B'(13+14)	**982700**	**685772**	**395994**	**763474**
16	Inputed value of household labour	47145	18043	10512	**30006**
17	**Cost 'C'(15+16)**	**1029845**	**703815**	**406506**	**793480**

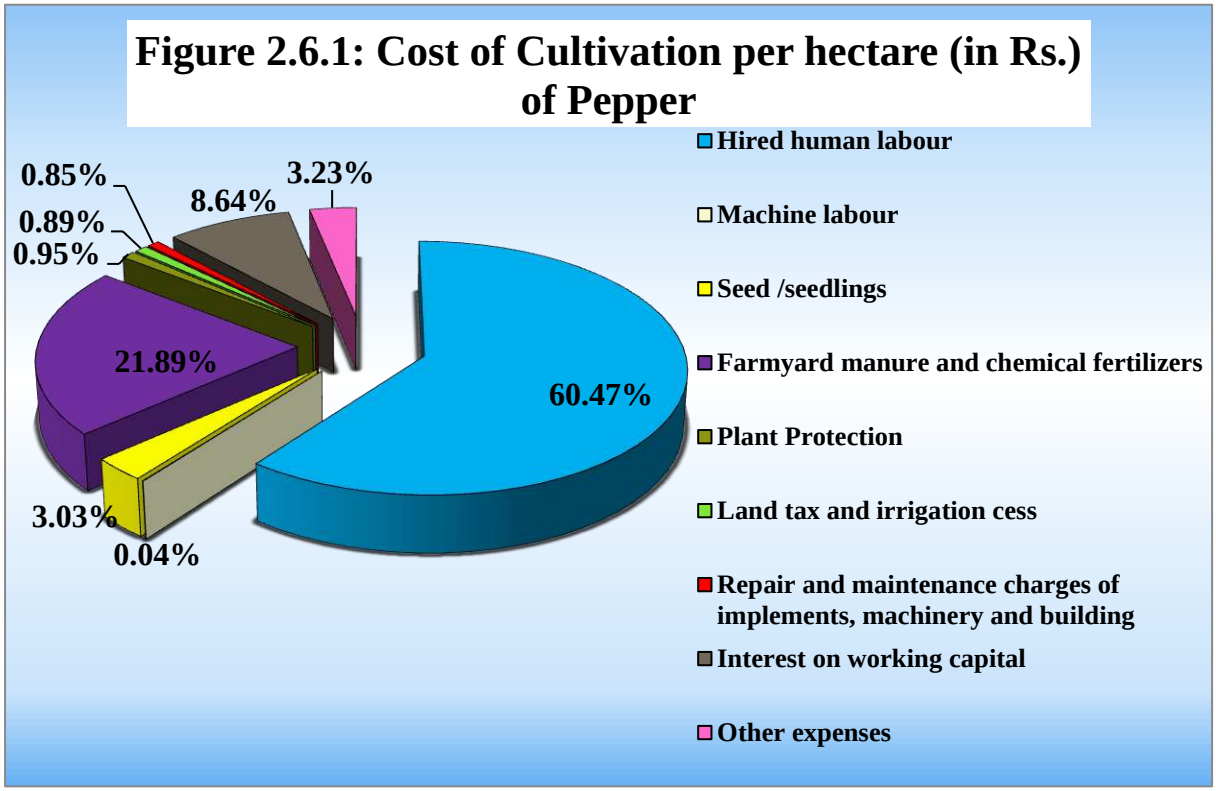


Table 2.6.2 and Fig.2.6.1 shows the total costs and Cost A percentage of Pepper farming. Cost A of Pepper was dominated by hired human labour and also farmyard manure and chemical fertilizers. Machine labour is less needed for pepper cultivation. Cost is increase from small to large holdings across most components, but there are exceptions, such as repair and maintenance charges of implements, other expenses etc. Also we can see fluctuations in the Cost A of all holding sizes.

Table 2.6.3: Percentage of hired human labour hours to total labour hours of Pepper during 2022 - 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	51.61	71.73	74.74	**61.56**
Female	6.40	15.40	10.64	**5.13**
Total	**58.01**	**87.13**	**85.38**	**66.69**

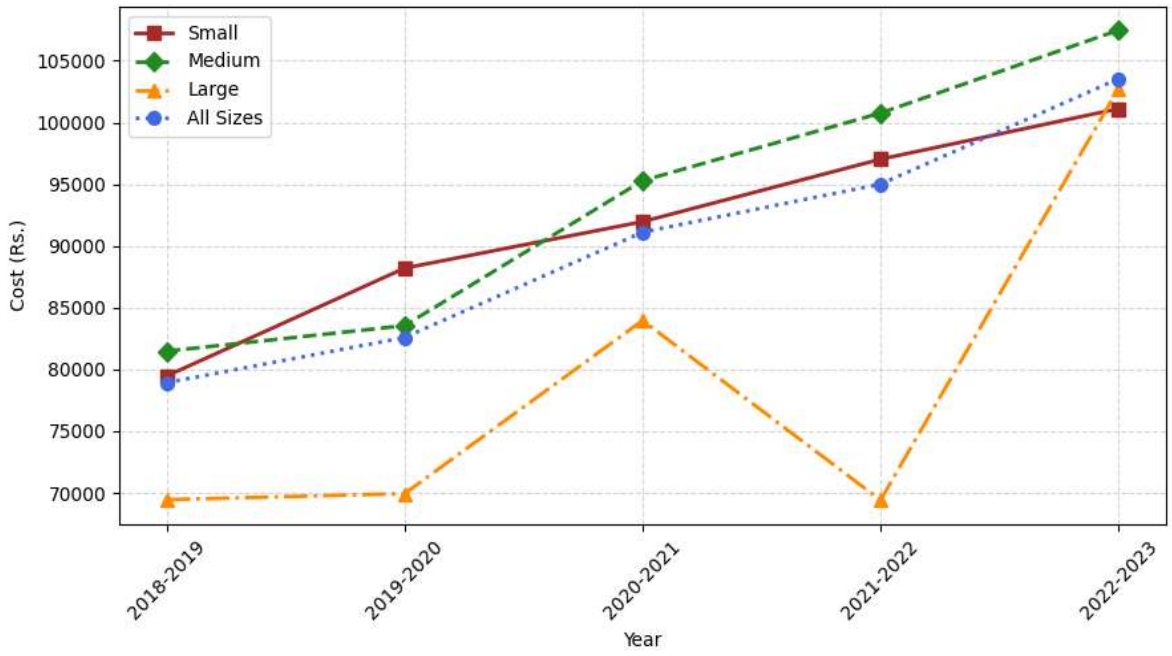
Here the total labour is the sum of hired human labour and household human labour. As usual proportion to hired labour, total labour input steadily increases with the increase in the holding size. Also all holdings are primarily male-dominated, with women participating at a lower rate. Generally, cultivators belonging to large class are seem to depend more of their requirements on hired labour during 2022-23.

Table 2.6.4: Cost of cultivation of Pepper per hectare (in Rs.) from 2018 -19 to 2022-23

Holding size class	Cost A (in Rs.)				
	2018- 2019	2019- 2020	2020 - 2021	2021 - 2022	2022 - 2023
Small	79465	88199	91965	97023	101114
Medium	81478	83543	95285	100762	107474
Large	69450	69935	83963	69408	102746
All Sizes	78925	82583	91110	95005	103532

The last five year data shows a consistent increase in the cost of cultivation of Pepper in all holding class. From above table it is clear that cultivators belong to medium holding has higher cost as compare to other holdings. Compared to 2021-22, percentage increase in Cost A in 2022-23 is 8.98% .

Figure 2.6.2: Cost of cultivation of Pepper per hectare (in Rs.) from 2018 -19 to 2022-23



2.6.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.6.5: Value of output during the year 2022-23

Holding size class	Product (in Rs.)
Small	275674
Medium	250896
Large	174030
All Sizes	246405

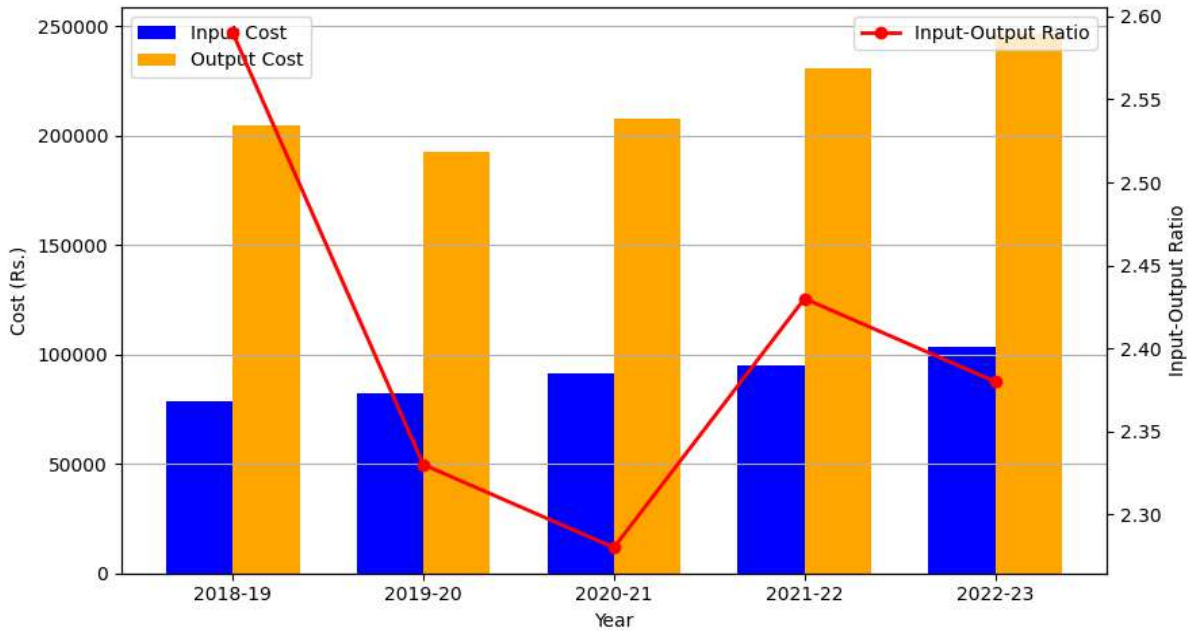
It is clear from the above data that small and medium holding size classes contribute significantly more to the total product value compared to the large size class.

Table 2.6.6: Input cost, output cost and input-output ratio of Pepper per hectare (in Rs.) from 2018 -19 to 2022-23

Year	Components		
	Input Cost(Rs.)	Output Cost(Rs.)	Input-output ratio
2018-19	78925	204794	2.59
2019-20	82583	192577	2.33
2020-21	91110	207707	2.28
2021-22	95005	230770	2.43
2022-23	103532	246405	2.38

From the data collected it is evident that the input-output ratio has some variations over the years and the efficiency is higher during the year 2018-19.

Figure 2.6.3: Input cost, output cost and input-output ratio of Pepper per hectare (in Rs.) from 2018 -19 to 2022-23



2.6.4 Agricultural cost Ratios

1.Labour Cost Ratio: Labour expenses make up about 60.50% of total cost A. This indicates that major contribution to an increased Cost A is the labour cost.

2. Costing materials used Ratio (Material cost ratio): The material cost ratio accounts for approximately 29.11% of the total Cost A. This indicates that material costs also plays a significant role in contributing to increase in Cost A.

2.6.5 Key Findings

- Input costs and output costs have consistently increased over the years, with output costs growing at a higher rate than input costs and the change depends upon the cultivators selected for this survey under each year.
- The input-output ratio also has fluctuations throughout years, also higher values suggest better efficiency in utilizing inputs to generate output shows less efficient utilization than 2021-2022.
- In 2022-23, labour cost ratio is higher than material cost ratio, meaning that labour costs account for the largest portion of cost A in tapioca cultivation. Together, labour and material costs comprise over 91% of total costs. This suggests that efforts to improve cost efficiency should target both labour and material inputs.

2.7 GINGER

2.7.0 Introduction

Ginger (Zingiber officinale Rosc.) is a herbaceous perennial, the rhizomes of which are used as a spice that has been cherished for its culinary and medical properties. Ginger Cultivation in Kerala is an integral part of the State's agricultural landscape. The rising input costs due to inflation and increased demand for resources like fertilizers and labour, along with the volatile market prices for ginger, make it essential for ginger farmers to focus on improving productivity and optimizing inputs. Sustainable farming practices, technological adoption, and better pest and disease management will be key to improving the cost-efficiency of ginger cultivation in the long term.

This chapter includes various components of the Cost of Cultivation and the comparative analysis of input cost, output cost with previous years of Ginger.

2.7.1 Area under Ginger Cultivation during 2022-23

Details of holding selected and area coverage of Ginger for this study are given below. The data collected from 448 holdings according to the size class by covering 35.35 hectare of land.

Table 2.7.1: Number of holdings and area for Ginger

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	399	17.65	49.93	**0.04**
Medium	45	14.09	39.86	**0.31**
Large	4	3.60	10.18	**0.90**
Total	448	35.35	100.00	**0.08**

It is observed that the average area per holding is 0.08 hectare in all classes while area per holding in large size class, ie more than 0.80 hectare is 0.90 hectare. But in small size class, ie, less than 0.20 hectare which comprises 399 holdings, the average area per holding is only 0.04 hectare.

2.7.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Ginger is furnished in the below table.

Table 2.7.2: Cost of Cultivation per hectare (in Rs.) of Ginger

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	75412	98045	72107	**84099**
2	Animal labour	0	0	0	**0**
3	Machine labour	686	2751	1846	**1628**
4	Seed /seedlings	53186	58007	64942	**56307**
5	Farmyard manure and chemical fertilizers	32631	31372	23371	**31185**
6	Plant Protection	548	1667	2258	**1169**
7	Land tax and irrigation cess	566	495	376	**518**
8	Repair and maintenance charges of implements, machinery and building	1656	501	194	**1046**
9	Interest on working capital	16246	19184	16452	**17439**
10	Other expenses	14403	19579	16024	**16632**
11	Total cost 'A'(1-10)	**195335**	**231602**	**197571**	**210022**
12	Interest on fixed capital	2611	1011	515	**1759**

13	Cost 'B1'(11+12)	**197945**	**232613**	**198085**	**211781**
14	Interest on land value	759799	263432	162380	**501002**
15	Cost 'B'(13+14)	**957744**	**496045**	**360465**	**712784**
16	Inputed value of household labour	73431	31678	16901	**51022**
17	**Cost 'C'(15+16)**	**103117**	**527723**	**377367**	**763805**

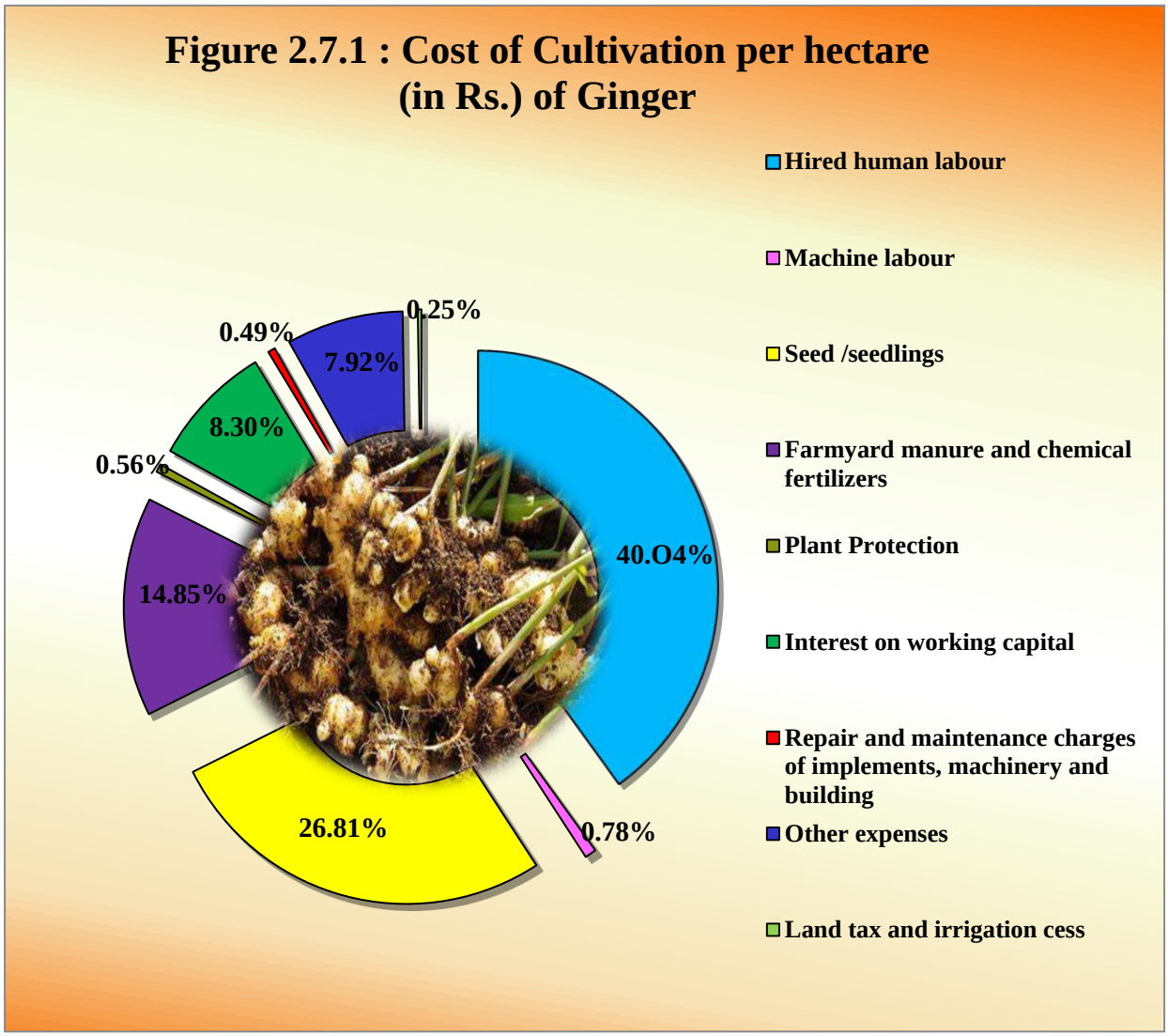


Table **2.7.2** and Fig.**2.7.1** shows the total costs and Cost A percentage of Ginger farming. Cost A of Ginger was dominated by hired human labour, seed/seedlings and also farmyard manure and chemical fertilizers occupies a major portion. Also it is evident that the medium holding needs higher cost for hired human labour, machine labour, interest on working capital and other expenses, but there are exceptions such as seed/seedlings and plant protection i.e, cost is increase from small to medium holdings. When it comes to total costs,

medium holdings occupies higher cost in Ginger cultivation as compared with others during 2022-23.

Table 2.7.3: Percentage of hired human labour hours to total labour hours of Ginger during 2022 - 2023

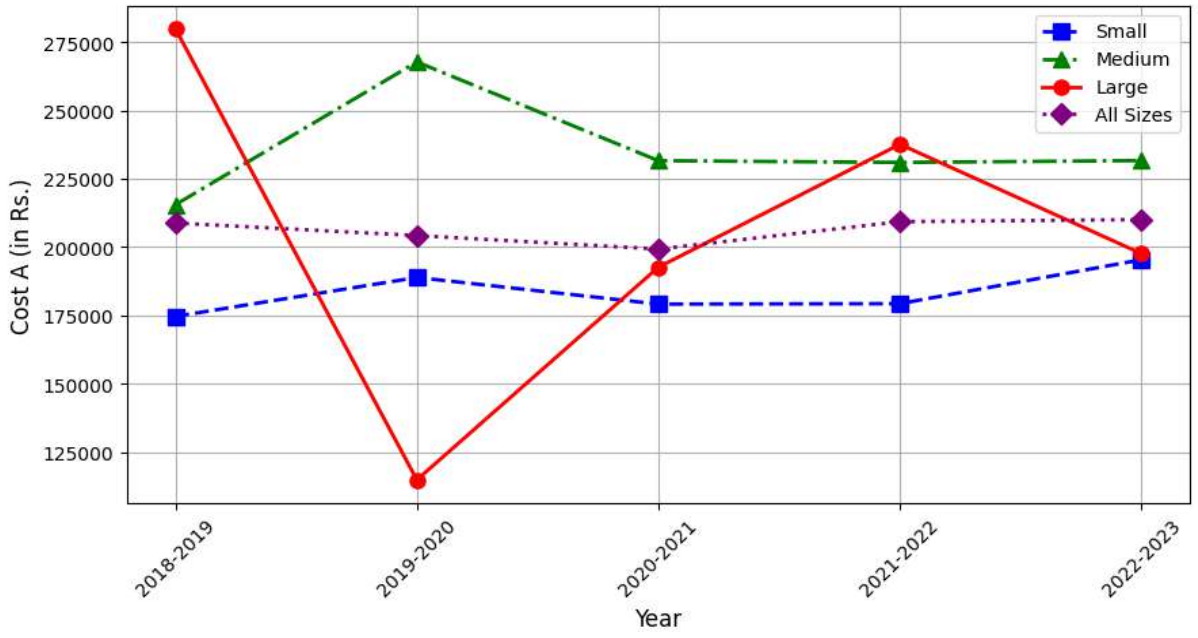
Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	43.70	45.57	39.45	**44.12**
Female	13.64	37.94	41.91	**22.85**
Total	**57.34**	**83.51**	**81.36**	**66.97**

Here the total labour is the sum of hired human labour and household human labour. As usual proportion to hired labour, total labour input is higher for medium holding as compared with other holdings. Also all holdings are primarily male-dominated except large holding.

Table 2.7.4: Cost of cultivation of Ginger per hectare (in Rs.) from 2018 -19 to 2022-23

Holding size class	Cost A (in Rs.)				
	2018- 2019	2019- 2020	2020 - 2021	2021 - 2022	2022 - 2023
Small	174603	188845	179105	179274	**195335**
Medium	215447	267686	231572	230937	**231602**
Large	279917	114805	192601	237565	**197571**
All Sizes	208761	204188	199246	209257	**210022**

Figure 2.7.2: Cost of cultivation of Ginger per hectare (in Rs.) from 2018 -19 to 2022-23



The last five year data shows that there occurred fluctuations in the cost of cultivation of Ginger. From the above table it is clear that cultivators belongs to medium holding has higher

cost as compare to other holdings. Compared to 2021-22, percentage increase in Cost A in 2022-23 is very small i.e, 0.37%.

2.7.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.7.5: Value of output during the year 2022-23

Holding size class	Product (in Rs.)
Small	537672
Medium	683494
Large	950014
All Sizes	637842

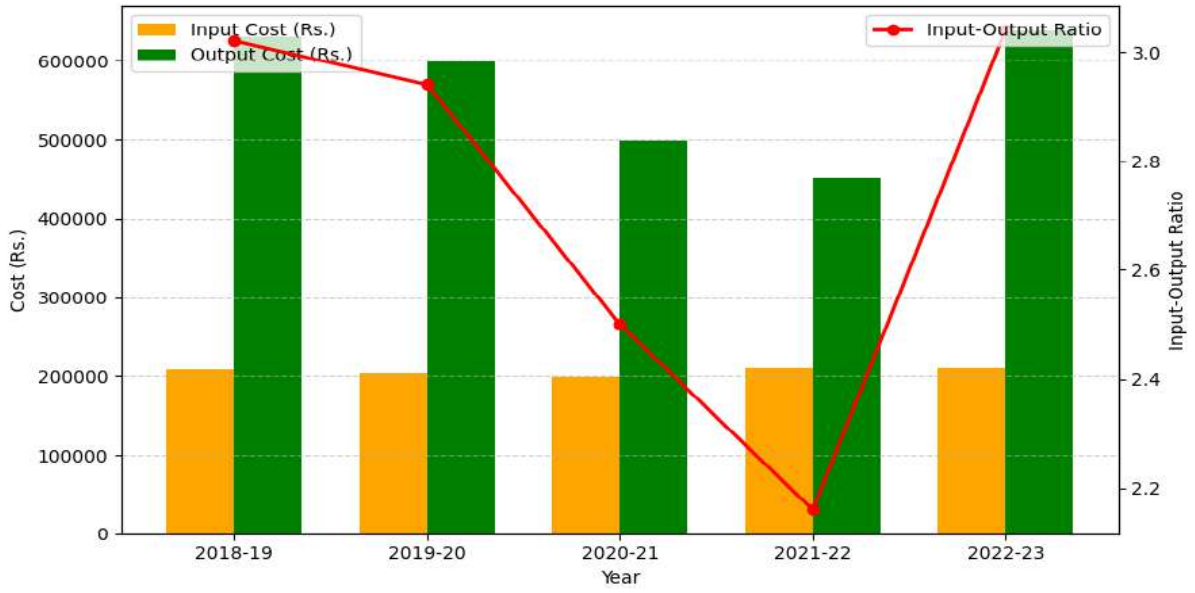
It is clear from the above table that large holding size class consistently demonstrates higher production level compared to the small and medium classes.

Table 2.7.6: Input cost, output cost and Input-output ratio of Ginger per hectare (in Rs.) from 2018 -19 to 2022-23

Year	Components		
	Input Cost(Rs.)	Output Cost (Rs.)	Input-output ratio
2018-19	208761	629930	3.02
2019-20	204188	599480	2.94
2020-21	199246	498727	2.50
2021-22	209257	452175	2.16
2022-23	210022	637842	3.04

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2022-23.

Figure 2.7.3: Input cost, output cost and input-output ratio of ginger per hectare (in Rs.) from 2018 -19 to 2022-23



2.7.4 Agricultural cost Ratios

1. **Labour Cost Ratio:** This indicates that labour expenses make up about 40.82% of total cost A.

2. Costing materials used Ratio (Material cost ratio): The material cost ratio accounts for approximately 50.13% of the total Cost A. This indicates that material costs also play a significant role in contributing to the increase in Cost A.

2.7.5 Key Findings

- The input costs for ginger cultivation have shown slight variations over the years, with a relatively stable trend. Increases in input costs are generally seen due to inflation, rising labour costs, or higher costs of inputs such as seeds, fertilizers, pesticides, and labour.
- The output cost of ginger has fluctuations.
- Input-Output Ratio shows a steady decline from 2018-19 to 2021-22, however the ratio recovers in 2022-23 and the change depends upon the cultivators selected for this survey under each year.
- In 2022-23, material cost ratio is higher than labour cost ratio, meaning that material costs account for the largest portion of cost A in ginger cultivation.

2.8 TURMERIC

2.8.0 Introduction

Turmeric (Curcuma longa)is a widely cultivated tropical plant renowned for its bright yellow-orange rhizomes, which are used as both a spice and a medicinal herb. Native to Southeast Asia, particularly India, turmeric has been a staple in traditional medicine, culinary practices, and cultural rituals for centuries. The primary active compound in turmeric, curcumin, is known for its potent antioxidant, anti-inflammatory, and antimicrobial properties. These health benefits, along with its culinary uses in curries, soups, and other dishes, have led to turmeric's global recognition.

This chapter includes various components of the Cost of Cultivation and the comparative analysis of input cost, output cost with previous years of This chapter aims to provide a comprehensive overview of the key cost components involved turmeric cultivation in Kerala, which covers essential factors such as land preparation, acquisition of planting materials, labour costs, inputs like fertilizers and pesticides, irrigation systems, and other operational expenses.

2.8.1 Area under Turmeric Cultivation during 2022-23

For this study details of holding selected and area coverage are given below.The data was collected from 492 holdings across different size classes, by covering a total of 31.17 hectares of land.

Table 2.8.1: Number of holdings and area for Turmeric

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	459	21.90	70.25	0.05
Medium	33	9.27	29.75	0.28
Large	-	-	-	-
Total	**492**	**31.17**	**100.00**	**0.06**

It is observed that the average area per holding is 0.06 hectares in all classes while area per holding in medium size class, ie between 0.20 and 0.80 hectares is 0.28 hectares. But in small size class, ie, less than 0.20 hectare which comprises 459 holdings, the average area per holding is only 0.05 hectare.

2.8.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Turmeric is furnished in the below table.

Table 2.8.2: Cost of Cultivation per hectare (in Rs.) of Turmeric

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	62340	63787	0	**62770**
2	Animal labour	0	0	0	**0**
3	Machine labour	1876	5591	0	**2981**
4	Seed /seedlings	29253	38595	0	**32031**
5	Farmyard manure and chemical fertilizers	29232	37162	0	**31590**
6	Plant Protection	549	96	0	**414**
7	Land tax and irrigation cess	534	297	0	**463**
8	Repair and maintenance charges of implements, machinery and building	1405	242	0	**1059**
9	Interest on working capital	12325	14523	0	**12979**
10	Other expenses	16378	20335	0	**17555**
11	Total cost 'A'(1-10)	**153892**	**180629**	**0**	**161843**

12	Interest on fixed capital	2546	1908	0	**2058**
13	Cost 'B1'(11+12)	**156438**	**181537**	**0**	**163902**
14	Interest on land value	765224	497271	0	**685539**
15	Cost 'B'(13+14)	**921662**	**678808**	**0**	**849441**
16	Inputed value of household labour	72189	48202	0	**65055**
17	Cost 'C'(15+16)	**993851**	**727010**	**0**	**914496**

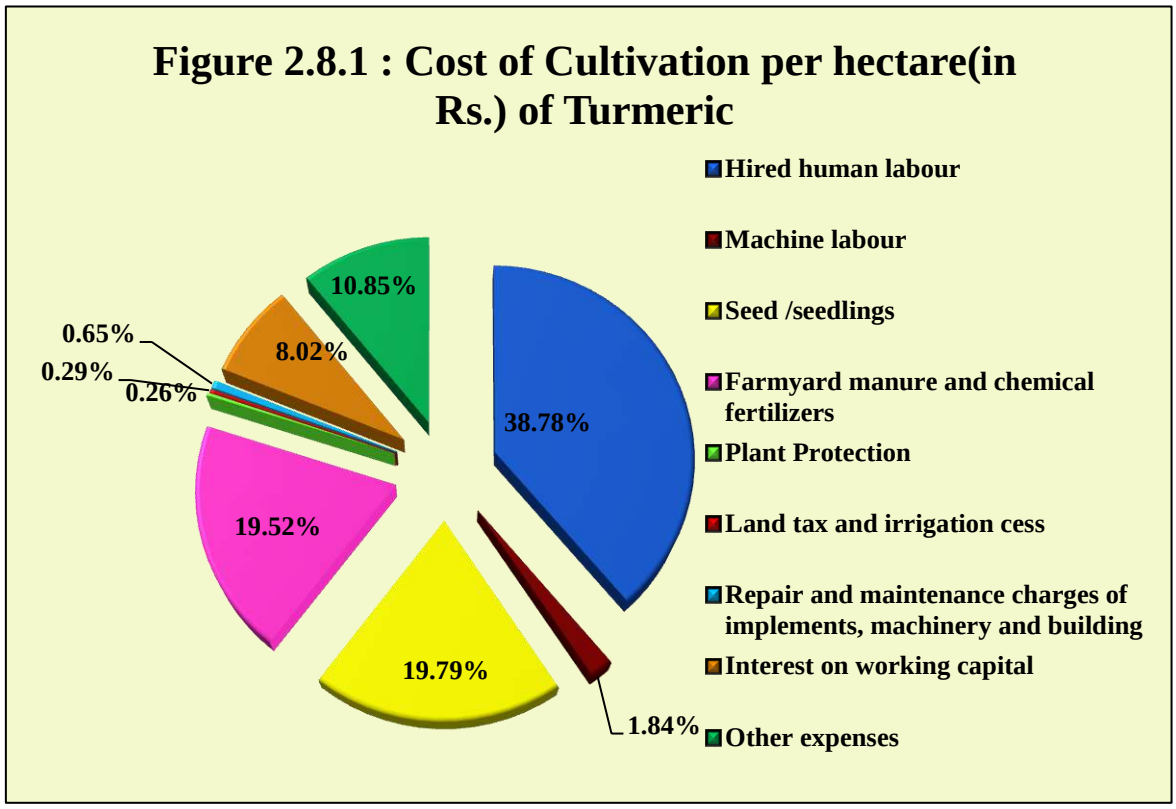


Table 2.8.2 and Fig.2.8.1 shows the total costs and Cost A percentage of Turmeric farming. The total costs increase with holding size, peaking at 180629 for Medium holdings. The hired human labour,seed/seedlings, repair and maintance cost increases from small to large holdings except plant protection, land tax and irrigation cess which is decreaces from small to large holding.The major contribution to costA is hired human labour.

Table 2.8.3: Percentage of hired human labour hours to total labour hours of Turmeric during 2022 - 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	35.74	46.15	0	**38.38**
Female	13.75	15.38	0	**10.13**
Total	**49.49**	**61.53**	**0**	**48.51**

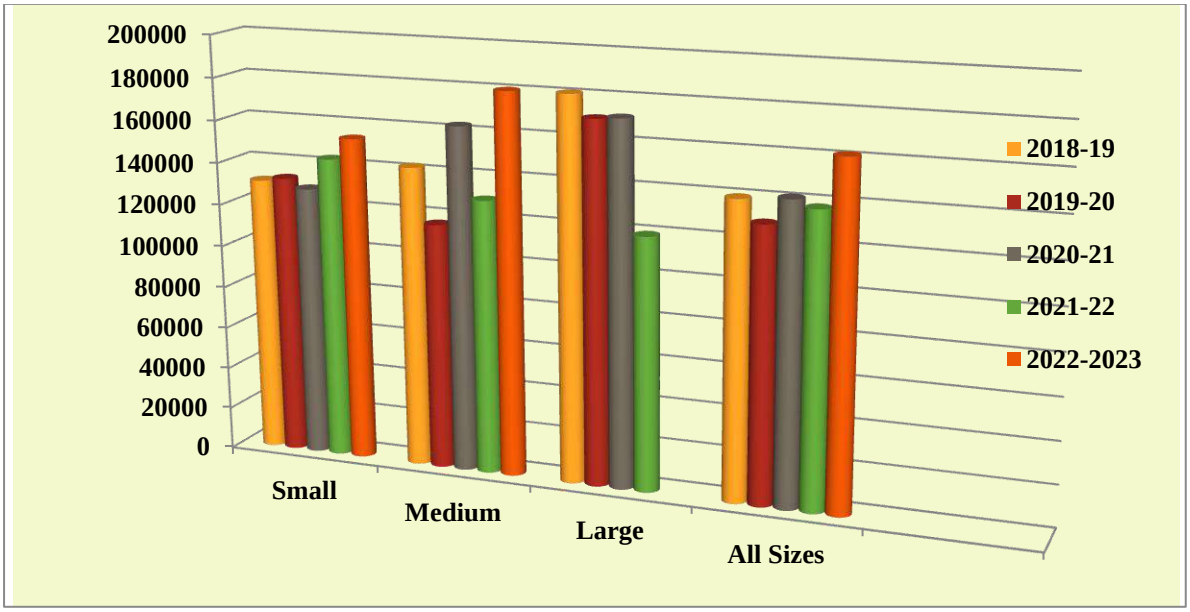
Here the total labour is the sum of hired human labour and household human labour. The data shows male dominance in both the small and medium size categories, Females contribute more in the small size class. Males consistently contributing more across all categories and holding a dominant share of the total hired human labour.

Table 2.8.4: Cost of cultivation of Turmeric per hectare (in Rs.)from 2018 -19 to 2022-23

Holding size class	Cost A(Rs.)				
	2018-19	2019-20	2020-21	2021-22	2022-23
Small	131018	132781	128538	143553	153892
Medium	142655	116816	163284	129966	180629
Large	181133	170771	171779	119805	-
All Sizes	140032	129665	141668	138264	161843

The last five year data shows fluctuation in cost for small and medium holdings, and for large holding the cost decreases over years. Medium Holdings shows the largest increase in 2022-23.

Figure 2.8.2: Cost of cultivation of Turmeric per hectare (in Rs.)from 2018-19 to 2022-23



2.8.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.8.5: Value of output during the year 2022-23

Year	Holding size class	Product/Byproduct (in Rs.)
2022-2023	Small	376781
	Medium	387743
	Large	0
	All Sizes	380041

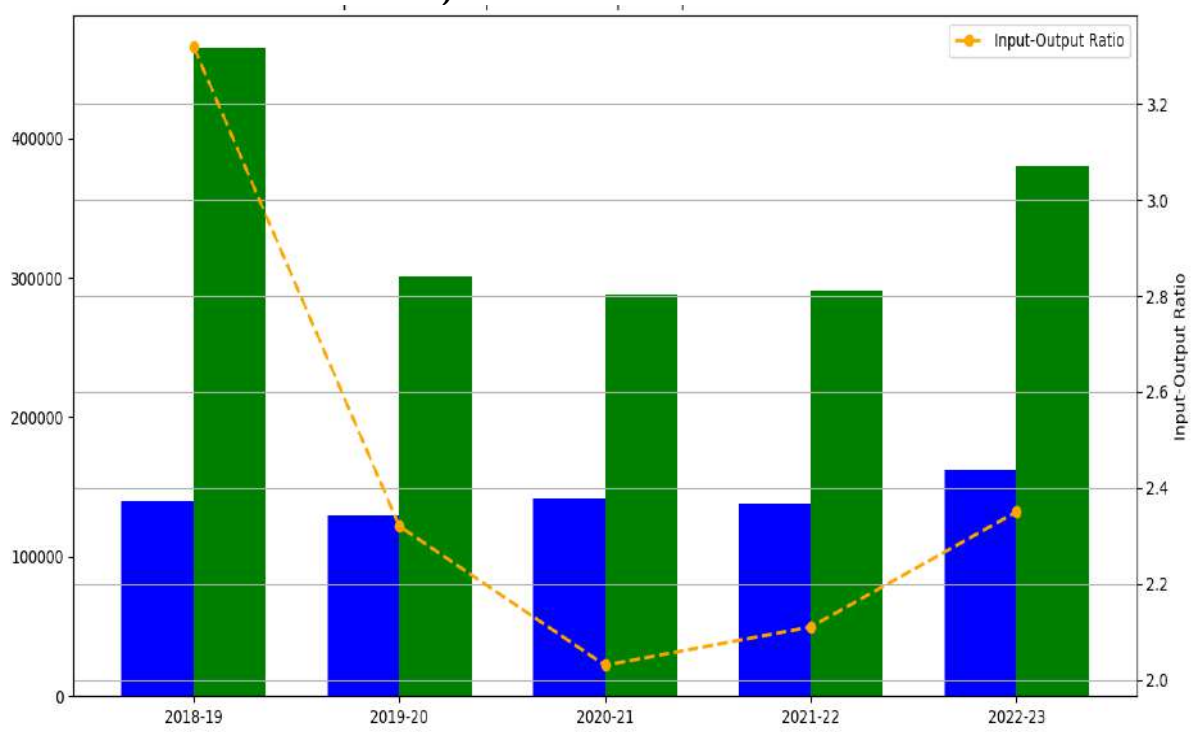
The overall value suggests that the medium holding class significantly contributes to this average, as it is the highest individual class value.

Table 2.8.6: Input cost, output cost and Input-output ratio of Turmeric per hectare (in Rs.) from 2018 -19 to 2022-23

Year	Components		
	Input Cost(Rs.)	Output Cost(Rs.)	Input-output ratio
2018-19	140032	464590	3.32
2019-20	129665	301175	2.32
2020-21	141668	287974	2.03
2021-22	138264	291072	2.11
2022-23	161843	380041	2.35

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2018-19.

Figure 2.8.3: Input cost, output cost and Input-output ratio of Turmeric per hectare (in Rs.) from 2018 -19 to 2022-23



2.8.4 Agricultural cost Ratios

1.Labour Cost Ratio: The labour cost ratio indicates that labour expenses account for approximately 40.63% of the total Cost A. This indicates that major contribution to an increased Cost A is the labour cost.

2. Costing materials used Ratio(Material cost ratio): The material cost ratio make up about 50.14% of total cost A. This indicates that Material cost ratio is also a major contribution to an increased Cost A.

2.8.5 Key Findings

- Comparing the data of 2022-23 with previous years shows fluctuations in the input and output costs of turmeric.
- The factors like hired human labour, machine labour, fertilizer are all growing in varying proportions leading to an increase in the cost of cultivation and cost A was dominated by material cost ratio constitute to 50% of total cost A.
- The Input-output ratio offers insights into the efficiency of agricultural operations in converting inputs into outputs over time. Higher values indicate better efficiency in utilizing inputs to generate output, while lower values suggest less efficient utilization.

2.9 PINEAPPLE

2.9.0 Introduction

Pineapple (Ananas comosus) is an increasingly important crop in Kerala, valued not only for its delicious flavour but also for its significant economic potential. The state's favourable agro-climatic conditions contribute to its success as a pineapple-growing region. With warm temperatures, high humidity, and abundant rainfall throughout the year, Kerala creates an ideal environment for the cultivation of this tropical fruit. Land preparation involves significant initial investments, including ploughing, harrowing, and levelling the soil, as well as the cost of quality planting materials like healthy pineapple suckers.

This chapter includes various components of the Cost of Cultivation and the comparative analysis of input cost, output cost with previous years of Pineapple.

2.9.1 Area under Pineapple cultivation during 2022-23

Details of holding selected and area coverage for this study are given below. Data was collected from 204 holdings across different size classes, covering a total of 592.83 hectares of land.

Table 2.9.1: Number of holdings and area for Pineapple

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	49	2.58	0.44	**0.05**
Medium	41	18.3	3.09	**0.45**
Large	114	571.94	96.48	**5.02**
Total	204	592.82	100	**2.91**

It was observed that the average area per holding is 2.91 hectares overall. In the large size class, which includes holdings of more than 0.80 hectares, the average area per holding is 5.02 hectares. Conversely, the small size class, consisting of holdings less than 0.20 hectares, has an average area per holding of only 0.05 hectares. The medium size class, with holdings between 0.20 and 0.80 hectares, has an average area per holding of 0.45 hectares.

2.9.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Pineapple is furnished in the below table.

Table 2.9.2: Cost of Cultivation per hectare (in Rs.) of Pineapple

Sl. No.	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	75403	83666	74213	**74510**
2	Animal labour	0	0	0	**0**
3	Machine labour	774	3057	9361	**9129**
4	Seed /seedlings	48601	76801	80734	**80472**
5	Farmyard manure and chemical fertilizers	22443	33561	31127	**31165**
6	Plant Protection	764	9375	3753	**3914**
7	Land tax and irrigation cess	597	694	83	**104**

8	Repair and maintenance charges of implements, machinery and building	2706	440	67	**90**
9	Interest on working capital	14798	20646	19919	**19919**
10	Other expenses	12021	33535	53012	**52232**
11	Total cost 'A'(1-10)	**178107**	**261774**	**272268**	**271534**
12	Interest on fixed capital	6292	1929	340	**415**
13	Cost 'B1'(11+12)	**184399**	**263703**	**272609**	**271949**
14	Interest on land value	843037	1033389	541738	**558230**
15	Cost 'B'(13+14)	**1027436**	**1297092**	**814346**	**830180**
16	Inputed value of household labour	40971	40777	7255	**8437**
17	Cost 'C'(15+16))	**1068407**	**1337869**	**821601**	**838616**

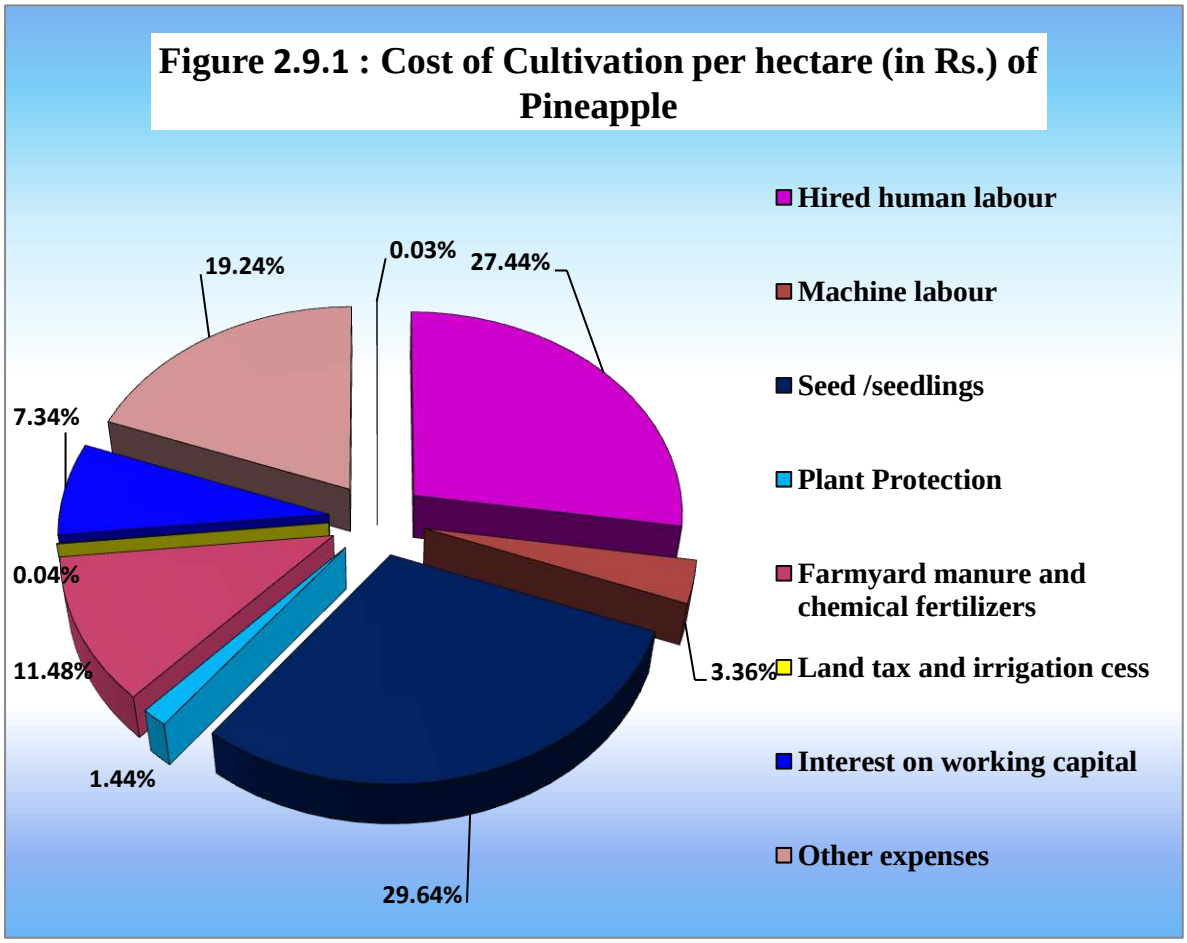


Table 2.9.2 and Fig.2.9.1 illustrates the total costs and Cost A associated with pineapple farming. Cost A per hectare for small holdings is lower than that of medium holdings and

large holdings. Hired human labour is the predominant component of Cost A across all size classes. It is observed that Cost A generally increases from small to large holdings, highlighting the scale of operations. Expenses for farmyard manure and chemical fertilizers, and plant protection costs increase notably in medium holdings. Repair and maintenance charges are more in small holdings compared to large ones.

Table 2.9.3: Percentage of hired human labour hours to total labour hours of Pineapple during 2022 - 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	62.87	62.92	74.44	**75.46**
Female	8.71	12.34	16.70	**15.04**
Total	71.58	75.26	91.14	**90.5**

An analysis of labour contributions during the period 2022-2023 reveals distinct trends based on holding size and gender. In pineapple cultivation, hired labour plays a crucial role across different holding sizes. In small holdings, male labour dominates, with female labour contributing only a small portion. As the holding size increases to medium holdings, the reliance on hired labour grows, with both male and female contributions rising slightly. Female labour also sees a growth, highlighting an evolving dependency on hired labour in larger operations. Overall, the data indicates a marked trend of growing female participation in pineapple cultivation, particularly as holding size increases, alongside a pronounced reliance on hired labour.

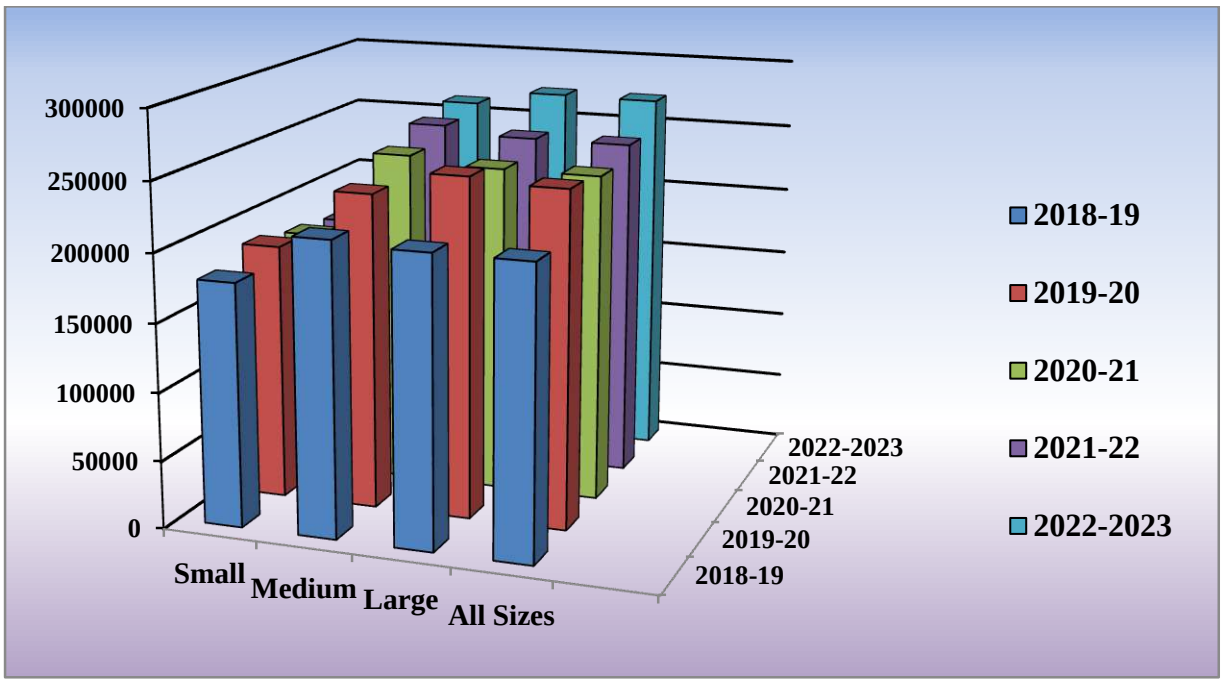
Table 2.9.4:Cost of cultivation of Pineapple per hectare (in Rs.)from 2018 -19 to 2022-23

Holding size class	Cost A(Rs.)				
	2018- 2019	2019- 2020	2020 - 2021	2021 - 2022	2022 - 2023
Small	178221	188043	180893	176333	178107
Medium	214237	231501	245740	255961	261774
Large	211210	248962	240599	250290	272268
All Sizes	211075	245327	240287	250088	271534

Table **2.9.4** outlines the cost of pineapple cultivation per hectare from 2018-19 to 2022-23. Throughout this period, medium holdings generally faced the highest costs, particularly in the earlier years. However, large holdings overtook them in the most recent years, indicating a

shift in expense patterns.Compared to 2021-22, percentage increase in Cost A in 2022-23 is 8.6%.

Figure 2.9.2:Cost of cultivation of Pineapple per hectare(in Rs.)from 2018 -19 to 2022-23



2.9.3 Value of output

Details of product and byproduct for the year 2022-23 is given below.

Table 2.9.5: Value of output during the year 2022-23

Year	Holding size class	Product/Byproduct (in Rs.)		
		Product	Byproduct	Total
2022-2023	Small	300332	20767	321099
	Medium	493731	8140	501871
	Large	435917	11285	447202
	All Sizes	437111	11229	448340

Table **2.9.5** presents the value of output during the year 2022-23 across different holding size classes for pineapple. The medium size class reported the highest total production, significantly surpassing both small and large size classes. The data reveals differences in output among the various holding sizes, emphasizing the advantages of medium farms. These

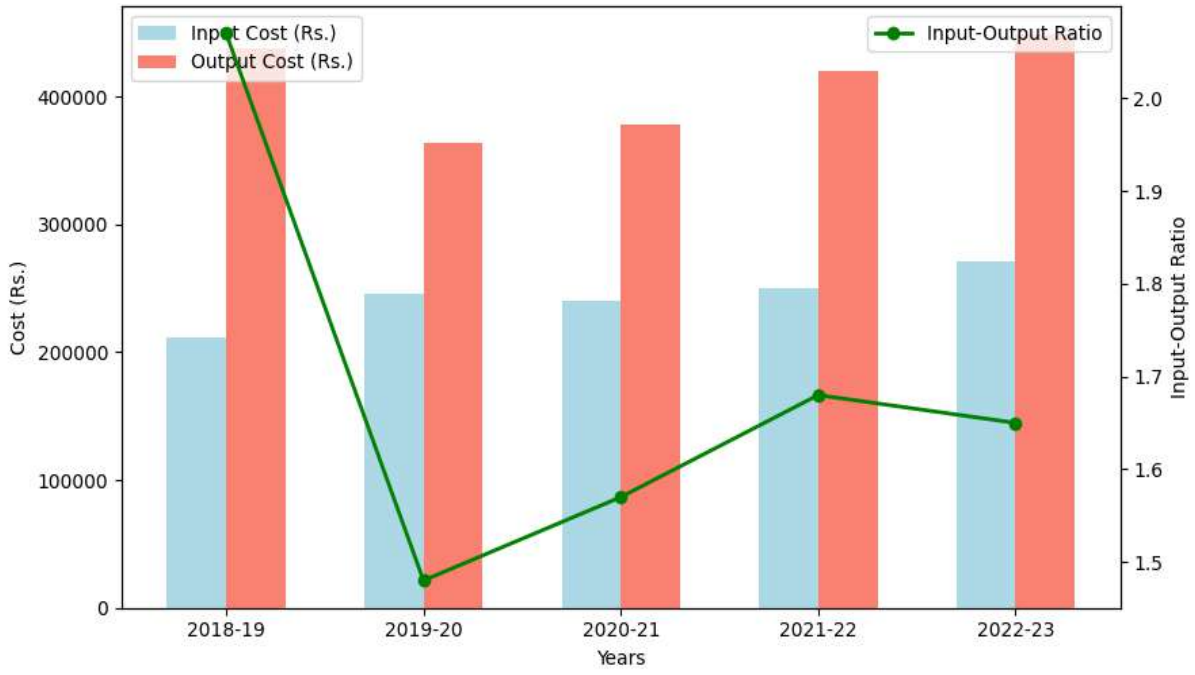
insights can inform production strategies to enhance yields across all sizes of pineapple holdings.

Table 2.9.6: Input cost, output cost and Input-output ratio of Pineapple per hectare (in Rs.) from 2018 -19 to 2022-23

Year	Components		
	Input Cost(Rs.)	Output Cost(Rs.)	Input-output ratio
2018-19	211075	437226	2.07
2019-20	245327	364160	1.48
2020-21	240287	378147	1.57
2021-22	250088	420453	1.68
2022-23	271534	448340	1.65

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2018-19.

Figure 2.9.3: Input cost, output cost and Input-output ratio of Pineapple per hectare (in Rs.) from 2018 -19 to 2022-23



2.9.4 Agricultural cost Ratios

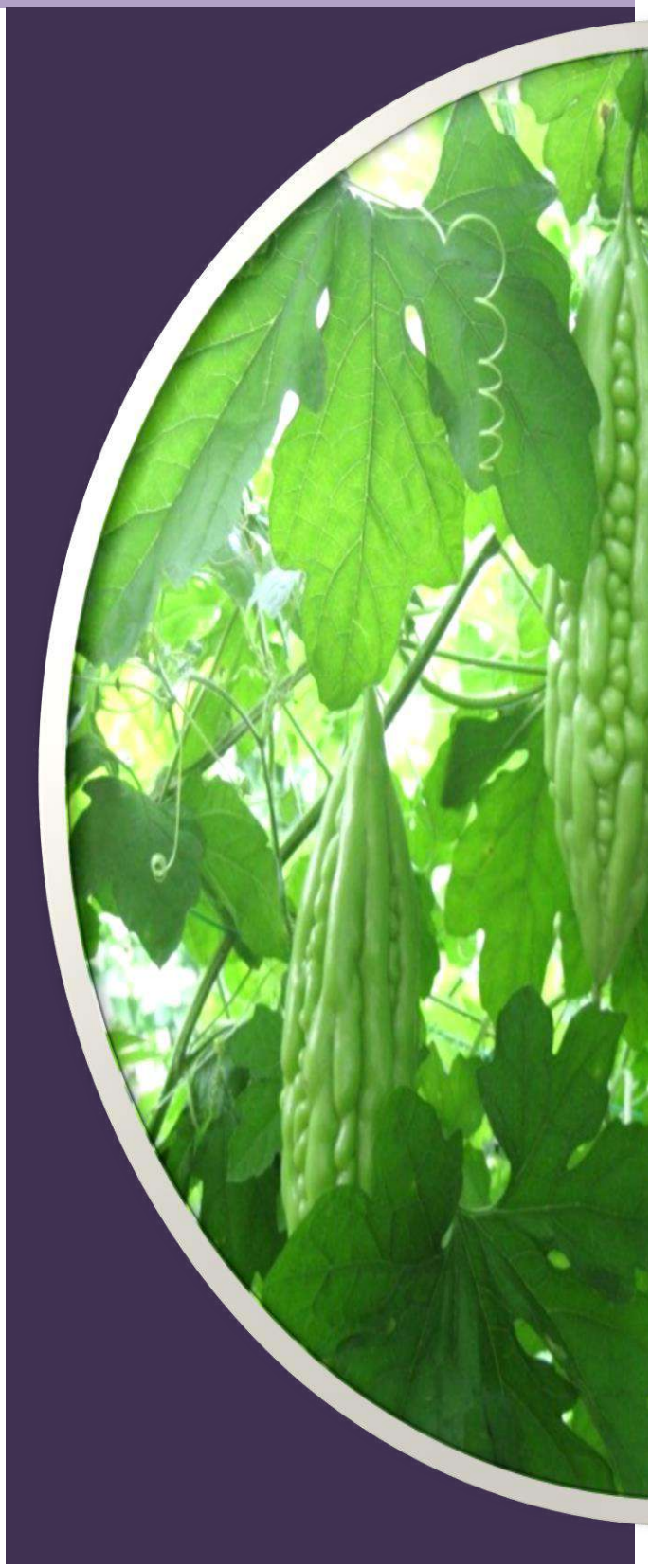
1.Labour Cost Ratio: The labour cost ratio indicates that labour expenses account for approximately 30.8% of the total Cost A.

2. Costing materials used Ratio(Material cost ratio): The material cost ratio accounts for approximately 61.79% of the total Cost A. This indicates that material costs also play a significant role in contributing to the increase in Cost A.

2.9.5 Key Findings

- When analyzing pineapple production data over recent years, a notable trend emerges.Input costs have generally risen, primarily influenced by increasing expenses for labour, fertilizers, and other essential inputs and the change depends upon the cultivators selected for this survey under each year.
- The labour cost ratio constitutes a significant portion of total Cost A, indicating a heavy reliance on hired labour. Conversely, material costs account for approximately 61.79% of total cost A
- A fluctuating input-output ratio suggests that productivity may not be keeping pace with the resources invested, particularly as the ratio has declined from a high of 2.07 in 2018-19 to 1.65 in 2022-23. This emphasizes the need for strategies to improve efficiency and optimize resource use in pineapple farming, ensuring that increased input costs translate into better outputs.

2.10 BITTER GOURD



2.10.0 Introduction

Bitter gourd, also known as bitter melon, is a unique vegetable recognized for its distinctive, warty appearance and its notably bitter taste. It is a member of the Cucurbitaceae family, which also includes cucumbers, squash, and pumpkins. Scientific Name: Momordica charantia Common Names: Bitter gourd, bitter melon, karela (India). Bitter gourd is cultivated in tropical and subtropical regions around the world. The plant is a climbing vine with large, lobed leaves and small, yellow flowers that eventually develop into the bitter, elongated fruit. The fruit is typically harvested while still green and unripe, though it matures to an orange-red color if left on the vine.

This chapter aims to provide a detailed overview of the cost components involved in bitter gourd cultivation in Kerala. It examines key aspects such as land preparation, planting materials, labour costs, inputs like fertilizers and pesticides, irrigation, and various operational expenses.

2.10.1 BITTER GOURD-AUTUMN (VIRIPPU)

2.10.1.1 Area under Bitter Gourd-Autumn Cultivation during 2022-23

For this study details of holding selected and area coverage are given below.The data was collected from 244 holdings across different size classes, by covering a total of 30.73 hectares of land.

Table 2.10.1.1: Number of holdings and area under Bitter Gourd -Autumn

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	184	11.29	36.74	**0.06**
Medium	57	16.81	54.70	**0.29**
Large	3	2.63	8.56	**0.88**
Total	**244**	**30.73**	**100**	**0.13**

2.10.1.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of **Bitter Gourd -Autumn** is furnished in the below table.

Table 2.10.1.2: Cost of Cultivation per hectare (in Rs.) of Bitter Gourd -Autumn

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	66233	66422	68295	**66513**
2	Animal labour	0	0	0	**0**
3	Machine labour	535	2887	0	**1776**
4	Seed /seedlings	7766	7957	8303	**7917**
5	Farmyard manure and chemical fertilizers	31496	26175	25265	**28051**
6	Plant Protection	2834	3801	3268	**3401**
7	Land tax and irrigation cess	356	219	190	**267**

8	Repair and maintenance charges of implements, machinery and building	2444	297	456	**1099**
9	Interest on working capital	10886	10724	10513	**10766**
10	Other expenses	38421	42533	62510	**42733**
11	**Total cost 'A'(1-10)**	**160971**	**161017**	**178800**	**62523**
12	Interest on fixed capital	27835	9101	5436	**15668**
13	**Cost 'B1'(11+12)**	**188805**	**170118**	**184236**	**178191**
14	Interest on land value	414430	463276	350495	**435675**
15	**Cost 'B'(13+14)**	**603235**	**633394**	**534731**	**613866**
16	Inputed value of household labour	97749	66846	42165	**76084**
17	**Cost 'C'(15+16)**	**700984**	**700240**	**576896**	**689950**

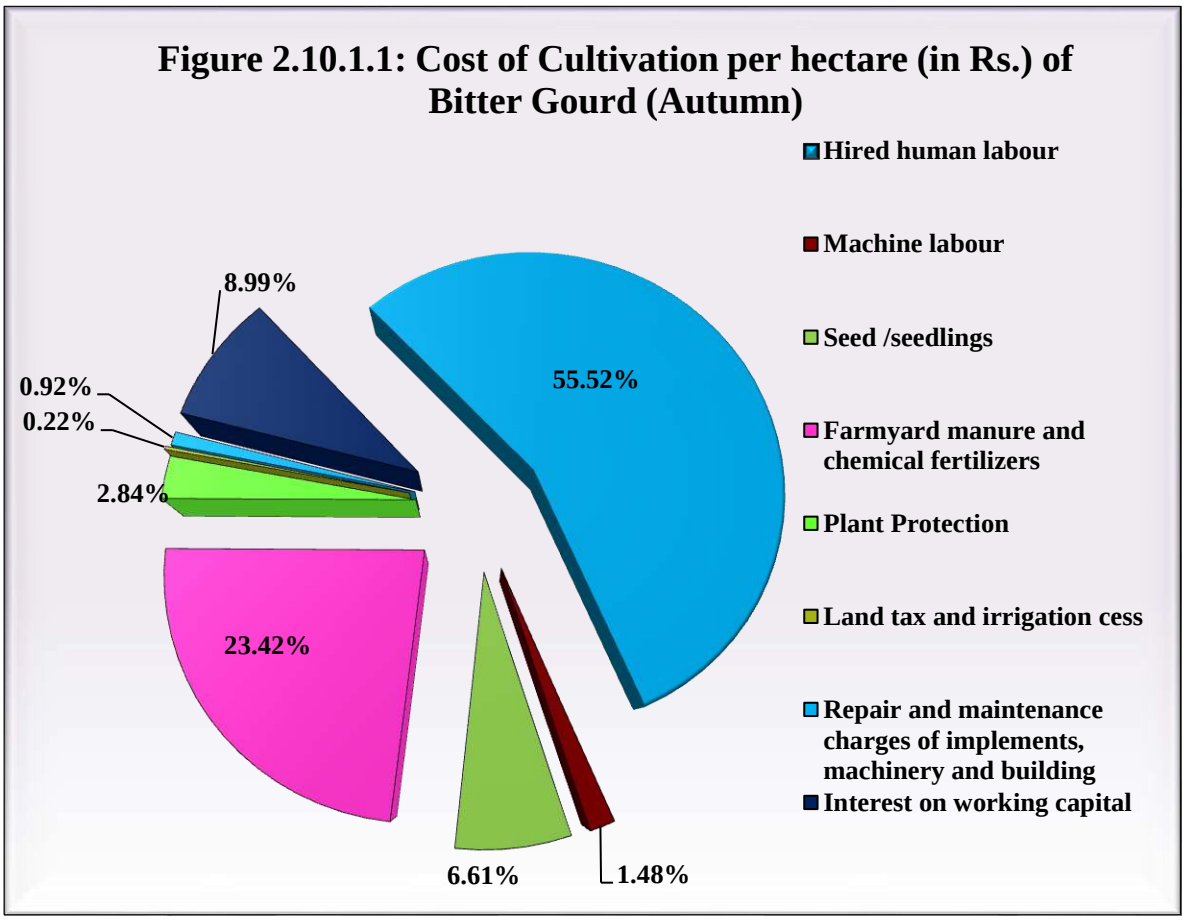


Table **2.10.1.2** and figure **2.10.1.1** shows the total costs and Cost A percentage of Bitter Gourd farming. The total costs increase with holding size, peaking for small holdings. The average Cost Across all sizes indicating that larger operations have higher total expenditure. There is a clear reliance on hired human labour, especially in Medium holdings, suggesting that larger operations might be exploring more efficient labour strategies. It is noted that the per hectare cost towards plant protection measures is fluctuating. The percentage share of land tax and irrigation cess is normal, also the expenditure on repair and maintenance of implements and machinery is higher in small holdings.

Table 2.10.1.3: Percentage of hired human labour hours to total labour hours of Bitter Gourd Autumn during 2022 - 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	37.94	34.20	59.75	**37.30**
Female	3.38	20.77	10.06	**10.45**
Total	41.32	54.97	69.81	**47.75**

Here the total labour is the sum of hired human labour and household human labour. Males dominate every size class, particularly the large size class. Females are more concentrated in the medium size class, although they are fewer in number overall compared to males. The size class with the highest total is large, followed by medium and small. The distribution across these classes is highly influenced by the male data.

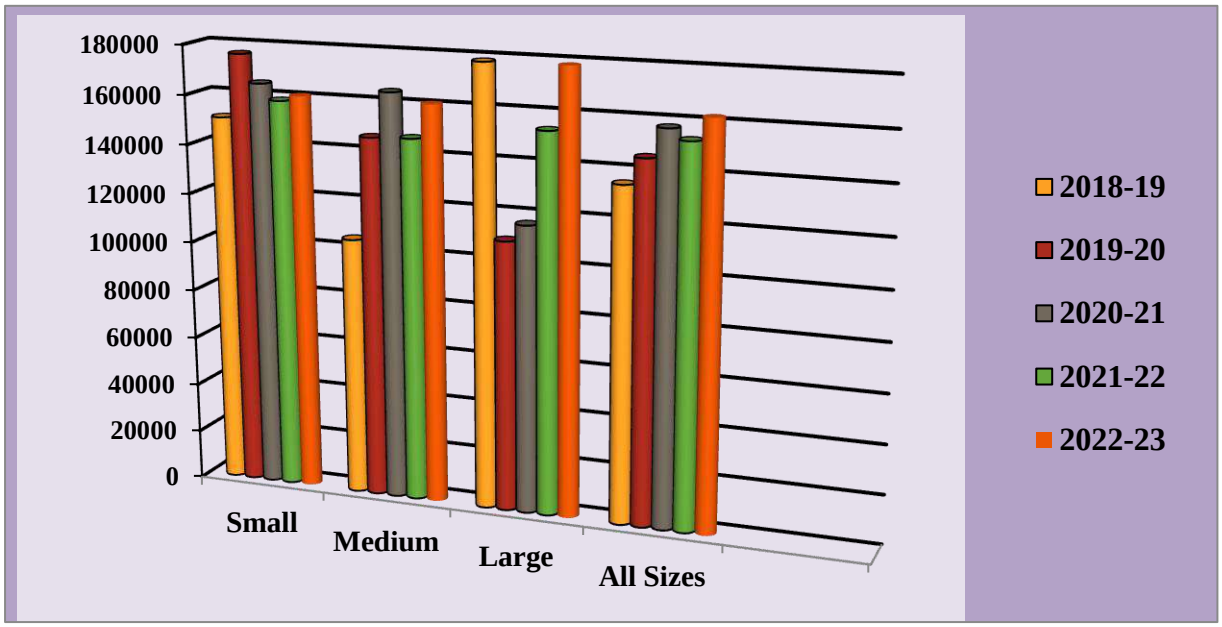
Table 2.10.1.4:Cost of cultivation of Autumn Bitter Gourd per hectare(in Rs.)from 2018-19 to 2022-23

Holding size class	Cost A(Rs.)				
	2018-19	2019-20	2020-21	2021-22	2022-2023
Small	150625	176395	165063	158659	160971
Medium	104947	146454	164729	147116	161017
Large	178492	109593	116527	153697	178800
All Sizes	135154	145821	157599	153310	162523

The above table of bitter gourd (autumn) shows that the overall cost increased from 2018-19 to 2022-23. The total increase over the five years is Rs. 27,369, which represents an

approximate rise of 20.2%. The cost trend indicates some fluctuations, with a peak in 2020-21 followed by a decrease in 2021-22. However, it regained in 2022-23.

Figure 2.10.1.2: Cost of cultivation of Autumn Bitter Gourd per hectare (in Rs.) from 2018 -19 to 2022-23



Cost over the five years shows a general upward trend with some fluctuations, suggesting that while costs are increasing, there are periods of consolidation and minor decreases. This trend is important for planning in agricultural operations.

2.10.1.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.10.1.5: Value of output during the year 2022-23

Year	Holding size class	Product/Byproduct(inRs.)
2022-2023	Small	426723
	Medium	434707
	Large	432058
	All Sizes	431547

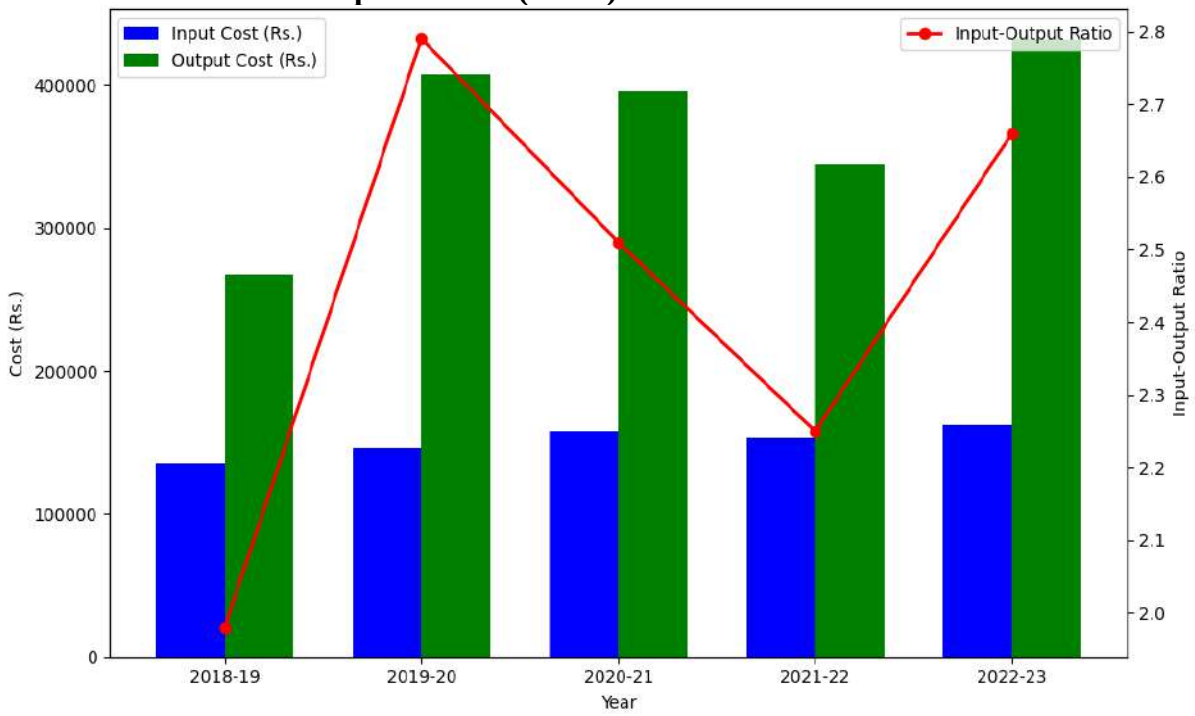
Where in large size class more production occurred as compared to other size classes. As the by product has a slight variation. The Large holding size class consistently demonstrates higher production levels compared to the Small and Medium classes for Bitter Gourd.

Table 2.10.1.6: Input cost, output Cost And Input-output ratio of Autumn Bitter Gourd per hectare (in Rs.) from 2018 -19 to 2022-23

Year	Components		
	Input Cost(Rs.)	Output Cost(Rs.)	Input-output ratio
2018-19	135154	267211	1.98
2019-20	145821	407637	2.80
2020-21	157599	395636	2.51
2021-22	153310	344280	2.25
2022-23	162523	431547	2.66

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2022-23.

Figure 2.10.1.4: Input cost, output Cost And Input-output ratio of Bitter Gourd Autumn per hectare (in Rs.) from 2018 -19 to 2022-23



2.10.1.4 Agricultural cost Ratios

1.Labour Cost Ratio

Labour Cost Ratio make up about 42.01% of total Cost A. This indicates that major contribution to an increased Cost A is the labour cost.

2. Costing materials used Ratio(Material cost ratio)

The material cost ratio accounts for approximately 50.52% of the total Cost A. This indicates that material costs also play a significant role in contributing to the increase in Cost A.

2.10.1.5 Key Findings

- The Material Cost Ratio of 50.52% shows that material expenses make up the largest portion of the total cost, showing that material inputs play an important role in the overall expenditure.
- The labour costs shows that nearly 42.01% of the total cost is spent on various types of labour.
- The comparative analysis of the data reveals that while input costs are rising, the agricultural sector is improving its efficiency in converting these inputs into higher outputs, especially in 2022-23.

2.10.2 BITTER GOURD -WINTER (MUNDAKAN)

2.10.2.1 Area under Bitter Gourd –Winter Cultivation

For this study details of holding selected and area coverage are given below.The data was collected from 268 holdings across different size classes, by covering a total of 27.61 hectares of land.

Table 2.10.2.1: Number of holdings and area under Bitter Gourd - Winter

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	225	13.72	49.69	**0.06**
Medium	40	10.65	38.57	**0.27**
Large	3	3.24	11.73	**1.08**
Total	268	27.61	100.00	**0.10**

It is observed that the average area per holding is 0.10 hectares in all classes while area per holding in large size class, ie more than 0.80 hectares is 1.08 hectares. But in small size class ie, less than 0.20 hectare which comprises 225 holdings, the average area per holding is only 0.06 hectare.

2.10.2.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Bitter Gourd Winter is furnished in the below table.

Table 2.10.2.2: Cost of Cultivation per hectare (in Rs.) of Bitter Gourd Winter

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	65277	55861	56416	**60606**
2	Animal labour	0	0	0	**0**
3	Machine labour	1756	1366	7688	**2302**
4	Seed /seedlings	10644	9777	13709	**10669**
5	Farmyard manure and chemical fertilizers	34479	20953	13052	**26749**
6	Plant Protection	3542	6446	4157	**4734**
7	Land tax and irrigation cess	294	220	192	**253**
8	Repair and maintenance charges of implements, machinery and building	2888	61	772	**1549**
9	Interest on working capital	11570	9440	9502	**10506**
10	Other expenses	41474	49790	24113	**42645**
11	**Total cost 'A'(1-10)**	**171924**	**153917**	**129600**	**160013**
12	Interest on fixed capital	15163	8326	31230	**14410**
13	**Cost 'B1'(11+12)**	**187087**	**162243**	**160830**	**174423**
14	Interest on land value	404619	455208	263923	**407624**
15	**Cost 'B'(13+14)**	**591706**	**617451**	**424753**	**582047**
16	Inputed value of household labour	120075	83335	3520	**92231**
17	**Cost 'C'(15+16)**	**711782**	**700786**	**428273**	**674278**

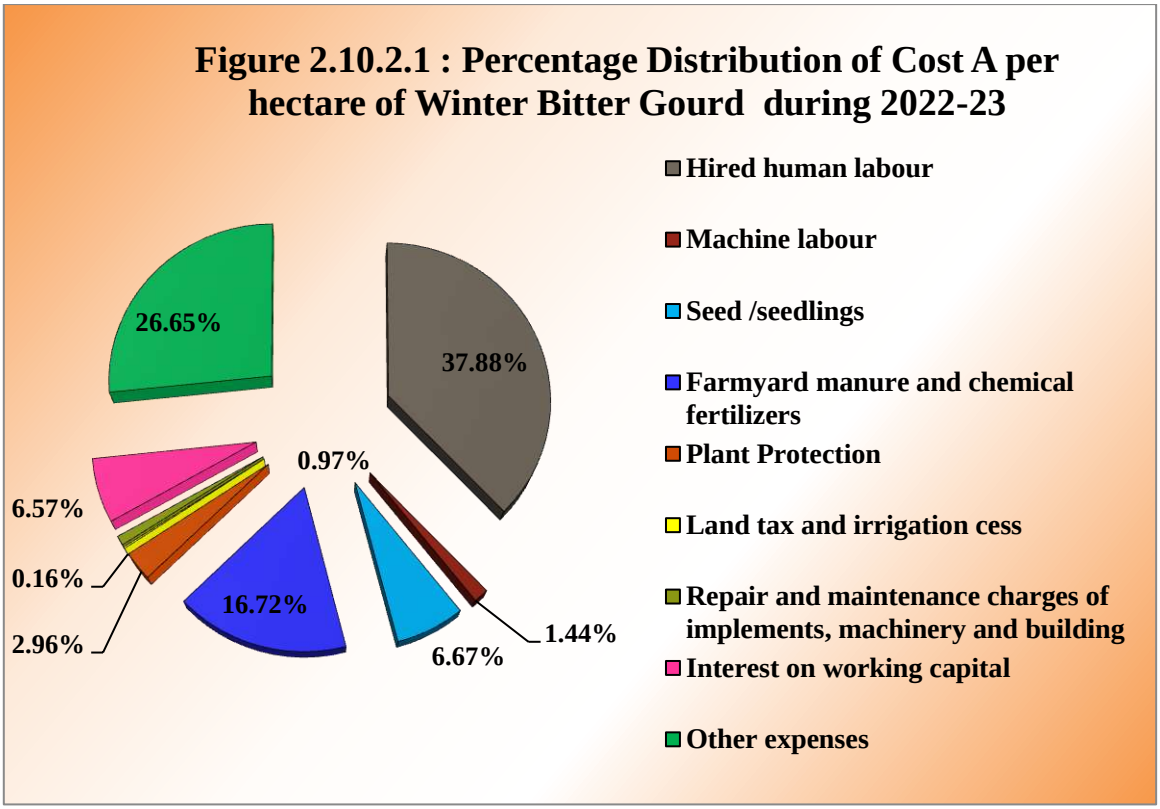


Table 2.10.2.2 and figure 2.10.2.1 shows the total costs and Cost A percentage of Bitter Gourd farming. The total costs has filuctuation with holding size, peaking for small holdings. There is a clear reliance on hired human labour, especially in Medium holdings, suggesting that larger operations might have more efficient labour strategies. It is also noted that the per hectare cost towards plant protection measures is fluctuating. The percentage share of land tax and irrigation cess is normal, also the expenditure on repair and maintenance of implements and machinery is higher in small holdings and shows lowest value in medium holdings.

Table 2.10.2.3: Percentage of hired human labour hours to total labour hours of Bitter Gourd Winter during 2022 - 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	31.46	27.60	33.69	**30.23**
Female	6.36	17.68	47.52	**13.13**
Total	**37.82**	**45.28**	**81.21**	**43.36**

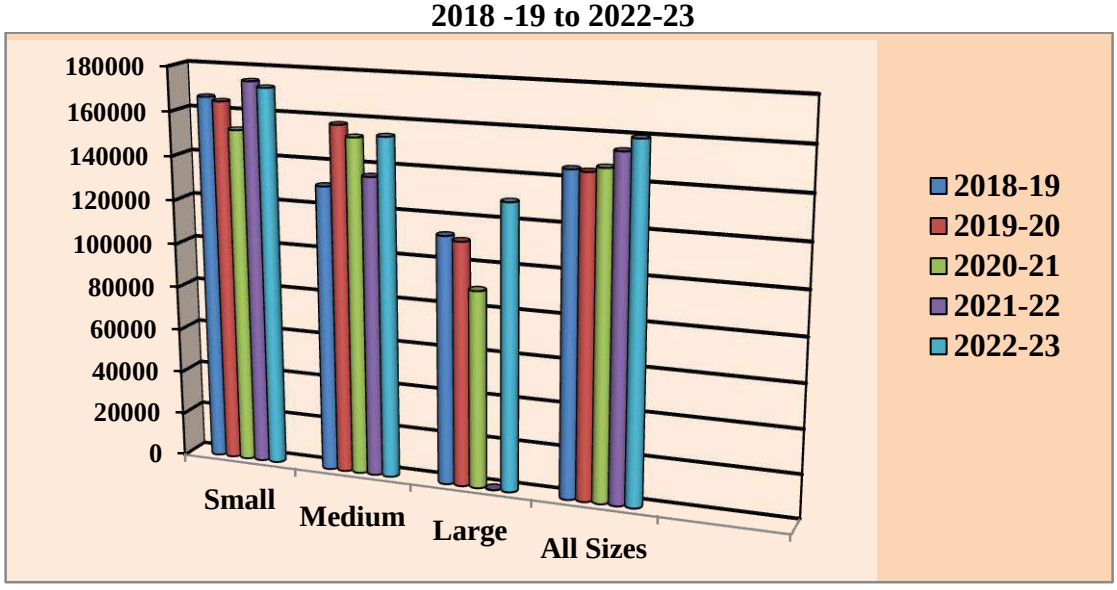
Here the total labour is the sum of hired human labour and household human labour. Males are more prevalent across the small and medium size classes, while females have a higher representation in the large size class, making up a larger proportion than males in that category. The size class with the highest total is large, followed by medium and small. The distribution across these classes is highly influenced by the male data.

Table 2.10.2.4: Cost of cultivation of Bitter Gourd Winter per hectare (in Rs.) from 2018 -19 to 2022-23

Holding size class	Cost A(in Rs.)				
	2018-19	2019-20	2020-21	2021-22	2022-2023
Small	166455	164815	152506	174423	171924
Medium	130308	157757	152720	135985	153917
Large	112758	110817	89739	0	129600
All Sizes	145423	144796	146981	154286	160013

The data from the last five years shows an increase in the cost of Winter Bitter Gourd from 2018-2019 to 2021-2022. However, there is a slight decrease in Cost A for the year 2019-2020, which is connected to a reduction in Cost A within the large size class.

Figure 2.10.2.2:Cost of cultivation of Winter Bitter Gourd per hectare(in Rs.)from 2018 -19 to 2022-23



2.10.2.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.10.2.5: Value of output during the year 2022-23

Year	Holding size class	Product/Byproduct (in Rs.)
2022-2023	Small	450213
	Medium	433474
	Large	650542
	All Sizes	467260

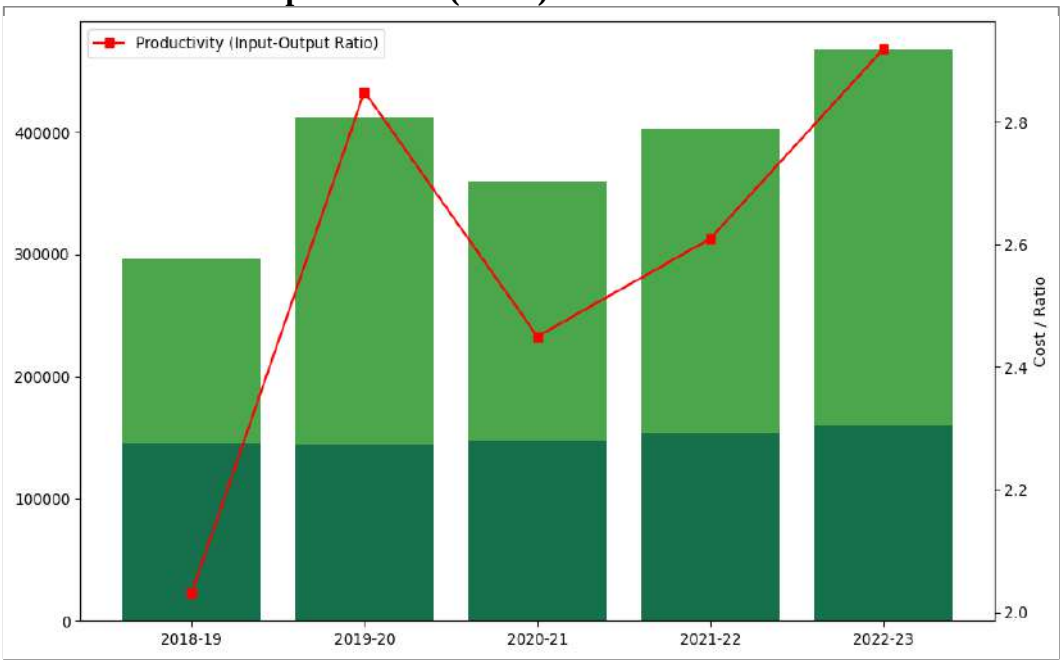
In 2022-2023, the large holding size class shows the strongest performance in terms of product/byproduct revenue, significantly exceeding both the Small and Medium categories.

Table. 2.10.2.6 Input cost,Out put Cost And input-output cost ratio of Bitter Gourd Winter per hectare (in Rs.) from 2018-19 to 2022-23

Year	Components		
	Input Cost	Output Cost	Input-output ratio
2018-19	145423	295886	2.03
2019-20	144796	412135	2.85
2020-21	146981	359384	2.45
2021-22	154286	402864	2.61
2022-23	160013	467260	2.92

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2022-23.

Figure 2.10.2.3: Input cost, output Cost And Input-output ratio of Bitter Gourd Winter per hectare (in Rs.) from 2018 -19 to 2022-23



2.10.2.4 Agricultural cost Ratios

1.Labour Cost Ratio

Labour Cost Ratio make up about 39.31% of total Cost A.

2. Costing materials used Ratio(Material cost ratio)

Material cost Ratio make up about 52.99% of total Cost A which is larger than the labour cost ratio.

2.10.2.5 Key Findings

- Labour Cost Ratio **39% i**ndicates that a significant portion of the total costs is tied to labour (human, animal, and machine).This Suggests that labour, which could impact profitability if not managed efficiently.
- Material Cost Ratio 53**%** represents the costs associated with inputs like seeds, fertilizers, and other materials.The higher value indicates its major contribution to the total cost.
- The input-output ratio improved over the years, reaching a peak of 2.92 in 2022-23. This reflects increased productivity, with more output generated per unit of input. The lowest productivity occurred in 2018-19

2.10.3 BITTER GOURD -SUMMER(PUNCHA)

2.10.3.1 Area under Bitter Gourd –Summer cultivation

For this study details of holding selected and area coverage are given below.The data was collected from 200 holdings across different size classes, by covering a total of 13.84 hectares of land.

Table 2.10.3.1: Number of holdings and area under Bitter Gourd- Summer

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	182	8.82	63.73	**0.05**
Medium	18	5.02	36.27	**0.28**
Large	0	0	0	**0**
Total	**200**	**13.84**	**100.00**	**0.07**

It is observed that the average area per holding is 0.07 hectares in all classes while area per holding in medium size class, ie between 0.20 hectares to 0.80 hectares is 0.28 hectares. But in small size class ie, less than 0.20 hectare which comprises 182 holdings, the average area per holding is only 0.05 hectare

2.10.3.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of **Bitter Gourd Summer** is furnished in the below table.

Table 2.10.3.2: Cost of Cultivation per hectare (in Rs.) of Bitter Gourd(Summer)

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	**All Sizes**
1	Hired human labour	59186	64977	-	**61287**
2	Animal labour	-	-	-	**-**
3	Machine labour	1735	598	-	**1322**
4	Seed /seedlings	11476	8921	-	**10549**
5	Farmyard manure and chemical fertilizers	33186	17934	-	**27653**
6	Plant Protection	2961	2307	-	**2724**
7	Land tax and irrigation cess	545	970	-	**699**
8	Repair and maintenance charges of implements, machinery and building	1703	517	-	**1273**
9	Interest on working capital	10854	9474	-	**10354**
10	Other expenses	39773	36185	-	**38471**
11	**Total cost 'A'(1-10)**	**161419**	**141883**	-	**154332**
12	Interest on fixed capital	20251	5503	-	**14899**
13	**Cost 'B1'(11+12)**	**181670**	**147386**	-	**169231**
14	Interest on land value	319822	444658	-	**365111**
15	**Cost 'B'(13+14)**	**501492**	**592045**	-	**534341**
16	Inputed value of household labour	135636	74444	-	**113436**
17	**Cost 'C'(15+16)**	**637128**	**666488**	-	**647778**

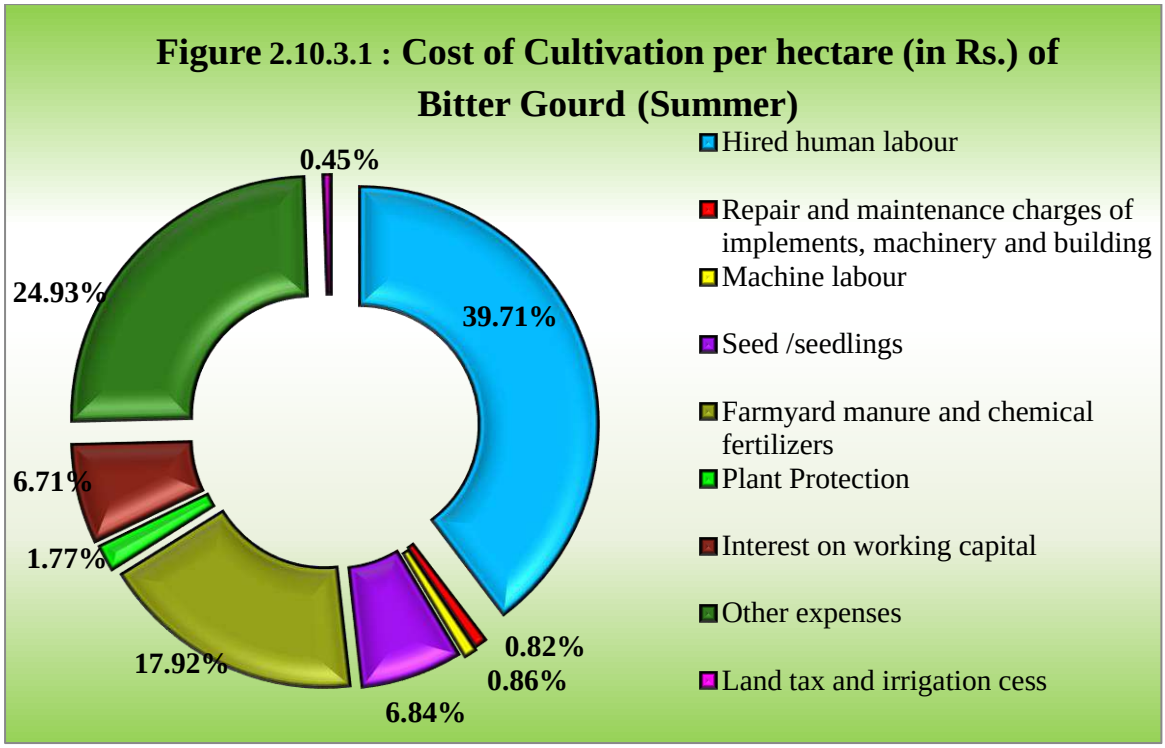


Table **2.10.3.2** and figure **2.10.3.1** shows the total costs and Cost A percentage of Bitter Gourd farming. The total costs increases with holding size, peaking for medium holdings. There is a clear reliance on hired human labour, especially in Medium holdings, suggesting that larger operations might have more efficient labour strategies. It is also noted that the per hectare cost towards plant protection measures is decreasing. The percentage share of land tax and irrigation cess is on decreasing trend and also the expenditure on repair and maintenance of implements and machinery is higher in small holdings and shows lowest value in medium holdings.

Table 2.10.3.3: Percentage of hired human labour hours to total labour hours of Bitter Gourd Summer during 2022 - 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	29.07	41.89	-	**33.08**
Female	1.79	8.25	-	**2.52**
Total	**30.86**	**50.14**	**-**	**35.60**

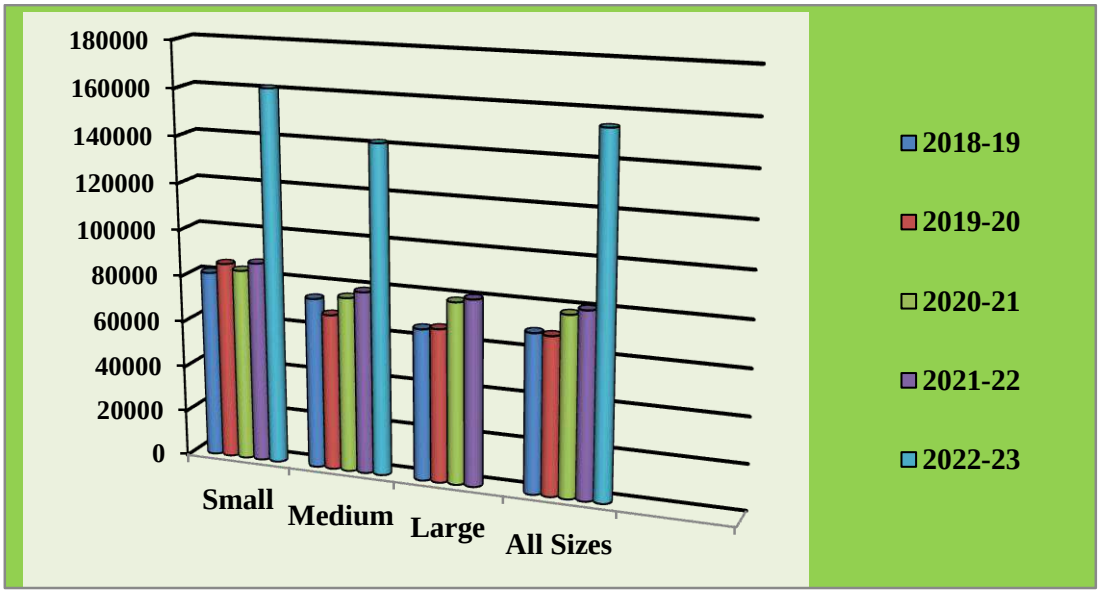
Here the total labour is the sum of hired human labour and household human labour. Males are significantly more represented across all size categories, especially in the smaller and medium sizes. Females have more representation in the medium size class, but they still make up a very small fraction of the overall total.

Table 2.10.3.4: Cost of cultivation of Summer Bitter Gourd per hectare (in Rs.) from 2018 -19 to 2022-23

Holding size class	Cost A (Rs.)				
	2018-19	2019-20	2020-21	2021-22	2022-2023
Small	175795	159742	139177	163258	161419
Medium	139160	150292	155187	150440	141883
Large	178334	0	93899	240458	0
All Sizes	164070	156830	138805	163858	154332

The last five year data shows fluctuation in cost of Summer Bitter Gourd from 2018-2019 to 2022-2023. And Cost A is higher for the year 2018-19, which is due to the increase of Cost A in small size class.

Figure 2.10.3.2: Cost of cultivation of Summer Bitter Gourd per hectare (in Rs.) from 2018 -19 to 2022-23



2.10.3.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.10.3.5 : Value of output during the year 2022-23

Year	Holding size class	Product/Byproduct (in Rs.)
2022-2023	Small	436149
	Medium	423673
	Large	0
	All Sizes	431623

In 2022-2023, small holdings achieved the highest revenue, followed closely by medium holdings. However, the absence of data for large holdings leaves a gap in the analysis. The

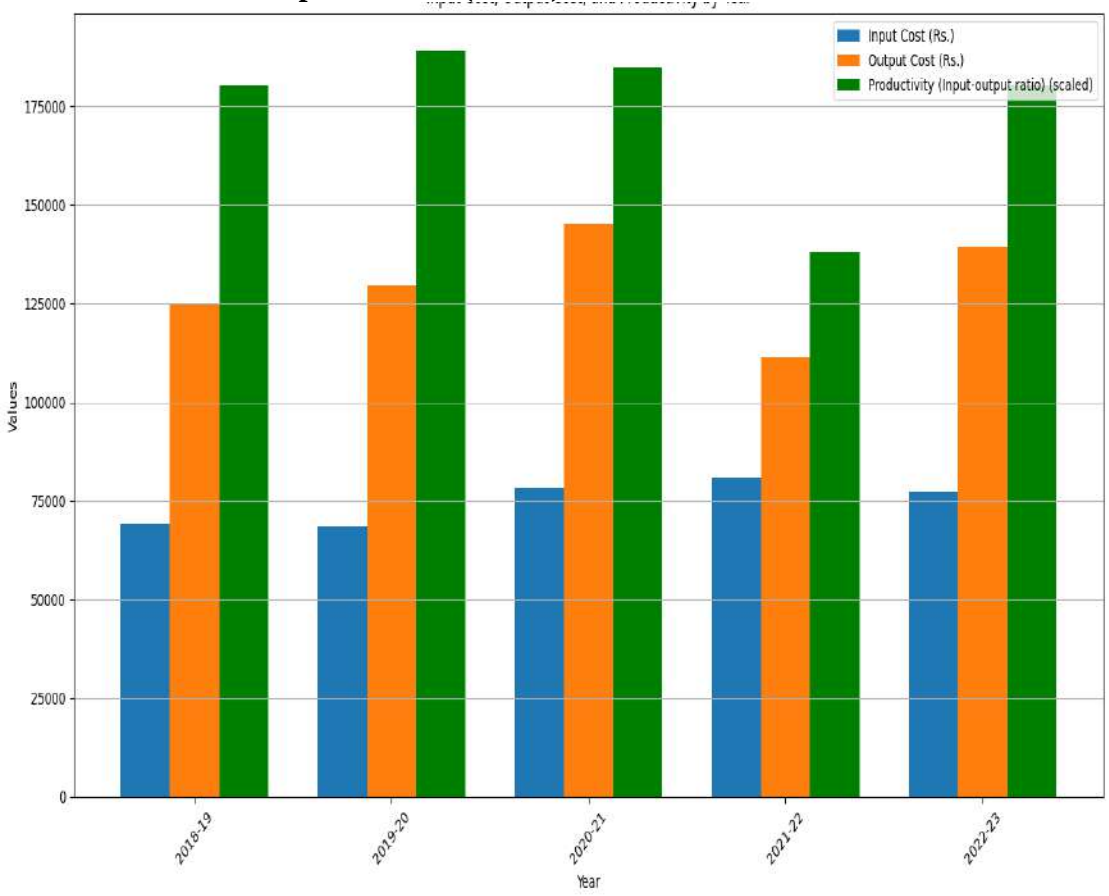
overall revenue indicates a positive trend, but it's crucial to manage rising costs to maintain profitability in the future.

Table 2.10.3.6: Input cost, output Cost And Input-output ratio of Summer Bitter Gourd per hectare (in Rs.) from 2018 -19 to 2022-23

Year	Components		
	Input Cost(Rs.)	Output Cost(Rs.)	Input-output ratio
2018-19	164070	355339	2.17
2019-20	156830	350825	2.24
2020-21	138805	332599	2.40
2021-22	163858	363851	2.22
2022-23	154332	431623	2.80

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2022-23.

Figure 2.10.3.3: Input cost, output Cost And Input-output ratio of Summer Bitter Gourd per hectare (in Rs.) from 2018 -19 to 2022-23



2.10.3.4 Agricultural cost Ratios

1. Labour Cost Ratio

Labour Cost Ratio make up about 40.56% of total Cost A. This indicates that major contribution to an increased Cost A is the labour cost.

2. Costing materials used Ratio (Material cost ratio)

Material cost ratio make up about 51.45% of total Cost A. This indicates that material costs also play a significant role in contributing to the increase in Cost A.

2.10.3.5 Key Findings

- Labour costs, accounting for 41%, represent a significant fixed expense. Efficient management of these costs can directly enhance profitability.
- Material costs, at 51%, are also a critical area and the use of more cost-effective inputs could help lower these expenses.
- The highest productivity was achieved in 2022-23, indicating the most effective use of inputs that year.
- The decline in productivity in 2018-19 reflects a notable decrease in output relative to input.

2.11

COWPEA

2.11.0 Introduction

Cowpea (Leguminaceae) is known as drought hardy nature, its wide and droopy leaves keeps soils and soil moisture conserved due to shading effect. It is also known as black-eyed pea or southern pea etc. and has multiple uses like food, feed, forage, fodder, green manuring and vegetable. Cowpea seed is a nutritious component in the human diet, and cheap livestock feed as well. Both the green and dried seeds are suitable for canning and boiling as well.

This chapter aims to provide a detailed overview of the cost components involved in cowpea cultivation in Kerala. It examines key aspects such as land preparation, planting materials, labour costs, inputs like fertilizers and pesticides, irrigation, and various operational expenses.

2.11.1 COWPEA -AUTUMN (VIRIPPU)

2.11.1.1Area under Cowpea -Autumn (Virippu) Cultivation

Details of holding selected and area coverage for this study are given below. The data was collected from 252 holdings according to the size class by covering 27.68 hectares of land.

Table 2.11.1.1: Number of holdings and area under Cowpea -Autumn

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	208	13.65	49.31	**0.07**
Medium	42	12.01	43.39	**0.29**
Large	2	2.02	7.30	**1.01**
Total	252	27.68	100	**0.11**

It is observed that the average area per holding is 0.11 hectares in all classes while area per holding in large size class, ie more than 0.80 hectares is 1.01 hectares. But in small size class, ie, less than 0.20 hectare which comprises 208 holdings, the average area per holding is only 0.07 hectare.

2.11.1.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of **Cowpea -Autumn** is furnished in the below table.

Table 2.11.1.2: Cost of Cultivation per hectare (in Rs.) of Cowpea -Autumn

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	55374	57152	76303	**57676**
2	Animal labour	0	0	0	**0**
3	Machine labour	91	1163	15413	**1677**
4	Seed /seedlings	6601	4826	5891	**5779**
5	Farmyard manure and chemical fertilizers	33888	21401	20218	**27470**
6	Plant Protection	3266	3862	304	**3308**

7	Land tax and irrigation cess	242	162	0	**189**
8	Repair and maintenance charges of implements, machinery and building	2373	184	49	**1253**
9	Interest on working capital	9922	8840	11813	**9591**
10	Other expenses	51209	44599	38273	**47395**
11	**Total cost 'A'(1-10)**	**162967**	**142189**	**168264**	**154339**
12	Interest on fixed capital	9202	8323	881	**8213**
13	**Cost 'B1'(11+12)**	**172169**	**150512**	**169146**	**162552**
14	Interest on land value	413718	409721	151460	**392807**
15	**Cost 'B'(13+14)**	**585887**	**560233**	**320606**	**555360**
16	Inputed value of household labour	104518	74158	19834	**85153**
17	**Cost 'C'(15+16)**	**690405**	**634392**	**340440**	**640512**

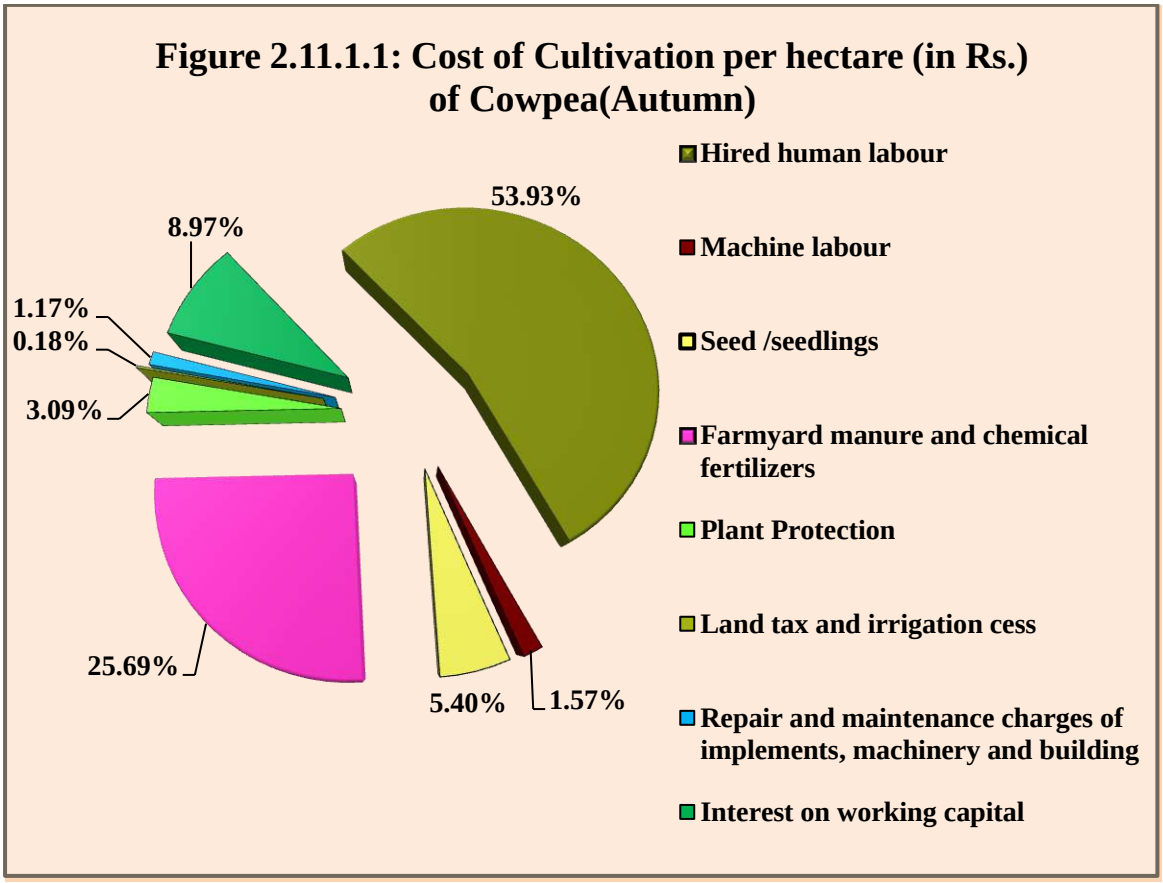


Table 2.11.1.2 and figure 2.11.1.1 shows the total costs and Cost A percentage of Cowpea (Autumn) farming. Cost A has fluctuation from small to large holdings across most

components, but there are exception in hired human labour which is increasing from small to large holding. It is noted that the per hectare cost towards farmyard manure and chemical fertilizer measures is on decreasing trend as compared to other components of Cost A. The percentage share of land tax and irrigation cess is decreasing and also the expenditure on repair and maintenance of implements and machinery has a rapid decrease in large holding.

Table 2.11.1.3: Percentage of hired human labour hours to total labour hours of Cowpea (Autumn) during 2022 - 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	31.71	31.83	30.23	**31.68**
Female	1.71	18.91	41.70	**10.13**
Total	**33.42**	**50.74**	**71.93**	**41.81**

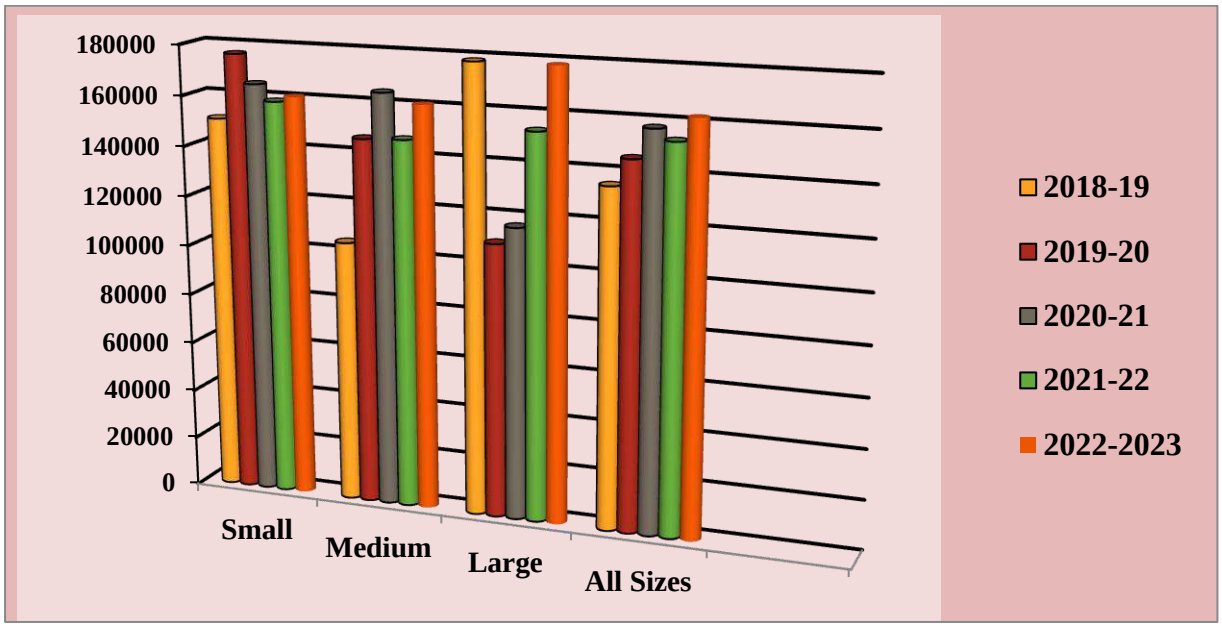
Here the total labour is the sum of hired human labour and household human labour. As usual proportion to hired labour, total labour input is higher for medium holding as compared with other holdings. That is, male belonging to medium class are seem to depend more of their requirements on hired labour during 2022-23.

Table 2.11.1.4: Cost of cultivation of Cowpea (Autumn) per hectare (in Rs.) from 2018 -19 to 2022-23

Holding size class	Cost A (Rs.)				
	2018-19	2019-20	2020-21	2021-22	2022-2023
Small	142374	150684	149790	156784	162967
Medium	107244	146396	164393	144062	142189
Large	124681	119580	156980	0	168264
All Sizes	126006	143289	156719	151478	154339

The last five year data shows that Small Holdings Overall increasing trend, consistently among the highest in the last two years. Medium Holdings Fluctuated significantly, highest in 2020-21, then declining sharply in 2022-23. Large holdings varied more, but showed higher growth in 2022-23. All sizes combined generally increasing costs, with fluctuations reflecting the changes in size classes.

Figure 2.11.1.2: Cost of cultivation of cowpea (Autumn) per hectare (in Rs.) from 2018 -19 to 2022-23



2.11.1.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.11.1.5: Value of output during the year 2022-23

Year	Holding size class	Product/Byproduct (in Rs.)
2022-2023	Small	412869
	Medium	399192
	Large	165673
	All Sizes	388859

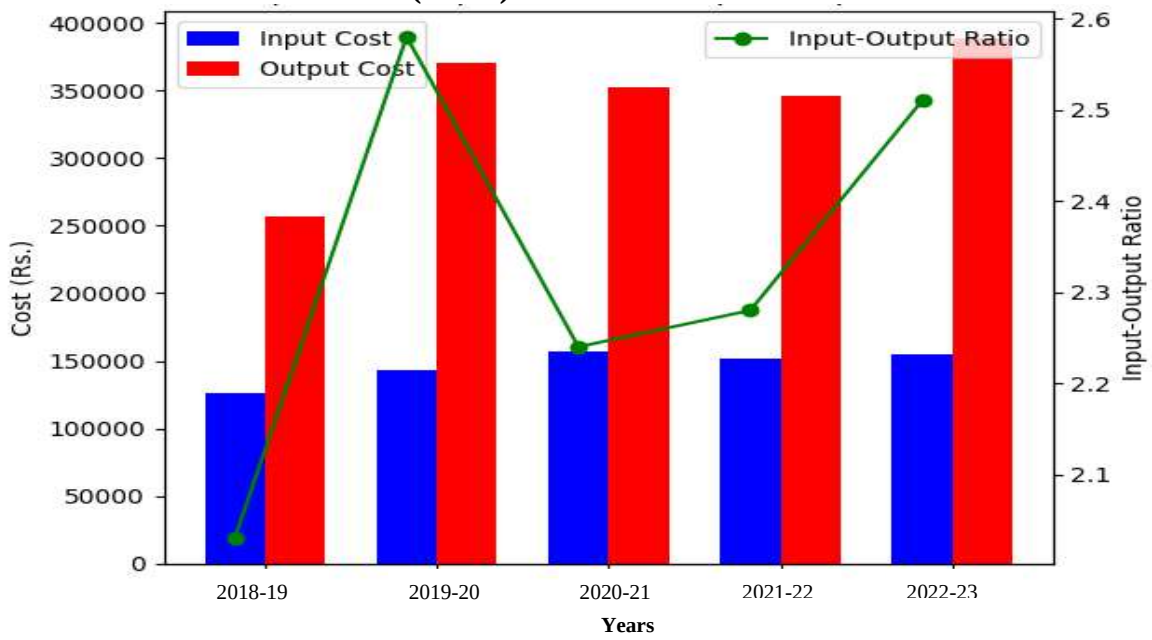
The above table illustrates that the small size class experienced higher production compared to the other size classes, as evidenced by its value of 412,869 which surpasses both the medium and large size categories.

Table 2.11.1.6: Input cost, output Cost And Input-output ratio of Autumn Cowpea per hectare (in Rs.) from 2018 -19 to 2022-23

Year	Components		
	Input Cost(Rs.)	Output Cost(Rs.)	Input-output ratio
2018-19	126006	256331	2.03
2019-20	143289	370415	2.58
2020-21	156719	352608	2.24
2021-22	151478	345676	2.28
2022-23	154339	388859	2.51

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2019-20.

Figure 2.11.1.3: Input cost, output Cost And Input-output ratio of cowpea(autumn) per hectare (in Rs.) from 2018 -19 to 2022-23



2.11.1.4 Agricultural cost Ratios

1.Labour Cost Ratio:

The labour cost ratio indicates that labour expenses account for approximately **38.45%** of the total Cost A. This highlights that the primary contributor to the increase in Cost A is the labour cost.

2. Costing materials used Ratio(Material cost ratio):

The material cost ratio accounts for approximately 54.39% of the total Cost A. This indicates that material costs also play a significant role in contributing to the increase in Cost A.

2.11.1.5 Key Findings

- Labour costs account for about 38.45% of total costs, indicating that the farm has a considerable reliance on labour.

- Material costs make up approximately 54.39% of total costs, highlighting their significant contribution to overall expenditures. This indicates that managing these costs lead to better savings.
- The highest efficiency in terms of output was seen in 2019-20 and the lowest in 2018-19.
- 2019-20 period was the most efficient in terms of converting inputs to outputs, while other years maintained a stable ratio, reflecting ongoing good performance in resource utilization and output generation.

2.11.2 COWPEA -WINTER (MUNDAKAN)

2.11.2.1 Area under Cowpea-Winter Cultivation

For this study details of holding selected and area coverage are given below.The data was collected from 313 holdings across different size classes, by covering a total of 32.27 hectares of land.

Table 2.11.2.1: Number of holdings and area under Cowpea -Winter

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	256	15.19	47.07	**0.06**
Medium	56	15.87	49.18	**0.28**
Large	1	1.21	3.75	**1.21**
Total	313	32.27	100.00	**0.10**

It is observed that the average area per holding is 0.10 hectares in all classes while area per holding in large size class, ie more than 0.80 hectares is 1.21 hectares. But in small size class, ie, less than 0.20 hectare which comprises 256 holdings, the average area per holding is only 0.06 hectare.

2.11.2.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Cowpea -Winter is furnished in the below table.

Table 2.11.2.2: Cost of Cultivation per hectare (in Rs.) of Cowpea –Winter

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	62632	66062	68650	**64545**
2	Animal labour	0	0	0	**0**
3	Machine labour	1121	2465	19760	**2483**
4	Seed /seedlings	8053	4825	7410	**6442**
5	Farmyard manure and chemical fertilizers	31871	21155	18970	**26116**
6	Plant Protection	2928	3989	0	**3339**
7	Land tax and irrigation cess	403	193	0	**285**
8	Repair and maintenance charges of implements, machinery and building	2476	183	0	**1255**
9	Interest on working capital	10661	9850	11479	**10293**
10	Other expenses	44899	41095	46107	**43074**
11	**Total cost 'A'(1-10)**	**165044**	**149817**	**172375**	**157832**
12	Interest on fixed capital	15423	5676	700	**10075**
13	**Cost 'B1'(11+12)**	**180466**	**155493**	**173075**	**167907**
14	Interest on land value	415830	387444	142931	**391602**
15	**Cost 'B'(13+14)**	**596296**	**542938**	**316005**	**559509**
16	Inputed value of household labour	126658	79194	7237	**98825**
17	**Cost 'C'(15+16)**	**722954**	**622131**	**323242**	**658334**

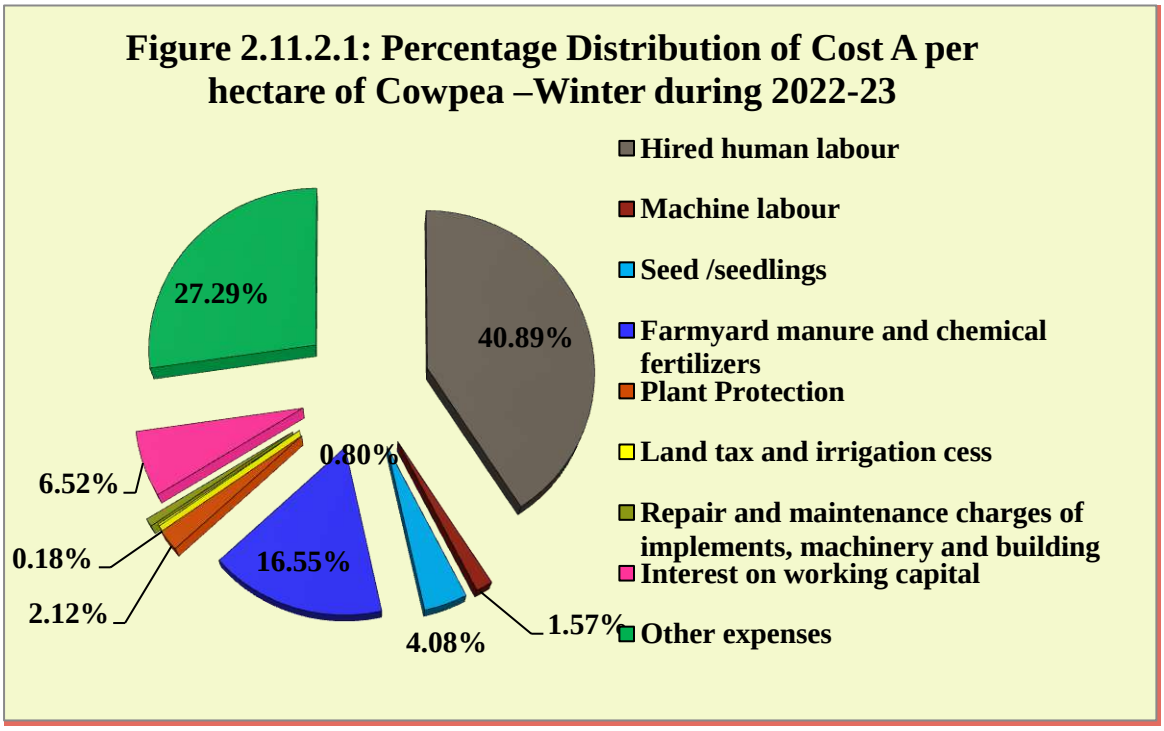


Table 2.11.2.2 and figure 2.11.2.1 shows the total costs and Cost A percentage of Cowpea (Winter) farming Cost A has fluctuation from small to large holdings across most components, but there are exception in hired human labour which is increasing from small to large holding. It is noted that the per hectare cost towards farmyard manure and chemical fertilizer measures is on decreasing trend as compared to other components of Cost A. The percentage share of land tax and irrigation cess is decreasing and also the expenditure on repair and maintenance of implements and machinery has a rapid decrease in medium holding.

Table 2.11.2.3: Percentage of hired human labour hours to total labour hours of Cowpea –Winter during 2022 - 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	29.15	34.39	41.40	**31.74**
Female	4.99	15.58	46.15	**8.33**
Total	**34.14**	**49.97**	**87.55**	**40.07**

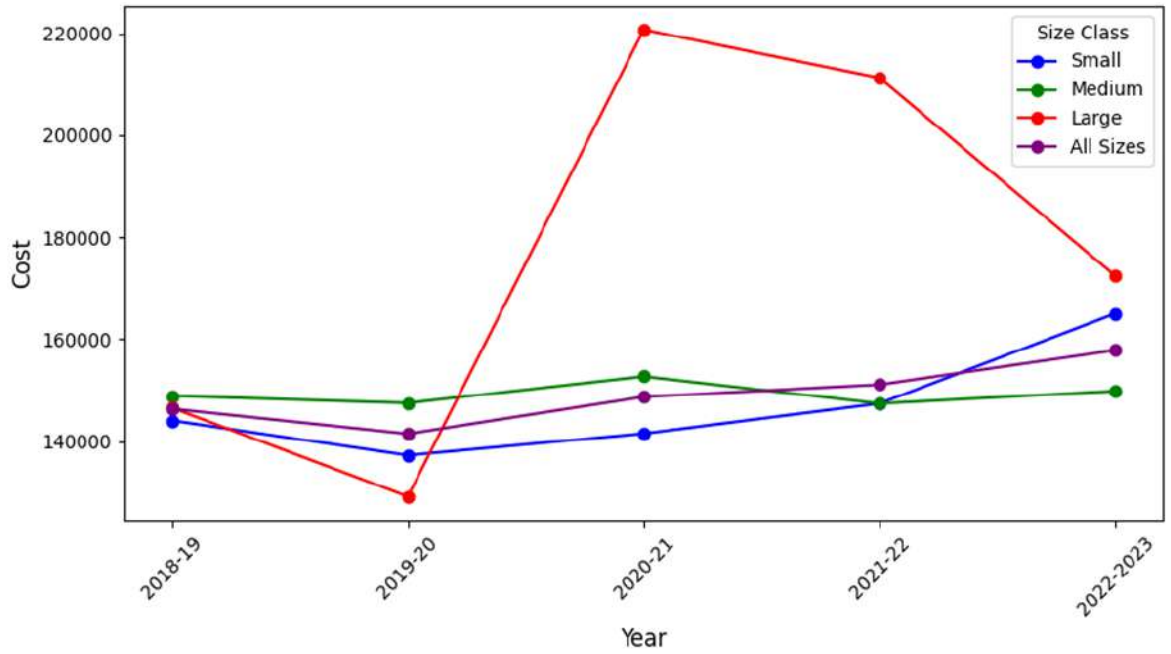
Here the total labour is the sum of hired human labour and household human labour. Both males and females have a strong presence in the Large size category, but the percentage of females in Large sizes is notably higher than that of males. This could indicate a trend where females, in this particular case, tend to have larger holding sizes compared to males, though the distribution is still relatively close.

Table 2.11.2.4: Cost of cultivation of Cowpea-Winter per hectare (in Rs.) from 2018-19 to 2022-23

Holding size class	Cost A				
	2018-19	2019-20	2020-21	2021-22	2022-2023
Small	144045	137230	141489	147387	165044
Medium	148889	147492	152686	147390	149817
Large	146553	129133	220735	211292	172375
All Sizes	146339	141440	148688	151090	157832

The last five year data shows fluctuations over year in small holding and highest value occurred in 2022-23. Medium Holdings also shows minor fluctuations and highest occurred in 2020-21 and large Holdings has lowest value occurred in 2019-20 followed by a increase. Overall Costs Fluctuated but showed growth in the last two years.

Figure 2.11.2.2: Cost of cultivation of Cowpea Winter per hectare (in Rs.) from 2018 -19 to 2022-23



2.11.2.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.11.2.5: Value of output during the year 2022-23

Year	Holding size class	Product/Byproduct (in Rs.)
2022-2023	Small	460426
	Medium	366392
	Large	123500
	All Sizes	401508

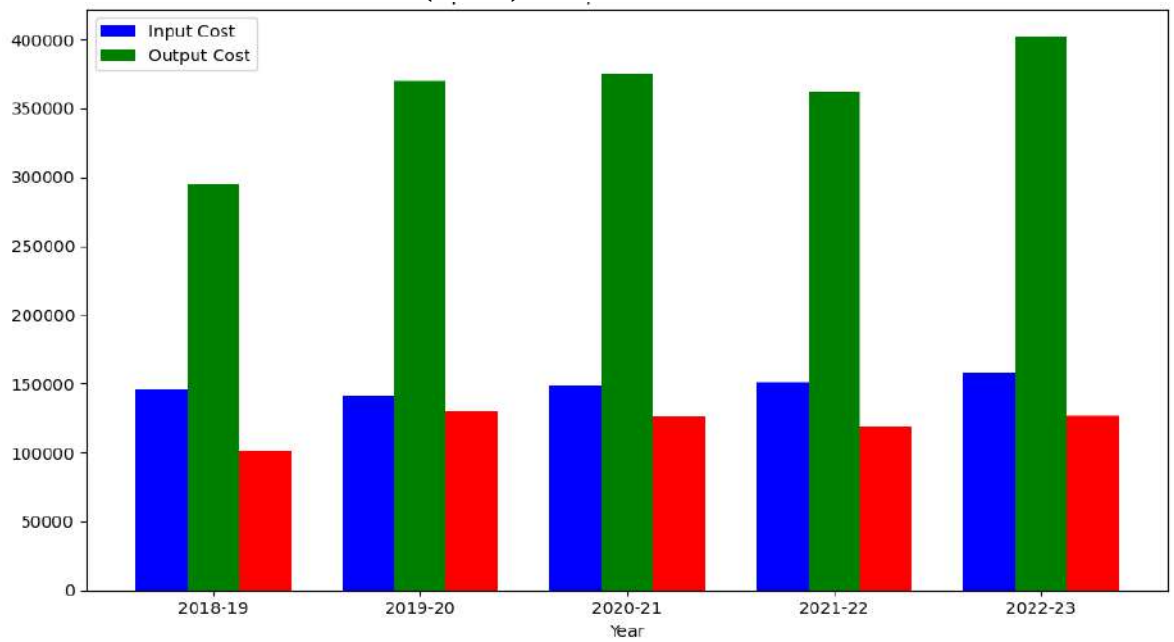
In 2022-2023, the small holding size class shows the strongest performance in terms of product/byproduct revenue, significantly exceeding both the large and medium categories.

Table 2.11.2.6 Input cost. Out put Cost And Input-output cost ratio of Cowpea Winter per hectare (in Rs.) from 2018-19 to 2022-23

Year	Components		
	Input Cost	Output Cost	Input-output ratio
2018-19	146339	294910	2.02
2019-20	141440	331754	2.35
2020-21	148688	375048	2.52
2021-22	151090	361985	2.40
2022-23	157832	401508	2.54

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2022-23.

Figure 2.11.2.3: Input cost, output Cost And Input-output ratio of Cowpea Winter per hectare (in Rs.) from 2018 -19 to 2022-23



2.11.2.4 Agricultural cost Ratios

1.Labour Cost Ratio

The labour cost ratio indicates that labour expenses account for approximately 42.46% of the total Cost A. This highlights that a significant contributor to the increase in Cost A is the labour cost.

2. Costing materials used Ratio(Material cost ratio)

The material cost ratio accounts for approximately 50.03% of the total Cost A.This indicates that major contribution to an increased Cost A is material cost.

2.11.2.5 Key Findings

- Labour costs constitute approximately 42.46% of total costs. This indicates a significant dependence on labour, suggesting opportunities to enhance labour efficiency.
- Material costs account for about 50.03% of total costs, highlighting that these expenses also represent a major factor in overall spending. Effective management of material inputs could lead to better cost savings.

- There were some fluctuations in the ratios between 2019-20, 2020-21 and 2021-22, but the overall trend is still an upward movement, and the highest ratio in 2022-23.

2.11.3 COWPEA -SUMMER(PUNCHA)

2.11.3.1 Area under Cowpea -Summer Cultivation

For this study details of holding selected and area coverage are given below.The data was collected from 299 holdings across different size classes, by covering a total of 25.70 hectares of land.

Table 2.11.3.1: Number of holdings and areaunder Cowpea -Summer

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	264	15.46	60.16	**0.06**
Medium	34	9.23	35.91	**0.27**
Large	1	1.01	3.93	**1.01**
Total	**299**	**25.70**	**100.00**	**0.09**

2.11.3.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Cowpea -Summer is furnished in the below table.

Table 2.11.3.2: Cost of Cultivation per hectare (in Rs.) of Cowpea -Summer

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	63998	69752	32130	**64810**
2	Animal labour	0	0	0	**0**
3	Machine labour	1175	2375	7904	**1871**
4	Seed /seedlings	8424	6912	680	**7576**
5	Farmyard manure and chemical fertilizers	30671	24755	7306	**27626**
6	Plant Protection	2997	3098	568	**2938**
7	Land tax and irrigation cess	671	348	0	**528**
8	Repair and maintenance charges of implements, machinery and building	2783	957	0	**2017**
9	Interest on working capital	10727	10689	4859	**10482**
10	Other expenses	35081	30972	13832	**32768**
11	**Total cost 'A'(1-10)**	**156526**	**149857**	**67279**	**150616**
12	Interest on fixed capital	13468	5096	99	**9935**

13	**Cost 'B1'(11+12)**	**169995**	**154953**	**67377**	**160551**
14	Interest on land value	355233	392625	187226	**362047**
15	**Cost 'B'(13+14)**	**525228**	**547578**	**254603**	**522598**
16	Inputed value of household labour	116485	78885	34333	**99745**
17	**Cost 'C'(15+16)**	**641713**	**626463**	**288936**	**622342**

Figure 2.11.3.1: Cost of Cultivation per hectare (in Rs.) of Cowpea -Summer

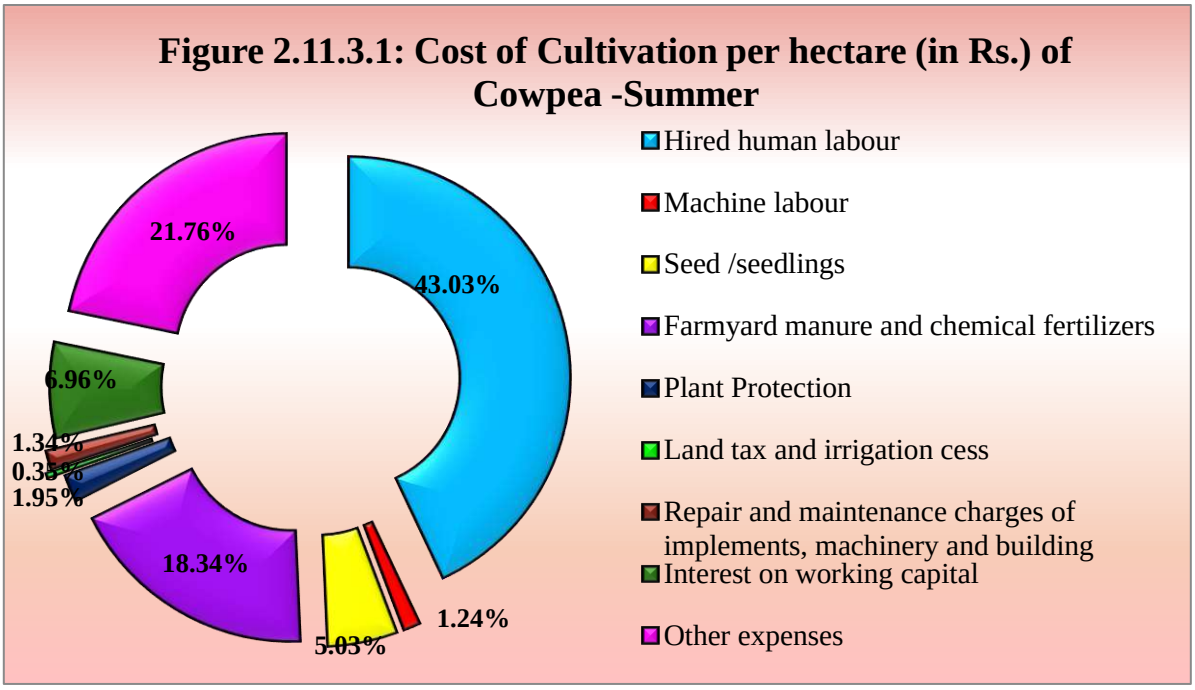


Table 2.11.2.2 and figure 2.11.2.1 shows the total costs and Cost A percentage of Cowpea (Summer) farming. Cost A is decreasing from small to large holdings across most components, but there are exception in hired human labour which is fluctuating from small to large holding. It is noted that the per hectare cost towards machine labour is on increasing trend as compared to other components of Cost A. The percentage share of land tax and irrigation cess is decreasing and also the expenditure on repair and maintenance of implements and machinery has a rapid decrease in medium holding

Table 2.11.3.3: Percentage of hired human labour hours to total labour hours of Cowpea -Summer during 2022 - 2023

Sex	Holding Size Class			
	Small	**Medium**	**Large**	**All Sizes**
Male	28.53	30.88	47.42	**29.56**
Female	2.45	11.51	0	**4.16**
Total	**30.98**	**42.39**	**47.42**	**33.72**

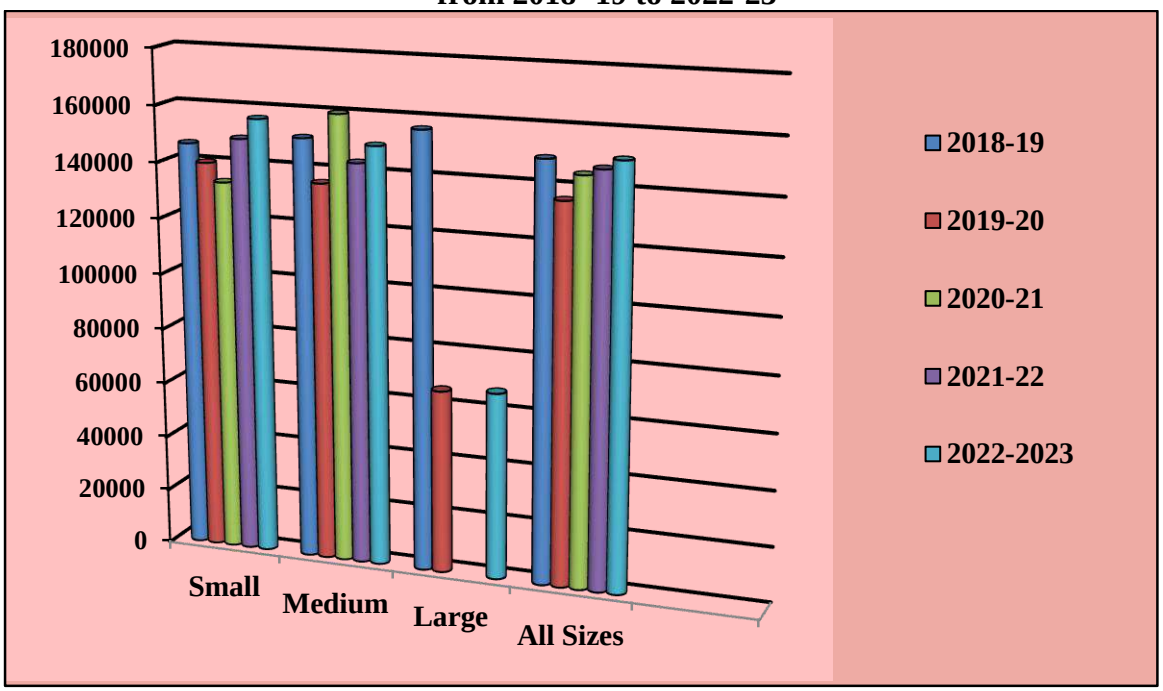
Males are predominantly in the large size category (47.42%), with a significant proportion also in the Medium (30.88%) and Small (28.53%) categories. Males show a relatively balanced distribution across medium, small, and large. Absence of females in Large size category contrast to males, where Large is the dominant category. Overall males contribution is more to the hired human labour hour as compared to females during 2022-23.

Table 2.11.3.4: Cost of cultivation of Cowpea -Summer per hectare (in Rs.) from 2018 -19 to 2022-23

Holding size class	Cost A (Rs.)				
	2018-19	2019-20	2020-21	2021-22	2022-23
Small	146448	139977	133469	149191	156526
Medium	150911	135620	160003	143559	149857
Large	156446	66003	0	0	67279
All Sizes	149400	135798	144802	147202	150616

Small holdings experienced the highest cost in 2022-23. Medium holdings shows slightly lower costs than small and Large holdings. The five-year comparison highlights significant cost increases, particularly in the last year, for small and medium holdings. Understanding the factors guiding these changes will be critical for managing expenses and ensuring the sustainability of farming operations.

Figure 2.11.3.2: Cost of cultivation of Summer Cowpea per hectare (in Rs.) from 2018 -19 to 2022-23



2.11.3.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table2.11.3.5: Value of output during the year 2022-23

Year	Holding size class	Product/Byproduct (in Rs.)
2022-2023	Small	406864
	Medium	383922
	Large	105556
	All Sizes	386758

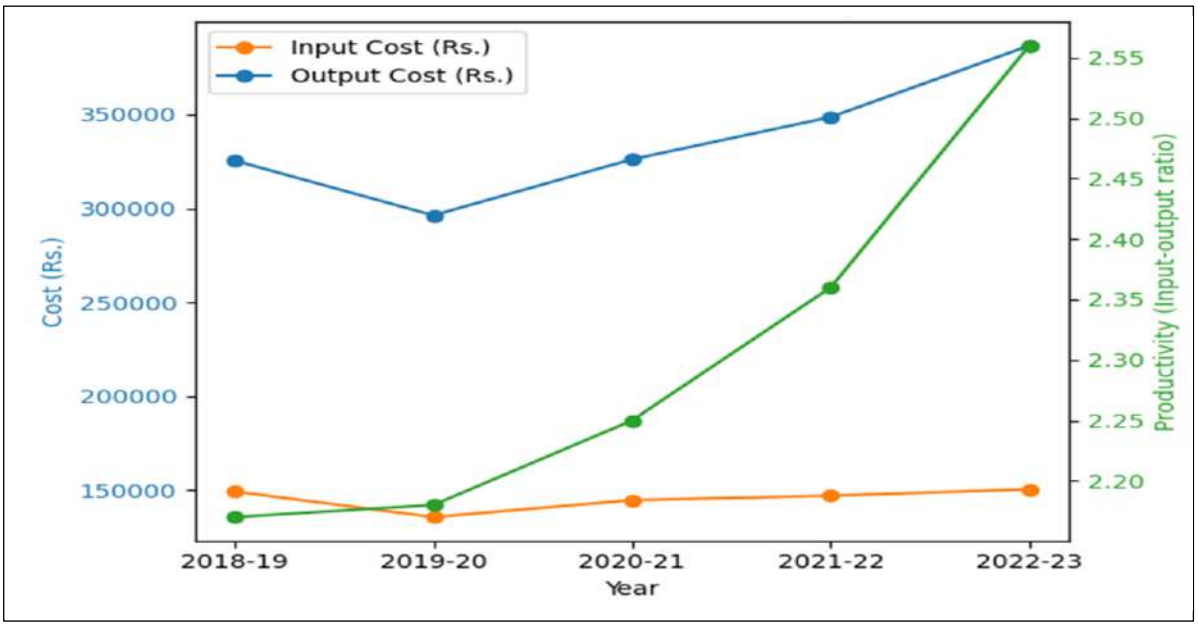
In 2022-2023, small holdings achieved the highest revenue, followed closely by medium holdings. The overall revenue indicates a positive trend, to manage rising costs.

Table 2.11.3.6: Input cost, output Cost And Input-output ratio of Summer Cowpea per hectare (in Rs.) from 2018 -19 to 2022-23

Year	Components		
	Input Cost(Rs.)	Output Cost(Rs.)	Input-output ratio
2018-19	149400	325437	2.18
2019-20	135798	296293	2.18
2020-21	144802	326175	2.25
2021-22	147202	348685	2.37
2022-23	150616	386758	2.57

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2022-23.

Figure 2.11.3.3: Input cost, output Cost And Input-output ratio of Summer Cowpea per hectare (in Rs.) from 2018 -19 to 2022-23



2.11.3.4 Agricultural cost Ratios

1.Labour Cost Ratio

The labour cost ratio make up about 44.27% of total Cost A.

2.Costing materials used Ratio (Material cost ratio)

This indicates that material cost ratio make up about 47.07% of total Cost A. This indicates that Material cost Ratio is also a major contribution to an increased Cost A.

2.11.3.5 Key Findings

- Labour costs constitute about 44% of the total costs, indicating a significant reliance on labour for farm operations.
- Material costs make up about 47% of total costs, highlighting that these expenses are also a major factor in overall spending. This suggests that efficient material usage and cost management could lead to significant savings.
- Input-Output Ratio increases steadily from 2018-19 to 2022-23, indicating an improvement in efficiency over the period and 2022-23 is the most efficient year in terms of input-output ratio.

2.12 CARDAMOM

2.12.0 Introduction

Cardamom (scientific name: Elettaria cardamomum) is an important crop in Kerala, renowned for its aromatic properties and substantial economic significance. Often referred to as the "queen of spices," cardamom is highly sought after in culinary uses and traditional medicine, driving demand in both domestic and international markets.. The cultural importance of cardamom farming is also profound, with many families cultivating this crop for generations, highlighting its essential role in the local economy and traditions.

This chapter aims to provide a detailed overview of the cost components involved in cardamom cultivation in Kerala. It examines key aspects such as land preparation, planting materials, labour costs, inputs like fertilizers and pesticides, irrigation, and various operational expenses.

2.12.1 Area under Cardamom cultivation during 2022-23

The data collected from 32 holdings under cardamom cultivation covers a total area of 24.66 hectares.

Table 2.12.1: Number of holdings and area under Cardamom

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	4	0.47	1.90	**0.12**
Medium	17	6.48	26.28	**0.38**
Large	11	17.71	71.82	**1.61**
Total	32	24.66	100	**0.77**

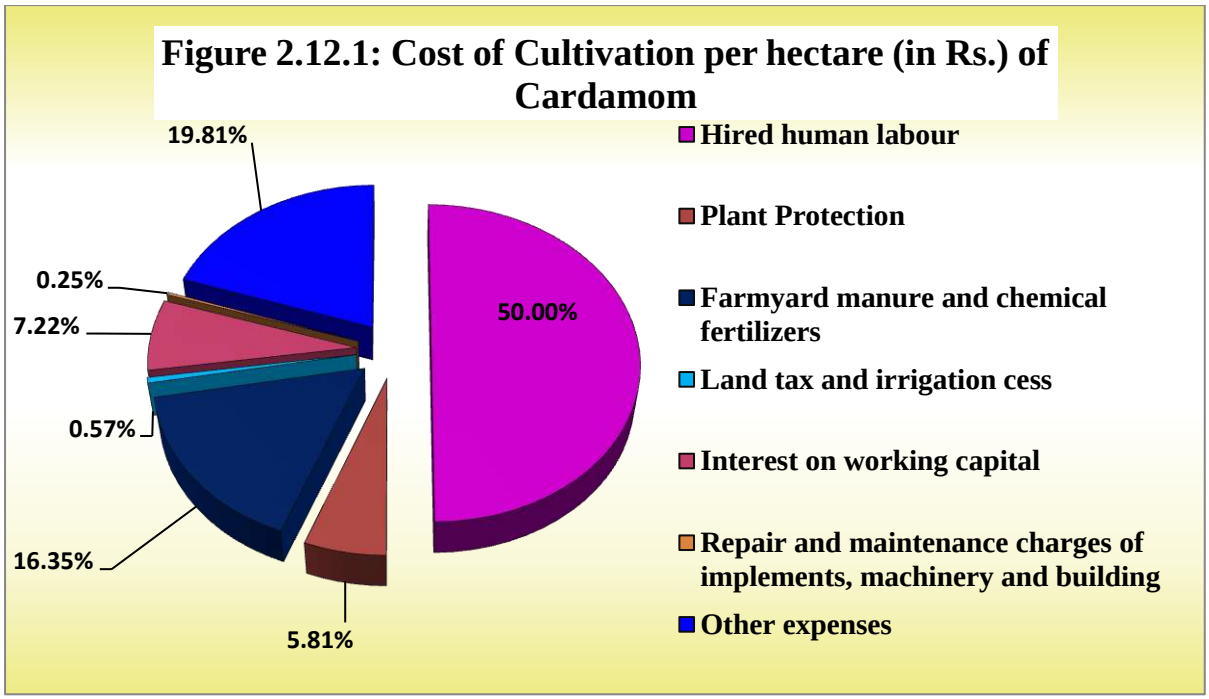
It is observed that the average area per holding across all size classes is 0.77 hectares. In the large size class (holdings greater than 0.80 hectares), the average area per holding is 1.61 hectares. Conversely, in the small size class (holdings less than 0.20 hectare), which comprises 4 holdings, the average area per holding is only 0.12 hectares.

2.12.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of cardamom is furnished in the below table.

Table 2.12.2: Cost of Cultivation per hectare (in Rs.) of Cardamom

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	78116	69873	135718	**117331**
2	Animal labour	0	0	0	**0**
3	Machine labour	0	0	0	**0**
4	Seed /seedlings	0	0	0	**0**
5	Farmyard manure and chemical fertilizers	41575	23405	43759	**38370**
6	Plant Protection	13402	8666	15442	**13623**
7	Land tax and irrigation cess	731	1016	1464	**1332**
8	Repair and maintenance charges of implements, machinery and building	0	2011	98	**598**
9	Interest on working capital	13309	10194	19492	**16932**
10	Other expenses	26066	35346	51083	**46476**
11	**Total cost 'A'(1-10)**	**173201**	**150511**	**267055**	**234664**
12	Interest on fixed capital	6946	6586	2307	**3518**
13	**Cost 'B1'(11+12)**	**180147**	**157097**	**269362**	**238182**
14	Interest on land value	148420	226006	111824	**142514**
15	**Cost 'B'(13+14)**	**328567**	**383102**	**381186**	**380695**
16	Inputed value of household labour	96974	98569	32800	**51291**
17	**Cost 'C'(15+16))**	**425541**	**481671**	**413986**	**431986**



The data presented in Table 2.12.2 and Figure 2.11.1 shows the total costs and Cost A of cardamom farming. Cost A per hectare for small holdings is higher than that of medium holdings and lower than that of large holdings. Hired human labour is the predominant component of Cost A across all size classes. Expenses for farmyard manure and chemical fertilizers, costs for plant protection and other expenses increase significantly in large holdings. Repair and maintenance charges are more pronounced in medium holdings which depends upon the cultivators selected for the survey in this year. Overall, the analysis indicates a complex cost structure in cardamom cultivation, reflecting differing labour and resource requirements across holding sizes.

Table 2.12.3: Percentage of hired human labour hours to total labour hours of Cardamom during 2022 - 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	27.57	17.45	18.18	**18.15**
Female	17.18	23.02	44.09	**54.41**
Total	44.75	40.47	62.27	**72.56**

Here, the total labour input is the sum of hired human labour and household human labour. It is observed that cultivators in the large holding class depend on hired labour for 62.27% of their total labour hours. Regarding the gender distribution, male labour accounts for 18.18% of total labour hours in large holdings, while female labour significantly contributes at

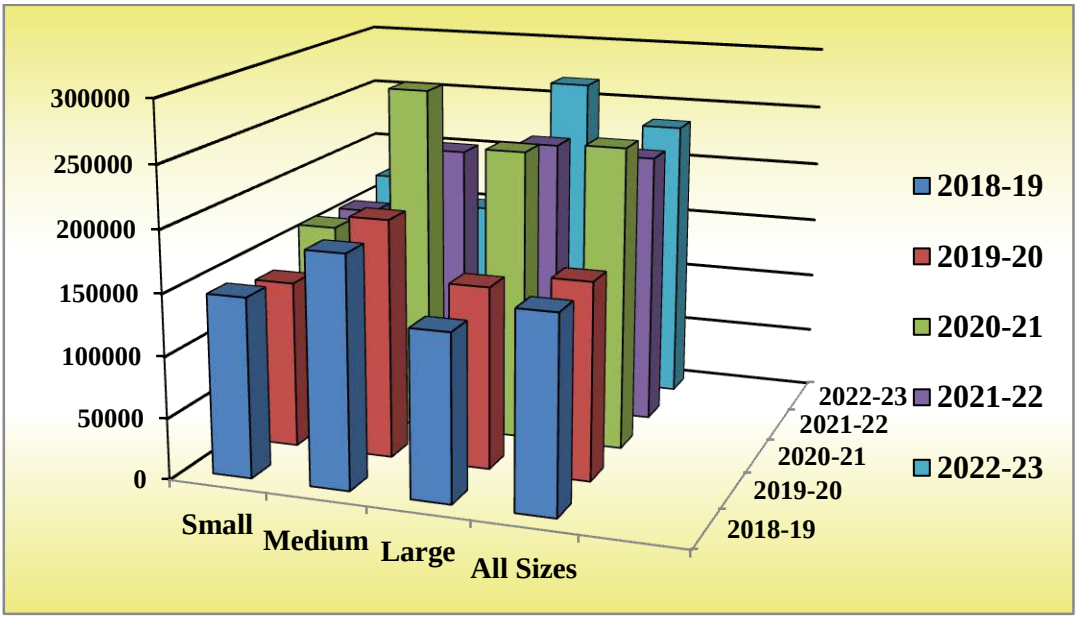
44.09%. For males, the proportion of hired labour decreases as the size of the holding increases. In contrast, female labour shows an increase, with their contribution rising significantly in larger holdings. This indicates a trend towards increasing female participation in larger holdings. Overall, the reliance on hired labour and the changing contributions of male and female labour reflect the evolving dynamics in cardamom cultivation.

Table 2.12.4: Cost of cultivation of Cardamom per hectare (in Rs.) from 2018 -19 to 2022-23

Holding size class	Cost A(Rs.)				
	2018- 2019	2019- 2020	2020 - 2021	2021 - 2022	2022 - 23
Small	146133	136468	163658	159945	173201
Medium	187844	195152	283525	217912	150511
Large	135318	148475	238931	229067	267055
All Sizes	158512	160436	247734	223807	234664

Table 2.12.4 presents the cost of cultivation of cardamom per hectare from 2018-19 to 2022-23. During the year period Cultivators with medium holdings incur the highest costs in most years, except 2021-2022 and 2022-23.However, large holdings had the highest cost in more recent years. In comparison, small holdings show a consistent increase. Overall, the percentage increase in Cost A for 2022-23 compared to the previous year is 4.8%, reflecting the rising expenses associated with cardamom cultivation.

Figure 2.12.2: Cost of cultivation of Cardamom per hectare (in Rs.) from 2018 -19 to 2022-23



2.12.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.12.5: Value of output during the year 2022-23

Year	Holding size class	Product/Byproduct (in Rs.)	
		Product	Total
2022-2023	Small	360942	360942
	Medium	366012	366012
	Large	459676	459676
	All Sizes	433204	433204

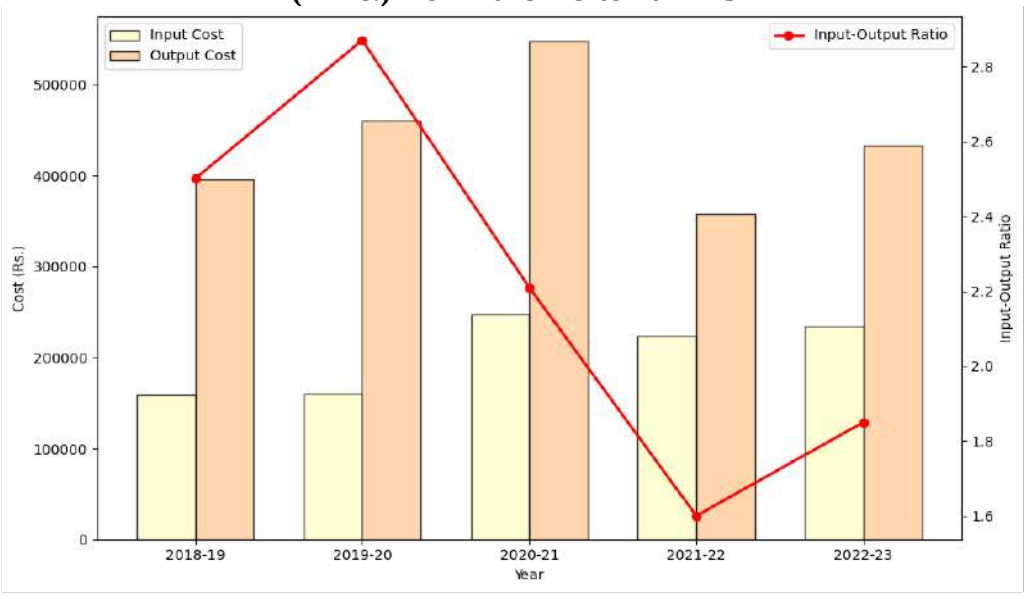
Table 2.12.5 displays the value of output during the year 2022-23 across different holding size classes. The large size class reported the highest total production exceeding both the small size class and the medium size class. This indicates significant productivity in larger holdings. Overall, the data shows the differences in output among different holding sizes, highlighting the benefits of larger farms.

Table 2.12.6: Input cost, output cost and Input-output ratio of Cardamom per hectare (in Rs.) from 2018 -19 to 2022-23

Year	Components		
	Input Cost(Rs.)	Output Cost(Rs.)	Input-output ratio
2018-19	158512	395872	2.50
2019-20	160436	460312	2.87
2020-21	247734	547428	2.21
2021-22	223807	357523	1.60
2022-23	234664	433204	1.85

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2019-20.

Figure 2.12.3: Input cost, output cost and Input-output ratio of Cardamom per hectare (in Rs.) from 2018 -19 to 2022-23



2.12.4 Agricultural cost Ratios

1.Labour Cost Ratio:

The labour cost ratio indicates that labour expenses account for approximately 50% of the total Cost A. This highlights that the primary contributor to the increase in Cost A is the labour cost.

2. Costing materials used Ratio(Material cost ratio):

The material cost ratio accounts for 41.96% of the total Cost A. This indicates that material costs also play a significant role in contributing to the increase in Cost A.

2.12.5 Key Findings

- When analysing cardamom production data over recent years, a varied trend emerges. Input costs generally increased, driven by rising expenses for labour, fertilizers, and other inputs. Importantly, the labour cost ratio makes up a significant portion of total Cost A, reflecting a strong reliance on hired labour.
- On the other hand, material costs account for approximately 41% of total expenses.
- A decreasing input-output ratio suggests that productivity may be declining relative to the resources invested, highlighting the need for strategies to improve efficiency and optimize resource use in cardamom farming.

2.13

ASH GOURD

2.13.0. Introduction

Ash gourd (Benincasa hispida), also known as winter melon, is a significant crop in Kerala, valued for its nutritional benefits and versatility in culinary applications. The favourable agro-climatic conditions of Kerala, including warm temperatures and ample rainfall, contribute to the successful cultivation of ash gourd. Its economic importance is underscored by its demand in both domestic and export markets, with many farmers relying on this crop for their livelihoods.

This chapter aims to provide a comprehensive overview of the cost components involved in ash gourd cultivation in Kerala. It covers essential aspects such as land preparation, seeds and planting materials, labour costs, inputs like fertilizers and pesticides, irrigation, and other operational expenses.

2.13.1 ASH GOURD-AUTUMN (VIRIPPU)

2.13.1.1Area under Ash gourd-Autumn Cultivation

Details of holding selected and area coverage for this study are given below. The data collected from 87 holdings according to the size class by covering 9.64 hectares of land.

Table 2.13.1.1: Number of holdings and area under Ash gourd-Autumn (Virippu)

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	72	4.00	41.45	**0.06**
Medium	13	4.03	41.76	**0.31**
Large	2	1.62	16.79	**0.81**
Total	87	9.65	100.00	**1.18**

It is observed that the average area per holding is 1.18 hectares in all classes while area per holding in large size class(ie, more than 0.80 hectares) is 0.81 hectares. But in small size class (ie, less than 0.20 hectare) which comprises 72 holdings, the average area per holding is only 0.06 hectare.

2.13.1.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Ash gourd (Autumn) is furnished in the below table.

Table 2.13.1.2: Cost of Cultivation per hectare (in Rs.) of Ash gourd-Autumn (Virippu)

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	24077	43455	31659	**33445**
2	Animal labour	0	0	0	**0**
3	Machine labour	601	3874	1003	**2036**
4	Seed /seedlings	6195	4106	2319	**4671**
5	Farmyard manure and chemical fertilizers	18624	15850	17058	**17202**
6	Plant Protection	1586	1454	1811	**1568**
7	Land tax and irrigation cess	241	69	0	**129**
8	Repair and maintenance charges of implements, machinery and building	1196	164	253	**607**
9	Interest on working capital	5108	6874	5385	**5892**
10	Other expenses	16041	25020	14697	**19566**
11	**Total cost 'A'(1-10)**	**73668**	**100864**	**74185**	**85115**
12	Interest on fixed capital	22426	537	3854	**10168**
13	**Cost 'B1'(11+12)**	**96095**	**101401**	**78040**	**95283**

14	Interest on land value	604559	322407	164966	**412880**
15	**Cost 'B'(13+14)**	**700654**	**423808**	**243005**	**508164**
16	Inputed value of household labour	55738	21267	21227	**35543**
17	**Cost 'C'(15+16))**	**756391**	**445075**	**264232**	**543707**

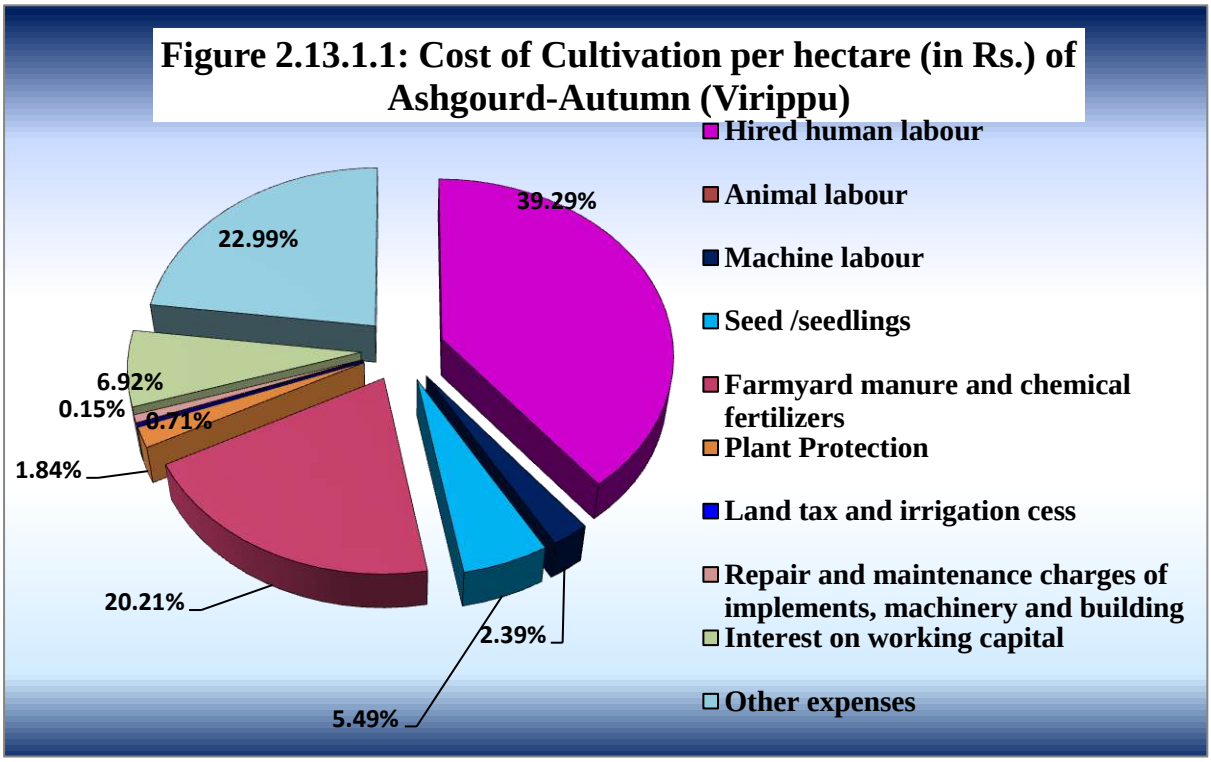


Table 2.13.1.2 and Figure 2.13.1.1 present Components of cost A and Cost A percentage associated with ash gourd farming in the autumn season (Virippu). For medium holdings, the Cost A per hectare is higher compared to medium and small holdings, primarily driven by substantial expenditures on hired human labour, which is a significant component across all sizes. Expenses related to machine labour, interest on working capital and other expenses are higher for medium holdings than for small and large ones.

Table 2.13.1.3: Percentage of hired human labour hours to total labour hours of Ash gourd-Autumn (Virippu) during 2022 - 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	20.97	45.90	55.50	**34.81**
Female	12.65	28.67	7.43	**14.29**
Total	33.62	74.57	62.93	**49.10**

Here the total labour is the sum of hired human labour and household human labour. As usual proportion to hired labour, total labour input steadily increases with the increase in the

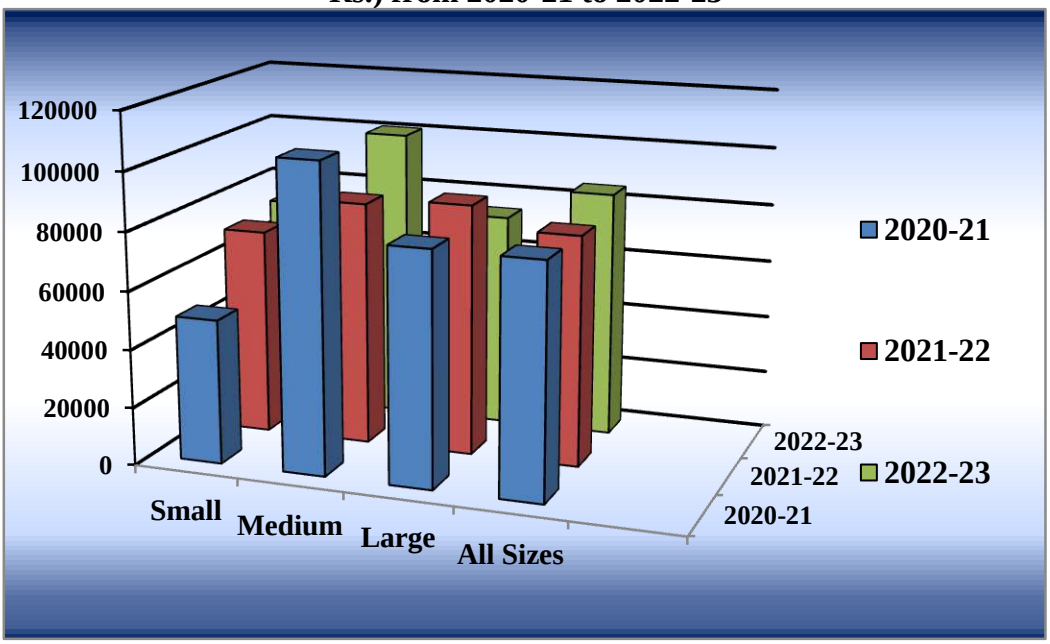
size holding. It is seen that cultivators belonging to large class are seem to depend for 62.93% of their requirements on hired labour. In Ash gourd cultivation during the 2022-2023 season, the gender distribution of labour reveals significant trends across holding sizes. Male labour contributes 20.97% of total labour hours in small holdings, increasing to 55.50% in large holdings, while female labour shows a contrasting pattern, starting at 12.65% in small holdings but declining to 7.43% in larger ones. This suggests that as holding size increases, male participation rises while female participation decreases, highlighting a shift in labour dynamics.

Table 2.13.1.4: Cost of cultivation of Ash gourd-Autumn (Virippu) per hectare (in Rs.) from 2020 -21 to 2022-23

Holding size class	Cost A(Rs.)		
	2020 - 2021	2021 - 2022	2022 -23
Small	49714	71236	73668
Medium	105917	84017	100864
Large	80244	86396	74185
All Sizes	79887	79141	85115

Table 2.13.1.4 outlines the cost of cultivation of Ash gourd (Autumn) per hectare from 2020-21 to 2022-23. In 2020 - 2021, cultivators with medium holdings experienced the highest costs but saw a decrease in the following years. Small holdings showed a consistent upward trend, indicating increasing expenses over time. In contrast, large holdings has increased costs in 2021 – 2022 before declining in 2022 - 2023. Compared to 2021-22, percentage increase in Cost A in 2022-23 is 7.55%.

Figure 2.13.1.2: Cost of cultivation of Ash gourd-Autumn (Virippu) per hectare (in Rs.) from 2020-21 to 2022-23



2.13.1.3 Value of output

Details of product and byproduct for the year 2022-23 is given below.

Table 2.13.1.5: Value of output during the year 2022-23

Year	Holding size class	Product/Byproduct (in Rs.)	
		Product	Total
2022-2023	Small	250385	250385
	Medium	190932	190932
	Large	142567	142567
	All Sizes	207445	207445

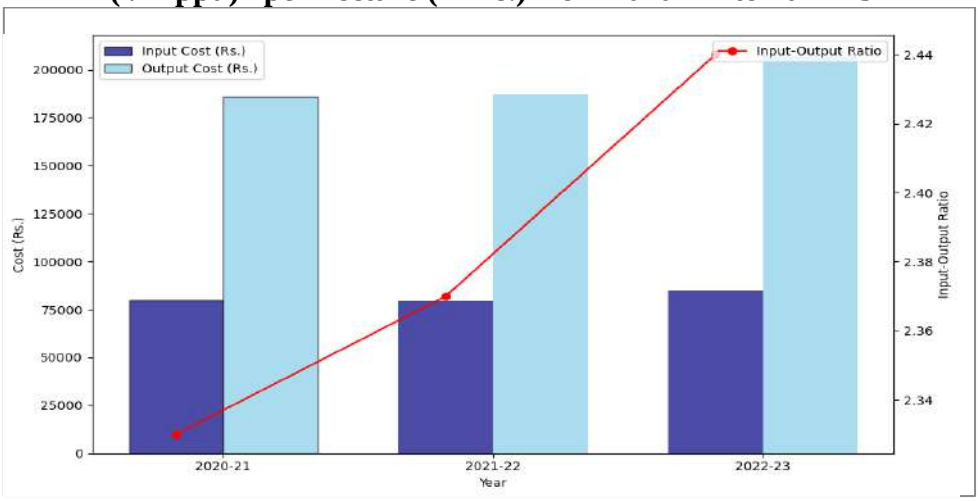
Table 2.13.1.6 displays the value of output for Ash gourd during the year 2022-23 across different holding size classes. The small size class reported the highest total production, exceeding both the medium and large size classes. This indicates significant productivity in smaller holdings, which may reflect more intensive management practices. Overall, the data highlights the differences in output among various holding sizes, emphasizing the strengths of smaller farms.

Table 2.13.1.6: Input cost, output cost and Input-output ratio of Ash gourd-Autumn (Virippu) per hectare (in Rs.) from 2020 -21 to 2022-23

Year	Components		
	Input Cost(Rs.)	Output Cost(Rs.)	Input-output ratio
2020-21	79887	186046	2.33
2021-22	79141	187464	2.37
2022-23	85115	207445	2.44

From the data collected it is evident that the input- output increases over the years and the efficiency is higher during the year 2022-23.

Figure 2.13.1.3: Input cost, output cost and Input-output ratio of Ash gourd-Autumn (Virippu) per hectare (in Rs.) from 2020 -21 to 2022-23



2.13.1.4 Agricultural cost Ratios

1.Labour Cost Ratio

The labour cost ratio indicates that labour expenses account for approximately 41.68 % of the total Cost A. This highlights that the primary contributor to the increase in Cost A is the labour cost.

2. Costing materials used Ratio(Material cost ratio):

The material cost ratio accounts for approximately 50.53% of the total Cost A. This indicates that material costs also play a significant role in contributing to the increase in Cost A.

2.13.1.5 Key Findings

When analyzing Ash gourd production data over recent years, a varied trend emerges.

- Input costs have generally increased, largely driven by rising expenses for labour, fertilizers, and other inputs.
- Notably, the material cost ratio constitutes a significant portion of total Cost A.
- Labour costs account for a substantial percentage of total expenses.
- Increasing input-output ratio suggests that productivity is declining relative to the resources invested, highlighting the need for strategies to enhance efficiency and optimize resource utilization in Ash gourd farming.

2.13.2. ASH GOURD- WINTER (MUNDAKAN)

2.13.2.1Area under Ash gourd- Winter (Mundakan) Cultivation

Details of holding selected and area coverage for this study are given below. The data collected from 104 holdings according to the size class by covering 8.55 hectares of land.

Table 2.13.2.1: Number of holdings and area under Ash gourd- Winter (Mundakan)

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	93	4.26	49.82	**0.05**
Medium	9	2.67	31.23	**0.30**
Large	2	1.62	18.95	**0.81**
Total	104	8.55	100.00	**0.08**

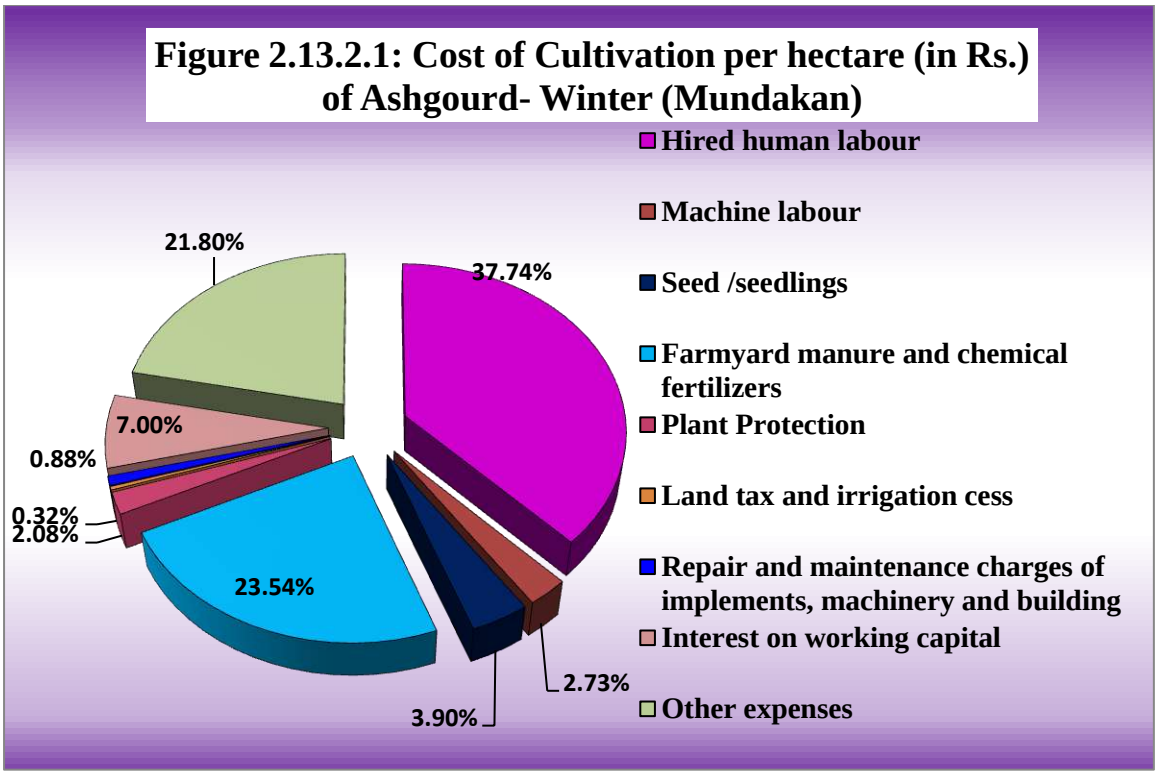
It is observed that the average area per holding is 0.08 hectares in all classes while area per holding in large size class (ie area more than 0.80 hectares) is 0.81 hectares. But in small size class (ie, area less than 0.20 hectare) which comprises 93 holdings, the average area per holding is only 0.05 hectare.

2.13.2.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Ash gourd (winter) is furnished in the below table.

Table 2.13.2.2: Cost of Cultivation per hectare (in Rs.) of Ash gourd- Winter (Mundakan)

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	19562	46670	60191	**35736**
2	Animal labour	0	0	0	**0**
3	Machine labour	4606	926	0	**2583**
4	Seed /seedlings	4486	2897	2939	**3696**
5	Farmyard manure and chemical fertilizers	26919	15716	20995	**22294**
6	Plant Protection	1948	1715	2470	**1974**
7	Land tax and irrigation cess	322	271	327	**307**
8	Repair and maintenance charges of implements, machinery and building	866	842	741	**835**
9	Interest on working capital	5752	6792	8660	**6628**
10	Other expenses	28607	12514	13153	**20647**
11	**Total cost 'A'(1-10)**	**93068**	**88345**	**109476**	**94700**
12	Interest on fixed capital	28608	5912	4551	**16947**
13	**Cost 'B1'(11+12)**	**121676**	**94257**	**114027**	**111647**
14	Interest on land value	453854	150637	90712	**290244**
15	**Cost 'B'(13+14)**	**575530**	**244894**	**204739**	**401892**
16	Inputed value of household labour	87670	16537	0	**48818**
17	**Cost 'C'(15+16))**	**663200**	**261431**	**204739**	**450710**



The data presented in Table 2.13.2.2 illustrates the cost of cultivation per hectare for Ash gourd(Winter). Cost A for medium holdings is significantly lower than that for small and large holdings. Hired human labour emerges as the predominant component of Cost A across all size classes. Notably, while expenses for farmyard manure and chemical fertilizers are lower in medium holdings, they still represent a substantial cost. Interestingly, small holdings incur higher repair and maintenance charges compared to large ones, which diverges from the expected trend of increasing costs with size. Overall, this analysis reveals a complex cost structure in Ash gourd cultivation, reflecting varying labour and resource requirements across different holding sizes.

Table 2.13.2.3: Percentage of hired human labour hours to total labour hours of Ash gourd- Winter (Mundakan) during 2022 - 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	11.97	53.69	80.28	**33.60**
Female	6.62	32.93	19.72	**12.74**
Total	18.59	86.62	100	**46.34**

Here the total labour is the sum of hired human labour and household human labour. In the context of ash gourd (winter) cultivation, the total labour input comprises both hired human labour and household labour. Analysis of labour contributions during the 2022-2023 period

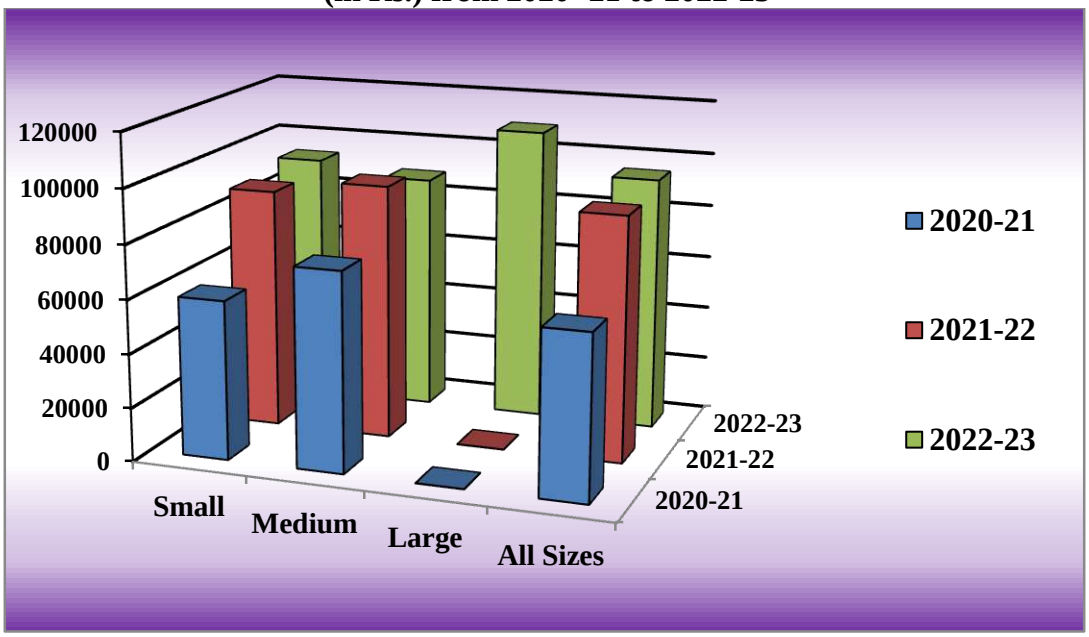
reveals distinct trends based on holding size and gender. Hired labour plays a crucial role across different holding sizes. In small holdings, male labour predominates, while female labour contributes only a small portion. As we move to medium holdings, the use of hired human labour increases, with contributions from both male and female workers rising. A significant shift occurs in large holdings, where the reliance on hired labour grows markedly, especially among male workers, but female labour also sees a growth. Overall, the data indicates a notable trend of increasing female participation in ash gourd cultivation, particularly as holding size increases, alongside a pronounced use of hired labour.

Table 2.13.2.4: Cost of cultivation of Ash gourd- Winter (Mundakan) per hectare (in Rs.) from 2020-21 to 2022-23

Holding size class	Cost A(Rs.)		
	2020 - 2021	2021 - 2022	2022 -23
Small	59109	89517	93068
Medium	73965	94684	88345
Large	0	0	109476
All Sizes	60767	90859	94700

Table 2.13.2.4 outlines the cost of ash gourd (winter) cultivation per hectare from 2020-21 to 2022-23. Throughout this period, small holdings experienced a consistent increase in costs, while medium holdings initially faced higher costs but saw a decrease in 2022-23. Overall, the data shows an upward trend in cultivation costs across all sizes. Compared to 2021-22, the percentage increase in Cost A in 2022-23 is 4.23%.

Figure 2.13.2.2: Cost of cultivation of Ash gourd- Winter (Mundakan) per hectare (in Rs.) from 2020 -21 to 2022-23



2.13.2.3Value of output

Details of product and byproduct for the year 2022-23 is given below.

Table 2.13.2.5: Value of output during the year 2022-23

Year	Holding size class	Product/Byproduct (in Rs.)
2022-2023	Small	284483
	Medium	270815
	Large	263055
	All Sizes	276150

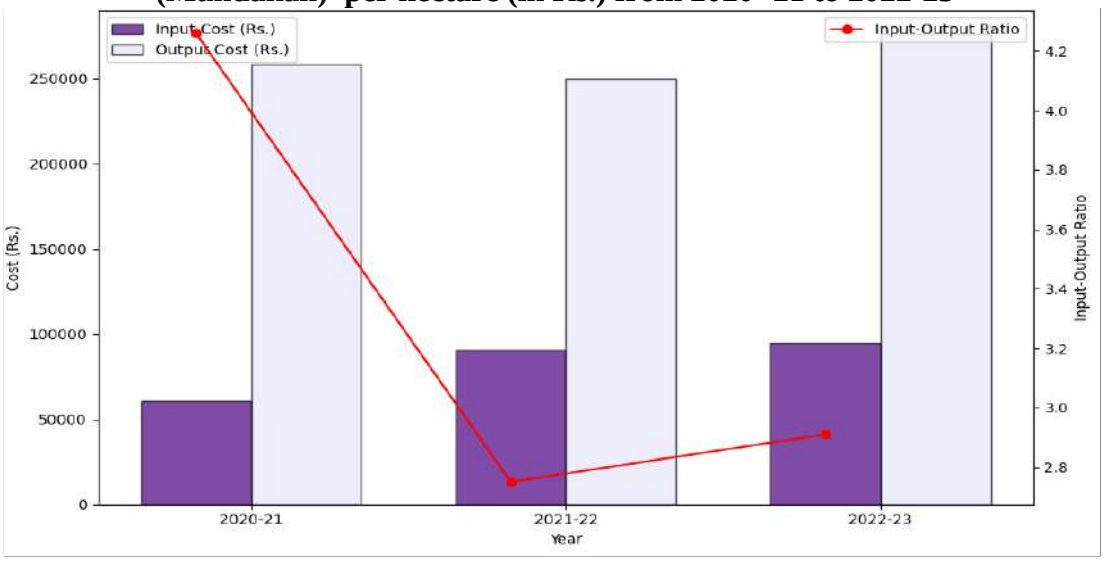
Table 2.13.2.6 presents the value of output during the year 2022-23 across different holding size classes for ash gourd. The small size class reported the highest total production, surpassing both medium and large size classes. This indicates strong productivity among small holdings.

Table 2.13.2.6: Input cost, output cost and Input-output ratio of Ash gourd- Winter (Mundakan) per hectare (in Rs.) from 2020 -21 to 2022-23

Year	Components		
	Input Cost(Rs.)	Output Cost(Rs.)	Input-output ratio
2020-21	60767	258758	4.26
2021-22	90859	249781	2.75
2022-23	94700	276150	2.92

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2022-23.

Figure 2.13.2.3: Input cost, output cost and Input-output ratio of Ash gourd- Winter (Mundakan) per hectare (in Rs.) from 2020 -21 to 2022-23



2.13.2.4Agricultural cost Ratios

1.Labour Cost Ratio:

The labour cost ratio indicates that labour expenses account for approximately 40.46% of the total Cost A. This highlights that the primary contributor to the increase in Cost A is the labour cost.

2. Costing materials used Ratio(Material cost ratio):

The material cost ratio accounts for approximately 51.33% of the total Cost A. This indicates that material costs also play a significant role in contributing to the increase in Cost A.

2.13.2.5 Key Findings

When analysing ash gourd (winter) production data over recent years, a notable trend emerges.

- Input costs have generally risen, primarily driven by increasing expenses for labour, fertilizers, and other essential inputs.
- The material costs ratio constitutes a significant portion of total Cost A. Conversely, labour cost represent a substantial share of total Cost A.
- A fluctuating input-output ratio suggests that productivity may not be keeping pace with the resources invested, particularly as the ratio has shown variability in recent years. This highlights the need for strategies to improve efficiency and optimize resource use in ash gourd farming, ensuring that rising input costs translate into better outputs.

2.13.3. ASH GOURD-SUMMER (PUNCHA)

2.13.3.1Area under Ash gourd-Summer (Puncha) Cultivation

Details of holding selected and area coverage for this study are given below. The data collected from 104 holdings according to the size class by covering 6.11 hectares of land.

Table 2.13.3.1: Number of holdings and area under Ash gourd-Summer (Puncha)

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	97	4.41	72.18	**0.05**
Medium	7	1.70	27.82	**0.24**
Large	0	0	0	**0**
Total	104	6.11	100.00	**0.06**

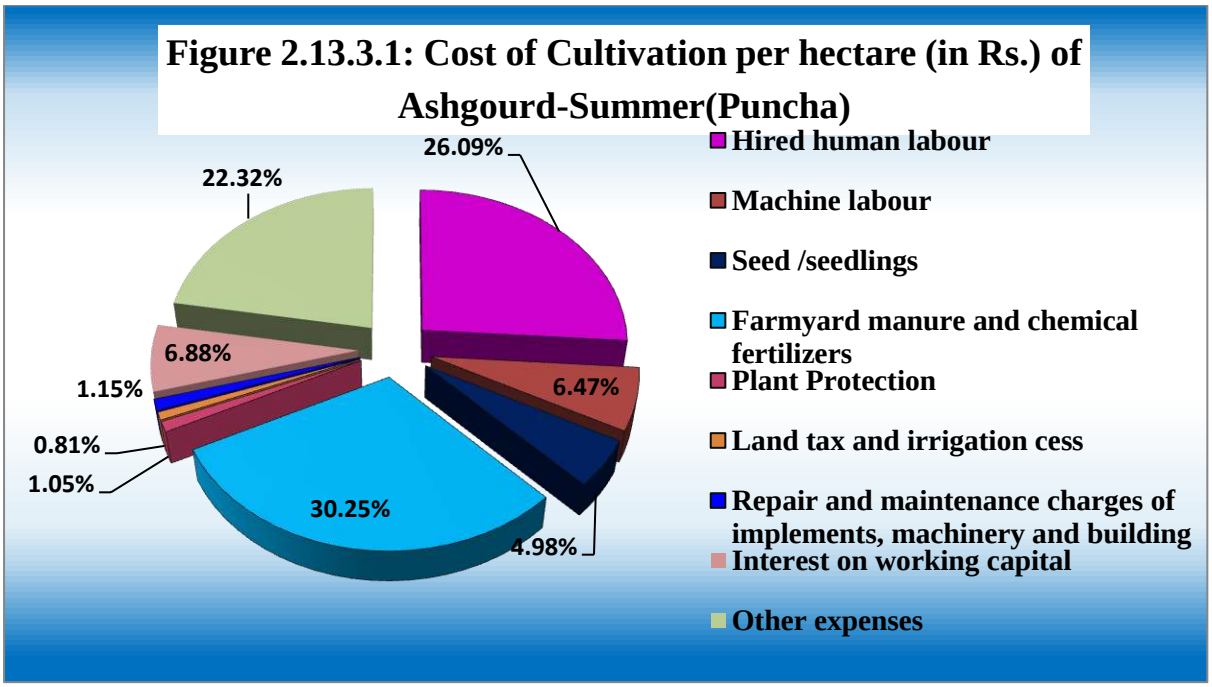
It is observed that the average area per holding is 0.06 hectares in all classes. But in small size class (ie, area less than 0.20 hectare) which comprises 97 holdings, the average area per holding is only 0.05 hectare.

2.13.3.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Ash gourd(summer) is furnished in the below table.

Table 2.13.3.2: Cost of Cultivation per hectare (in Rs.) of Ash gourd-Summer (Puncha)

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	18559	39641	0	**24427**
2	Animal labour	0	0	0	**0**
3	Machine labour	5619	7189	0	**6056**
4	Seed /seedlings	4950	3899	0	**4658**
5	Farmyard manure and chemical fertilizers	30392	22952	0	**28321**
6	Plant Protection	1019	899	0	**986**
7	Land tax and irrigation cess	717	853	0	**755**
8	Repair and maintenance charges of implements, machinery and building	1346	371	0	**1075**
9	Interest on working capital	6054	7458	0	**6445**
10	Other expenses	20328	22360	0	**20894**
11	**Total cost 'A'(1-10)**	**88985**	**105621**	**0**	**93615**
12	Interest on fixed capital	20911	7538	0	**17187**
13	**Cost 'B1'(11+12)**	**109896**	**113159**	**0**	**110802**
14	Interest on land value	444145	473922	0	**452432**
15	**Cost 'B'(13+14)**	**554040**	**587081**	**0**	**563235**
16	Inputed value of household labour	87202	51761	0	**77338**
17	**Cost 'C'(15+16))**	**641243**	**638842**	**0**	**640573**



The data presented in Table 2.13.3.2 illustrates the total costs and Cost A associated with ash gourd (summer) farming. Cost A per hectare for small holdings is lower than that of medium holdings. Hired human labour is the predominant component of Cost A across all size classes, reflecting a significant reliance on labour for production. Cost A generally increases from small to medium holdings, indicating that larger operations involve higher costs associated with labour and resources. Notably, expenses for farmyard manure and chemical fertilizers, plant protection, repair and maintenance charges are particularly high in small holdings compared to medium ones. Overall, the analysis indicates a complex cost structure in ash gourd cultivation, highlighting the varying labour and resource requirements across different holding sizes.

Table 2.13.3.3: Percentage of hired human labour hours to total labour hours of Ash gourd-Summer(Puncha) during 2022 – 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	14.73	32.35	0	19.09
Female	1.38	11.70	0	3.12
Total	16.11	44.05	0	22.21

In the context of ash gourd (autumn) cultivation, the total labour hour comprises both hired human labour hour and household labour hour. Analysis of labour contributions during the 2022-2023 period reveals distinct trends based on holding size and gender. Hired labour plays

a crucial role across different holding sizes. In small holdings, male labour predominates, while female labour contributes only a small portion.

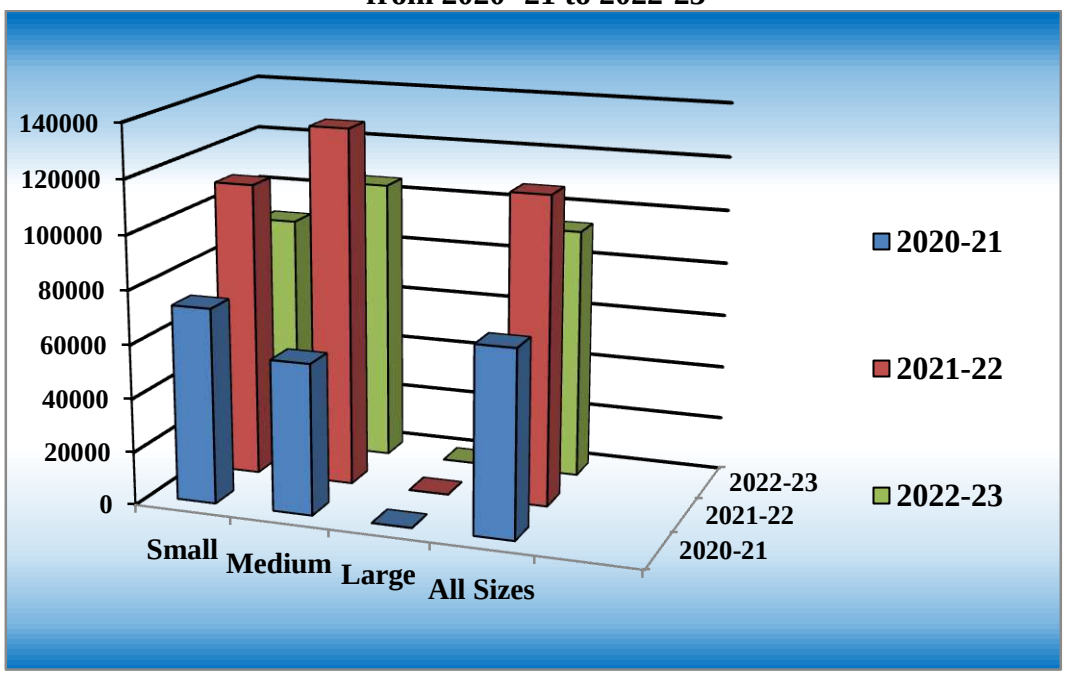
As we move to medium holdings, there is a significant increase in the use of hired labour, with both male and female contributions rising. Overall, the data indicates a clear trend of increasing dependence on hired labour in medium-sized holdings.

Table 2.13.3.4: Cost of cultivation of Ash gourd-Summer (Puncha) per hectare (in Rs.) from 2020 -21 to 2022-23

Holding size class	Cost A(Rs.)		
	2020 - 2021	2021 - 2022	2022 -23
Small	72960	110415	88985
Medium	56349	133576	105621
Large	0	0	0
All Sizes	69373	114748	93615

Table 2.13.3.4 outlines the cost of ash gourd (summer) cultivation per hectare from 2020-21 to 2022-23. Throughout this period, medium holdings generally faced the highest costs than small holdings, particularly in the recent years. Overall, the analysis shows that small and medium holdings experienced significant variations in costs, with medium holdings having the highest expenses in 2021-22. Compared to 2021-22, the percentage decrease in Cost A in 2022-23 is approximately 18.41%.

Figure 2.13.3.2: Cost of cultivation of Ash gourd-Summer(Puncha) per hectare (in Rs.) from 2020 -21 to 2022-23



2.13.3.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.13.3.5: Value of output during the year 2022-23

Year	Holding size class	Product/Byproduct (in Rs.)	
		Product	Total
2022-2023	Small	279328	279328
	Medium	208006	208006
	Large	0	0
	All Sizes	259477	259477

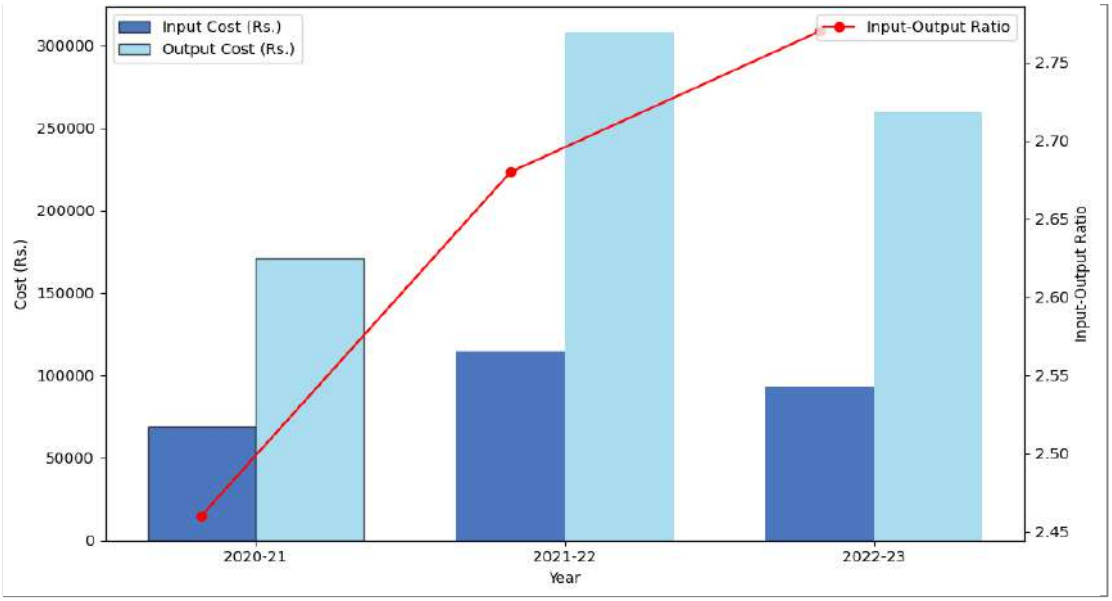
Table 2.13.3.6 presents the value of output during the year 2022-23 across different holding size classes for ash gourd (summer). The small size class reported the highest total production, significantly surpassing the medium size class.

Table 2.13.3.6: Input cost, output cost and Input-output ratio of Ash gourd-Summer (Puncha) per hectare (in Rs.) from 2020 -21 to 2022-23

Year	Components		
	Input Cost(Rs.)	Output Cost(Rs.)	Input-output ratio
2020-21	69373	170956	2.46
2021-22	114748	308007	2.68
2022-23	93615	259477	2.77

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2022-23.

Figure 2.13.3.3: Input cost, output cost and Input-output ratio of Ash gourd-Summer(Puncha) per hectare (in Rs.) from 2020 -21 to 2022-23



2.13.3.4 Agricultural cost Ratios

1.Labour Cost Ratio:

The labour cost ratio indicates that labour expenses account for approximately 32.56% of the total Cost A. This highlights that the primary contributor to the increase in Cost A is the labour cost.

2. Costing materials used Ratio(Material cost ratio):

The material cost ratio accounts for approximately 58.60% of the total Cost A. This indicates that material costs also play a significant role in contributing to the increase in Cost A.

2.13.3.5 Key Findings

When examining ash gourd (summer) production data from recent years, a clear trend emerges.

- Overall input costs have tended to increase, largely due to rising expenses for labour, fertilizers, and other critical inputs.
- The material costs ratio makes up a significant portion of total Cost A. In contrast, labour cost form a notable part of the overall Cost A.
- Increasing input-output ratio indicates the efficiency in ash gourd cultivation.

2.14

CUCUMBER

2.14.0 Introduction

Cucumbers (Cucumis sativus) are a popular vegetable known for their refreshing taste and versatility in culinary applications. Cultivating cucumbers can be a profitable venture for farmers, given their high market demand. However, understanding the cost of cultivation is crucial for assessing profitability and making informed decisions. The crop thrives in warm temperatures and requires moderate rainfall. The farming process involves preparing well-drained soil, sowing seeds, and ensuring proper irrigation and pest management.

This chapter aims to provide a comprehensive overview of the cost components involved in cucumber cultivation in Kerala. It covers essential aspects such as land preparation, seeds and planting materials, labour costs, inputs like fertilizers and pesticides, irrigation, and other operational expenses.

2.14.1 CUCUMBER -AUTUMN (VIRIPPU)

2.14.1.1 Area under Cucumber –Autumn Cultivation

For this study details of holding selected and area coverage are given below.The data collected from 137 sample holding by covering 16.52 hectares and the average area per holding is 0.12 hectare.

Table 2.14.1.1: Number of holdings and area under Cucumber - Autumn

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	108	7.53	45.58	**0.07**
Medium	29	8.99	54.42	**0.31**
Large	0	0	0	**0**
Total	137	16.52	100	**0.12**

2.14.1.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Cucumber - Autumn is furnished in the below table.

Table 2.14.1.2: Cost of Cultivation per hectare (in Rs.) of Cucumber - Autumn

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	28749	31220	0	**30093**
2	Animal labour	0	0	0	**0**
3	Machine labour	212	3146	0	**1808**
4	Seed /seedlings	3944	2123	0	**2953**
5	Farmyard manure and chemical fertilizers	20756	16805	0	**18606**
6	Plant Protection	1736	1924	0	**1838**
7	Land tax and irrigation cess	304	190	0	**242**
8	Repair and maintenance charges of implements, machinery and building	1380	299	0	**792**
9	Interest on working capital	5540	5522	0	**5530**
10	Other expenses	17826	17971	0	**17905**

11	**Total cost 'A'(1-10)**	**80446**	**79200**	**0**	**79768**
12	Interest on fixed capital	7263	581	0	**3628**
13	**Cost 'B1'(11+12)**	**87709**	**79781**	**0**	**83397**
14	Interest on land value	433074	514157	0	**477182**
15	**Cost 'B'(13+14)**	**520783**	**593937**	**0**	**560578**
16	Inputed value of household labour	85683	36815	0	**59100**
17	**Cost 'C'(15+16)**	**606466**	**630753**	**0**	**619678**

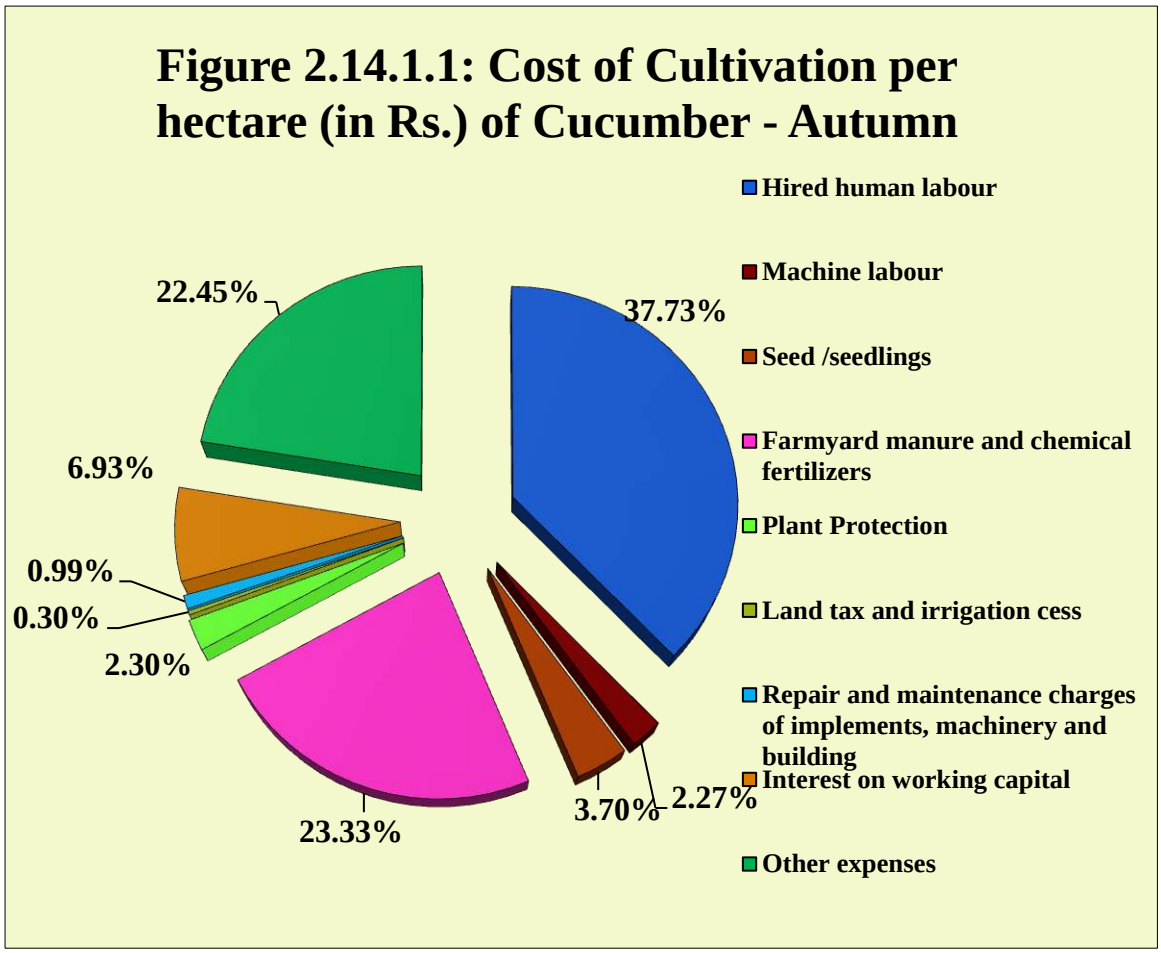


Table 2.14.1.2 and figure 2.14.1.1 shows the total costs and Cost A percentage of Cucumber farming. The Cost A of autumn cucumber per hectare shows a decrease from small to large holdings. This is due to decreased cost in most of the cost components. It is noted that the per hectare cost towards hired human measures is on increassing trend as compared to other components of Cost A.

Table 2.14.1.3: Percentage of hired human labour hours to total labour hours of CucumberAutumn during 2022 - 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	22.91	41.93	0	**30.99**
Female	4.86	7.29	0	**4.20**
Total	**27.77**	**49.22**	**0**	**35.19**

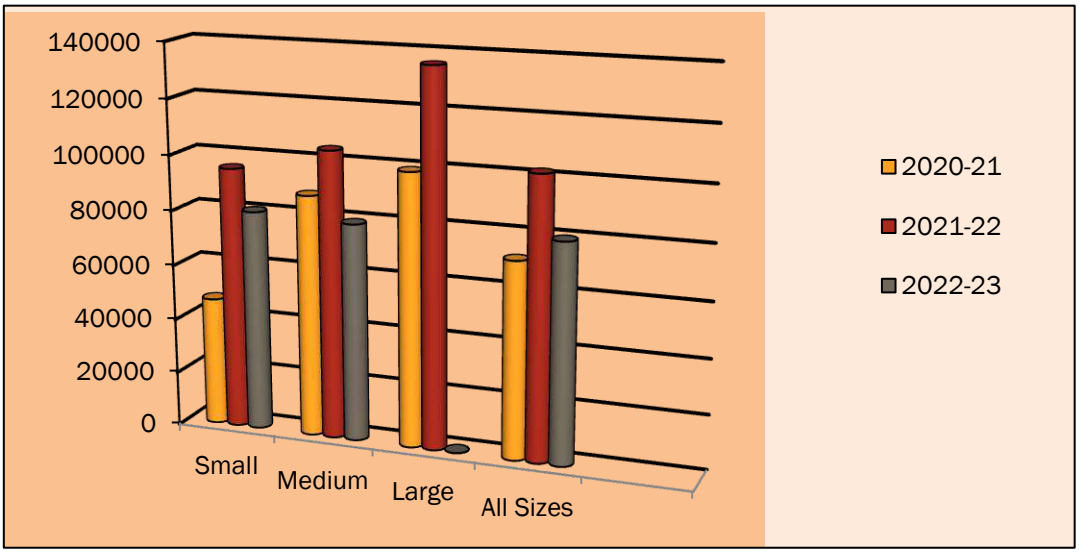
Here the total labour is the sum of hired human labour and household human labour. As usual proportion to hired labour, total labour input is higher for medium holding as compared with other holdings. That is, male belonging to medium class are seem to depend more of their requirements on hired labour during 2022-23.

Table 2.14.1.4: Cost of cultivation of Autumn Cucumber per hectare (in Rs.) from 2020 -21to 2022-23

Holding size class	Cost A(Rs.)		
	2020-21	2021-22	2022-2023
Small	46974	95352	80446
Medium	87954	104493	79200
Large	99211	135920	0
All Sizes	71630	102037	79768

The above table of cucumber (autumn) shows that the overall cost increased from 2020-21 to 2022-23. The total increase over the three years represents an approximate rise of 20.2%. The cost trend indicates some fluctuations, with a peak in 2020-21 followed by a decrease in 2021-22. However, it regain in 2022-23.

Figure 2.14.1.2: Cost of cultivation of Cucumber - Autumn per hectare (in Rs.) from 2020 -21 to 2022-23



Cost over the three years shows a general upward trend with some fluctuations, suggesting that while costs are increasing, there are periods of stabilization and minor decreases.

2.14.1.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.14.1.5: Value of output during the year 2022-23

Year	Holding size class	Product/Byproduct (in Rs.)
2022-2023	Small	261716
	Medium	190293
	Large	0
	All Sizes	222863

The estimated value of cucumber production per hectare during the autumn season in 2022-23 is Rs. 2,22,863/-, while the cost of cultivation per hectare stands at Rs. 79,768/-. This indicates a profitable return from cucumber cultivation during the specified year.

Table 2.14.1.6: Input cost, output cost and Input-output ratio of Autumn Cucumber per hectare (in Rs.) from 2020 -21 to 2022-23

Year	Components		
	Input Cost(Rs.)	Output Cost(Rs.)	Input-output ratio
2020-21	71630	145425	2.03
2021-22	102037	254016	2.49
2022-23	79768	222863	2.79

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2022-23.

Figure 2.14.1.3: Input cost, output cost and Input-output ratio of Cucumber per hectare (in Rs.) from 2020 -21 to 2022-23

2.14.1.4 Agricultural cost Ratios

1. Labour Cost Ratio

The labour cost ratio indicates that labour expenses account for approximately 39.99% of the total Cost A. This highlights that the primary contributor to the increase in Cost A is the labour cost.

2. Costing materials used Ratio(Material cost ratio)

The material cost ratio accounts for approximately 51.77% of the total Cost A. This indicates that material costs also play a significant role in contributing to the increase in Cost A.

2.14.1.5 Key Findings

- The input costs were highest in 2021-22, likely reflecting increased prices of inputs such as seeds, fertilizers, labour, or other factors.
- The Material Cost Ratio (52%) is significantly higher than the Labour Cost Ratio (40%). This suggests that a larger portion of the total costs is attributed to material expenses compared to labour costs.
- Despite a small decline in output value compared to 2021–2022, 2022–2023 had the best profitability (input-output ratio of 2.79), indicating that input costs were more effectively optimized.

2.14.2 CUCUMBER -WINTER (MUNDAKAN)

2.14.2.1Area under Cucumber -Winter cultivation

For this study details of holding selected and area coverage are given below.The data collected from 168 sample holding by covering 15.15 hectares and the average area per holding is 0.09 hectare.

Table 2.14.2.1: Number of holdings and area under Cucumber - Winter

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	147.00	8.70	57.43	**0.06**
Medium	21.00	6.46	42.64	**0.31**
Large	0	0	0	**0**
Total	168.00	15.15	100.00	**0.09**

2.14.2.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Cucumber Winter is furnished in the below table.

Table 2.14.2.2: Cost of Cultivation per hectare (in Rs.) of Cucumber Winter during 2022-23

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	35823	33872	0	**34992**
2	Animal labour	0	0	0	**0**
3	Machine labour	3133	2524	0	**2874**
4	Seed /seedlings	4617	3558	0	**4166**
5	Farmyard manure and chemical fertilizers	33152	25743	0	**29995**
6	Plant Protection	2570	1379	0	**2063**
7	Land tax and irrigation cess	728	349	0	**567**
8	Repair and maintenance charges of implements, machinery and building	860	172	0	**567**
9	Interest on working capital	7930	6708	0	**7409**
10	Other expenses	23190	17406	0	**20725**
11	**Total cost 'A'(1-10)**	**112003**	**91712**	**0**	**103357**
12	Interest on fixed capital	21881	3215	0	**13930**
13	**Cost 'B1'(11+12)**	**133884**	**94927**	**0**	**117287**
14	Interest on land value	434242	334657	0	**391806**
15	**Cost 'B'(13+14)**	**568126**	**429584**	**0**	**509093**
16	Inputed value of household labour	91031	56389	0	**76269**
17	**Cost 'C'(15+16)**	**659157**	**485973**	**0**	**585362**

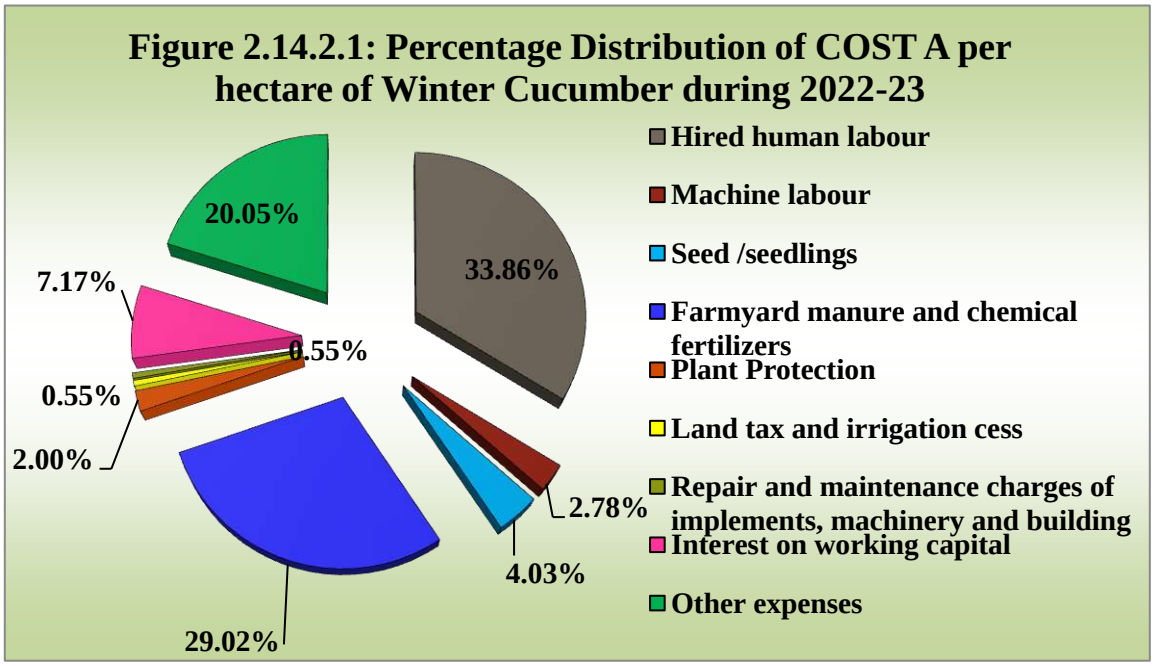


Table 2.14.2.2 and figure 2.14.2.1 shows the total costs and Cost A percentage of Cucumber farming. The Cost A of winter cucumber per hectare shows a decrease from small to large holdings. This is due to decreased cost in most of the cost components. Noted decrease happened in input cost like human labour, seedlings, plant protection and repair and maintenance charge.

Table 2.14.2.3: Percentage of hired human labour hours to total labour hours of Cucumber Winter during 2022 - 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	18.52	33.33	0	**22.96**
Female	4.60	7.94	0	**4.47**
Total	23.12	41.27	0	**27.43**

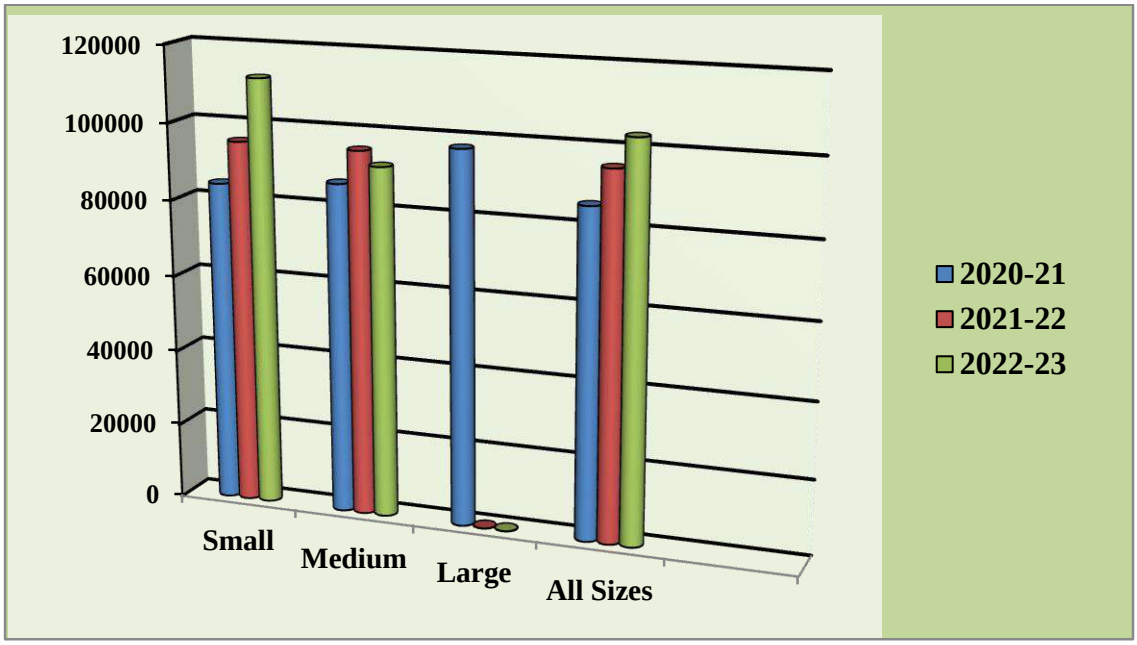
Here the total labour is the sum of hired human labour and household human labour. As usual proportion to hired labour, total labour input is higher for medium holding as compared with other holdings. That is, male belonging to medium class are seem to depend more of their requirements on hired labour during 2022-23.

Table 2,14.2.4: Cost of cultivation of Winter Cucumber per hectare (in Rs.) from 2020-21 to 2022-23

Holding size class	Cost A		
	2020-21	2021-22	2022-2023
Small	84336	95534	112003
Medium	86619	95396	91712
Large	97660	0	0
All Sizes	85948	95466	103357

The last three-year data shows an increase in cost of Winter cucumber from 2020-21 to 2022-23. A cumulative increase of approximately 20.2% from 2020-21 to 2022-23 indicates a general upward trend in costs across all holding sizes.

Figure 2.14.2.2: Cost of cultivation of Winter Cucumber per hectare (in Rs.) from 2020-21 to 2022-23



2.14.2.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.14.2.5: Value of output during the year 2022-23

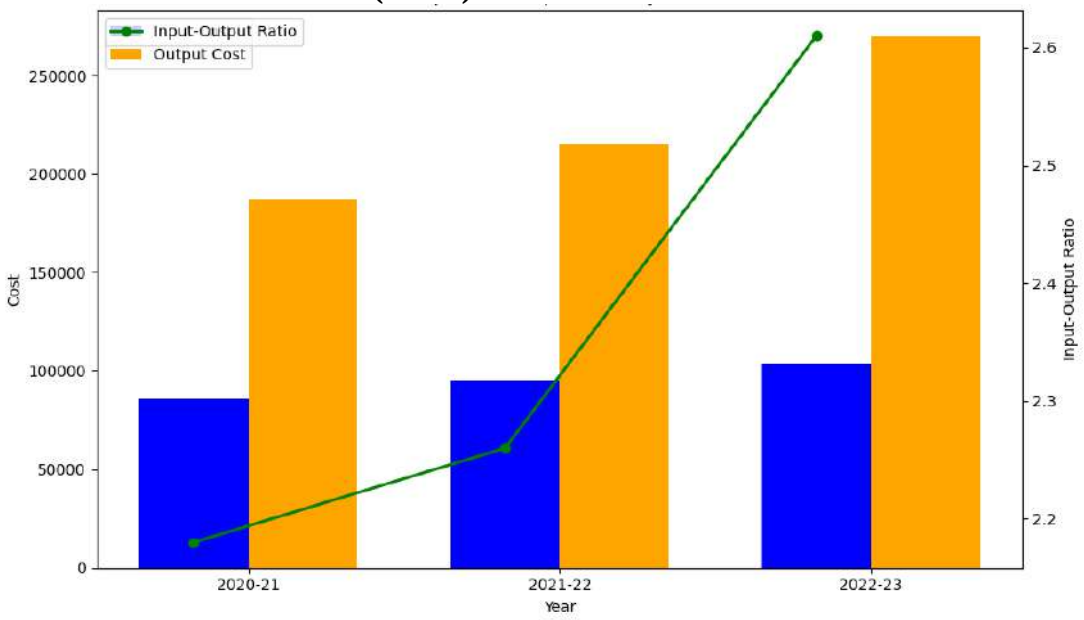
Year	Holding size class	Product/Byproduct (in Rs.)
2022-2023	Small	303970
	Medium	222999
	Large	0
	All Sizes	269466

Table.2.14.2.6 Input cost. Output cost and Input-output cost ratio of cucumber Winter per hectare (in Rs.) from 2020-21 to 2022-23

Year	Components		
	Input Cost	Output Cost	Input-output ratio
2020-21	85948	187145	2.18
2021-22	95466	215463	2.26
2022-23	103357	269466	2.61

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2022-23.

Figure 2.14.2.3: Input cost, output cost and Input-output ratio of Winter Cucumber per hectare (in Rs.) from 2020 -21 to 2022-23



2.14.2.4 Agricultural cost Ratios

1.Labour Cost Ratio:

The labour cost ratio indicates that labour expenses account for approximately 36.63% of the total Cost A. This highlights that the primary contributor to the increase in Cost A is the labour cost.

2. Costing materials used Ratio(Material cost ratio):

The material cost ratio accounts for approximately 55.09% of the total Cost A. This indicates that material costs also play a significant role in contributing to the increase in Cost A.

2.14.2.5 Key Findings

- The Material Cost Ratio shows that about **55%** of the total costs are related to material expenses. This indicates a substantial investment in materials needed for production.
- Labour cost ratio indicates that labour efficiency is reduced effectively cost management.
- The comparison of input-output ratios over the three years reveals a positive trend in productivity, with notable improvements particularly between 2021-22 and 2022-23.

2.14.3 CUCUMBER-SUMMER(PUNCHA)

2.14.3.1 Area under Cucumber-Summer Cultivation

For this study details of holding selected and area coverage are given below. The data collected from 219 sample holding by covering 17.42 hectares and the average area per holding is 0.08 hectare.

Table 2.14.3.1: Number of holdings and area under Cucumber- Summer

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	202	10.72	61.54	**0.05**
Medium	15	4.27	24.51	**0.28**
Large	2	2.43	13.95	**1.22**
Total	**219**	**17.42**	**100.00**	**0.08**

2.14.3.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of **Cucumber Summer** is furnished in the below table.

Table 2.14.3.2: Cost of Cultivation per hectare (in Rs.) of Cucumber(Summer)

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	38492	38190	24679	**36491**
2	Animal labour	0	0	0	**0**
3	Machine labour	3128	2763	8069	**3728**
4	Seed /seedlings	4764	3241	3507	**4215**
5	Farmyard manure and chemical fertilizers	30744	29028	30076	**30230**
6	Plant Protection	1508	1948	1050	**1552**
7	Land tax and irrigation cess	676	156	0	**454**
8	Repair and maintenance charges of implements, machinery and building	2527	1141	226	**1866**
9	Interest on working capital	7864	7517	6738	**7622**
10	Other expenses	22503	28141	38753	**26152**
11	**Total cost 'A'(1-10)**	**112206**	**112125**	**113099**	112311
12	Interest on fixed capital	20860	2835	4362	**14137**

13	**Cost 'B1'(11+12)**	**133066**	**114960**	**117462**	126447
14	Interest on land value	479205	506263	125052	**436447**
15	**Cost 'B'(13+14)**	**612272**	**621224**	**242514**	562894
16	Inputed value of household labour	94456	63953	21530	**76804**
17	**Cost 'C'(15+16)**	**706727**	**685177**	**264044**	**639699**

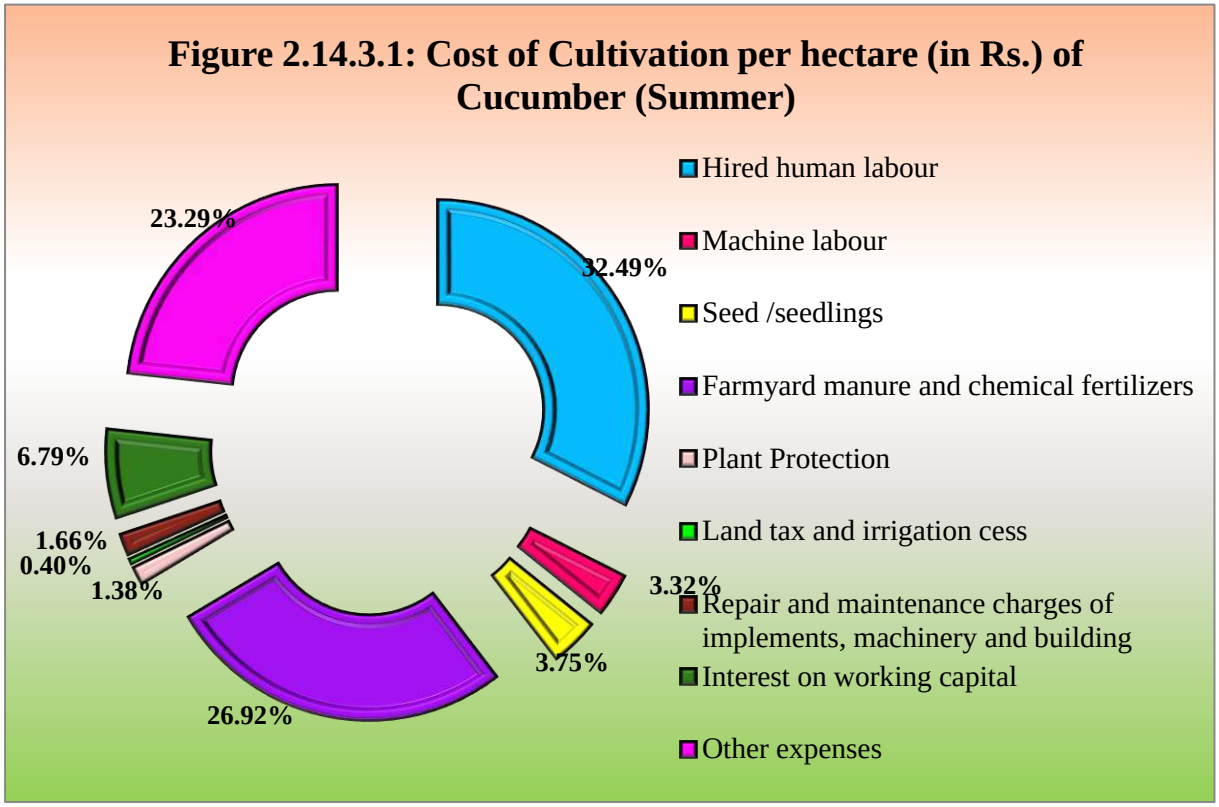


Table 2.14.3.2 and figure 2.14.3.1 shows the total costs and Cost A percentage of Cucumber farming. The Cost A of summer cucumber per hectare shows a fluctuation from small to large holdings. This is due to fluctuation of cost in most of the cost components. Noted fluctuation happened in input cost human labour, seed/seedlings, plant protection and repair and mainteanace charge.

Table 2.14.3.3: Percentage of hired human labour hours to total labour hours of Cucumber Summer during 2022 - 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	21.52	34.75	26.04	**24.40**
Female	3.72	0	30.33	**3.72**
Total	**24.72**	**34.75**	**56.37**	**28.12**

Here the total labour is the sum of hired human labour and household human labour. As usual proportion to hired labour, total labour input is higher for medium holding as compared with

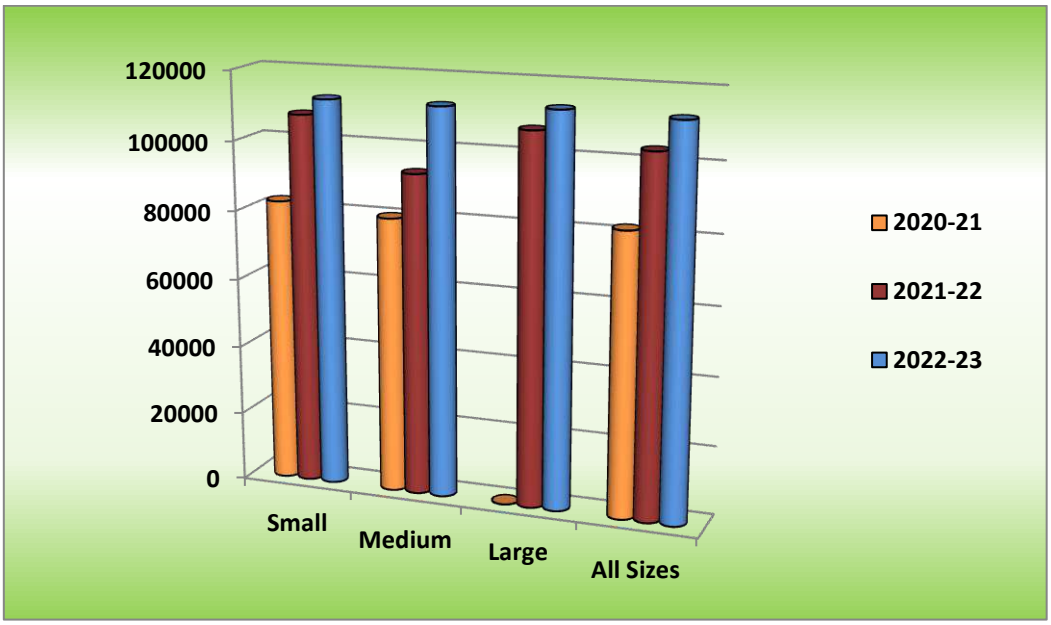
other holdings. The overall shows that, male are seem to depend more of their requirements on hired labour as compared to females during 2022-23.

Table 2.14.3.4: Cost of cultivation of Summer Cucumber per hectare (in Rs.) from 2020 -21 to 2022-23

Holding size class	Cost A (Rs.)		
	2020-21	2021-22	2022-2023
Small	82379	107495	112206
Medium	79954	93006	112125
Large	0	107122	113099
All Sizes	81859	103591	112311

The three-year comparison highlights significant cost increases, particularly in the last year, for small and medium holdings.All size shows an increasing trend over years and the highest cost occurred in 2022-23.

Figure 2.14.3.2: Cost of cultivation of Summer Cucumber per hectare(in Rs.)from 2020-21 to 2022-23



2.14.3.3Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.14.3.5: Value of output during the year 2022-23

Year	Holding size class	Product/Byproduct (in Rs.)
2022-2023	Small	292446
	Medium	296319
	Large	211430
	All Sizes	282096

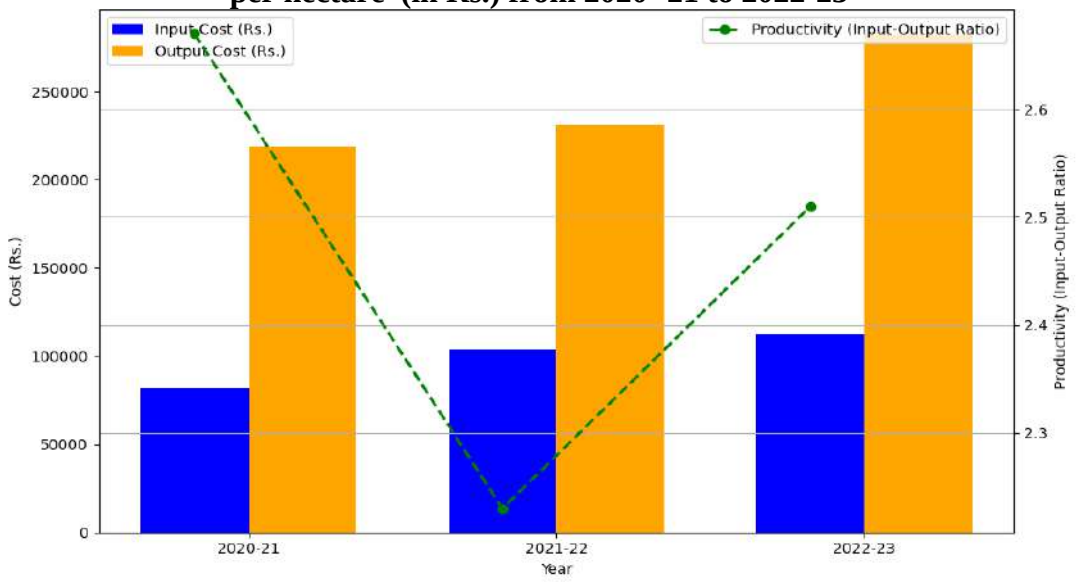
In 2022-2023, medium holdings achieved the highest revenue, followed closely by medium holdings. However, the absence of data for large holdings leaves a gap in the analysis. The overall revenue indicates a positive trend, but it's crucial to manage rising costs to maintain profitability in the future.

Table 2.14.3.6: Input cost, output cost and Input-output ratio of Summer Cucumber per hectare (in Rs.) from 2020 -21 to 2022-23

Year	Components		
	Input Cost(Rs.)	Output Cost(Rs.)	Input-output ratio
2020-21	81859	218802	2.67
2021-22	103591	231026	2.23
2022-23	112311	282096	2.51

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2020-21.

Figure 2.14.3.3: Input cost, output cost and Input-output ratio of Summer Cucumber per hectare (in Rs.) from 2020 -21 to 2022-23



2.14.3.4 Agricultural cost Ratios

1. Labour Cost Ratio

The labour cost ratio indicates that labour expenses account for approximately 35.81% of the total Cost A. This highlights that the primary contributor to the increase in Cost A is the labour cost.

2. Costing materials used Ratio (Material cost ratio)

The material cost ratio make up about 55.33% of total cost A. This indicates that Material cost Ratio is also a major contribution to an increased Cost A.

2.14.3.5 Key Findings

- Labour costs account for a substantial portion (36%) of the total cost, indicating a reasonable dependence on human and animal labour.
- Material costs make up a larger share (55%), shows the importance of external inputs like seeds, fertilizers, and plant protection.
- The input-output ratio shows fluctuation but overall improvement, from 2020-21, to 2022-23.

SNAKE GOURD

2.15.0 Introduction

Snake Gourd (Trichosanthes anguria) a nutritious and versatile vegetable of Kerala belongs to the cucurbitaceous family. It can be grown both as summer and rainy season crop. India is thought to be its place of origin. Snake gourd needs a warm and humid climate for better plant growth and fruit development.

The cost of cultivation of this crop is collected by the department from 2020-21 onwards. This chapter aims to provide a comprehensive overview of the key cost components involved in Snake Gourd (autumn, winter and summer)cultivation in Kerala, which covers essential factors such as land preparation, acquisition of planting materials, labour costs, inputs like fertilizers and pesticides, irrigation systems, and other operational expenses.

2.15.1 SNAKE GOURD-AUTUMN (VIRIPPU)

2.15.1.1 Area under Snake gourd-Autumn Cultivation

Details of holding selected and area coverage for this study are given below. The data collected from 213 holdings according to the size class by covering 20.16 hectares of land.

Table 2.15.1.1: Number of holdings and Area under Snake gourd-Autumn

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	183.00	11.70	58.04	**0.06**
Medium	30.00	8.46	41.96	**0.28**
Large	0	0	0	**0**
Total	213.00	20.16	100.00	**0.09**

It is observed that the average area per holding is 0.09 hectares in all classes while average area per holding in medium size class, ie between 0.20 hectares and 0.80 hectares is 0.28 hectares. But in small size class, ie, less than 0.20 hectare which comprises 183 holdings, the average area per holding is only 0.06 hectare.

2.15.1.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Snake gourd autumn is furnished in the below table.

Table 2.15.1.2: Cost of Cultivation per hectare (in Rs.) of Snake gourd-Autumn

Sl. No	Components	Holding Size Class			
		Small	**Medium**	**Large**	All Sizes
1	Hired human labour	52086	49191	0	**50871**
2	Animal labour	-	-	-	**-**
3	Machine labour	548	2266	0	**1269**
4	Seed /seedlings	5462	4081	0	**4883**
5	Farmyard manure and chemical fertilizers	24229	22942	0	**23689**
6	Plant Protection	5617	3724	0	**4823**
7	Land tax and irrigation cess	276	162	0	**228**

8	Repair and maintenance charges of implements, machinery and building	1647	269	0	**1068**
9	Interest on working capital	8794	8221	0	**8553**
10	Other expenses	40659	38754	0	**39859**
11	Total cost 'A'(1-10)	**139318**	**129611**	**0**	**135244**
12	Interest on fixed capital	17607	8605	0	**13830**
13	Cost 'B1'(11+12)	156925	138216	0	**149075**
14	Interest on land value	437304	438806	0	**437935**
15	Cost 'B'(13+14)	594230	577022	0	**587009**
16	Inputed value of household labour	95791	57087	0	**79548**
17	Cost 'C'(15+16))	690021	634109	0	**666557**

Figure 2.15.1.1: Cost of Cultivation per hectare (in Rs.) of Snake gourd autumn

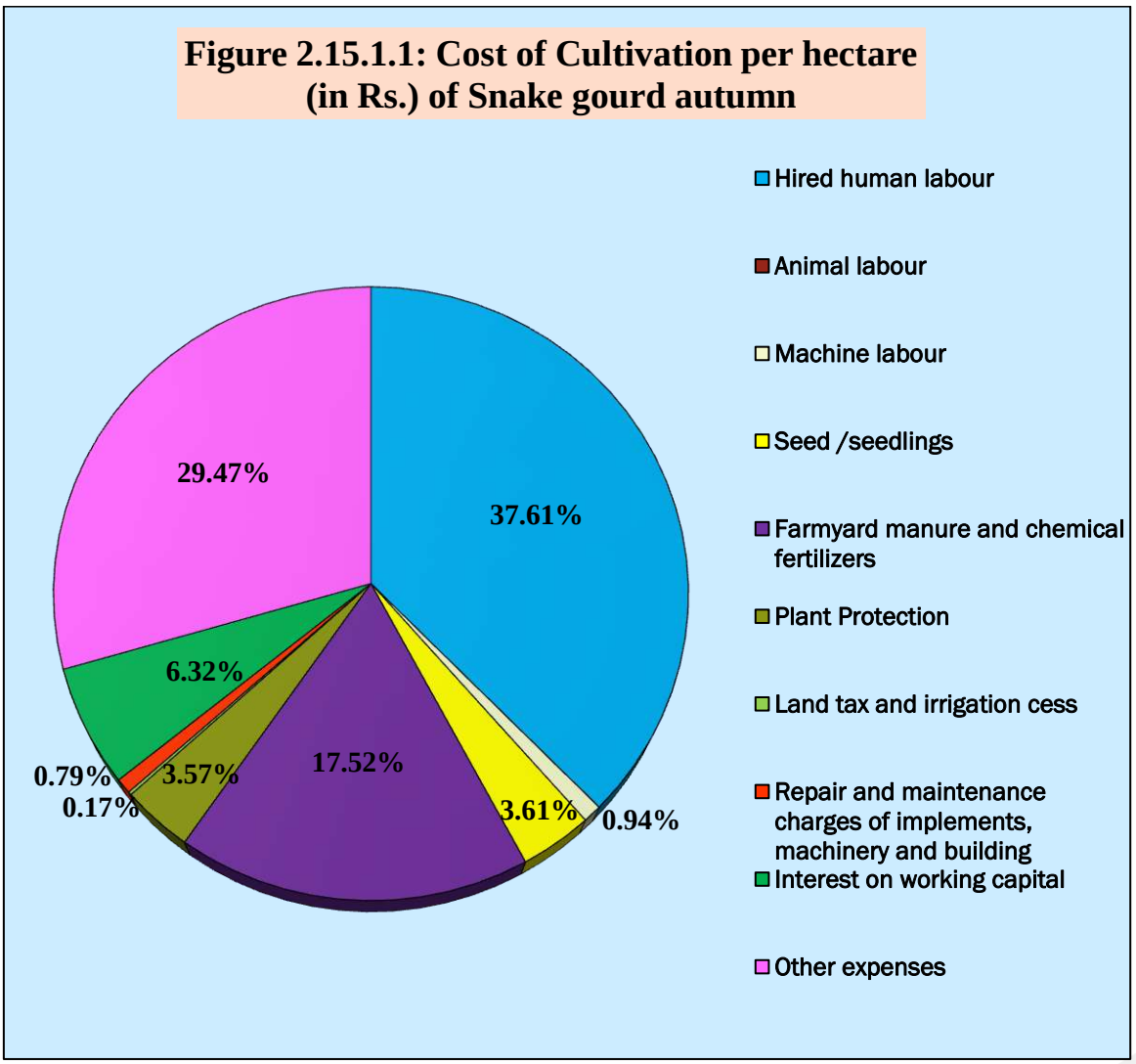


Table: 2.15.1.2 and **figure 2.15.1.1** shows the total costs and Cost A percentage of Snake gourd autumn farming. Cost A of Snake gourd-autumn was dominated by hired human labour, other expense and farmyard manure and chemical fertilizers. Also it is evident that the small holding needs higher cost for hired human labour, machine labour, interest on working capital and other expenses, but there are exceptions such as seed/seedlings and plant protection ie, cost is increase from small to medium holdings. There exist a strong dependence on human labour for small operations likewise the inputed value of house hold labour. When it comes to total costs, small holdings occupies higher cost in Snake gourd autumn as compared with others during 2022-23.

Table 2.15.1.3: Percentage of hired human labour hours to total labour hours of Snake gourd Autumn during 2022 - 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	32.45	32.81	0	**32.58**
Female	5.62	19.49	0	**8.54**
Total	**38.07**	**52.30**	**0**	**41.12**

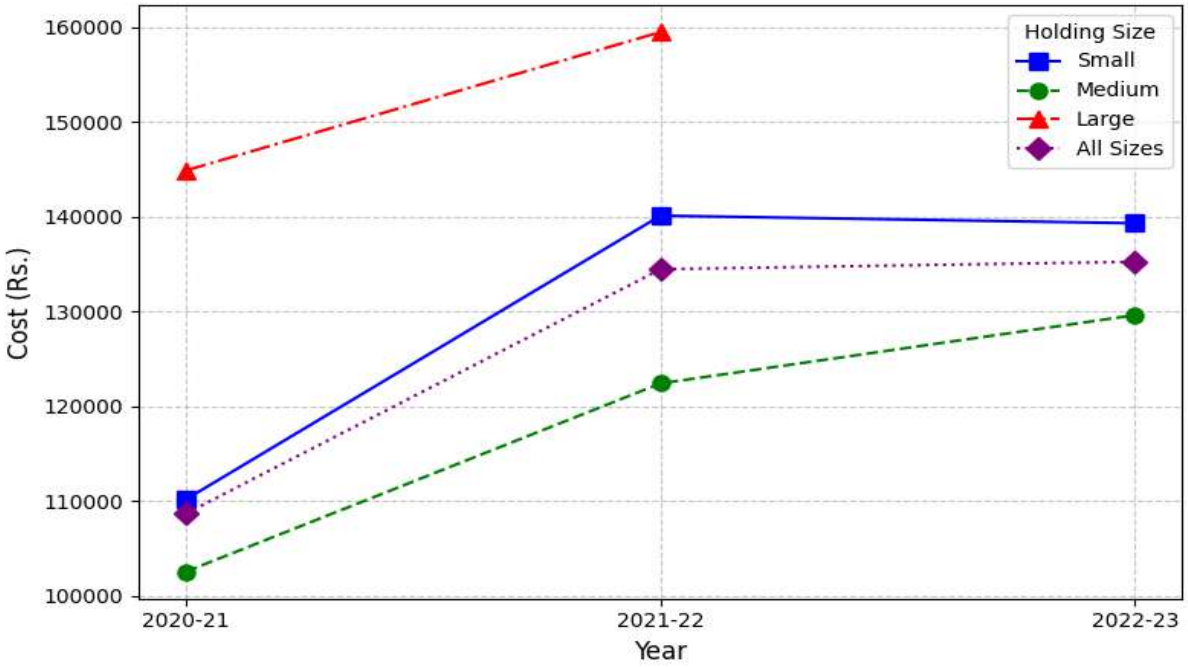
Here the total labour is the sum of hired human labour and household human labour. As usual proportion to hired labour, total labour input is higher for medium holding as compared with other holdings. Also small holdings are primarily male-dominated, with women participating at a much lower rate but the female participation is notably higher in medium holdings than in small holdings.

Table 2.15.1.4: Cost of cultivation of Snake gourd autumn per hectare (in Rs.) from 2020-21 to 2022-23

Holding size class	Cost A(Rs.)		
	2020-21	2021-22	2022-2023
Small	110161	140116	139318
Medium	102522	122399	129611
Large	144891	159512	0
All Sizes	108657	134465	135244

The data indicates a general upward trend in costs for all holding size classes, with the largest increase occurring between 2020-21 and 2021-22. Compared to 2021-22, percentage increase in Cost A in 2022-23 is 0.58%.

Figure 2.15.1.2: Cost of cultivation of Snake gourd autumn per hectare (in Rs.) from 2020-21 to 2022-23



2.15.1.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.15.1.5: Value of output during the year 2022-23

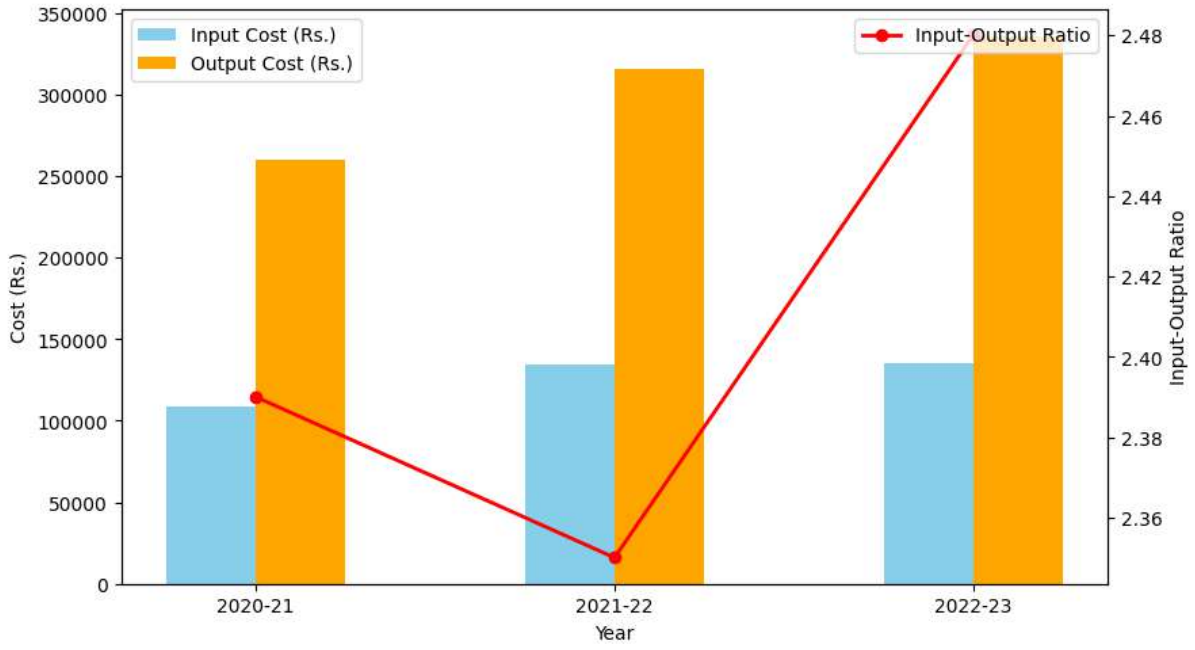
Holding size class	Product (in Rs.)
Small	339925
Medium	329457
Large	0
All Sizes	335532

Here the small holdings consistently demonstrates higher production level compared to the Medium class.

Table 2.15.1.6: Input cost, output cost and Input-output ratio of Snake gourd autumn per hectare (in Rs.) from 2020-21 to 2022-23

Year	Components		
	Input Cost (Rs.)	**Output Cost (Rs.)**	**Input-output ratio**
2020-21	108657	259779	2.39
2021-22	134465	315524	2.35
2022-23	135244	335532	2.48

Figure 2.15.1.3: Input cost, output cost and Input-output ratio of Snake gourd autumn per hectare (in Rs.) from 2020-21 to 2022-23



2.15.1.4 Agricultural cost Ratios

1. The labour cost ratio: The labour cost ratio indicates that labour expenses account for approximately 38.55% of the total Cost A.

2. Costing materials used Ratio (Material cost ratio): The material cost ratio accounts for approximately 54.16 % of the total Cost A. This indicates that material costs plays a significant role in contributing to the increase in Cost A.

2.15.1.5 Key Findings

- The cost of cultivation of Snake gourd autumn is increasing over each year and this improvement is seen in the production also.
- By interpreting the input-output ratio(productivity), it increased significantly from 2020-21 to 2022-23 provides insights into the efficiency of the agricultural operation in converting inputs into outputs over the years and the change depends upon the cultivators selected for this survey under each year.
- The material cost ratio is higher than that of labour cost ratio. Together, these ratios imply that labour and material costs collectively make up a substantial majority of total costs (over 92%). This suggests that efforts to improve cost efficiency should focus on both labour and material inputs.

2.15.2 SNAKE GOURD -WINTER (MUNDAKAN)

2.15.2.1 Area under Snake gourd –Winter cultivation

Details of holding selected and area coverage for this study are given below. The data collected from 232 holdings according to the size class by covering 22.49 hectares of land.

Table 2.15.2.1: Number of holdings and Area under Snake gourd -Winter

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	195	12.00	53.36	**0.06**
Medium	37	10.49	46.64	**0.28**
Large	0	0	0	**0**
Total	232	22.49	100.00	**0.10**

It is observed that the average area per holding is 0.10 hectares in all classes while average area per holding in medium size class, ie between 0.20 hectares and 0.80 hectares is 0.28 hectares. But in small size class, ie, less than 0.20 hectare which comprises 195 holdings, the average area per holding is only 0.06 hectare.

2.15.2.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Snake gourd -Winter is furnished in the below table.

Table 2.15.2.2: Cost of Cultivation per hectare (in Rs.) of Snake gourd-Winter

Sl. No	Components	Holding Size Class			
		Small	**Medium**	**Large**	All Sizes
1	Hired human labour	50271	61036	0	**55291**
2	Animal labour	0	0	0	-
3	Machine labour	1569	1714	0	**1637**
4	Seed /seedlings	6953	4810	0	**5954**
5	Farmyard manure and chemical fertilizers	29982	21648	0	**26096**
6	Plant Protection	2898	3796	0	**3316**
7	Land tax and irrigation cess	570	164	0	**381**
8	Repair and maintenance charges of implements, machinery and building	2235	225	0	**1297**
9	Interest on working capital	9167	9301	0	**9229**
10	Other expenses	40065	35273	0	**37831**
11	**Total cost 'A'(1-10)**	**143710**	**137967**	**0**	**141033**
12	Interest on fixed capital	12866	5032	0	**9214**
13	**Cost 'B1'(11+12)**	156577	142999	0	**150246**
14	Interest on land value	450665	305258	0	**382869**
15	**Cost 'B'(13+14)**	607242	448257	0	**533116**
16	Inputed value of household labour	100223	65666	0	**84111**
17	**Cost 'C'(15+16)**	707464	513923	0	**617226**

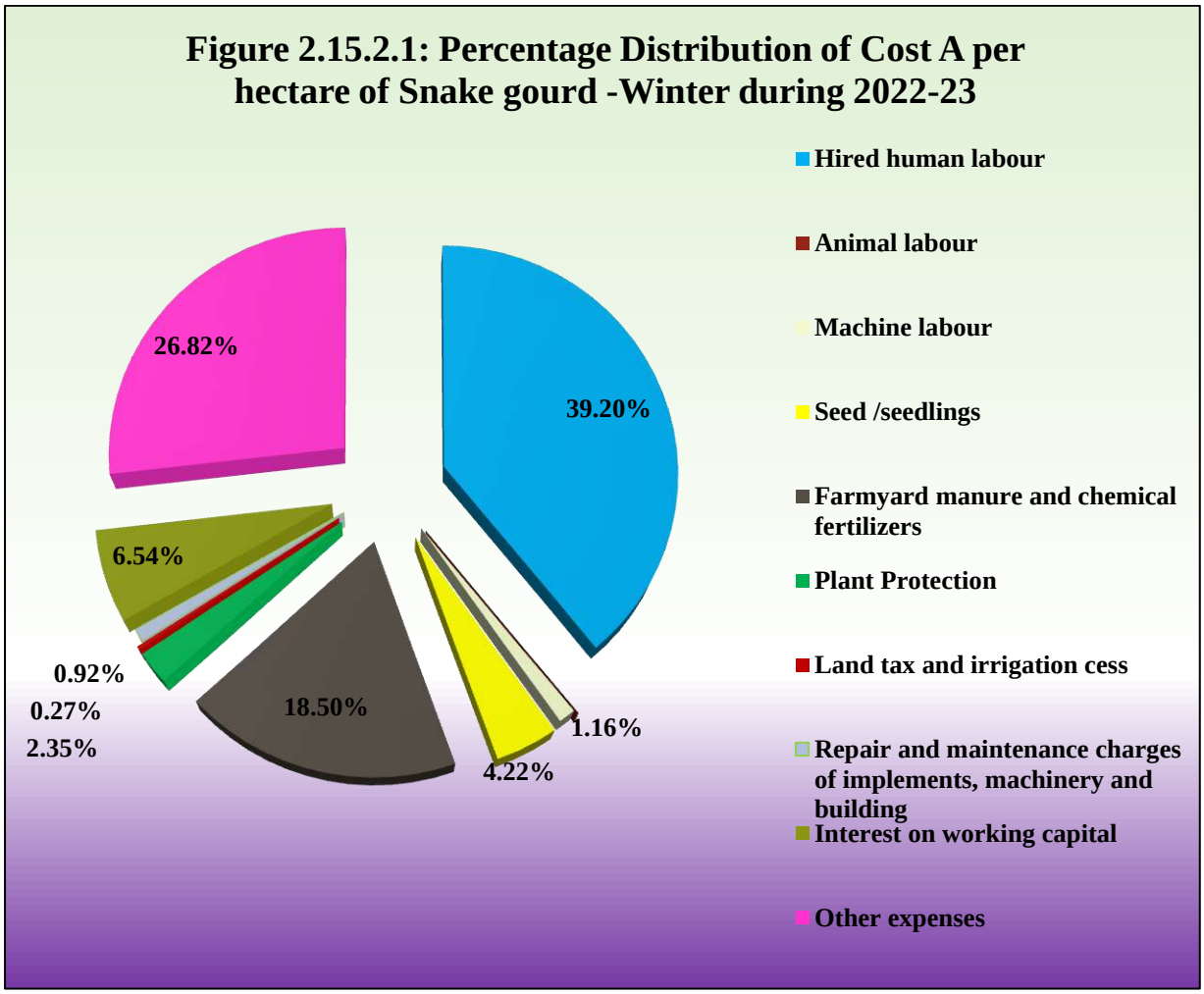


Table: 2.15.2.2 and figure 2.15.2.1 shows the total costs and Cost A percentage of Snake gourd winter farming. Cost A of Snake gourd-winter was dominated by hired human labour, other expense and farmyard manure and chemical fertilizers. Small holdings incur the highest cost likewise the inputed value of house hold labour.When it comes to total costs, small holdings occupies higher cost in Snake gourd winter as compared with others during 2022-23.

Table 2.15.2.3: Percentage of hired human labour hours to total labour hours of Snake gourd winter during 2022 – 2023

Sex	Holding Size Class			
	Small	**Medium**	**Large**	All Sizes
Male	30.07	41.24	0	**35.02**
Female	4.57	12.13	0	**5.46**
Total	34.64	53.37	0	40.48

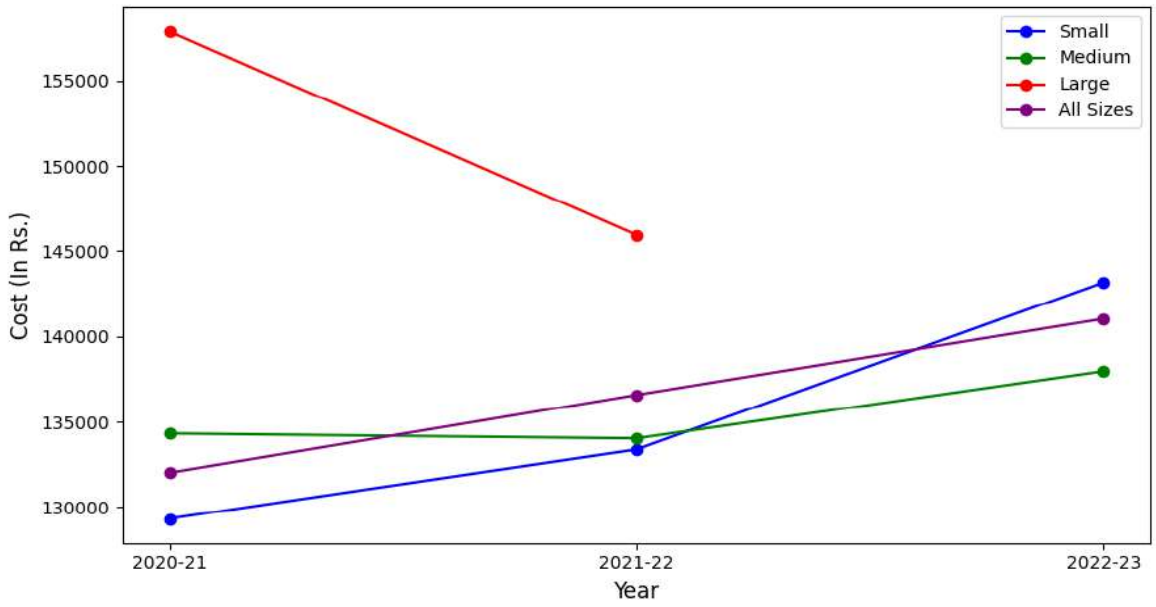
Here the total labour is the sum of hired human labour and household human labour. As usual proportion to hired labour, total labour input is higher for medium holding as compared with other holdings. Also small holdings are primarily male-dominated, with women participating at a much lower rate but the female participation is notably higher in medium holdings than in small holdings. Generally, cultivators belonging to medium class are seem to depend more of their requirements on hired labour during 2022-23.

Table 2.15.2.4: Cost of cultivation of Snake gourd winter per hectare (in Rs.) from 2020-21 to 2022-23

Holding size class	Cost A (In Rs.)		
	2020-21	2021-22	2022-2023
Small	129319	133379	143710
Medium	134311	134027	137967
Large	157873	145959	0
All Sizes	132010	136578	141033

From the above table it is clear that cultivators belongs to large holding has higher cost than other holdings. Compared to 2021-22, percentage increase of Cost A in 2022-23 is 3.26%. But there occur fluctuations in costs among each holdings over years.

Figure 2.15.2.2:Cost of cultivation of Snake gourd winter per hectare (in Rs.) from 2020-21 to 2022-23



2.15.2.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.15.2.5: Value of output during the year 2022-23

Year	Holding size class	Product (Cost in Rs.)
2022-23	Small	380578
	Medium	335017
	Large	0
	All sizes	359336

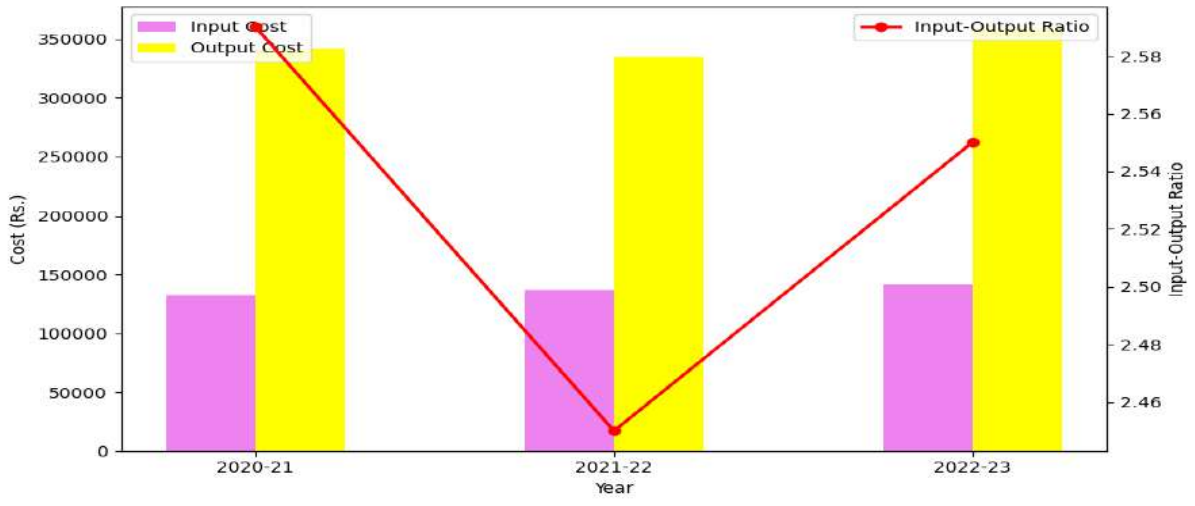
Here the small holdings consistently demonstrates higher production level compared to the Medium class.

Table 2.15.2.6 Input cost, out put cost and Input-output ratio of Snake gourd winter per hectare (in Rs.) from 2020-21 to 2022-23

Year	Components		
	Input Cost	Output Cost	Input-output ratio
2020-21	132010	341542	2.59
2021-22	136578	334716	2.45
2022-23	141033	359336	2.55

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2020-21.

Figure 2.15.2.3: Input cost, output cost and input-output ratio of Snake gourd winter per hectare (in Rs.) from 2020-21 to 2022-23



2.15.2.4 Agricultural cost Ratios

1.Labour Cost Ratio: The labour cost ratio indicates that labour expenses account for approximately 40.37% of the total Cost A.

2. Costing materials used Ratio(Material cost ratio): The material cost ratio accounts for approximately 51.90% of the total Cost A. This indicates that material costs also play a significant role in contributing to the increase in Cost A.

2.15.2.5 Key Findings

- The cost of cultivation of Snake gourd winter is increasing over each year but there occurred fluctuation in the output throughout the years and the change depends upon the cultivators selected for this survey under each year.
- By interpreting the input-output ratio(productivity), it increased significantly from 2020-21 to 2022-23.Higher values indicates that the efficiency is higher in 2020-21 apart from other years.
- The material cost ratio is higher than that of labour cost ratio, so for cultivating Snake gourd autumn the major part of cost A is contributed by material costs. Together, these ratios imply that labour and material costs collectively make up a substantial majority of total costs (over 92%). This suggests that efforts to improve cost efficiency should focus on both labour and material inputs.

2.15.3 SNAKE GOURD – SUMMER (PUNCHA)

2.15.3.1 Area under Snake gourd – Summer Cultivation

Details of holding selected and area coverage for this study are given below. The data collected from 199 holdings according to the size class by covering 17.52 hectares of land.

Table 2.15.3.1: Number of holdings and Area under Snake gourd - Summer

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	175	10.37	59.19	**0.06**
Medium	23	5.53	31.56	**0.24**
Large	1	1.62	9.25	**1.62**
Total	**199**	**17.52**	**100.00**	**0.09**

It is observed that the average area per holding is 0.09 hectares in all classes while area per holding in large size class, ie more than 0.80 hectares is 1.62 hectares. But in small size class, ie, less than 0.20 hectare which comprises 175 holdings, the average area per holding is only 0.06 hectare.

2.15.3.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of **Snake gourd Summer** is furnished in the below table.

Table 2.15.3.2: Cost of Cultivation per hectare (in Rs.) of Snake gourd Summer

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	44158	60051	30196	**47881**
2	Animal labour	0	0	0	**0**
3	Machine labour	718	2805	4940	**1767**
4	Seed /seedlings	6781	6443	3952	**6413**
5	Farmyard manure and chemical fertilizers	27432	14347	8417	**21547**
6	Plant Protection	3175	1476	1037	**2441**
7	Land tax and irrigation cess	371	144	0	**265**
8	Repair and maintenance charges of implements, machinery and building	2620	652	0	**1757**
9	Interest on working capital	8227	8512	4854	**8005**
10	Other expenses	30174	31650	43102	**31835**
11	**Total cost 'A'(1-10)**	**123657**	**126080**	**96497**	**121911**
12	Interest on fixed capital	9395	1613	389	**6107**
13	**Cost 'B1'(11+12)**	**133052**	**127693**	**96886**	**128018**
14	Interest on land value	366249	436576	462001	**397286**
15	**Cost 'B'(13+14)**	**499301**	**564269**	**558888**	**525303**
16	Inputed value of household labour	115905	63842	36216	**92115**
17	Cost 'C'(15+16)	**615206**	**628111**	**595104**	**617418**

Figure 215.3.1: Cost of Cultivation per hectare (in Rs.) of Snake gourd(Summer)

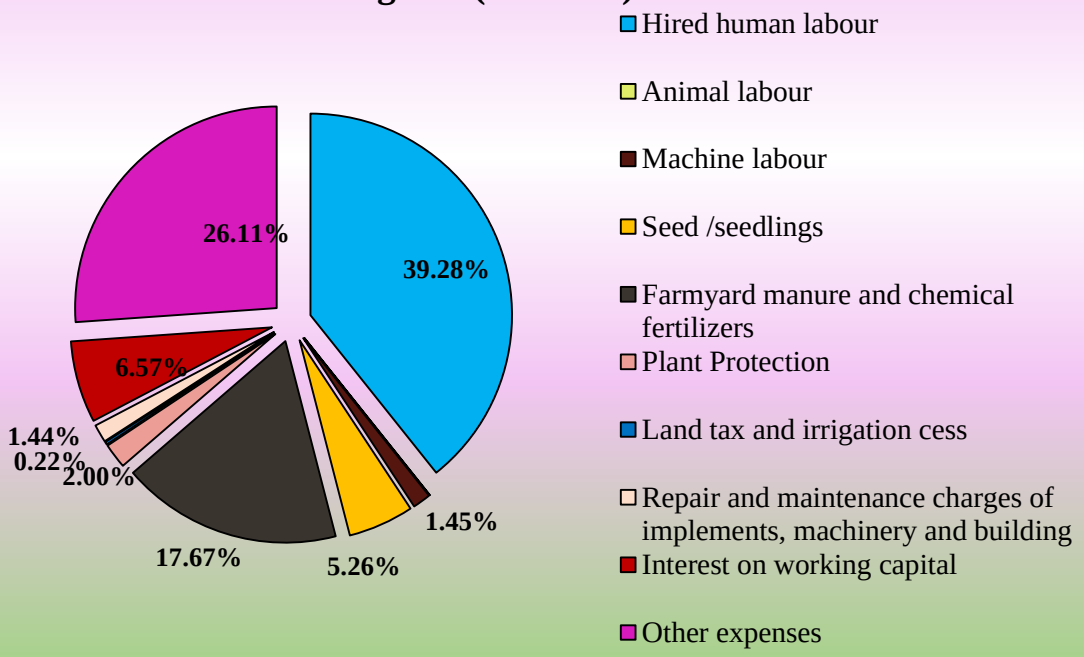


Table: 2.15.3.2 and **figure 2.15.3.1** shows the total costs and Cost A percentage of Snake gourd farming. The Cost A of Snake gourd-summer per hectare of medium holdings works out was higher than that of the small and large holdings. Cost A of Snake gourd-summer was dominated by hired human labour, other expense and farmyard manure and chemical fertilizers. Small holdings incur the highest costs. There exist a strong dependence on human labour for small operations likewise the inputed value of house hold labour. When it comes to total costs, medium holdings need higher cost in Snake gourd summer as compared with others during 2022-23.

Table 2.15.3.3: Percentage of hired human labour hours to total labour hours of Snake gourd (Summer) during 2022 - 2023

Sex	Holding Size Class			
	Small	**Medium**	**Large**	All Sizes
Male	26.43	46.04	30.83	32.43
Female	3.30	5.90	0	3.28
Total	**29.73**	**51.94**	**47.10**	**35.71**

Here the total labour is the sum of hired human labour and household human labour. As usual proportion to hired labour, total labour input is higher for medium holding as compared with

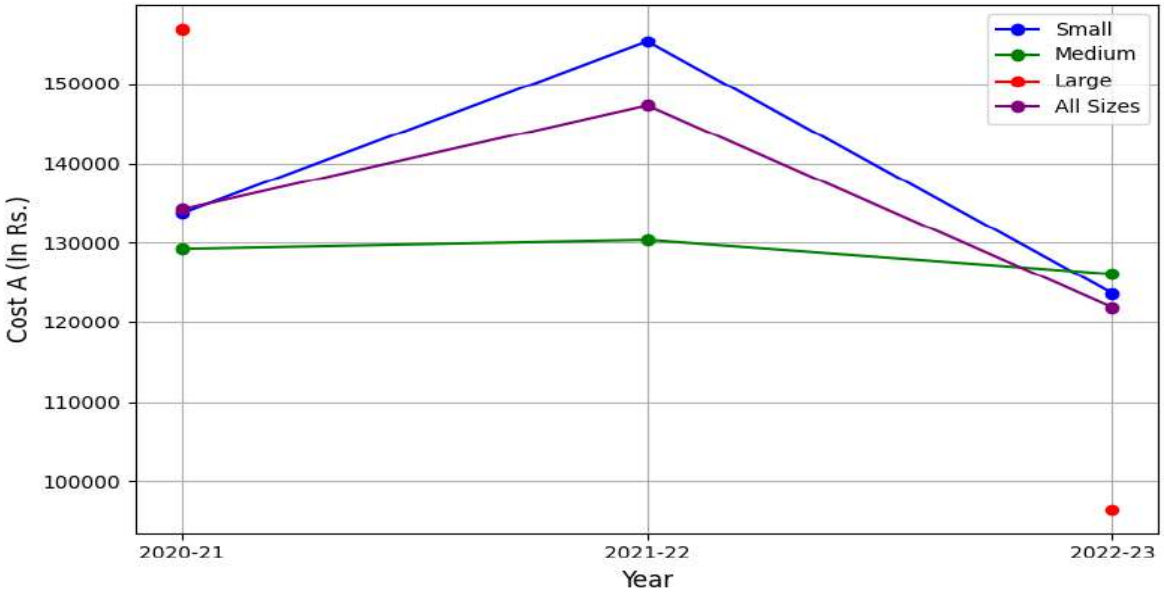
other holdings. Also all holdings are primarily male-dominated, with women participating at a much lower rate. Generally, cultivators belonging to medium class are seem to depend more of their requirements on hired labour during 2022-23.

Table 2.15.3.4: Cost of cultivation of Snake gourd (Summer) per hectare (in Rs.) from 2020-21 to 2022-23

Holding size class	Cost A (In Rs.)		
	2020-21	2021-22	2022-2023
Small	133739	155249	123657
Medium	129210	130319	126080
Large	156849	0	96497
All Sizes	**134216**	**147236**	**121911**

The last three year data shows that there occurred fluctuations in the cost of cultivation of Snake gourd Summer. Also it is clear that cultivators belongs to medium holding has higher cost as compare to other holdings.

Figure 2.15.3.2: Cost of cultivation of Snake gourd (Summer) per hectare (in Rs.) from 2020-21 to 2022-23



2.15.3.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.15.3.5: Value of output during the year 2022-23

Holding size class	Product (in Rs.)
Small	548466
Medium	380265
Large	260227
All Sizes	468760

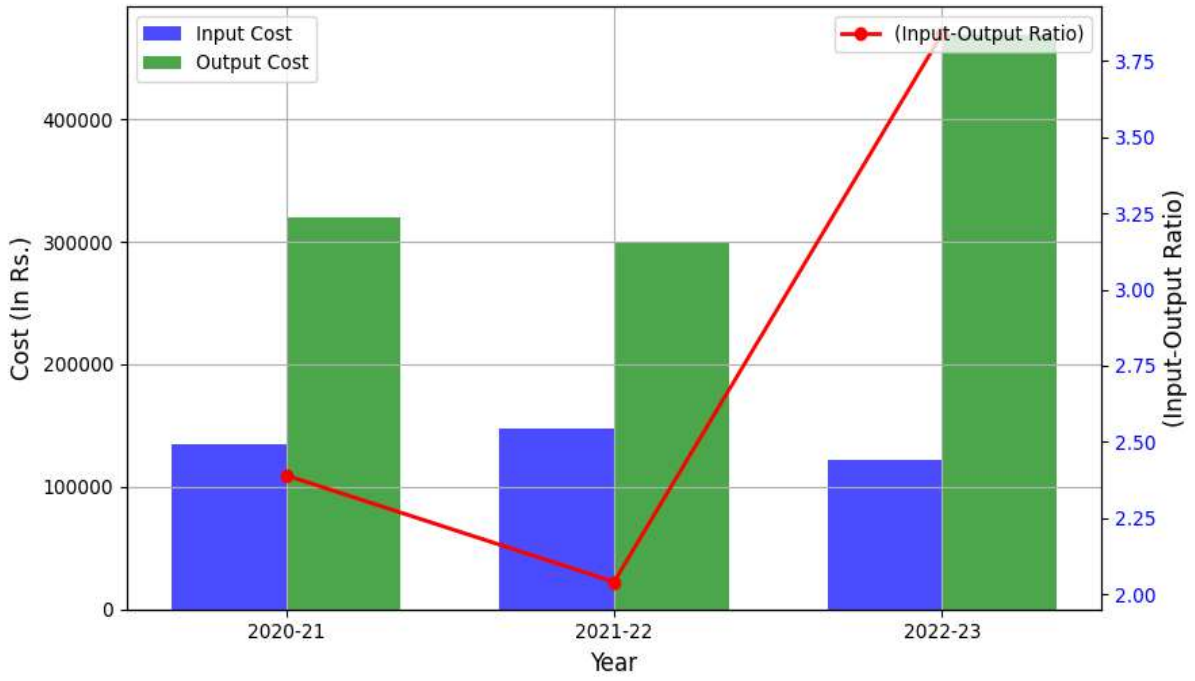
Here the small holdings consistently demonstrates higher production level compared to the medium and large holdings.

Table 2.15.3.6: Input cost, output cost and Input-output ratio of Snake gourd(Summer) per hectare (in Rs.) from 2020-21 to 2022-23

Year	Components		
	Input Cost	Output Cost	Input-output ratio
2020-21	**134216**	**320393**	2.39
2021-22	**147236**	**300453**	2.04
2022-23	**121911**	468760	3.85

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2022-23.

Figure 2.15.3.3: Input cost, output cost and input-output ratio of Snake gourd-Summer per hectare (in Rs.) from 2020-21 to 2022-23



2.15.3.4 Agricultural cost Ratios

1. Labour Cost Ratio: The labour cost ratio indicates that labour expenses account for approximately 40.72% of the total Cost A.

2. Costing materials used Ratio (Material cost ratio): The material cost ratio accounts for approximately 51.05% of the total Cost A. This indicates that material costs also play a significant role in contributing to the increase in Cost A.

2.15.3.5 Key Findings

- The cost and the production of cultivation of Snake gourd summer has fluctuations over each year and the change depends upon the cultivators selected for this survey under each year.
- By interpreting the input-output ratio (productivity), it decreased significantly from 2020-21 to 2021-22 followed by an increase in 2022-23. Higher values indicates that the efficiency is higher in 2022-23 apart from other years.
- The material cost ratio is higher than that of labour cost ratio, so for cultivating Snake gourd summer the major part of cost A is contributed by material costs. Together, these ratios imply that labour and material costs collectively make up a substantial majority of total costs (over 91%). This suggests that efforts to improve cost efficiency should focus on both labour and material inputs.

2.16

LADIES FINGER

2.16.0 Introduction

Ladies finger (Abelmoschus esculentus, known as Okara) is one of the important vegetable crop cultivated in Kerala, which has a relatively quick growth cycle, allowing for multiple harvests in a year. The cultivation of ladies finger provides opportunities for agricultural research and education, particularly in areas like pest management, organic farming practices, and sustainable agricultural techniques. This report aims to provide a comprehensive analysis of the cost of cultivation for ladies finger farming, covering various input costs, output costs, and associated expenses.

This chapter aims to provide a detailed overview of the cost components involved in Ladies finger cultivation in Kerala. It examines key aspects such as land preparation, planting materials, labour costs, inputs like fertilizers and pesticides, irrigation, and various operational expenses.

2.16.1 LADIES FINGER-AUTUMN (VIRIPPU)

2.16.1.1 Area under Ladies finger-Autumn Cultivation

Details of holding selected and area coverage for this study are given below. The data collected from 162 holdings according to the size class by covering 14.75 hectares of land.

Table 2.16.1.1: Number of holdings and Area under Ladies finger -Autumn

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	139.00	7.88	53.42	**0.06**
Medium	23.00	6.87	46.58	**0.30**
Large	0	0	0	**0**
Total	162.00	14.75	100.00	**0.09**

It is observed that the average area per holding is 0.09 hectares in all classes while average area per holding in medium size class, ie between 0.20 hectares and 0.80 hectares is 0.30 hectares. But in small size class, ie, less than 0.20 hectare which comprises 139 holdings, the average area per holding is only 0.06 hectare.

2.16.1.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Ladies finger Autumn is furnished in the below table.

Table 2.16.1.2: Cost of Cultivation per hectare (in Rs.) of Ladies finger (Autumn)

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	34241	62933	0	**47606**
2	Animal labour	0	0	0	**0**
3	Machine labour	1076	3251	0	**2089**
4	Seed /seedlings	7823	4933	0	**6477**
5	Farmyard manure and chemical fertilizers	33810	21870	0	**28248**
6	Plant Protection	1658	1437	0	**1555**
7	Land tax and irrigation Cess	464	134	0	**310**

8	Repair and maintenance charges of implements, machinery and building	1953	520	0	**1286**
9	Interest on working capital	7861	9442	0	**8598**
10	Other expenses	19570	19640	0	**19603**
11	**Total cost 'A'(1-10)**	**108456**	**124161**	**0**	**115772**
12	Interest on fixed capital	10511	23722	0	**16663**
13	**Cost 'B1'(11+12)**	118966	147883	0	**132435**
14	Interest on land value	524456	454280	0	**491766**
15	**Cost 'B'(13+14)**	643423	602163	0	**624202**
16	Inputed value of household labour	78986	20197	0	**51601**
17	**Cost 'C'(15+16)**	722408	622360	0	**675802**

Figure 2.16.1.1: Cost of Cultivation per hectare (in Rs.) of Ladies finger autumn

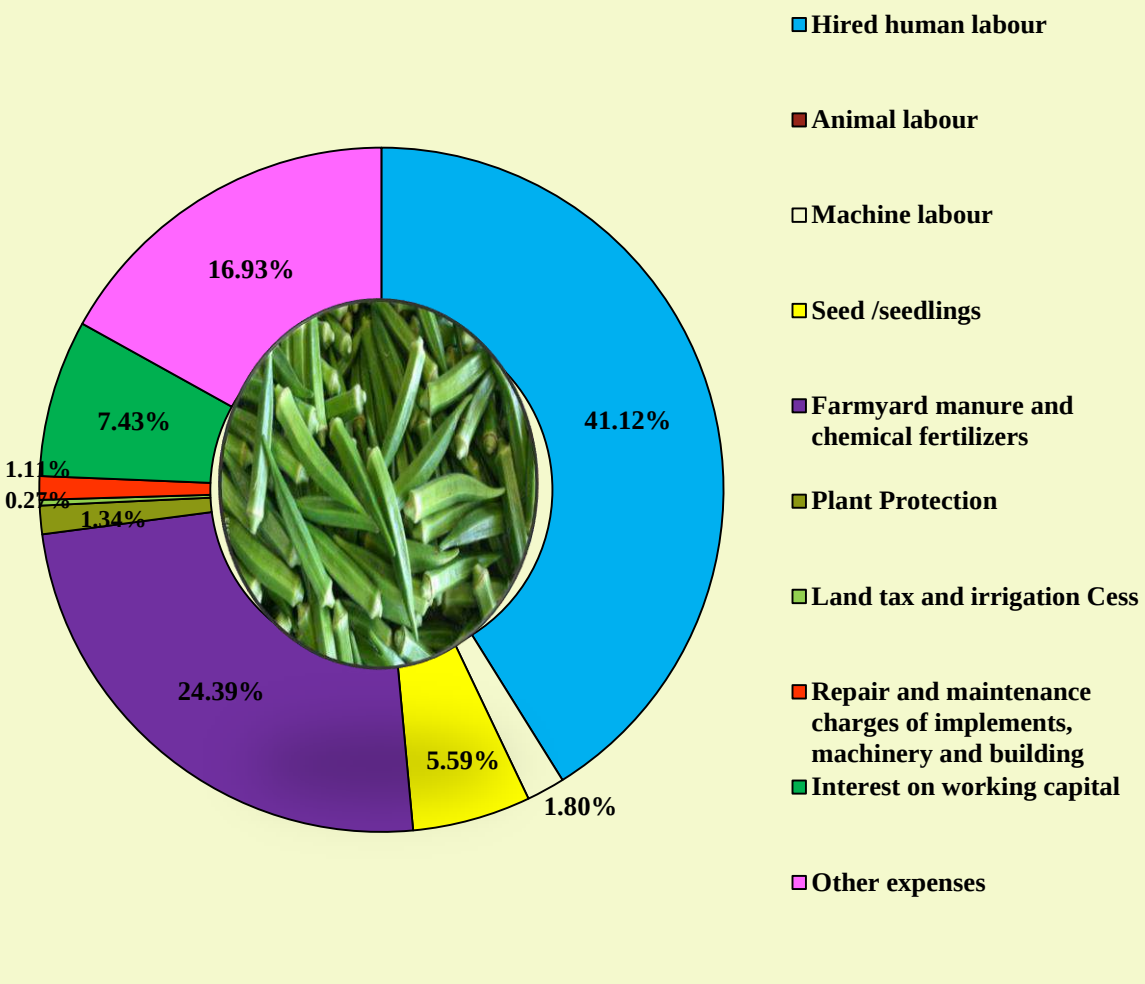


Table: 2.16.1.2 and **figure 2.16.1.1** shows the total costs and Cost A percentage of ladies finger autumn. The Cost A of Ladies finger autumn per hectare of medium class works out was higher than that of the small holding. Cost A was dominated by Hired human labour. It is noted that the per hectare cost towards plant protection occupies a tiny proportion when compared to other major components of Cost A, likewise the repair and maintenance charges of implements, machinery and building and the percentage share of land tax and irrigation cess. Also, the inputed value of household labour is higher for small holdings.

Table 2.16.1.3: Percentage of hired human labour hours to total labour hours of Ladies finger Autumn during 2022 - 2023

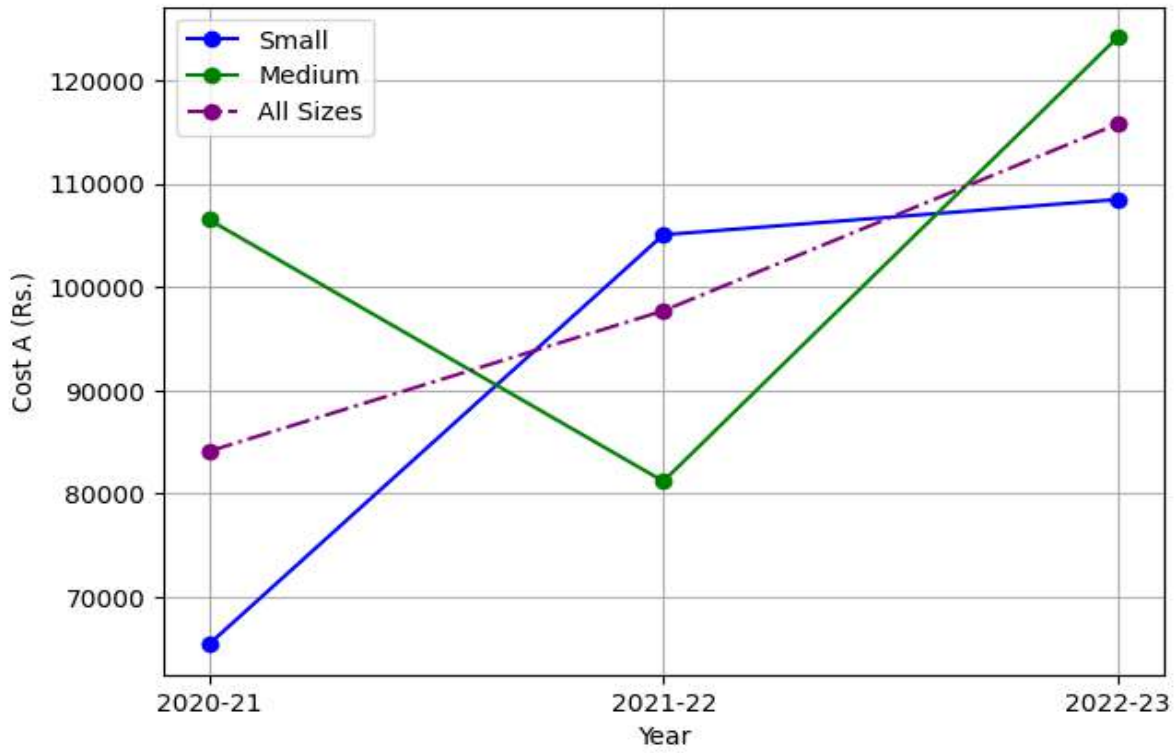
Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	25.74	46.30	0	**35.00**
Female	2.52	35.82	0	**14.56**
Total	**28.26**	**82.12**	**0**	**49.56**

Here the total labour is the sum of hired human labour and household human labour. As usual proportion to hired labour, total labour input steadily increases with the increase in the size holding. Also all holdings are primarily male-dominated. It is seen that cultivators belonging to medium class are seem to depend more of their requirements on hired labour.

Table 2.16.1.4: Cost of cultivation of Autumn Ladies finger per hectare (in Rs.) from 2020 -21 to 2022-23

Holding size class	Cost A(Rs.)		
	2020-21	2021-22	2022-2023
Small	65408	105040	108456
Medium	106497	81181	124161
Large	0	0	0
All Sizes	84085	97680	115772

Figure 2.16.1.2: Cost of cultivation of Ladies finger autumn per hectare (in Rs.) from 2020-21 to 2022-23



The last three years data shows a consistent increase in cost of ladies finger cultivation in all holding class during autumn season in the state. Also it is evident that cost varies over each holding classes from time to time. Compared to 2021-22, percentage increase in Cost A in 2022-23 is 18.52%.

2.16.1.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.16.1.5: Value of output during the year 2022-23

Year	Holding Size Class	Product
Small	Small	283906
Medium	Medium	259305
Large	Large	0
All sizes	All sizes	272446

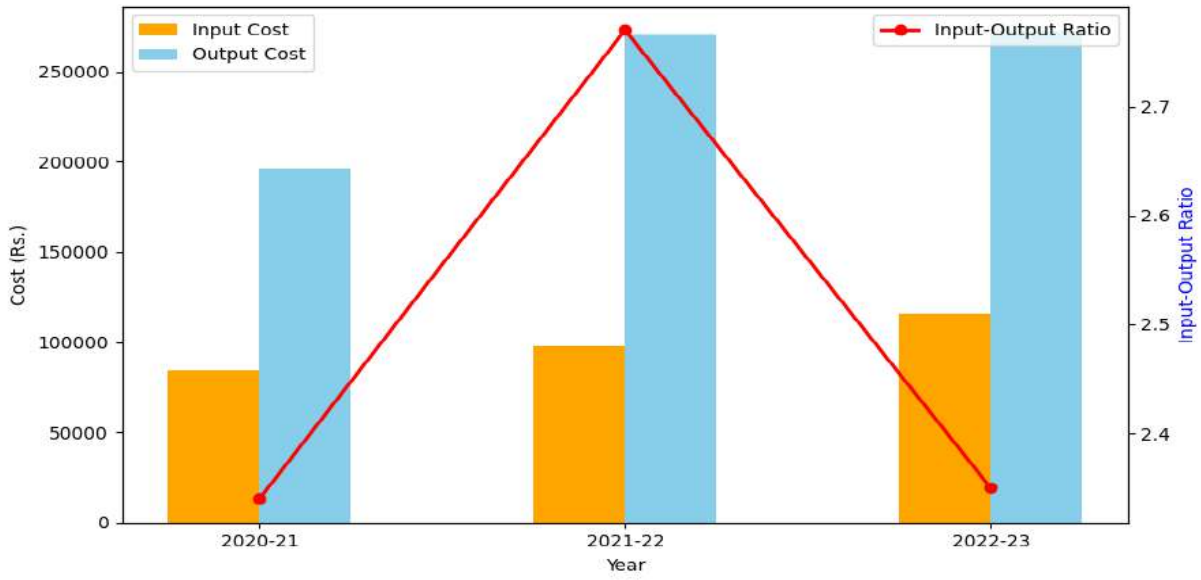
It is clear from the above data that small holding size class consistently demonstrates higher production levels compared to the medium class.

Table 2.16.1.6: Input cost, output cost and Input-output ratio of Ladies finger Autumn per hectare (in Rs.) from 2020-21 to 2022-23

Year	Components		
	Input Cost(Rs.)	Output Cost(Rs.)	Input-output ratio
2020-21	84085	196515	2.34
2021-22	97680	270683	2.77
2022-23	115772	272446	2.35

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2021-22.

Figure 2.16.1.3: Input cost, output cost and Input-output ratio of Ladies finger Autumn per hectare (in Rs.) from 2020-21 to 2022-23



2.16.1.4 Agricultural cost Ratios

1. Labour Cost Ratio: The labour cost ratio indicates that labour expenses account for approximately 42.92% of the total Cost A.

2. Costing materials used Ratio (Material cost ratio): The material cost ratio accounts for approximately 48.27% of the total Cost A. This indicates that material costs also play a significant role in contributing to the increase in Cost A.

2.16.1.5 Key Findings

- The cost and production of Ladies finger autumn cultivation is increasing over each year and the change depends upon the cultivators selected for this survey under each year.
- By interpreting the input-output ratio(productivity), it increased significantly from 2020-21 to 2022-23. Higher values suggest better efficiency in utilizing inputs to generate output, using the fact the efficiency is higher in 2021-22 apart from other years.
- The material cost ratio is higher than that of labour cost ratio, so for cultivating ladies finger autumn the major part of cost A is contributed by material costs. Together, these ratios imply that labour and material costs collectively make up a substantial majority of total costs (over 91%). This suggests that efforts to improve cost efficiency should focus on both labour and material inputs.

2.16.2 LADIES FINGER -WINTER (MUNDAKAN)

2.16.2.1 Area under Ladies finger -Winter Cultivation

Details of holding selected and area coverage for this study are given below. The data collected from 178 holdings according to the size class by covering 11.22 hectares of land.

Table 2.16.2.1: Number of holdings and Area under Ladies finger- Winter

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	165	7.37	65.69	**0.04**
Medium	13	3.85	34.31	**0.30**
Large	0	0	0	**0**
Total	178	11.22	100.00	**0.06**

It is observed that the average area per holding is 0.06 hectares in all classes while average area per holding in medium size class, i.e, between 0.20 hectares and 0.80 hectares is 0.30 hectares. But in small size class ie, less than 0.20 hectare which comprises 165 holdings, the average area per holding is only 0.04 hectare.

2.16.2.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Ladies finger Winter is furnished in the below table.

Table 2.16.2.2: Cost of Cultivation per hectare (in Rs.) of Ladies finger Winter

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	28979	44673	0	**34359**
2	Animal labour	0	0	0	**0**
3	Machine labour	2272	5830	0	**3492**
4	Seed /seedlings	6679	4780	0	**6028**
5	Farmyard manure and chemical fertilizers	28351	31373	0	**29387**
6	Plant Protection	1661	2435	0	**1926**
7	Land tax and irrigation cess	325	196	0	**280**
8	Repair and maintenance charges of implements, machinery and building	1306	732	0	**1109**
9	Interest on working capital	6794	8909	0	**7519**
10	Other expenses	16666	16113	0	**16477**
11	**Total cost 'A'(1-10)**	**93032**	**115041**	**0**	**100577**
12	Interest on fixed capital	24769	12927	0	**20706**
13	**Cost 'B1'(11+12)**	**117801**	**127967**	**0**	**121284**
14	Interest on land value	358904	269765	0	**328344**
15	**Cost 'B'(13+14)**	**476705**	**397732**	**0**	**449628**
16	Inputed value of household labour	78080	28312	0	**61018**
17	**Cost 'C'(15+16)**	**554785**	**426045**	**0**	**510645**

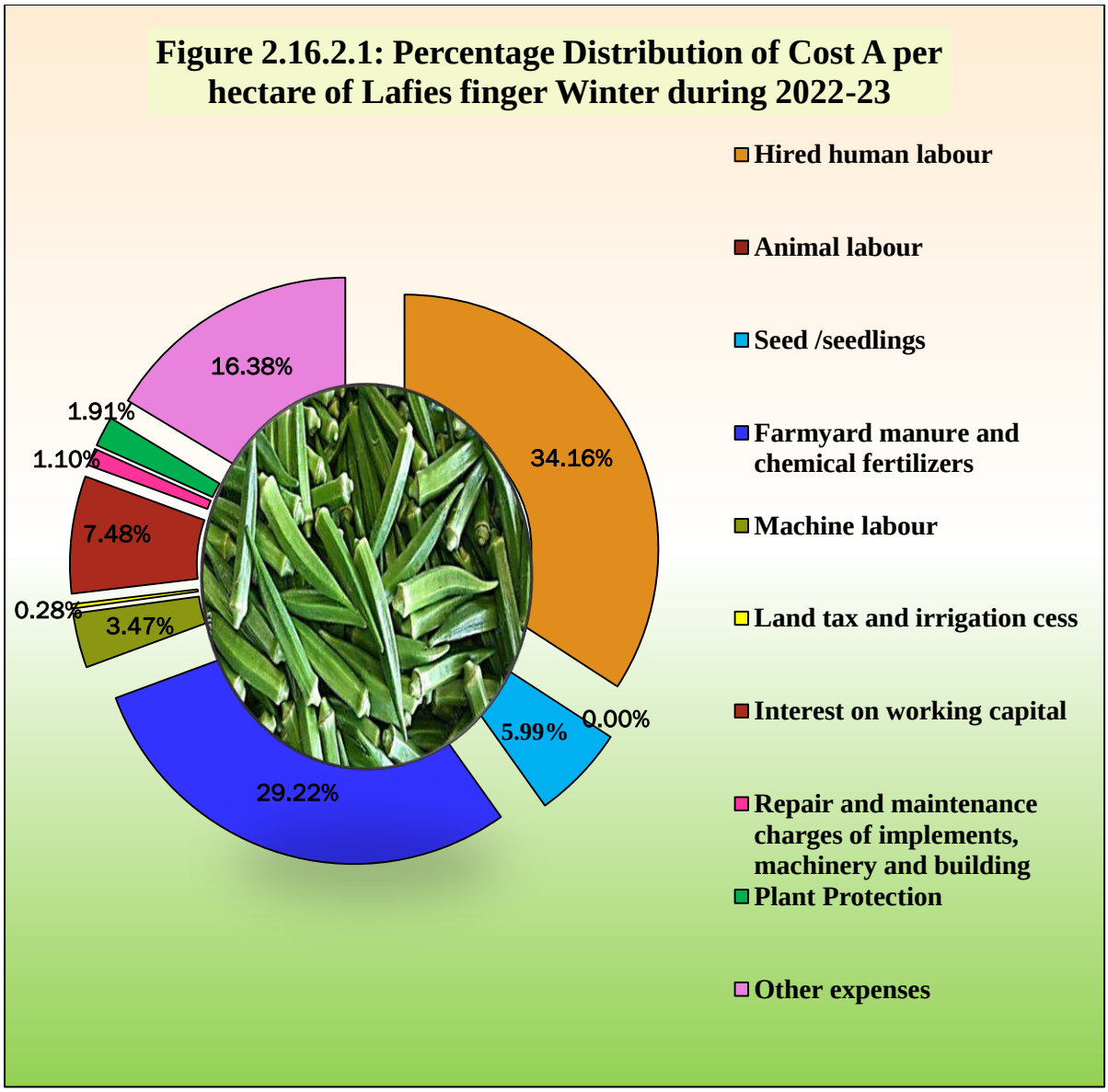


Table: 2.16.2.2 and **figure 2.16.2.1** shows the total costs and Cost A percentage of ladies finger winter. The Cost A of Ladies finger winter per hectare of medium class works out was higher than that of the small holding. Cost A was dominated by Hired human labour and Farmyard manure and chemical fertilizers. It is noted that the per hectare cost towards Repair and maintenance charges of implements, machinery and building occupies a tiny proportion when compared to other major components of Cost A, likewise the plant protection and the percentage share of land tax and irrigation cess is very small. Also, the inputed value of household labour is higher for small holdings.

Table 2.16.2.3: Percentage of hired human labour hours to total labour hours of Ladies finger Winter during 2022 - 2023

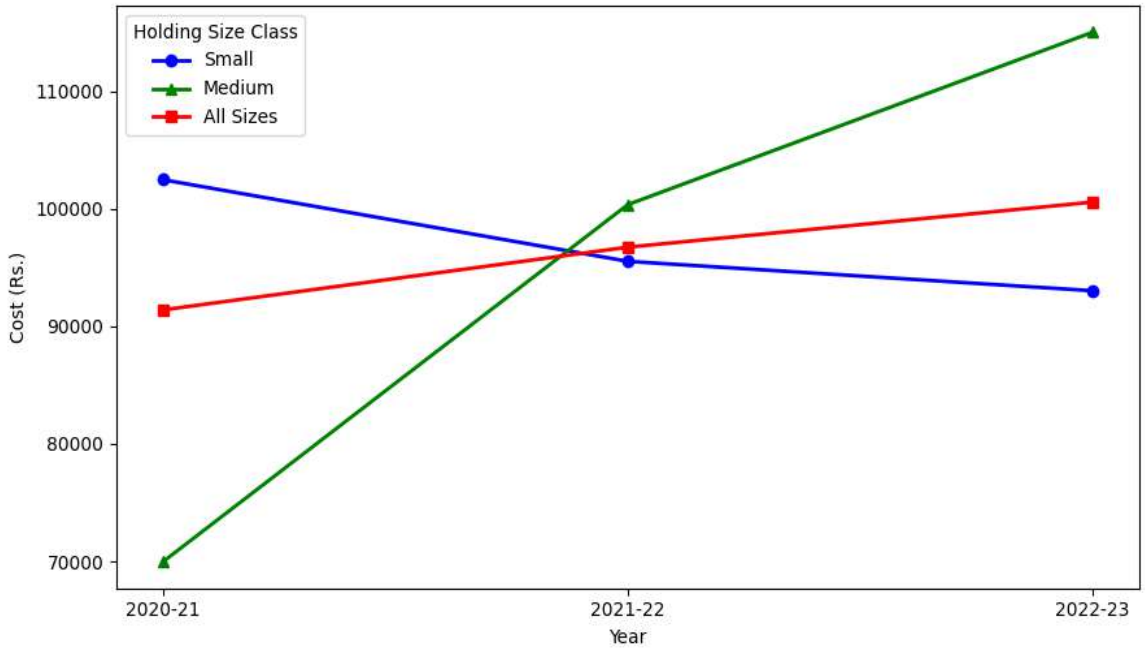
Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	22.07	36.57	0	26.15
Female	4.61	30.35	0	10.48
Total	**26.68**	**66.92**	**0**	**36.63**

Here the total labour is the sum of hired human labour and household human labour. As usual proportion to hired labour, total labour input steadily increases with the increase in the size holding. It is seen that cultivators belonging to medium class seem to depends 66.92% of their requirements on hired labour. Also all holdings are primarily male-dominated.

Table 2.16.2.4:Cost of cultivation of Ladies finger winter per hectare (in Rs) from 2020-21 to 2022-23

Holding size class	Cost A (In Rs.)		
	2020-21	2021-22	2022-23
Small	102482	95536	93032
Medium	69968	100366	115041
Large	0	0	0
All Sizes	91403	96742	100577

Figure 2.16.2.2: Cost of cultivation of Ladies finger Winter per hectare (in Rs.) from 2020 -21 to 2022-23



The last three years data shows a consistent increase in the cost of ladies finger cultivation in all holding class during winter season in the state. Also cost A of small holdings decrease from 2020-21 to 2022-23. Compared to 2021-22, percentage increase of Cost A in 2022-23 is 3.96%.

2.16.2.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.16.2.5: Value of output during the year 2022-23

Year	Holding size class	Product (Cost in Rs.)
2022-23	Small	332435
	Medium	255934
	Large	0
	All sizes	306208

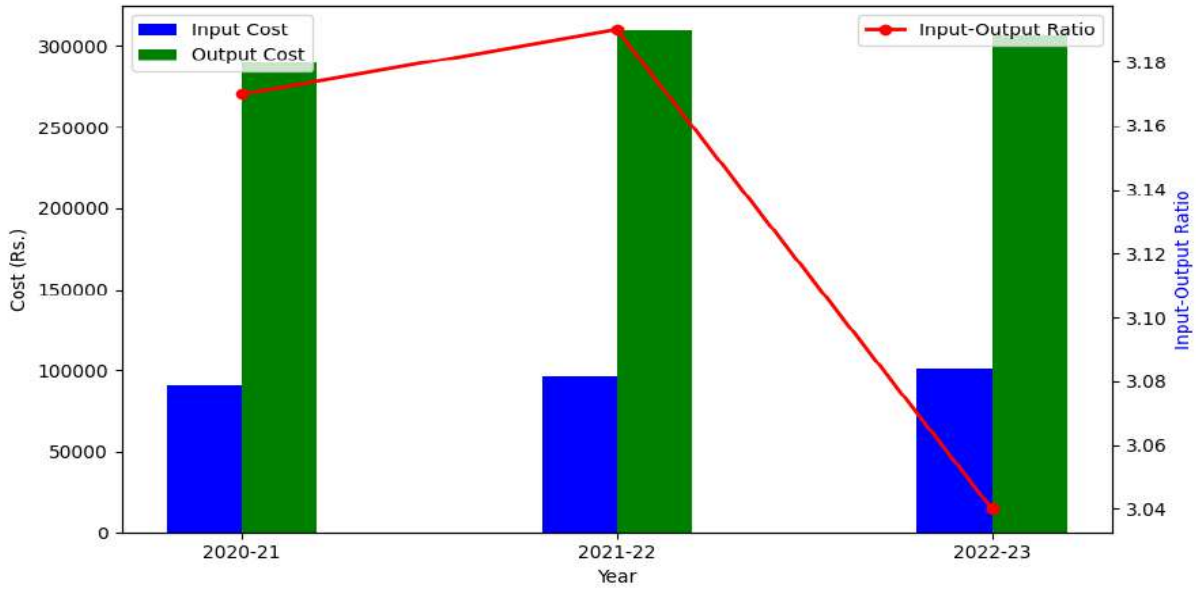
It is clear from the above data that small holding size class consistently demonstrates higher production level compared to the medium holding.

Table2.16.2.6. Input cost. Output cost and Input-output ratio of Ladies finger Winter per heactare (in Rs.) from 2020-21to 2022-23

Year	Components		
	Input Cost	Output Cost	Input-output ratio
2020-21	91403	289947	3.17
2021-22	96742	309132	3.20
2022-23	100577	306208	3.04

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2021-22.

Figure 2.16.2.3: Input cost, output cost and Input-output ratio of Ladies finger winter per hectare (in Rs.) from 2020-21 to 2022-23



2.16.2.4 Agricultural cost Ratios

1.Labour Cost Ratio: The labour cost ratio indicates that labour expenses account for approximately 37.63% of the total Cost A.

2. Costing materials used Ratio(Material cost ratio): The material cost ratio accounts for approximately 53.51% of the total Cost A. This indicates that material costs plays a significant role in contributing to the increase in Cost A.

2.16.2.5 Key Findings

- There is a trend in increase of input cost compared to the previous year. Input and output costs generally increased from 2020-21 to 2022-23, but there occured a fluctuation in the cost of production during the year 2022-23.
- The productivity ratio also shows a fluctuation over the years and the change depends upon the cultivators selected for this survey under each year.
- In 2022-23, material cost ratio is higher than labour cost ratio, meaning that material costs account for the largest portion of cost A in Ladies finger winter cultivation during the year 2022-23.

2.16.3 LADIES FINGER-SUMMER(PUNCHA)

2.16.3.1 Area under Ladies finger-Summer Cultivation

Details of holding selected and area coverage for this study are given below. The data collected from 168 holdings according to the size class by covering 10.11 hectares of land.

Table 2.16.3.1: Number of holdings and Area under Ladies finger- Summer

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	159	7.84	77.55	**0.05**
Medium	9	2.27	22.45	**0.25**
Large	0	0	0	**0**
Total	**168**	**10.11**	**100.00**	**0.06**

It is observed that the average area per holding is 0.06 hectares in all classes while average area per holding in medium size class, ie between 0.20 hectares and 0.80 hectares is 0.25 hectares. But in small size class, ie, less than 0.20 hectare which comprises 159 holdings, the average area per holding is only 0.05 hectare.

2.16.3.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of **Ladies finger Summer** is furnished in the below table.

Table 2.16.3.2: Cost of Cultivation per hectare (in Rs.) of Ladies finger(Summer)

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	**All Sizes**
1	Hired human labour	37104	32354	0	**36038**
2	Animal labour	0	0	0	**0**
3	Machine labour	3326	529	0	**2699**
4	Seed /seedlings	7772	4600	0	**7061**

5	Farmyard manure and chemical fertilizers	36531	25188	0	**33987**
6	Plant Protection	1874	1095	0	**1700**
7	Land tax and irrigation cess	1044	260	0	**868**
8	Repair and maintenance charges of implements, machinery and building	3942	172	0	**3097**
9	Interest on working capital	8661	6377	0	**8148**
10	Other expenses	20401	17722	0	**19800**
11	**Total cost 'A'(1-10)**	**120654**	**88298**	**0**	**113397**
12	Interest on fixed capital	29311	558	0	**22861**
13	**Cost 'B1'(11+12)**	149965	88855	0	**136258**
14	Interest on land value	407228	804510	0	**496326**
15	**Cost 'B'(13+14)**	557193	893365	0	**632584**
16	Inputed value of household labour	103694	49649	0	**91573**
17	**Cost 'C'(15+16)**	**660887**	**943014**	**0**	**724158**

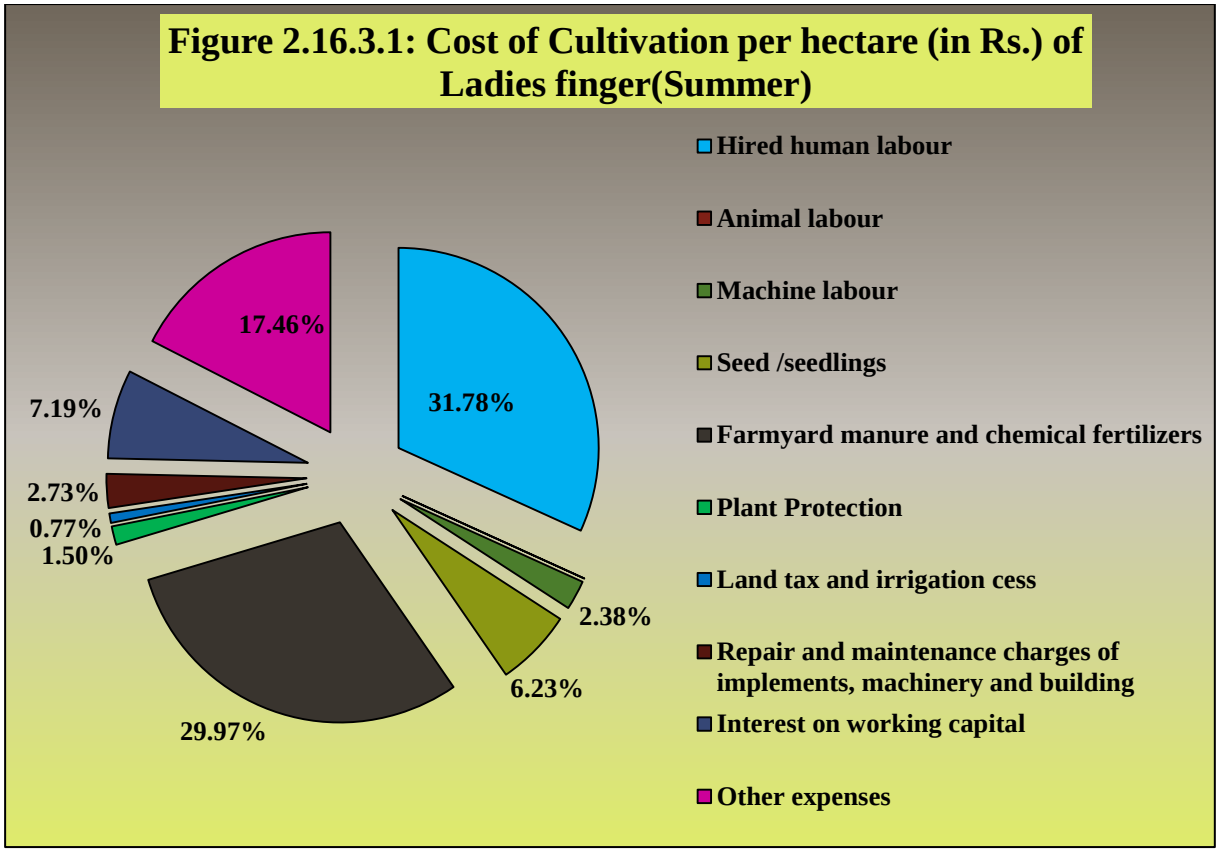


Table: 2.16.3.2 and **figure 2.16.3.1** shows the total costs and Cost A percentage of Ladies finger farming. The Cost A of Ladies finger per hectare of small holdings of summer season works out was higher than that of the medium holdings. Cost A is dominated by hired human labour and Farmyard manure and chemical fertilizers and other expenses. Among the major components, plant protection required minimum cost than others. Generally, each components of small holdings needs more investment than medium holdings during 2022-23.

Table 2.16.3.3: Percentage of hired human labour hours to total labour hours of Ladies finger Summer during 2022 – 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	22.32	38.63	0	**24.81**
Female	4.79	0	0	**3.31**
Total	**27.11**	**38.63**	**0**	**28.12**

Here the total labour is the sum of hired human labour and household human labour. As usual proportion to hired labour, total labour input steadily increases with the increase in the size

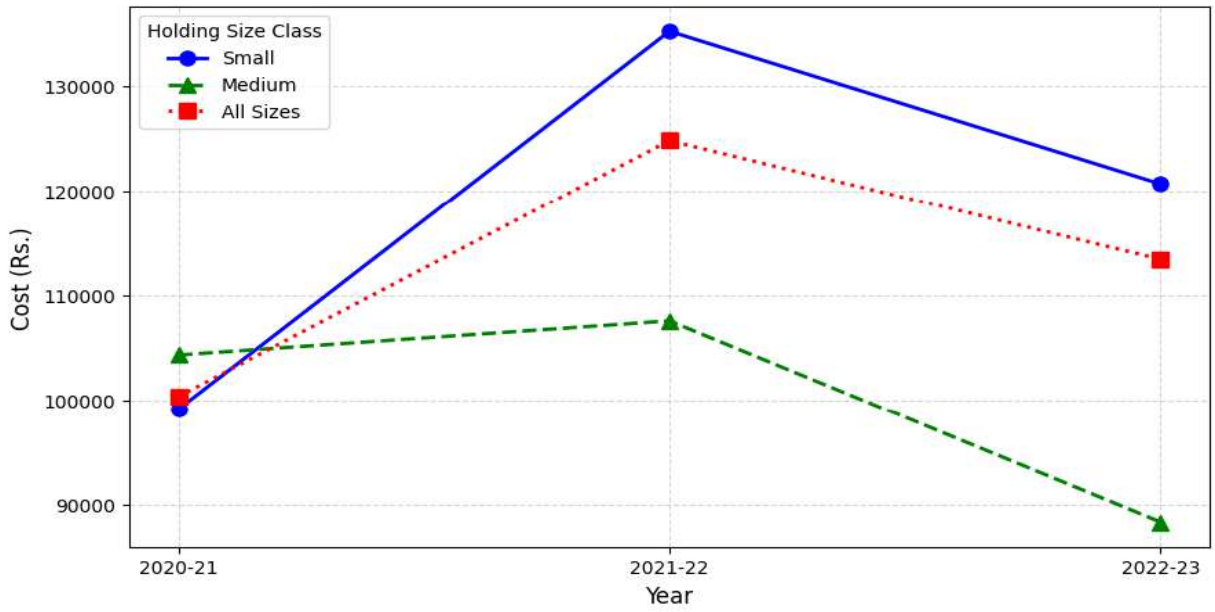
holding. Also all holdings are primarily male-dominated, with women participating at a lower rate.

Table 2.16.3.4: Cost of cultivation of Ladies finger Summer per hectare (in Rs.) from 2020-21to 2022-23

Holding size class	Cost A (In Rs.)		
	2020-21	2021-22	2022-2023
Small	99113	135188	120654
Medium	104292	107544	88298
Large	0	0	0
All Sizes	100322	124787	113397

From the past three year data it is evident that there occur fluctuations in the overall cost. Compared to 2021-22, there occur a general trend towards cost reduction across all holdings during 2022-23.

Figure 2.16.3.2: Cost of cultivation of Ladies finger Summer per hectare (in Rs.) from 2020-21 to 2022-23



The last three years data shows a consistent increase in the cost of ladies finger cultivation in all holding class during winter season in the state. Also cost A of small holdings decrease from 2020-21 to 2022-23. Compared to 2021-22, percentage decrease of Cost A in 2022-23 is 9.13%.

2.16.3.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.16.3.5: Value of output during the year 2022-23

Holding size class	Product (in Rs.)
Small	327493
Medium	245393
Large	0
All Sizes	309081

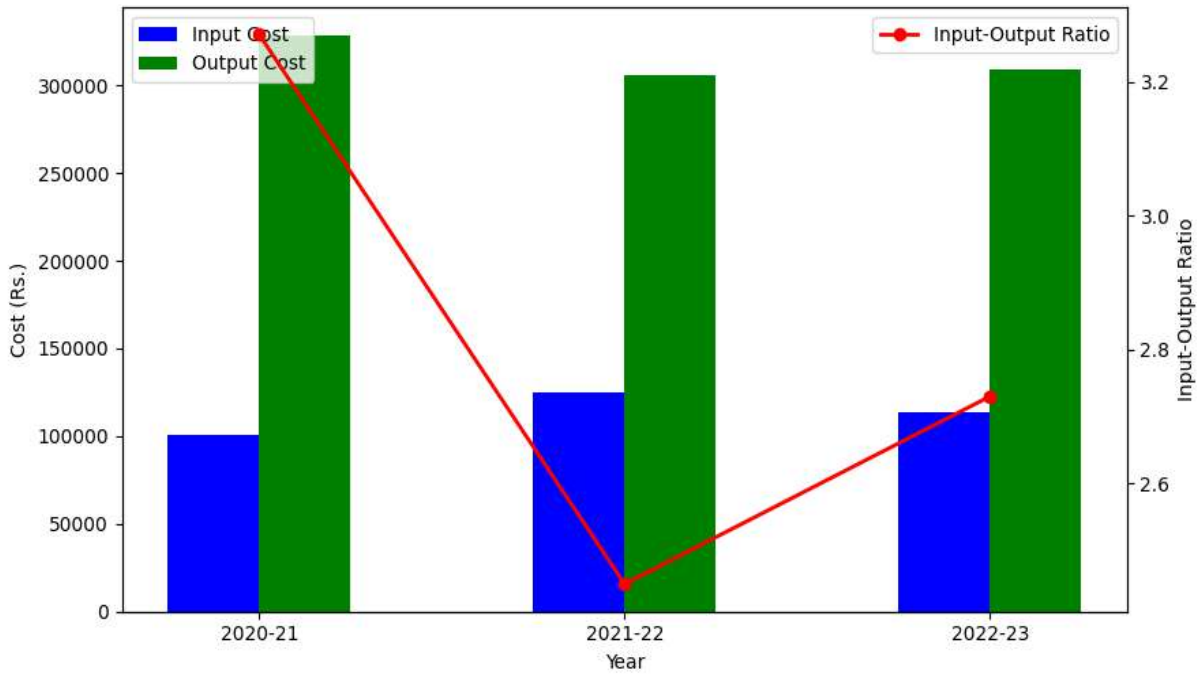
The small holding size class consistently demonstrates higher production levels compared to the Medium class.

Table 2.16.3.6: Input cost, output cost and Input -output ratio of Ladies finger Summer per hectare (in Rs.) from 2020-21 to 2022-23

Year	Components		
	Input Cost	**Output Cost**	**Input-output ratio**
2020-21	100322	328133	3.27
2021-22	124787	305643	2.45
2022-23	113397	309081	2.73

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2022-23.

Figure 2.16.3.3: Input cost, output cost and Input-output ratio of Ladies finger Summer per hectare (in Rs.) from 2020-21 to 2022-23



2.16.3.4 Agricultural cost Ratios

1.Labour Cost Ratio: The labour cost ratio indicates that labour expenses account for approximately 34.16% of the total Cost A.

2. Costing materials used Ratio(Material cost ratio): The material cost ratio accounts for approximately 55.16% of the total Cost A. This indicates that material costs plays a significant role in contributing to increase in Cost A.

2.16.3.5 Key Findings

- Interpreting the input-output ratio (productivity),it has fluctuations over the years.
- The efficiency of the agricultural operation in converting inputs into outputs over the year 2022-23 has increased.
- The input and output cost also has fluctuations over the years and the change depends upon the cultivators selected for this survey under each year.
- In 2022-23, material cost ratio is higher than labour cost ratio, meaning that material costs account for the largest portion of cost A in ladies finger winter cultivation.

2.17

CABBAGE

2.17.0 Introduction

Cabbage (Brassica oleracea var. capitata) is a leafy green vegetable belonging to the Brassicaceae family. It is one of the most widely cultivated and consumed vegetables worldwide, valued for its nutritional benefits and versatility in cooking.Cabbage is a cool-season crop, thriving in temperate climates with moderate rainfall and well-drained soils. It is often grown as a staple vegetable in many regions, with its cultivation playing a significant role in local agricultural economies. The vegetable comes in various varieties, including green, red, and savoy cabbage, each with unique characteristics and uses. From 2020-21 in addition to the existing crops cabbage is also included in the survey.

This chapter aims to provide a detailed overview of the cost components involved in Cabbage cultivation in Kerala. It examines key aspects such as land preparation, planting materials, labour costs, inputs like fertilizers and pesticides, irrigation, and various operational expenses.

2.17.1 CABBAGE-SUMMER (PUNCHA)

2.17.1Area under Cabbage-summer Cultivation

For this study details of holding selected and area coverage are given below.The data was collected from 1 holdings across different size classes, by covering a total of 0.14 hectares of land.

Table 2.17.1: Number of holdings and Area for Cabbage(summer)

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	1.00	0.14	100	0.14
Medium	0	0	0	0
Large	0	0	0	0
Total	**1.00**	**0.14**	**100.00**	0.14

2.17.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Cabbage (summer) is furnished in the below table.

Table 2.17.2: Cost of Cultivation per hectare (in Rs.) of Cabbage (summer)

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	13620	0	0	13620
2	Animal labour	0	0	0	0
3	Machine labour	5293	0	0	5293
4	Seed /seedlings	3176	0	0	3176
5	Farmyard manure and chemical fertilizers	3811	0	0	3811
6	Plant Protection	1694	0	0	1694
7	Land tax and irrigation cess	0	0	0	0
8	Repair and maintenance charges of implements, machinery and building	0	0	0	0
9	Interest on working capital	2759	0	0	2759
10	Other expenses	11997	0	0	11997
11	Total cost 'A'(1-10)	42350	0	0	42350
12	Interest on fixed capital	423	0	0	423
13	Cost 'B1'(11+12)	42773	0	0	42773
14	Interest on land value	864500	0	0	864500
15	Cost 'B'(13+14)	907273	0	0	907273
16	Inputed value of household labour	0	0	0	0
17	Cost 'C'(15+16)	907273	0	0	907273

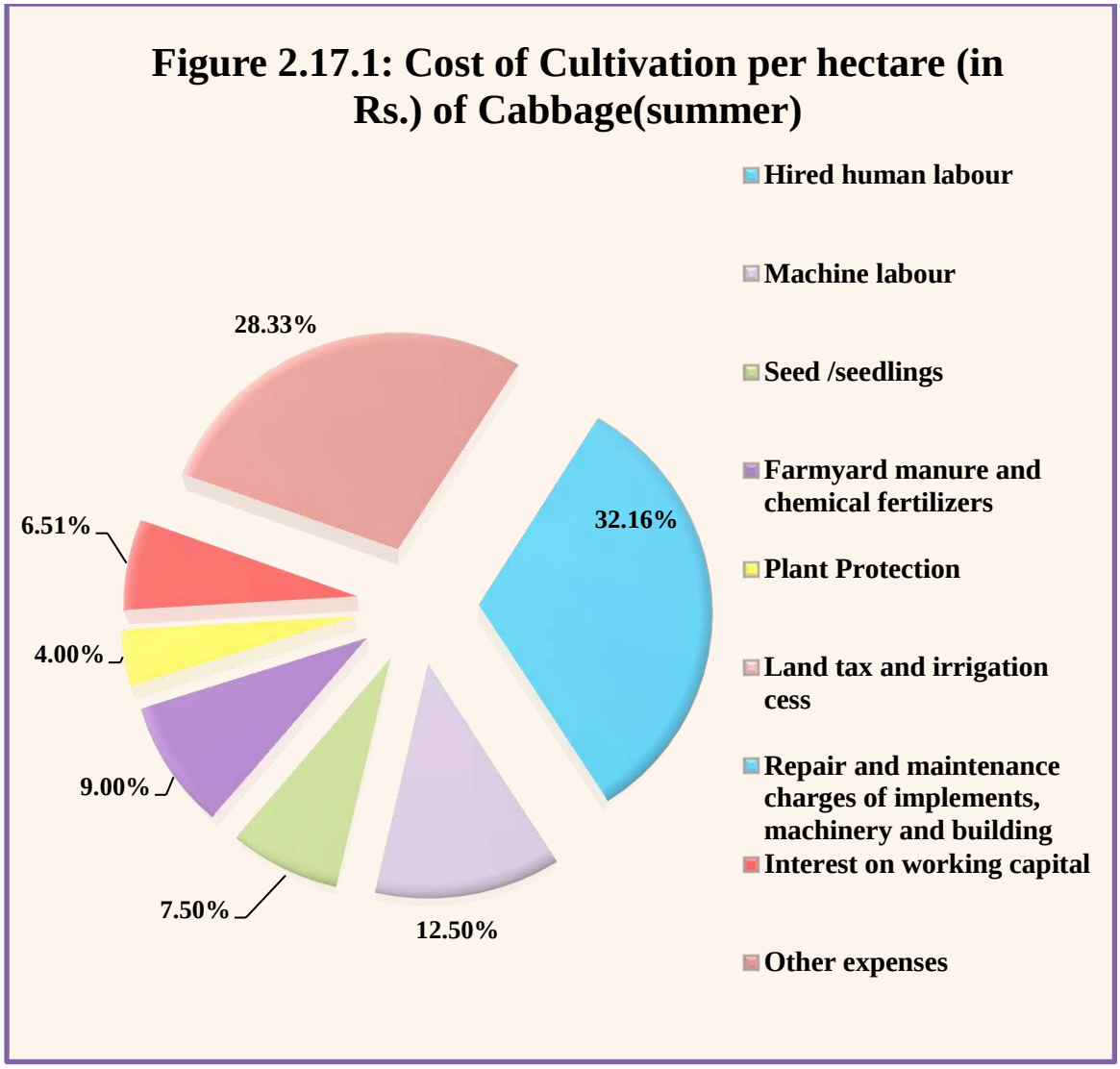


Table: 2.17.2 and **figure 2.17.1** shows the total costs and Cost A percentage of cabbage farming. The Cost A of cabbage only depend on small holding as there is no value in medium and large holdings. Hired human labour give major contribution to cost A other than Machine labour, Other expenses, repair and maintenance charges, plant protection , farmyard manure and chemical fertilizers.

Table 2.17.3: Percentage of hired human labour hours to total labour hours of Cabbage(summer) during 2022 - 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	65	0	0	**65**
Female	35	0	0	**35**
Total	**100**	0	0	100

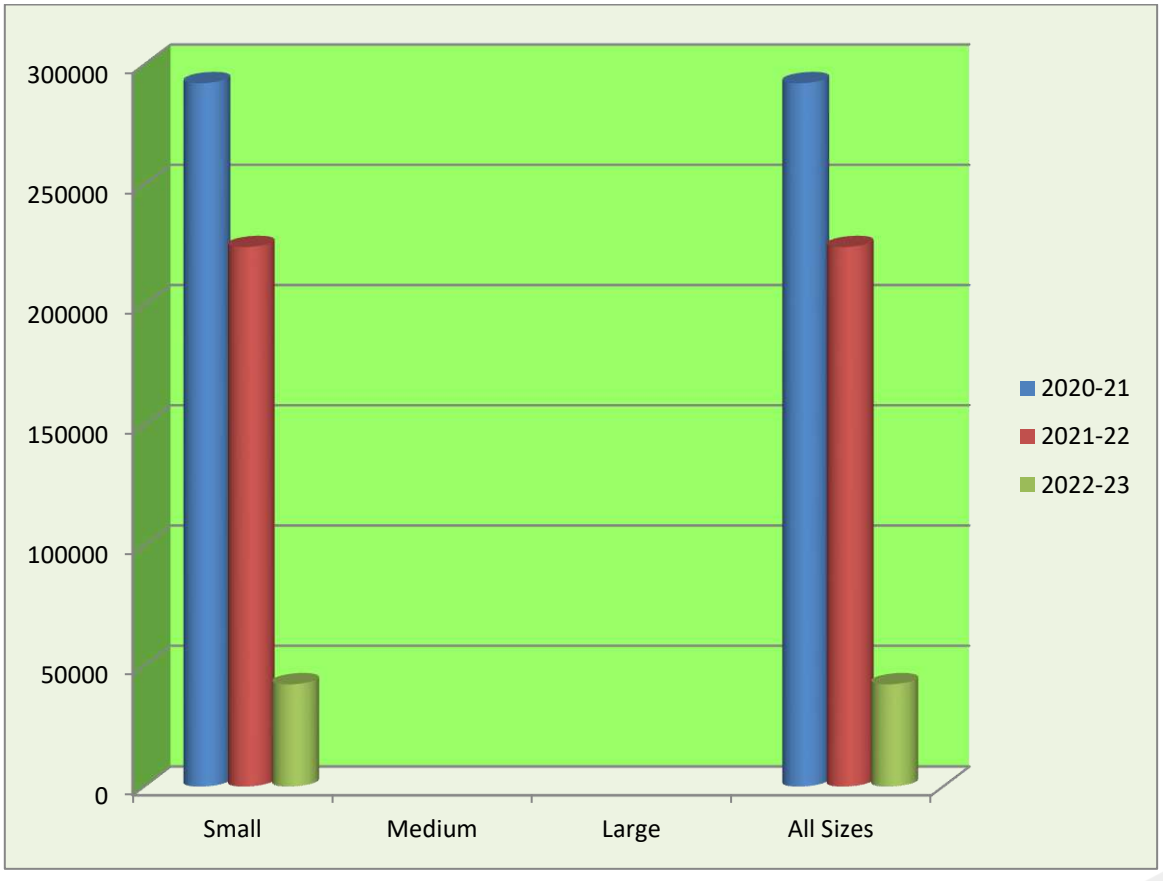
Here the total labour is the sum of hired human labour and household human labour. The small size class is relatively balanced with males slightly leading over females . Males make up the larger portion of the total dataset.

Table 2.17.4: Cost of cultivation of Cabbage(summer) per hectare (in Rs.) from 2020-21 to 2022-23

Holding size class	Cost A (Rs.)		
	2020-21	2021-22	2022-23
Small	292224	224093	42350
Medium	0	0	0
Large	0	0	0
All Sizes	292224	224093	42350

The last three year data shows a decrease in cost of Cabbage from 2020-21 to 2022-23. Between 2020-21 and 2022-23 shows a total decrease of about 85.5% in cost A. The comparison shows downward trend in costs for small holdings over the observed period.

Figure 2.17.2: Cost of cultivation of Cabbage (summer) per hectare (in Rs.) from 2020-21 to 2022-23



2.17.3 **Value of output**

Details of product and by product for the year 2022-23 is given below.

Table 2.17.5: Value of output during the year 2022-23

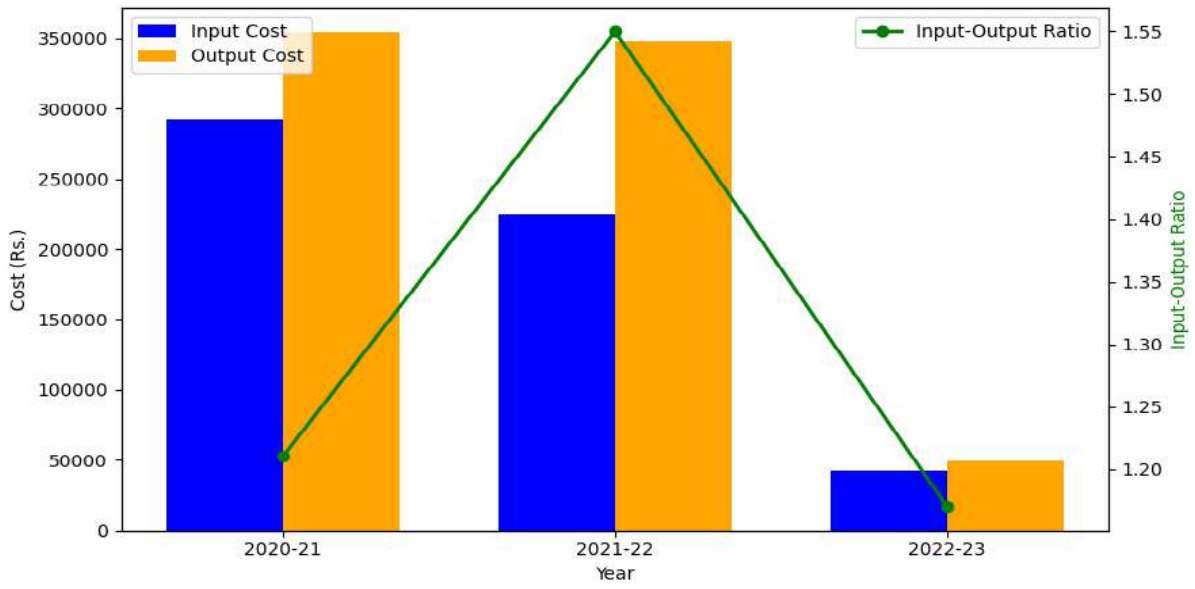
Year	Holding size class	Product/Byproduct (in Rs.)
2022-2023	Small	49400
	Medium	0
	Large	0
	All Sizes	49400

Table 2.17.6: Input cost, output cost and Input-output ratio of Cabbage (summer) per hectare (in Rs.) from 2020 -21 to 2022-23

Year	Components		
	Input Cost(Rs.)	**Output Cost(Rs.)**	**Input-output ratio**
2020-21	292224	353918	1.21
2021-22	224093	347885	1.55
2022-23	42350	49400	1.17

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2021-22.

Figure 2.17.3: Input cost, output cost and Input-output ratio of Cabbage (summer) per hectare (in Rs.) from 2020-21 to 2022-23



2.17.4 Agricultural cost Ratios

1.Labour Cost Ratio: The labour expenses make up about 44.66% of total cost A. This indicates that primary contribution to an increased Cost A is the labour cost.

2. Costing materials used Ratio(Material cost ratio): The material cost ratio make up about 48.82% of total cost A. This indicates that Material cost Ratio is also a major contribution to an increased Cost A.

2.17.5 Key Findings

- Labour is a substantial cost but isn't the highest proportion of total costs. This suggests that the farm uses a fair amount of labour.
- Material costs take up a major portion of the total costs, reflecting the nature of the farm's operation where inputs like seeds, fertilizers, and other materials are important for production.
- 2022-23 saw a large reduction in input costs and relatively reduced output cost.
- The input-output ratio shows a fluctuation over years, 2022-23 shows lower Input-output ratio as compared to previous years.

2.18

TOMATO

2.18.0 Introduction

Tomato (Lycopersicon esculentum) is an important member of the Solanaceae family. It is mainly used as food and cash crop globally. High cost of inputs, pest and diseases, post harvest losses and marketing are the major challenges facing tomato production globally. Organic tomato production is an emerging market niche. Additionally, consideration of marketand appropriate timing is necessary,particularly for tomato to be sold for fresh consumption. This is necessary to ensure the farmers can get good returns by understanding seasonal variations and demand/ supply.

The cost of cultivation of this crop is collected by the department from 2020-21 onwards. This chapter aims to provide a comprehensive overview of the key cost components involved in Tomato autumn, winter and summer cultivation in Kerala,

2.18.1: TOMATO-AUTUMN (VIRIPPU)

2.18.1: Tomato-Autumn (Virippu)

2.18.1.1Area under Tomato-Autumn Cultivation

Details of holding selected and area coverage for this study are given below. The data collected from 20 holdings according to the size class by covering 4.45 hectares of land.

Table 2.18.1.1: Number of holdings and Area under Tomato-Autumn

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	10	1.13	25.39	**0.11**
Medium	10	3.32	74.61	**0.33**
Large	-	-	-	**-**
Total	**20**	**4.45**	**100.00**	**0.22**

It is observed that the average area per holding is 0.22 hectares in all classes while average area per holding in medium size class, ie between 0.20 hectares an 0.80 hectares is 0.33 hectares. But in small size class, ie, less than 0.20 hectare which comprises 10 holdings, the average area per holding is only 0.11 hectare.

2.18.1.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Tomato autumn is furnished in the below table.

Table 2.18.1.2: Cost of Cultivation per hectare (in Rs.) of Tomato-Autumn

Sl. No	Components	Holding Size Class			
		Small	**Medium**	**Large**	All Sizes
1	Hired human labour	6175	64619	0	**49742**
2	Animal labour	0	0	0	**0**
3	Machine labour	3273	10426	0	**8605**
4	Seed /seedlings	6396	11273	0	**10032**
5	Farmyard manure and chemical fertilizers	30752	53604	0	**47787**

6	Plant Protection	2574	3203	0	**3043**
7	Land tax and irrigation cess	367	557	0	**508**
8	Repair and maintenance charges of implements, machinery and building	0	346	0	**258**
9	Interest on working capital	4917	14312	0	**11921**
10	Other expenses	12152	15106	0	**14354**
11	Total cost 'A'(1-10)	**66605**	**173446**	0	**146250**
12	Interest on fixed capital	41628	29402	0	**32539**
13	Cost 'B1'(11+12)	**108233**	**202848**	**0**	**178790**
14	Interest on land value	123159	92200	0	**100081**
15	Cost 'B'(13+14)	**231392**	**295049**	**0**	**278870**
16	Inputed value of household labour	67294	7873	0	**22999**
17	Cost 'C'(15+16)	**298686**	**302922**	**0**	**301869**

Figure 2.18.1.1: Cost of Cultivation per hectare (in Rs.) of Tomato autumn

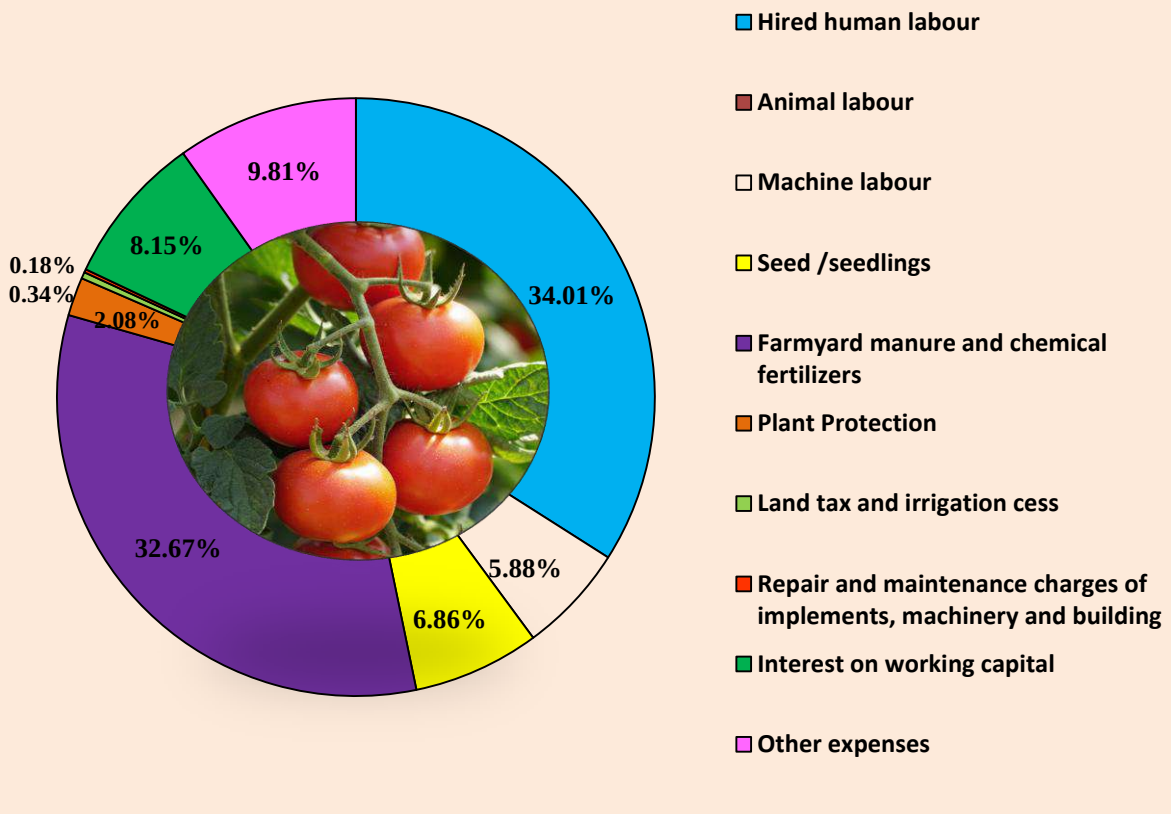


Table: 2.18.1.2 and **figure 2.18.1.1** shows the total costs and Cost A percentage of Tomato autumn farming. Cost A of Tomato -autumn was dominated by hired human labour and farmyard manure and chemical fertilizers. There exist a strong dependence on human labour for medium. When it comes to total costs, medium holdings occupies higher cost in Tomato autumn as compared with others. Generally, the agricultural operation has faced rising operational costs, particularly in the areas of fertilizers, labour, and working capital during 2022-23.

Table 2.18.1.3: Percentage of hired human labour hours to total labour hours of Tomato Autumn during 2022 - 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	0	10.96	0	**8.17**
Female	9.27	47.07	0	**61.62**
Total	**9.27**	**58.03**	**0**	**69.79**

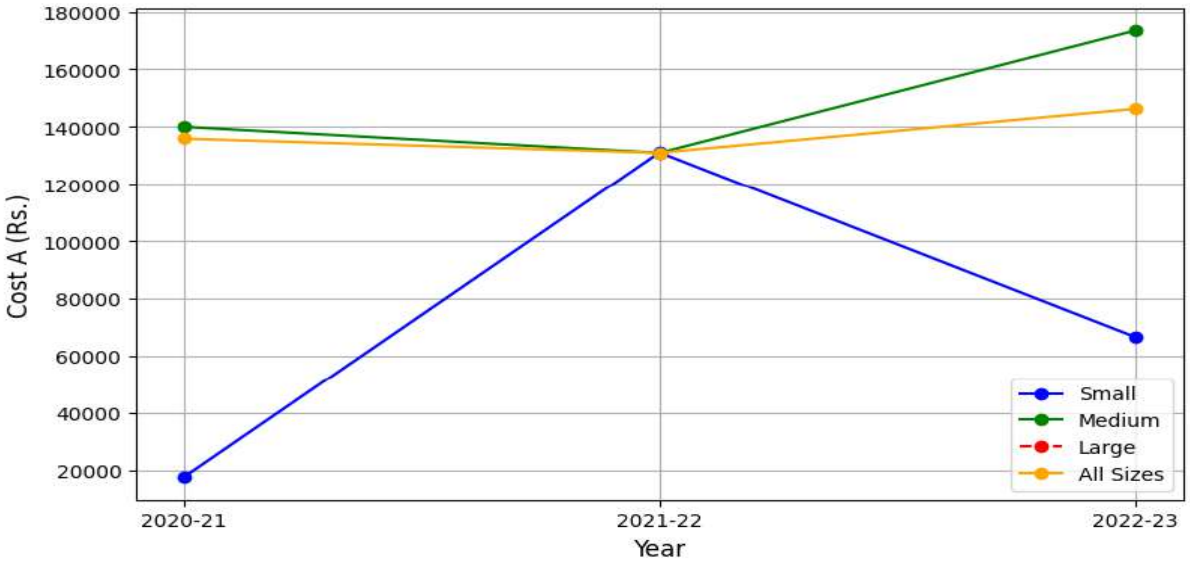
Here the total labour is the sum of hired human labour and household human labour. As usual proportion to hired labour, total labour input is higher for medium holding as compared with other holdings. Also medium holdings are primarily female-dominated, with men participating at a lower rate. Generally, cultivators belonging to medium class are seem to depend more of their requirements on hired labour during 2022-23.

Table 2.18.1.4: Cost of cultivation of Tomato autumn per hectare (in Rs.) from 2020-21 to 2022-23

Holding size class	Cost A(Rs.)		
	2020-21	2021-22	2022-2023
Small	17513	131044	66605
Medium	140019	130943	173446
Large	0	0	0
All Sizes	135901	130976	146250

The last three year data shows that there occurred fluctuations in the cost of cultivation of Tomato autumn. The overall costs for all sizes combined continued to rise, though at a slower rate in 2022-23. Compared to 2021-22, percentage increase in Cost A in 2022-23 is 0.58%.

Figure 2.18.1.2: Cost of cultivation of Tomato autumn per hectare (in Rs.) from 2020-21 to 2022-23



2.18.1.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.18.1.5: Value of output during the year 2022-23

Holding size class	Product (in Rs.)
Small	204776
Medium	251670
Large	0
All Sizes	239734

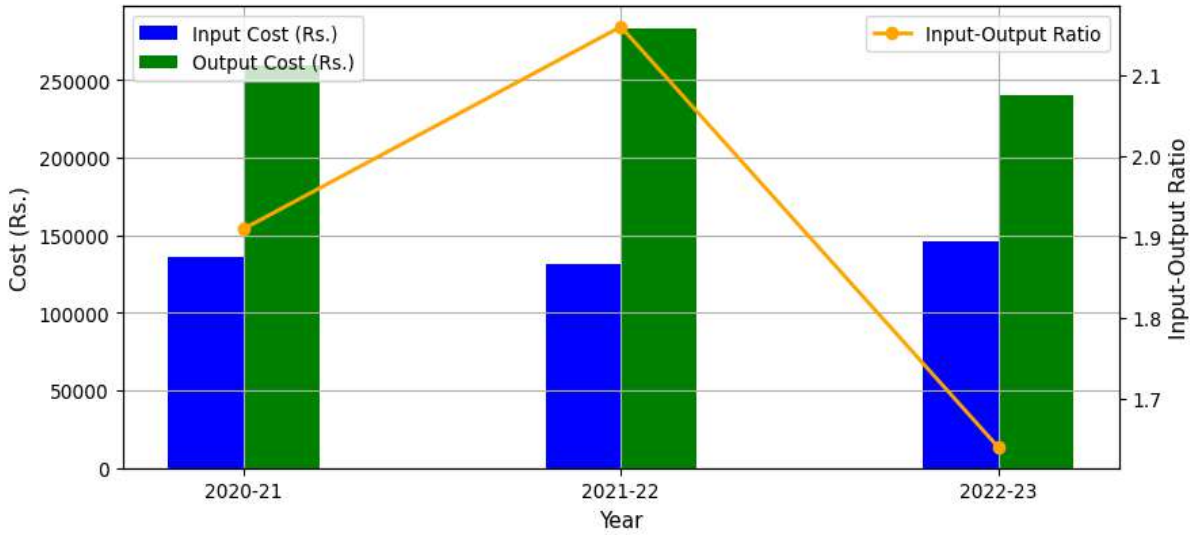
Here the medium holdings consistently demonstrates higher production level compared to small holdings.

Table 2.18.1.6: Input cost, output cost and Input-output ratio of Tomato autumn per hectare (in Rs.) from 2020-21 to 2022-23

Year	Components		
	Input Cost (Rs.)	Output Cost (Rs.)	Input-output ratio
2020-21	135901	258949	1.91
2021-22	130976	283385	2.16
2022-23	146250	239734	1.64

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2021-22.

Figure 2.18.1.3: Input cost, output cost and Input-output ratio of Tomato autumn per hectare (in Rs.) from 2020-21 to 2022-23



2.18.1.4 Agricultural cost Ratios

1. Labour Cost Ratio: The labour cost ratio indicates that labour expenses account for approximately 39.89% of the total Cost A.

2. Costing materials used Ratio(Material cost ratio): The material cost ratio accounts for approximately 51.43% of the total Cost A. This indicates that material costs plays a significant role in contributing to increase in Cost A.

2.18.1.5 Key Findings

- There occur fluctuations in the input and output costs over the years and the change depends upon the cultivators selected for this survey under each year.
- By interpreting the input-output ratio(productivity), compared with the previous years efficiency is lower in 2022-23.
- Also the material cost ratio is higher than that of labour cost ratio, so for cultivating tomato autumn the major part of cost A is contributed by material costs. Together, these ratios imply that labour and material costs collectively make up a substantial

majority of total costs (over 91%). This suggests that efforts to improve cost efficiency should focus on both labour and material inputs.

2.18.2: TOMATO -WINTER (MUNDAKAN)

2.18.2.1 Area under Tomato -Winter Cultivation

Details of holding selected and area coverage for this study are given below. The data collected from 20 holdings according to the size class by covering 4.39 hectares of land.

Table 2.18.2.1: Number of holdings and Area under Tomato -Winter

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	7	0.61	13.90	**0.09**
Medium	13	3.79	86.33	**0.29**
Large	0	0	0	**0**
Total	20	4.39	100.00	**0.22**

It is observed that the average area per holding is 0.22 hectares in all classes while average area per holding in medium size class, ie between 0.20 hectares and 0.80 hectares is 0.29 hectares. But in small size class ie, less than 0.20 hectare which comprises 7 holdings, the average area per holding is only 0.09 hectare.

2.18.2.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of Tomato -Winter is furnished in the below table.

Table 2.18.2.2: Cost of Cultivation per hectare (in Rs.) of Tomato -Winter

Sl. No	Components	Holding Size Class			
		Small	**Medium**	**Large**	All Sizes
1	Hired human labour	8645	53663	0	**47439**
2	Animal labour	0	0	0	**-**
3	Machine labour	8332	9981	0	**9753**
4	Seed /seedlings	10506	9683	0	**9797**
5	Farmyard manure and chemical fertilizers	45178	47721	0	**47370**
6	Plant Protection	1564	3447	0	**3187**

7	Land tax and irrigation cess	509	461	0	**467**
8	Repair and maintenance charges of implements, machinery and building	0	594	0	**512**
9	Interest on working capital	7423	12450	0	**11755**
10	Other expenses	16220	14455	0	**14699**
11	**Total cost 'A'(1-10)**	**98376**	**152456**	0	**144979**
12	Interest on fixed capital	6883	29711	0	**26572**
13	**Cost 'B1'(11+12)**	**105259**	**182167**	**0**	**171551**
14	Interest on land value	129139	107725	0	**110685**
15	**Cost 'B'(13+14)**	**234398**	**289892**	**0**	**282236**
16	Inputed value of household labour	67775	9533	0	**17585**
17	**Cost 'C'(15+16)**	**302173**	**299425**	**0**	**299821**

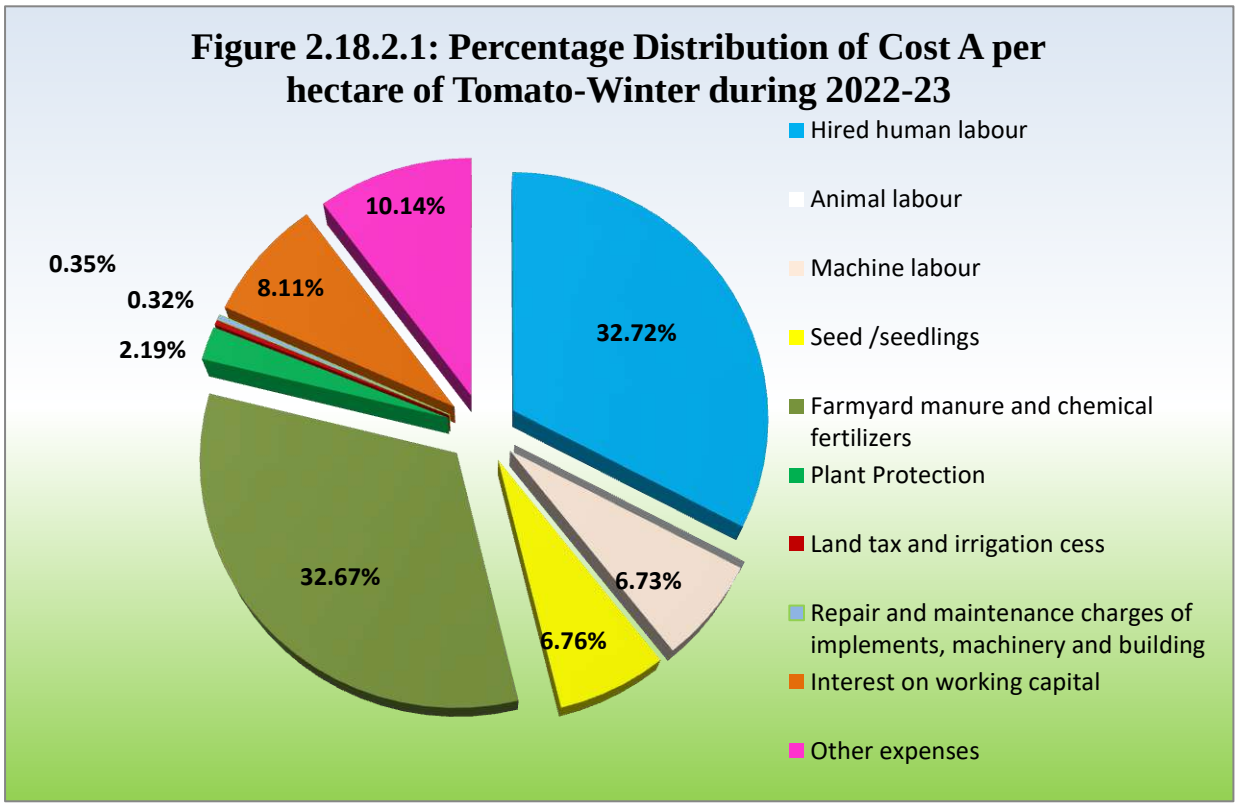


Table: 2.18.2.2 and **figure 2.18.2.1** shows the total costs and Cost A percentage of Tomato winter farming. Cost A of Tomato-winter was dominated by hired human labour, other expense and farmyard manure and chemical fertilizers. Medium holdings have a significantly higher cost for hired human labour than small holdings likewise the imputed value of house hold labour is highest for small holding.

Table 2.18.2.3: Percentage of hired human labour hours to total labour hours of Tomato winter during 2022 - 2023

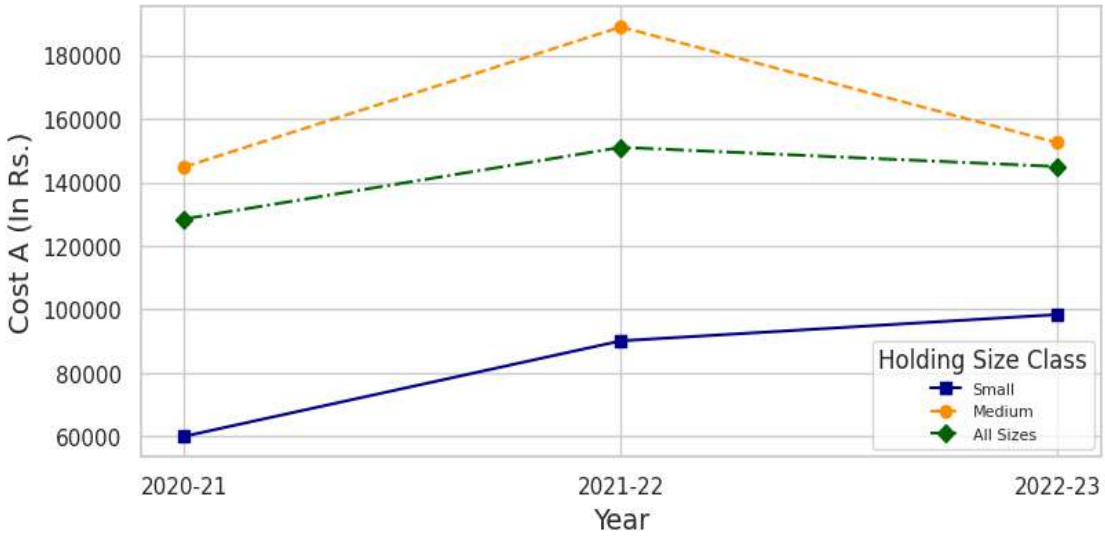
Sex	Holding Size Class			
	Small	**Medium**	**Large**	**All Sizes**
Male	0	8.80	0	7.48
Female	12.83	46.16	0	68.70
Total	**12.83**	**54.96**	0	**76.18**

Here the total labour is the sum of hired human labour and household human labour. As usual proportion to hired labour, total labour input is higher for medium holding as compared with other holdings. Also both the holdings are primarily female-dominated, with men participating at a much lower rate.

Table2.18.2.4:Cost of cultivation of Tomato winter per hectare (in Rs.) from 2020-21 to 2022-23

Holding size class	**Cost A (In Rs.)**		
	2020-21	**2021-22**	**2022-2023**
Small	60016	90092	98376
Medium	144860	188945	152456
Large	0	0	0
All Sizes	128492	151040	144979

Figure 2.18.2.2: Cost of cultivation of Tomato winter per hectare (in Rs.) from 2020-21 to 2022-23



The last three year data shows that there occured fluctuations in the cost of cultivation of Tomato autumn.

2.18.2.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table2.18.2.5:Value of output during the year 2022-23

Year	Holding size class	Product (Cost in Rs.)
2022-23	Small	220041
	Medium	219264
	Large	0
	All sizes	219371

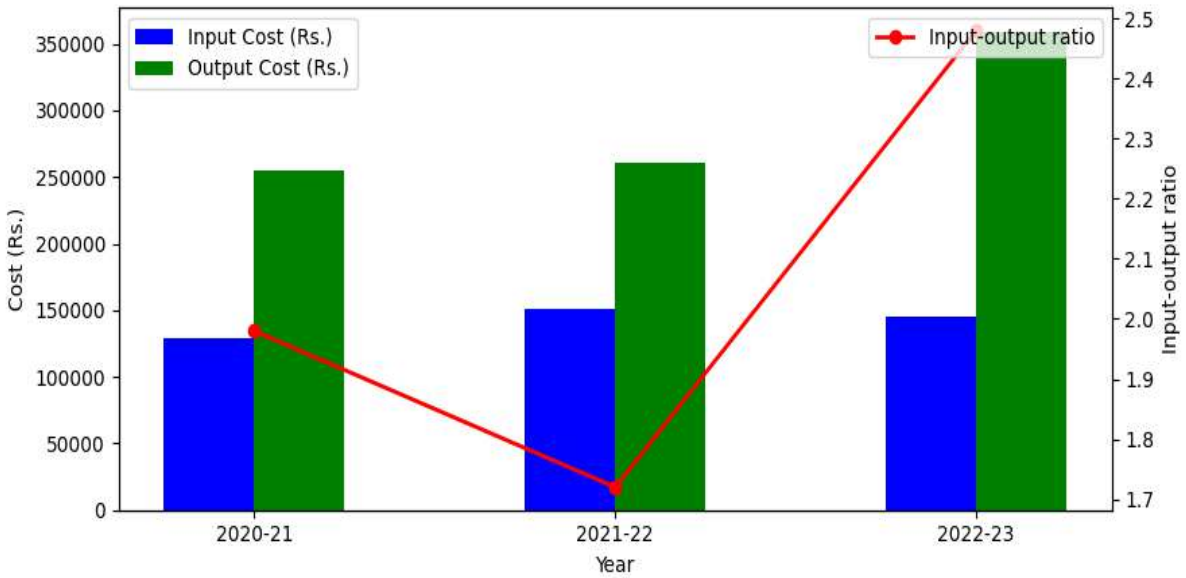
Here the small holdings consistently demonstrates higher production level compared to the medium class.

Table 2.18.2.6. Input cost, output cost and Input-output ratio of Tomato winter per heactare (in Rs.) from 2020-21 to 2022-23

Year	Components		
	Input Cost	Output Cost	Input-output ratio
2020-21	128492	254837	1.98
2021-22	151040	260521	1.72
2022-23	144979	219371	1.51

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2020-21.

Figure 2.18.2.3: Input cost, output cost and Input-output ratio of Tomato winter per hectare (in Rs.) from 2020-21 to 2022-23



2.18.2.4 Agricultural cost Ratios

1.Labour Cost Ratio: The labour cost ratio indicates that labour expenses account for approximately 39.45% of the total Cost A.

2. Costing materials used Ratio(Material cost ratio): The material cost ratio accounts for approximately 51.77% of the total Cost A. This indicates that material costs plays a significant role in contributing to increase in Cost A.

2.18.2.5 Key Findings

- There occur fluctuations in the input and output costs over the years and the change depends upon the cultivators selected for this survey under each year.
- By interpreting the input-output ratio (productivity), compared with the previous years efficiency is highest in 2020-21.
- Also the material cost ratio is higher than that of labour cost ratio, so for cultivating tomato autumn the major part of cost A is contributed by material costs. Together, these ratios imply that labour and material costs collectively make up a substantial majority of total costs (over 91%). This suggests that efforts to improve cost efficiency should focus on both labour and material inputs.

2.18.3: TOMATO – SUMMER (PUNCHA)

2.18.3.1 Area under Tomato - Summer Cultivation

Details of holding selected and area coverage for this study are given below. The data collected from 10 holdings according to the size class by covering 1.42 hectares of land.

Table 2.18.3.1: Number of holdings and Area under Tomato - Summer

Holding size class	Sample size (No.s)	Area under the crop in the sample (ha)	Percentage Area	Average Area Per holding (ha)
Small	7	0.81	57.04	**0.12**
Medium	3	0.61	42.96	**0.20**
Large	0	0	0	**0**
Total	**10**	**1.42**	**100.00**	**0.14**

It is observed that the average area per holding is 0.14 hectares in all classes while average area per holding in medium size class, ie between 0.20 hectares and 0.80 hectares is 0.20 hectares. But in small size class, ie, less than 0.20 hectare which comprises 7 holdings, the average area per holding is only 0.12 hectare.

2.18.3.2 Cost of cultivation

The estimated cost of cultivation of different items per hectare of **Tomato Summer** is furnished in the below table.

Table 2.18.3.2: Cost of Cultivation per hectare (in Rs.) of Tomato Summer

Sl. No	Components	Holding Size Class			
		Small	Medium	Large	All Sizes
1	Hired human labour	34272	65990	0	**47866**
2	Animal labour	0	0	0	**0**
3	Machine labour	10819	11856	0	**11263**
4	Seed /seedlings	14981	15100	0	**15032**
5	Farmyard manure and chemical fertilizers	71581	71136	0	**71390**
6	Plant Protection	2470	2470	0	**2470**
7	Land tax and irrigation cess	658	657	0	**658**
8	Repair and maintenance charges of implements, machinery and building	1081	1317	0	**1182**
9	Interest on working capital	13412	16655	0	**14802**
10	Other expenses	18747	18895	0	**18811**
11	**Total cost 'A'(1-10)**	**168021**	**204077**	0	**183473**
12	Interest on fixed capital	20625	39553	0	**28676**
13	**Cost 'B1'(11+12)**	188645	243630	0	**212150**
14	Interest on land value	126305	120070	0	**123633**
15	**Cost 'B'(13+14)**	314950	363700	0	**335782**

16	Inputed value of household labour	38379	0	0	**21931**
17	Cost 'C'(15+16)	353329	363700	0	**357713**

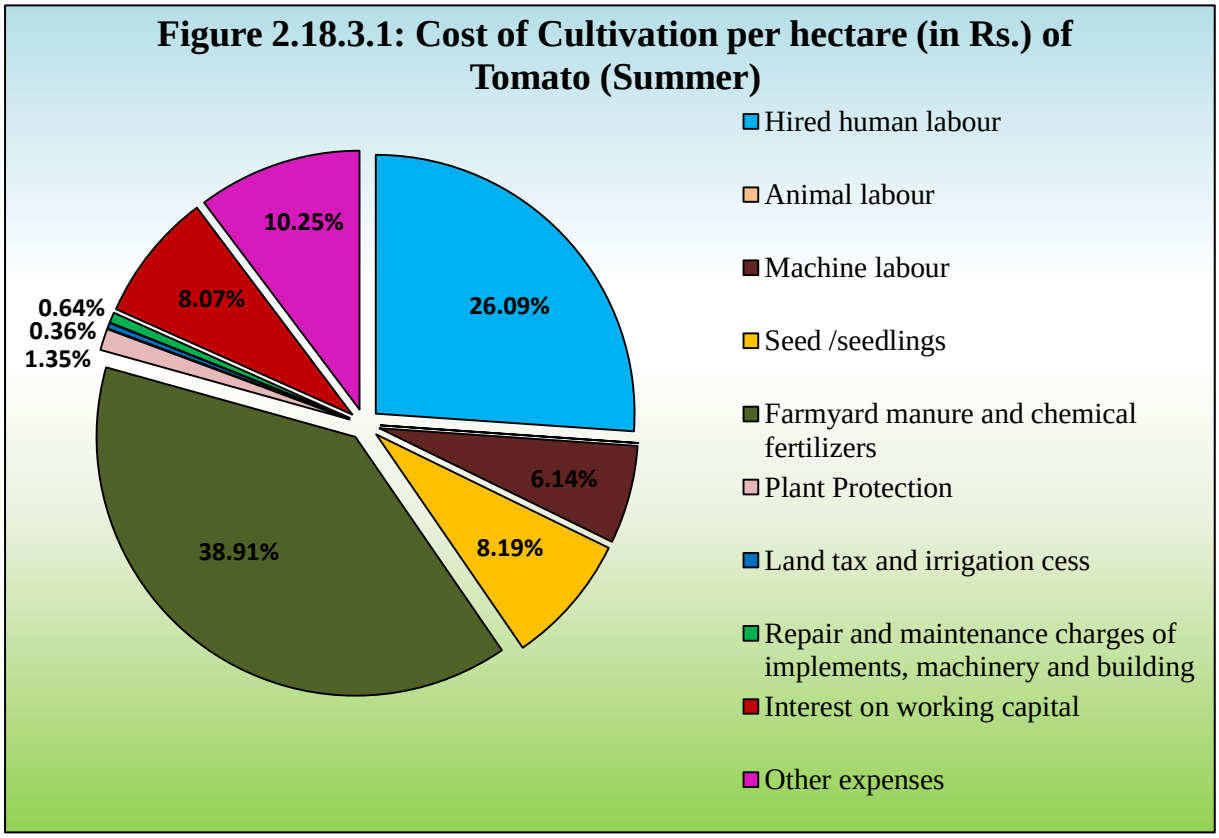


Table: 2.18.3.2 and **figure 2.18.3.1** shows the total costs and Cost A percentage of Tomato summer farming. Cost A of Tomato -summer was dominated by farmyard manure and chemical fertilizers, hired human labour and other expenses. When it comes to total costs, medium holdings occupies higher cost in Tomato summer as compared with others. Generally, the agricultural operation has faced rising operational costs, particularly in the areas of fertilizers, labour, and working capital during 2022-23.

Table 2.18.3.3:Percentage of hired human labour hours to total labour hours of Tomato (Summer) during 2022 - 2023

Sex	Holding Size Class			
	Small	Medium	Large	All Sizes
Male	7.61	13.53	0	**10.06**
Female	30.44	50.00	0	**59.44**
Total	**38.05**	**63.53**	0	**69.50**

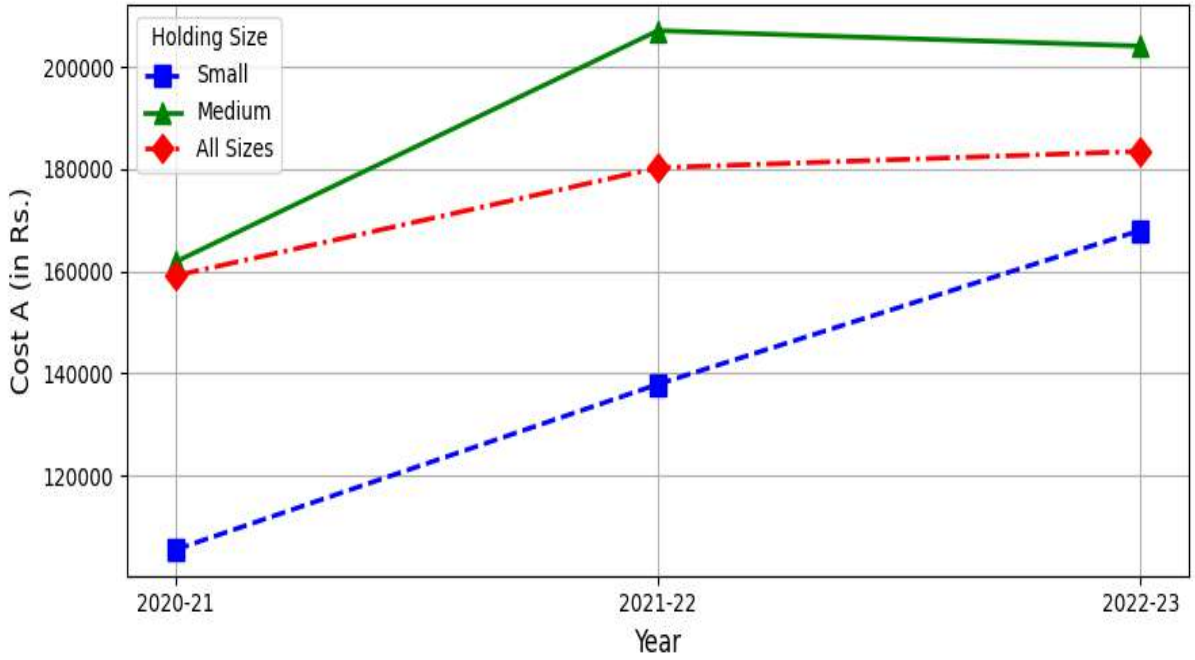
Here the total labour is the sum of hired human labour and household human labour. As usual proportion to hired labour, total labour input is higher for medium holding as compared with other holdings. Also small and medium holdings are primarily female-dominated, with men participating at a much lower rate.

Table 2.18.3.4: Cost of cultivation of Tomato summer per hectare (in Rs.) from 2020-21 to 2022-23

Holding size class	Cost A (In Rs.)		
	2020-21	2021-22	2022-2023
Small	105522	137904	168021
Medium	161832	207086	204077
Large	0	0	0
All sizes	159132	180259	183473

The last five year data shows that there occured fluctuations in the cost of cultivation of Tomato summer. From the above table it is clear that cultivators belongs to medium holding has higher cost as compare to other holdings. Compared to 2021-22, percentage increase in Cost A in 2022-23 is very small i.e, 1.78%.

Figure 2.18.3.2: Cost of cultivation of Tomato summer per hectare (in Rs.) from 2020-21 to 2022-23



2.18.3.3 Value of output

Details of product and by product for the year 2022-23 is given below.

Table 2.18.3.5: Value of output during the year 2022-23

Year	Holding size class	Product (in Rs.)
2022-23	Small	270156
	Medium	294753
	Large	0
	All Sizes	280698

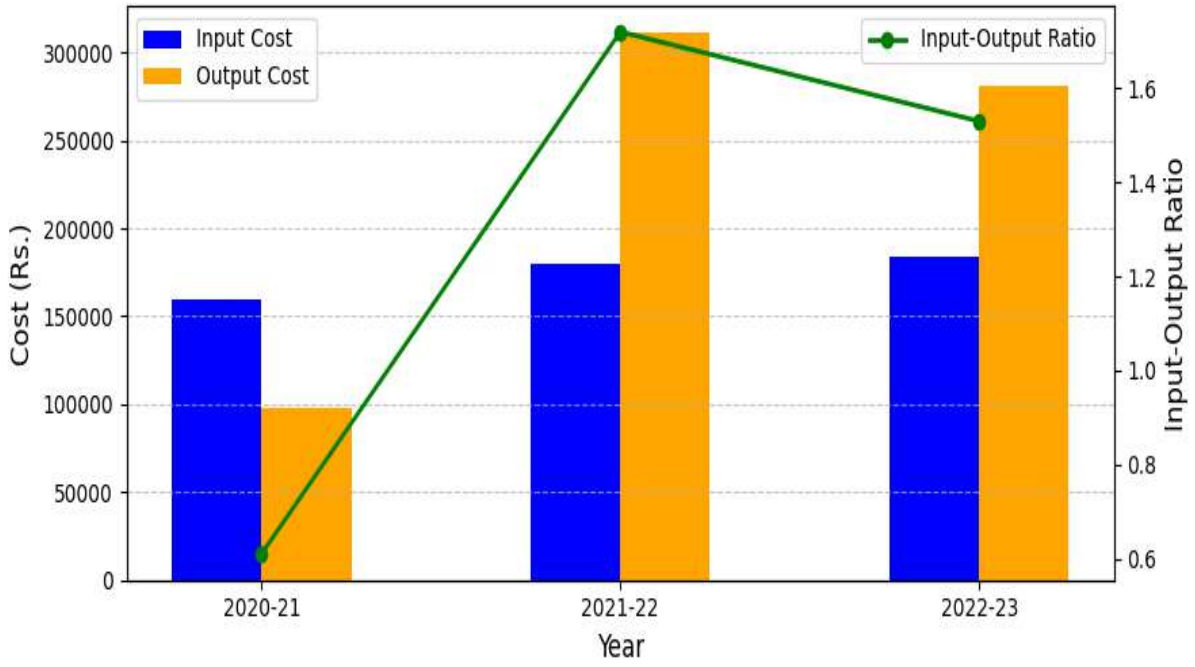
Here medium holdings consistently demonstrate higher production level compared to small holdings.

Table 2.18.3.6: Input cost, output cost and Input -output ratio of Tomato summer per hectare (in Rs.) from 2020-21 to 2022-23

Year	Components		
	Input Cost	Output Cost	Input -output ratio
2020-21	159132	97636	0.61
2021-22	180259	310910	1.72
2022-23	183473	280698	1.53

From the data collected it is evident that the input- output ratio has some variations over the years and the efficiency is higher during the year 2021-22.

Figure 2.18.3.2: Input cost, output cost and Input-output ratio of Tomato-Summer per hectare (in Rs.) from 2020-21 to 2022-23



2.18.3.4 Agricultural cost Ratios

1.Labour Cost Ratio

The labour cost ratio indicates that labour expenses account for approximately 32.23% of the total Cost A.

2. Costing materials used Ratio (Material cost ratio)

The material cost ratio accounts for approximately 58.70% of the total Cost A. This indicates that material costs plays a significant role in contributing to increase in Cost A.

2.18.3.5 Key Findings

- Input costs have risen over the years, while output costs have fluctuated during 2022-23.
- Input-Output Ratio shows fluctuations and the change depends upon the cultivators selected for this survey under each year.
- Also the material cost ratio is higher than that of labour cost ratio, so for cultivating tomato summer the major part of cost A is contributed by material costs. Together, these ratios imply that labour and material costs collectively make up a substantial majority of total costs (over 91%). This suggests that efforts to improve cost efficiency should focus on both labour and material inputs.

Appendix

A1.1 District wise Area and number of holding under Autumn Paddy during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	45	14.23	4.12	0.32
2	Kollam	49	20.94	6.06	0.43
3	Pathanamthitta	15	9.14	2.65	0.61
4	Alappuzha	49	63.49	18.38	1.30
5	Kottayam	31	42.52	12.31	1.37
6	Idukki	15	7.53	2.18	0.50
7	Ernakulam	45	31.46	9.11	0.70
8	Thrissur	45	62.21	18.01	1.38
9	Palakkad	21	22.69	6.57	1.08
10	Malappuram	45	34.64	10.03	0.77
11	Kozhikode	25	8.37	2.42	0.33
12	Wayanad	0	0	0	0
13	Kannur	30	15.40	4.46	0.51
14	Kasaragod	30	12.83	3.71	0.43
	State	**445**	**345.46**	**100.00**	**0.78**

A1.2 District wise Area and number of holding under Winter Paddy during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	37	12.15	1.81	0.33
2	Kollam	51	18.41	2.75	0.36
3	Pathanamthitta	47	163.67	24.42	3.48
4	Alappuzha	75	125.45	18.72	1.67
5	Kottayam	45	64.64	9.65	1.44
6	Idukki	15	9.71	1.45	0.65
7	Ernakulam	42	57.46	8.57	1.37
8	Thrissur	45	71.30	10.64	1.58
9	Palakkad	30	31.48	4.70	1.05
10	Malappuram	45	46.25	6.90	1.03
11	Kozhikode	30	29.96	4.47	1.00
12	Wayanad	15	16.56	2.47	1.10
13	Kannur	30	8.20	1.22	0.27
14	Kasaragod	30	14.90	2.22	0.50
	State	**537**	**670.15**	**100.00**	**1.25**

A1.3. District wise Area and number of holding under Summer Paddy during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	41	13.00	1.61	0.32
2	Kollam	17	35.21	4.36	2.07
3	Pathanamthitta	49	157.48	19.51	3.21
4	Alappuzha	75	273.90	33.92	3.65
5	Kottayam	45	56.06	6.94	1.25
6	Idukki	2	0.23	0.03	0.12
7	Ernakulam	40	35.25	4.37	0.88
8	Thrissur	45	62.23	7.71	1.38
9	Palakkad	19	25.89	3.21	1.36
10	Malappuram	43	59.59	7.38	1.39
11	Kozhikode	30	68.68	8.51	2.29
12	Wayanad	15	4.13	0.51	0.28
13	Kannur	1	0.10	0.01	0.10
14	Kasaragod	30	15.62	1.93	0.52
	State	**452**	**807.37**	**100.00**	**1.79**

A1.4. District wise Area and number of holding under Coconut during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	60	15.84	5.01	0.26
2	Kollam	80	20.39	6.44	0.25
3	Pathanamthitta	80	21.51	6.80	0.27
4	Alappuzha	100	40.25	12.72	0.40
5	Kottayam	60	20.02	6.33	0.33
6	Idukki	20	5.11	1.62	0.26
7	Ernakulam	60	18.94	5.99	0.32
8	Thrissur	60	31.26	9.88	0.52
9	Palakkad	40	24.96	7.89	0.62
10	Malappuram	60	42.93	13.57	0.72
11	Kozhikode	40	24.50	7.74	0.61
12	Wayanad	20	11.72	3.70	0.59
13	Kannur	40	21.07	6.66	0.53
14	Kasaragod	40	17.87	5.65	0.45
	State	**760**	**316.38**	**100.00**	**0.42**

A1.5. District wise Area and number of holding under Arecanut during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	60	5.31	4.39	0.09
2	Kollam	80	3.10	2.57	0.04
3	Pathanamthitta	80	3.34	2.76	0.04
4	Alappuzha	100	4.21	3.48	0.04
5	Kottayam	60	2.79	2.31	0.05
6	Idukki	20	1.56	1.29	0.08
7	Ernakulam	60	5.90	4.88	0.10
8	Thrissur	60	10.45	8.65	0.17
9	Palakkad	40	11.00	9.10	0.28
10	Malappuram	60	27.63	22.86	0.46
11	Kozhikode	40	5.78	4.78	0.14
12	Wayanad	20	10.21	8.45	0.51
13	Kannur	40	7.36	6.09	0.18
14	Kasaragod	40	22.20	18.37	0.56
	State	**760**	**120.84**	**100.00**	**0.16**

A1.6. District wise Area and number of holding under Tapioca during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	45	9.89	8.83	0.22
2	Kollam	60	9.06	8.09	0.15
3	Pathanamthitta	60	11.10	9.91	0.19
4	Alappuzha	75	6.47	5.78	0.09
5	Kottayam	45	7.56	6.75	0.17
6	Idukki	15	2.21	1.97	0.15
7	Ernakulam	45	20.80	18.57	0.46
8	Thrissur	45	6.25	5.58	0.14
9	Palakkad	30	4.68	4.18	0.16
10	Malappuram	45	15.67	13.99	0.35
11	Kozhikode	30	3.72	3.32	0.12
12	Wayanad	15	3.66	3.27	0.24
13	Kannur	30	5.84	5.21	0.19
14	Kasaragod	25	5.11	4.56	0.20
	State	**565**	**112.03**	**100.00**	**0.20**

A1.7. District wise Area and number of holding under Banana during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	45	11.79	8.43	0.26
2	Kollam	60	11.68	8.35	0.19
3	Pathanamthitta	60	15.38	10.99	0.26
4	Alappuzha	63	9.42	6.73	0.15
5	Kottayam	45	6.17	4.41	0.14
6	Idukki	15	2.68	1.92	0.18
7	Ernakulam	45	21.90	15.65	0.49
8	Thrissur	45	11.86	8.48	0.26
9	Palakkad	30	9.56	6.83	0.32
10	Malappuram	45	16.17	11.56	0.36
11	Kozhikode	30	7.88	5.63	0.26
12	Wayanad	15	4.96	3.54	0.33
13	Kannur	30	7.29	5.21	0.24
14	Kasaragod	30	3.18	2.27	0.11
	State	**558**	**139.93**	**100.00**	**0.25**

A1.8. District wise Area and number of holding under Pepper during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	45	5.23	9.43	0.12
2	Kollam	60	3.30	5.95	0.06
3	Pathanamthitta	60	4.49	8.09	0.07
4	Alappuzha	51	1.51	2.72	0.03
5	Kottayam	45	3.34	6.02	0.07
6	Idukki	15	0.91	1.64	0.06
7	Ernakulam	45	3.23	5.82	0.07
8	Thrissur	45	2.81	5.06	0.06
9	Palakkad	30	5.92	10.67	0.20
10	Malappuram	45	7.77	14.01	0.17
11	Kozhikode	30	3.21	5.79	0.11
12	Wayanad	15	6.01	10.83	0.40
13	Kannur	30	2.40	4.33	0.08
14	Kasaragod	30	5.36	9.66	0.18
	State	**546**	**55.48**	**100.00**	**0.10**

A1.9. District wise Area and number of holding under Ginger during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	45	3.66	10.35	0.08
2	Kollam	60	1.72	4.87	0.03
3	Pathanamthitta	60	3.18	9.00	0.05
4	Alappuzha	26	0.78	2.21	0.03
5	Kottayam	43	1.81	5.12	0.04
6	Idukki	15	1.30	3.68	0.09
7	Ernakulam	36	4.65	13.15	0.13
8	Thrissur	45	1.85	5.23	0.04
9	Palakkad	21	6.56	18.56	0.31
10	Malappuram	19	0.65	1.84	0.03
11	Kozhikode	19	1.51	4.27	0.08
12	Wayanad	15	4.68	13.24	0.31
13	Kannur	24	1.62	4.58	0.07
14	Kasaragod	20	1.38	3.90	0.07
	State	**448**	**35.35**	**100.00**	**0.08**

A1.10. District wise Area and number of holding under Turmeric during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	45	3.19	10.23	0.07
2	Kollam	60	1.46	4.68	0.02
3	Pathanamthitta	60	3.07	9.85	0.05
4	Alappuzha	37	2.74	8.79	0.07
5	Kottayam	43	2.10	6.74	0.05
6	Idukki	10	0.94	3.01	0.09
7	Ernakulam	37	3.47	11.13	0.09
8	Thrissur	45	2.31	7.41	0.05
9	Palakkad	20	1.74	5.58	0.09
10	Malappuram	37	2.78	8.92	0.08
11	Kozhikode	30	2.25	7.22	0.08
12	Wayanad	15	0.47	1.51	0.03
13	Kannur	30	3.15	10.10	0.11
14	Kasaragod	23	1.53	4.91	0.07
	State	**492**	**31.18**	**100.00**	**0.06**

A1.11. District wise Area and number of holding under Pineapple during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	1	1.01	0.17	1.01
2	Kollam	30	7.46	1.26	0.25
3	Pathanamthitta	6	1.58	0.27	0.26
4	Alappuzha	9	0.55	0.09	0.06
5	Kottayam	45	104.94	17.70	2.33
6	Idukki	15	49.19	8.30	3.28
7	Ernakulam	30	62.33	10.51	2.08
8	Thrissur	31	129.45	21.84	4.18
9	Palakkad	3	20.65	3.48	6.88
10	Malappuram	1	3.64	0.61	3.64
11	Kozhikode	15	110.38	18.62	7.36
12	Wayanad	0	0	0	0
13	Kannur	13	31.40	5.30	2.42
14	Kasaragod	5	70.24	11.85	14.05
	State	**204**	**592.83**	**100.00**	**2.91**

A1.12. District wise Area and number of holding under Bitter Gourd (Autumn) during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	30	4.59	14.94	0.15
2	Kollam	40	2.27	7.39	0.06
3	Pathanamthitta	26	1.53	4.98	0.06
4	Alappuzha	27	1.15	3.74	0.04
5	Kottayam	29	5.67	18.45	0.20
6	Idukki	0	0	0	0
7	Ernakulam	12	1.87	6.09	0.16
8	Thrissur	30	3.72	12.11	0.12
9	Palakkad	20	5.97	19.43	0.30
10	Malappuram	14	1.98	6.44	0.14
11	Kozhikode	3	0.12	0.39	0.04
12	Wayanad	0	0	0	0
13	Kannur	13	1.86	6.05	0.14
14	Kasaragod	0	0	0	0
	State	**244**	**30.73**	**100.00**	**0.13**

A1.13. District wise Area and number of holding under Bitter Gourd (Winter) during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	30	2.87	10.39	0.10
2	Kollam	40	1.22	4.42	0.03
3	Pathanamthitta	28	1.52	5.51	0.05
4	Alappuzha	33	2.91	10.54	0.09
5	Kottayam	23	3.28	11.88	0.14
6	Idukki	2	0.25	0.91	0.13
7	Ernakulam	9	0.77	2.79	0.09
8	Thrissur	30	3.37	12.21	0.11
9	Palakkad	20	7.39	26.77	0.37
10	Malappuram	15	1.62	5.87	0.11
11	Kozhikode	7	0.38	1.38	0.05
12	Wayanad	1	0.20	0.72	0.20
13	Kannur	16	1.08	3.91	0.07
14	Kasaragod	14	0.74	2.68	0.05
	State	**268**	**27.61**	**100.00**	**0.10**

A1.14. District wise Area and number of holding under Bitter Gourd (Summer) during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	30	2.34	16.91	0.08
2	Kollam	27	0.71	5.13	0.03
3	Pathanamthitta	28	1.71	12.36	0.06
4	Alappuzha	19	0.78	5.64	0.04
5	Kottayam	6	0.55	3.97	0.09
6	Idukki	3	0.38	2.75	0.13
7	Ernakulam	8	0.35	2.53	0.04
8	Thrissur	30	3.51	25.36	0.12
9	Palakkad	5	1.36	9.83	0.27
10	Malappuram	5	0.14	1.01	0.03
11	Kozhikode	20	0.91	6.58	0.05
12	Wayanad	1	0.20	1.45	0.20
13	Kannur	14	0.57	4.12	0.04
14	Kasaragod	4	0.30	2.17	0.08
	State	**200**	**13.84**	**100.00**	**0.07**

A1.15. District wise Area and number of holding under Cowpea (Autumn) during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	30	3.77	13.62	0.13
2	Kollam	40	2.37	8.56	0.06
3	Pathanamthitta	27	1.15	4.15	0.04
4	Alappuzha	37	1.82	6.58	0.05
5	Kottayam	30	5.04	18.21	0.17
6	Idukki	0	0	0	0
7	Ernakulam	9	0.65	2.35	0.07
8	Thrissur	30	4.76	17.20	0.16
9	Palakkad	17	3.95	14.27	0.23
10	Malappuram	15	1.53	5.53	0.10
11	Kozhikode	7	0.40	1.45	0.06
12	Wayanad	0	0	0	0
13	Kannur	10	2.25	8.13	0.23
14	Kasaragod	0	0	0	0
	State	**252**	**27.68**	**100.00**	**0.11**

A1.16. District wise Area and number of holding under Cowpea(Winter)during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	30	3.92	12.14	0.13
2	Kollam	40	1.40	4.34	0.04
3	Pathanamthitta	29	1.40	4.34	0.05
4	Alappuzha	41	1.83	5.67	0.04
5	Kottayam	30	5.57	17.26	0.19
6	Idukki	10	2.77	8.58	0.28
7	Ernakulam	6	0.39	1.21	0.07
8	Thrissur	30	4.43	13.72	0.15
9	Palakkad	17	3.36	10.41	0.20
10	Malappuram	18	2.30	7.13	0.13
11	Kozhikode	12	0.57	1.77	0.05
12	Wayanad	10	0.73	2.26	0.07
13	Kannur	20	2.74	8.49	0.14
14	Kasaragod	20	0.85	2.63	0.04
	State	**313**	**32.28**	**100.00**	**0.10**

A1.17. District wise Area and number of holding under Cowpea (Summer)

during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	30	2.97	11.56	0.10
2	Kollam	33	0.89	3.46	0.03
3	Pathanamthitta	32	2.12	8.25	0.07
4	Alappuzha	35	1.85	7.20	0.05
5	Kottayam	30	4.25	16.54	0.14
6	Idukki	10	2.09	8.13	0.21
7	Ernakulam	8	0.71	2.76	0.09
8	Thrissur	30	3.80	14.79	0.13
9	Palakkad	4	0.45	1.75	0.11
10	Malappuram	20	2.86	11.13	0.14
11	Kozhikode	20	1.04	4.05	0.05
12	Wayanad	10	0.65	2.53	0.07
13	Kannur	18	0.91	3.54	0.05
14	Kasaragod	19	1.11	4.32	0.06
	State	**299**	**25.70**	**100.00**	**0.09**

A1.18.District wise Area and number of holding under Cardamom

during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Idukki	7	4.17	16.91	0.60
2	Palakkad	10	14.03	56.89	1.40
3	Wayanad	15	6.46	26.20	0.43
	State	**32**	**24.66**	**100.00**	**0.77**

A1.19. District wise Area and number of holding under Ash Gourd (Autumn) during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	0	0	0	0
2	Kollam	2	0.04	0.41	0.02
3	Pathanamthitta	3	0.13	1.35	0.04
4	Alappuzha	6	0.11	1.14	0.02
5	Kottayam	3	0.14	1.45	0.05
6	Idukki	0	0	0	0
7	Ernakulam	5	1.03	10.68	0.21
8	Thrissur	30	2.00	20.75	0.07
9	Palakkad	16	2.33	24.17	0.15
10	Malappuram	10	2.09	21.68	0.21
11	Kozhikode	0	0	0	0
12	Wayanad	0	0	0	0
13	Kannur	12	1.76	18.26	0.15
14	Kasaragod	0	0	0	0
	State	**87**	**9.64**	**100.00**	**0.11**

A1.20. District wise Area and number of holding under Ash Gourd (Winter) during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	0	0	0	0
2	Kollam	1	0.02	0.23	0.02
3	Pathanamthitta	3	0.08	0.94	0.03
4	Alappuzha	7	0.24	2.81	0.03
5	Kottayam	4	0.10	1.17	0.03
6	Idukki	0	0	0	0
7	Ernakulam	3	0.24	2.81	0.08
8	Thrissur	30	1.63	19.06	0.05
9	Palakkad	12	3.56	41.64	0.30
10	Malappuram	13	1.30	15.20	0.10
11	Kozhikode	3	0.12	1.40	0.04
12	Wayanad	0	0	0	0
13	Kannur	14	0.53	6.20	0.04
14	Kasaragod	14	0.73	8.54	0.05
	State	**104**	**8.55**	**100.00**	**0.08**

A1.21. District wise Area and number of holding under Ash Gourd (Summer) during2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram				
2	Kollam	4	0.08	1.31	0.02
3	Pathanamthitta	5	0.21	3.44	0.04
4	Alappuzha	3	0.07	1.15	0.02
5	Kottayam	3	0.12	1.96	0.04
6	Idukki				
7	Ernakulam	5	0.59	9.66	0.12
8	Thrissur	30	1.75	28.64	0.06
9	Palakkad	1	0.12	1.96	0.12
10	Malappuram	18	1.33	21.77	0.07
11	Kozhikode	14	0.86	14.08	0.06
12	Wayanad				
13	Kannur	14	0.52	8.51	0.04
14	Kasaragod	7	0.46	7.53	0.07
	State	**104**	**6.11**	**100.00**	**0.06**

A1.22. District wise Area and number of holding under Cucumber (Autumn) during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	30	3.69	22.34	0.12
2	Kollam	3	0.06	0.36	0.02
3	Pathanamthitta	8	0.87	5.27	0.11
4	Alappuzha	10	0.67	4.06	0.07
5	Kottayam	20	4.31	26.09	0.22
6	Idukki				
7	Ernakulam	8	0.89	5.39	0.11
8	Thrissur	30	1.99	12.05	0.07
9	Palakkad	4	0.43	2.60	0.11
10	Malappuram	10	1.58	9.56	0.16
11	Kozhikode				
12	Wayanad				
13	Kannur	14	2.04	12.35	0.15
14	Kasaragod				
	State	**137**	**16.52**	**100.00**	**0.12**

A1.23. District wise Area and number of holding under Cucumber (Winter) during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	30	2.64	17.43	0.09
2	Kollam	8	0.16	1.06	0.02
3	Pathanamthitta	7	0.55	3.63	0.08
4	Alappuzha	11	0.51	3.37	0.05
5	Kottayam	19	2.50	16.50	0.13
6	Idukki	-	-	-	-
7	Ernakulam	5	0.62	4.09	0.12
8	Thrissur	30	1.85	12.21	0.06
9	Palakkad	3	0.63	4.16	0.21
10	Malappuram	15	2.04	13.47	0.14
11	Kozhikode	1	0.02	0.13	0.02
12	Wayanad	-	-	-	-
13	Kannur	19	0.88	5.81	0.05
14	Kasaragod	20	2.75	18.15	0.14
	State	**168**	**15.15**	**100.00**	**0.09**

A1.24. District wise Area and number of holding under Cucumber (Summer) during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	30	2.85	16.36	0.10
2	Kollam	12	0.27	1.55	0.02
3	Pathanamthitta	9	0.65	3.73	0.07
4	Alappuzha	18	0.63	3.62	0.04
5	Kottayam	17	1.75	10.05	0.10
6	Idukki	3	0.06	0.34	0.02
7	Ernakulam	9	1.47	8.44	0.16
8	Thrissur	30	1.49	8.55	0.05
9	Palakkad	3	0.34	1.95	0.11
10	Malappuram	30	2.29	13.15	0.08
11	Kozhikode	20	1.64	9.41	0.08
12	Wayanad				
13	Kannur	18	0.87	4.99	0.05
14	Kasaragod	20	3.11	17.85	0.16
	State	**219**	**17.42**	**100.00**	**0.08**

A1.25. District wise Area and number of holding under Snake Gourd (Autumn) during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	30	3.62	17.96	0.12
2	Kollam	25	1.07	5.31	0.04
3	Pathanamthitta	30	1.65	8.18	0.06
4	Alappuzha	25	1.77	8.78	0.07
5	Kottayam	30	5.03	24.95	0.17
6	Idukki				
7	Ernakulam	7	0.40	1.98	0.06
8	Thrissur	30	2.40	11.90	0.08
9	Palakkad	15	2.83	14.04	0.19
10	Malappuram	12	0.63	3.13	0.05
11	Kozhikode	-	-	-	-
12	Wayanad	-	-	-	-
13	Kannur	9	0.75	3.72	0.08
14	Kasaragod	-	-	-	-
	State	**213**	**20.16**	**100.00**	**0.09**

A1.26. District wise Area and number of holding under Snake Gourd (Winter) during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	30	2.99	13.29	0.10
2	Kollam	18	0.39	1.73	0.02
3	Pathanamthitta	30	1.71	7.60	0.06
4	Alappuzha	35	2.66	11.83	0.08
5	Kottayam	30	5.08	22.59	0.17
6	Idukki	2	0.73	3.25	0.37
7	Ernakulam	10	0.83	3.69	0.08
8	Thrissur	30	4.55	20.23	0.15
9	Palakkad	15	2.06	9.16	0.14
10	Malappuram	15	0.75	3.33	0.05
11	Kozhikode	5	0.22	0.98	0.04
12	Wayanad	1	0.06	0.27	0.06
13	Kannur	9	0.40	1.78	0.04
14	Kasaragod	2	0.04	0.18	0.02
	State	**232**	**22.49**	**100.00**	**0.10**

A1.27. District wise Area and number of holding under Snake Gourd (Summer) during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	30	2.64	15.07	0.09
2	Kollam	8	0.17	0.97	0.02
3	Pathanamthitta	28	1.60	9.13	0.06
4	Alappuzha	30	1.55	8.85	0.05
5	Kottayam	30	3.68	21.00	0.12
6	Idukki	7	0.55	3.14	0.08
7	Ernakulam	10	0.73	4.17	0.07
8	Thrissur	30	5.24	29.91	0.17
9	Palakkad	2	0.26	1.48	0.13
10	Malappuram	9	0.55	3.14	0.06
11	Kozhikode	9	0.32	1.83	0.04
12	Wayanad				
13	Kannur	5	0.14	0.80	0.03
14	Kasaragod	1	0.08	0.46	0.08
	State	**199**	**17.52**	**100.00**	**0.09**

A1.28. District wise Area and number of holding under Ladies Finger (Autumn) during 2021-22

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	30	2.28	15.46	0.08
2	Kollam	14	0.31	2.10	0.02
3	Pathanamthitta	7	0.24	1.63	0.03
4	Alappuzha	9	0.38	2.58	0.04
5	Kottayam	12	1.44	9.76	0.12
6	Idukki				
7	Ernakulam	11	0.68	4.61	0.06
8	Thrissur	30	2.64	17.90	0.09
9	Palakkad	20	2.91	19.73	0.15
10	Malappuram	14	2.19	14.85	0.16
11	Kozhikode	3	0.20	1.36	0.07
12	Wayanad				
13	Kannur	12	1.48	10.03	0.12
14	Kasaragod				
	State	**162**	**14.75**	**100.00**	**0.09**

A1.29. District wise Area and number of holding under Ladies Finger(Winter) during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	22	0.91	8.11	0.04
2	Kollam	14	0.53	4.72	0.04
3	Pathanamthitta	5	0.15	1.34	0.03
4	Alappuzha	12	0.48	4.28	0.04
5	Kottayam	10	0.60	5.35	0.06
6	Idukki				
7	Ernakulam	9	0.66	5.88	0.07
8	Thrissur	30	1.42	12.66	0.05
9	Palakkad	20	2.71	24.15	0.14
10	Malappuram	14	1.52	13.55	0.11
11	Kozhikode	12	0.49	4.37	0.04
12	Wayanad				
13	Kannur	14	0.87	7.75	0.06
14	Kasaragod	16	0.88	7.84	0.06
	State	**178**	**11.22**	**100.00**	**0.06**

A1.30. District wise Area and number of holding under Ladies Finger (Summer) during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Thiruvananthapuram	30	1.72	17.01	0.06
2	Kollam	4	0.08	0.79	0.02
3	Pathanamthitta	4	0.27	2.67	0.07
4	Alappuzha	8	0.26	2.57	0.03
5	Kottayam	10	0.63	6.23	0.06
6	Idukki				
7	Ernakulam	10	0.91	9.00	0.09
8	Thrissur	30	1.70	16.82	0.06
9	Palakkad	4	0.33	3.26	0.08
10	Malappuram	20	1.31	12.96	0.07
11	Kozhikode	20	1.03	10.19	0.05
12	Wayanad				
13	Kannur	15	0.85	8.41	0.06
14	Kasaragod	13	1.02	10.09	0.08
	State	**168**	**10.11**	**100.00**	**0.06**

A1.31. District wise Area and number of holding under Cabbage (Summer) during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Idukki	1	0.14	100.00	0.14
	State	**1**	**0.14**	**100.00**	**0.14**

A1.32. District wise Area and number of holding under Tomato (Autumn) during 2022-23

Sl. No	**District**	**Sample Size**	**Area under the crop in the sample (ha)**	**percentage Area**	**Average Area per holding (ha)**
1	Palakkad	20	4.45	100.00	0.22
	State	20	4.45	100.00	0.22

A1.33. District wise Area and number of holding under Tomato (Winter) during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Palakkad	20	4.39	100.00	0.22
	State	20	4.39	100.00	0.22

A1.34. District wise Area and num ber of holding under Tomato(Summer)during 2022-23

Sl. No	District	Sample Size	Area under the crop in the sample (ha)	percentage Area	Average Area per holding (ha)
1	Palakkad	10	1.42	100.00	0.14
	State	10	1.42	100.00	0.14

A2.1 District wise Cost of Cultivation (In Rs.) Per Hectare of Paddy Autumn during 2022 – 2023

Sl No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Kannur	Kasaragod
1	Hired human labour	64881	70197	39504	36967	30726	24525	30674	21975	29002	35744	27202	41404	41061
2	Animal labour													
3	Machine labour	9827		23494	11769		12709	12531	16021	13695	20231		17043	21914
4	Seed /seedlings	3217	9046	3985	3773	4953	3645	2998	3440	3225	3302	3734	2976	2358
5	Farmyard manure and chemical fertilizers	7627	9735	11161	10460	4667	7257	7307	9985	16290	11937	9807	7205	16136
6	Plant Protection	529	96	899	6702	6981	813	3237	796	4993	921	119	61	156
7	Land tax and irrigation cess	563	419	22	586	261	78	94	155	271	70	367	376	308
8	Repair and maintenance charges of implements, machinery and building	63	583	208	2196	47	325	643	1		1812	176	20	136
9	Interest on working capital	8608	8907	7904	6967	4733	4895	5675	5222	6720	7213	4086	6869	8163
10	Other expenses	13852	15745	6749	22352	14736	4230	13035	18529	3661	10466	26292	11521	1627
11	**Total cost 'A'(1-10)**	109167	114728	93926	101773	67103	58478	76194	76123	77856	91695	71783	87474	91861
12	Interest on fixed capital	476	448	3435	405	138	472	2994	56	14630	693	272	628	411
13	**Cost 'B1'(11+12)**	109643	115176	97361	102178	67242	58950	79188	76178	92486	92387	72055	88102	92272
14	Interest on land value	301039	74364	84202	58203	97370	756400	407149	1121132	169746	350178	382726	131869	159845
15	**Cost 'B'(13+14)**	410682	189540	181563	160381	164612	815350	486336	1197310	262233	442566	454781	219971	252118
16	Inputed value of household labour	21564	9293	6036	5007	13144	3057	4717	3216	4156	6875	7482	12194	19638
17	**Cost 'C'(15+16)**	432247	198833	187599	165389	177756	818407	491054	1200526	266389	449441	462262	232165	271755

A2.2 District wise Cost of Cultivation (In Rs.) Per Hectare of Paddy Winter during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Wayanad	Kannur	Kasaragod
1	Hired human labour	67693	70169	35079	24421	30197	31975	22823	22132	29770	39621	24369	50087	41214	37054
2	Animal labour														
3	Machine labour	5589		9711	16073	122	21669	16869	20491	15484	21332			17626	22127
4	Seed /seedlings	3237	3289	4144	4735	4808	3148	2361	3484	3592	3004	3517	3689	3047	2661
5	Farmyard manure and chemical fertilizers	8558	10744	11356	6266	7925	10992	10919	8919	9881	14130	5940	13469	11448	13741
6	Plant Protection	517	251	1715	2942	6322	1252	2079	1457	3296	1088	20	273	135	130
7	Land tax and irrigation cess	394	406	37	498	276	98	64	241	368	141	98	789	663	379
8	Repair and maintenance charges of implements, machinery and building	33	1058	115	891	89	513	144	2		85	171	848	44	84
9	Interest on working capital	8559	8445	6201	5444	4937	6904	5505	5648	6202	7917	3385	6752	7347	7571
10	Other expenses	22421	14790	9989	9341	15325	1823	12960	15250	4197	16495	23105	27714	6338	2672
11	**Total cost 'A'(1-10)**	116999	109152	78348	70610	70000	78374	73724	77624	72791	103814	60604	103621	87862	86418
12	Interest on fixed capital	493	567	567	334	115	599	1378	124	12276	1714	1927	537	801	3213
13	**Cost 'B1'(11+12)**	117493	109720	78914	70944	70115	78973	75103	77748	85067	105528	62531	104158	88663	89632
14	Interest on land value	286630	46606	138680	67600	409355	745292	290320	457596	173786	277966	322063	126987	152696	146992
15	**Cost 'B'(13+14)**	404122	156326	217594	138544	479470	824265	365422	535344	258853	383494	384594	231145	241359	236624
16	Inputed value of household labour	16646	11461	5948	2513	10166	1071	2390	5325	3132	5658	3699	10648	16579	19515
17	**Cost 'C'(15+16)**	420768	167787	223542	141057	489636	825336	367812	540669	261986	389151	388293	241793	257938	256139

A2.3 District wise Cost of Cultivation (In Rs.) Per Hectare of Paddy Summer during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Wayanad	Kannur	Kasaragod
1	Hired human labour	37642	49686	21031	15964	33262	72821	30807	23954	25275	36632	27603	97285	57798	29326
2	Animal labour														
3	Machine labour	14374		6298	18408		49400	13812	19093	12288	24179	4537			23325
4	Seed /seedlings	2480	2787	4274	5962	3998	3248	2079	3582	3770	2911	3180	6032	3557	2304
5	Farmyard manure and chemical fertilizers	9332	12601	10526	6685	7154	7913	7135	10480	8114	16051	7654	21595	20600	12366
6	Plant Protection	593	55	1323	1848	6932	2964	1852	1252	3401	2686	201	357		177
7	Land tax and irrigation cess	879	474	29	534	570	123	40	381	288	47	187	799	988	216
8	Repair and maintenance charges of implements, machinery and building	31	182	122	348	137		10	6		6459	131	1816	494	248
9	Interest on working capital	6442	6513	4345	4887	5135	13635	5568	5836	5285	8246	4318	12527	8195	6750
10	Other expenses	8825	29973	26607	13298	20500	1985	15558	13776	4489	24453	19154	25371	4940	4300
11	**Total cost 'A'(1-10)**	80597	102272	74555	67933	77688	152089	76861	78358	62911	121664	66965	165782	96572	79010
12	Interest on fixed capital	526	120	1015	434	135	2739	263	173	14180	6953	5310	850	5570	4320
13	**Cost 'B1'(11+12)**	81123	102393	75570	68368	77823	154828	77124	78531	77091	128617	72275	166632	102142	83330
14	Interest on land value	593857	30164	191869	82463	228598	741000	309041	446582	175818	124296	245695	93648	111150	315447
15	**Cost 'B'(13+14)**	674980	132557	267439	150831	306421	895828	386165	525112	252909	252913	317969	260280	213292	398777
16	Inputed value of household labour	22315	7261	4512	1847	11906	71895	5156	6585	3487	7315	2692	35056	29146	18292
17	**Cost 'C'(15+16)**	697295	139818	271951	152678	318327	967722	391321	531698	256396	260228	320661	295336	242438	417068

A2.4 District wise Cost of Cultivation (In Rs.) Per Hectare of Coconut during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Wayanad	Kannur	Kasaragod
1	Hired human labour	78418	48949	54684	70666	51926	63327	50839	65266	35692	87911	51478	46199	75382	73531
2	Animal labour														
3	Machine labour	5455								3769	1887				5178
4	Seed /seedlings			735	373	1186	3374		812		1	69			240
5	Farmyard manure and chemical fertilizers	18303	15465	16010	12548	29516	10052	12719	16412	20460	36016	16374	21725	37815	35384
6	Plant Protection			307	286			1195	42						
7	Land tax and irrigation cess	823	480	856	734	670	123	216	1111	1041	829	731	801	855	1996
8	Repair and maintenance charges of implements, machinery and building	60	1051	816	136	361	362		29	425	396	131	789	31	344
9	Interest on working capital	10218	6441	7174	8387	8263	7675	6475	8253	5992	12582	6792	6792	11320	11433
10	Other expenses	4755	1483	6354	8617	7829	2669	10762	3385	8435	5473	1934	1463	4095	4432
11	**Total cost 'A'(1-10)**	118032	73870	86935	101747	99750	87583	82206	95310	75814	145096	77508	77770	129497	132538
12	Interest on fixed capital	409	597	1926	554	482	1432	408	1681	19696	10186	112	518	6225	25461
13	**Cost 'B1'(11+12)**	118441	74467	88861	102301	100232	89014	82614	96991	95509	155282	77619	78288	135722	158000
14	Interest on land value	914127	325006	679100	979957	1748551	659071	1594195	993303	184776	787410	1587114	288993	293057	136700
15	**Cost 'B'(13+14)**	1032568	399472	767961	1082258	1848783	748086	1676808	1090295	280286	942692	1664733	367281	428779	294700
16	Inputed value of household labour	20986	11386	7835	8674	10512	5104	6297	15895	3703	7587	8093	12363	9240	18186
17	**Cost 'C'(15+16)**	1053555	410859	775796	1090932	1859295	753190	1683106	1106189	283989	950279	1672826	379644	438018	312886

A2.5 District wise Cost of Cultivation (In Rs.) Per Hectare of Arecanut during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Wayanad	Kannur	Kasaragod
1	Hired human labour	33992	59506	46770	34942	47725	40726	174300	111308	60580	80719	86508	50017	113952	107115
2	Animal labour														
3	Machine labour										4211				10121
4	Seed /seedlings			794					819		241	4241			99
5	Farmyard manure and chemical fertilizers	21639	11345	19826	14541	14758	12285	20607	28862	102142	32164	31355	12540	30909	73452
6	Plant Protection														
7	Land tax and irrigation cess	1104	477	580	729	677	119	351	674	1524	788	741	801	815	1970
8	Repair and maintenance charges of implements, machinery and building	414	4704	2918		2128	1187	17	9	564	451	564	648	12	309
9	Interest on working capital	5563	7085	6739	4948	6248	5301	19491	14099	16272	11734	12210	6256	14486	19079
10	Other expenses	3050	65	3754	4787	3716	192	34781	5262	4711	6011	2769	3877	14258	4454
11	**Total cost 'A'(1-10)**	65763	83182	81381	59947	75253	59810	249547	161032	185793	136318	138389	74138	174433	216598
12	Interest on fixed capital	997	1886	1995	3030	2401	3894	1111	4798	12784	14031	368	477	11697	21151
13	**Cost 'B1'(11+12)**	66760	85068	83376	62978	77654	63704	250658	165829	198577	150349	138757	74615	186130	237749
14	Interest on land value	737622	287447	671687	928577	1342034	550803	1644652	569491	160690	730325	510793	334234	257415	127456
15	**Cost 'B'(13+14)**	804381	372514	755063	991555	1419688	614507	1895310	735320	359266	880674	649550	408849	443545	365204
16	Inputed value of household labour	27856	9815	27928	39374	13032		35180	24820	7598	9431	8762	7005	30499	28434
17	**Cost 'C'(15+16)**	832237	382330	782991	1030929	1432720	614507	1930490	760140	366864	890105	658312	415854	474044	393638

A2.6 District wise Cost of Cultivation (In Rs.) Per Hectare of Tapioca during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Wayanad	Kannur	Kasaragod
1	Hired human labour	62147	68217	78555	61339	55344	117318	76055	72065	46321	75016	84721	65803	111224	37814
2	Animal labour														
3	Machine labour	1132			4114		14359	5663	5155	7057	5235			8736	13005
4	Seed /seedlings	3784	8856	7657	18168	7180	736	9240	10359	18031	6986	15199	3523	28935	7351
5	Farmyard manure and chemical fertilizers	23202	20201	53822	34141	29379	6832	13787	17116	34729	25792	37932	5204	36642	10425
6	Plant Protection	283		1635	302	963		421	548	3700	361			9661	1130
7	Land tax and irrigation cess	533	414	746	458	326	73	61	684	876	90	454	781	268	151
8	Repair and maintenance charges of implements, machinery and building	172	1726	1583	674	618	677	13	10	331	218	690	1685	45	29
9	Interest on working capital	9055	9728	14167	11806	9287	13925	10516	10524	10984	11339	13785	7453	19520	6973
10	Other expenses	17349	5011	18066	19987	9526	9528	61476	7100	13649	26332	17666	8611	16410	4639
11	**Total cost 'A'(1-10)**	117656	114153	176230	150990	112622	163449	177232	123560	135677	151368	170447	93060	231439	81517
12	Interest on fixed capital	502	911	776	8810	753	2127	158	1536	7218	5806	594	1240	455	977
13	**Cost 'B1'(11+12)**	118159	115064	177006	159800	113375	165576	177390	125096	142895	157174	171041	94301	231893	82494
14	Interest on land value	827458	160251	503842	552524	1116097	659327	578806	672014	145948	254484	510127	205308	223465	165373
15	**Cost 'B'(13+14)**	945617	275315	680848	712324	1229472	824903	756197	797110	288844	411658	681168	299609	455358	247867
16	Inputed value of household labour	65166	29236	61898	90404	53790	14052	11260	42731	28721	29434	28851	31905	30251	51558
17	**Cost 'C'(15+16)**	1010783	304551	742747	802728	1283261	838955	767456	839842	317565	441093	710019	331514	485609	299425

A2.7 District wise Cost of Cultivation (In Rs.) Per Hectare of Banana during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Wayanad	Kannur	Kasaragod
1	Hired human labour	62285	95462	87343	102541	60486	134934	85107	54378	74827	82227	79339	110797	119602	66126
2	Animal labour														
3	Machine labour	3733			5628			9851	10813		2433			7136	1194
4	Seed /seedlings	21622	31525	29335	28467	29588	50367	17465	44184	24290	31627	57670	41374	41908	33001
5	Farmyard manure and chemical fertilizers	40605	38402	68337	56884	45021	33497	29066	60105	121982	63483	111408	14706	50640	79240
6	Plant Protection		1169	4311	2181	15459	7689	2002	4561	1028	4531		1072	2393	17321
7	Land tax and irrigation cess	672	394	580	404	403	107	71	432	1376	26	163	807	257	3064
8	Repair and maintenance charges of implements, machinery and building	187	1977	1121	418	860	522	16	19	1229	339	575	1830	440	189
9	Interest on working capital	12825	16656	18933	19570	15055	22649	14349	17404	22213	18430	24842	16795	22168	19688
10	Other expenses	27811	22936	45304	40549	14953	8289	50072	81740	15048	83513	86786	5908	30985	13216
11	**Total cost 'A'(1-10)**	169740	208521	255264	256642	181825	258054	207998	273637	261993	286608	360784	193288	275529	233040
12	Interest on fixed capital	506	996	3189	6752	1066	1569	569	2445	16115	10400	22697	1609	11727	40390
13	**Cost 'B1'(11+12)**	170246	209518	258454	263394	182890	259623	208567	276082	278107	297008	383481	194897	287256	273430
14	Interest on land value	713692	124872	514497	309726	1617626	811471	580700	897899	201260	212893	362921	160648	271096	225012
15	**Cost 'B'(13+14)**	883938	334389	772950	573120	1800516	1071094	789268	1173982	479367	509901	746402	355545	558352	498442
16	Inputed value of household labour	101673	29476	70770	84902	65505	3390	13898	62525	19231	50478	30385	64996	32208	157387
17	**Cost 'C'(15+16)**	985611	363865	843720	658022	1866021	1074484	803166	1236507	498598	560379	776787	420541	590560	655829

A2.8 District wise Cost of Cultivation (In Rs.) Per Hectare of Pepper during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Wayanad	Kannur	Kasaragod
1	Hired human labour	39709	82778	59165	34250	46954	54373	89527	116291	80086	57296	57308	33175	133103	43238
2	Animal labour														
3	Machine labour														395
4	Seed /seedlings			1001	1007	7419		272	1743		2137	934	19662		
5	Farmyard manure and chemical fertilizers	23600	21519	13124	38216	19560	11327	7944	13768	24635	26775	23767	9606	44088	39764
6	Plant Protection			22	337	139		416	111	6367	1310				761
7	Land tax and irrigation cess	1174	553	748	849	549	125	374	843	1765	607	645	815	709	1772
8	Repair and maintenance charges of implements, machinery and building	287	3869	2015	555	1220	276	39	53	844	617	517	936	58	569
9	Interest on working capital	6331	10430	7331	7381	7407	6570	9816	13191	11109	8752	8201	6244	17719	8416
10	Other expenses	2388	3870	4154	9438	4856	496	10440	4225	2385	2930	1775	50	3484	2545
11	**Total cost 'A'(1-10)**	73489	123019	87560	92032	88104	73167	118827	150226	127191	100424	93148	70488	199161	97461
12	Interest on fixed capital	848	1734	1303	19344	1446	3555	820	4379	9079	29278	616	858	11087	52437
13	**Cost 'B1'(11+12)**	74338	124753	88863	111376	89550	76722	119647	154605	136270	129702	93764	71346	210248	149898
14	Interest on land value	1380461	290336	565463	1322468	1317874	761653	1488806	893310	146346	800938	228140	245736	265316	166576
15	**Cost 'B'(13+14)**	1454799	415089	654325	1433844	1407423	838376	1608454	1047915	282616	930640	321904	317082	475565	316474
16	Inputed value of household labour	43953	26809	36249	96013	57323	25218	21041	41459	6878	18753	12908	22579	29778	38243
17	**Cost 'C'(15+16)**	1498752	441898	690574	1529857	1464746	863594	1629495	1089374	289494	949394	334811	339661	505342	354717

A2.9 District wise Cost of Cultivation (In Rs.) Per Hectare of Ginger during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Wayanad	Kannur	Kasaragod
1	Hired human labour	45012	136141	65431	26655	77801	68037	61890	72303	43175	52333	84003	226353	71713	54694
2	Animal labour														
3	Machine labour						1731	1591		5331				3088	5706
4	Seed /seedlings	29027	68942	52554	39443	67324	47245	35607	43844	60014	28513	49744	84163	91668	78252
5	Farmyard manure and chemical fertilizers	62098	32801	32110	25022	25061	8960	27049	26858	20583	56702	50301	29635	19803	33382
6	Plant Protection		262	1147	232	1436		213	956	3256	68	106	2161		
7	Land tax and irrigation cess	863	460	323	656	515	120	135	626	595	465	552	784	380	459
8	Repair and maintenance charges of implements, machinery and building	820	5592	2775	2226	2302	154	70	16		378	828	1577	124	26
9	Interest on working capital	13614	23815	15124	9135	17162	12597	12635	14396	13236	13762	18415	34231	18627	17203
10	Other expenses	16101	5610	9900	23414	11627	3809	48035	8294	8204	10629	10512	15732	24391	10963
11	**Total cost 'A'(1-10)**	167536	273624	179363	126781	203228	142653	187225	167294	154394	162850	214462	394636	229794	200685
12	Interest on fixed capital	1232	2333	1685	16655	2801	2712	769	651	1311	1350	716	1244	1257	2554
13	**Cost 'B1'(11+12)**	168767	275957	181049	143437	206029	145365	187995	167945	155705	164200	215178	395879	231050	203238
14	Interest on land value	1246138	203644	478517	1253396	1102164	433420	655468	666098	152362	616541	287765	202328	265562	180693
15	**Cost 'B'(13+14)**	1414905	479601	659566	1396833	1308192	578785	843462	834042	308067	780740	502943	598208	496613	383931
16	Inputed value of household labour	108647	34021	71605	98903	63531	19506	25141	73732	17395	77172	69110	33960	64921	84236
17	**Cost 'C'(15+16)**	1523552	513622	731171	1495736	1371724	598291	868603	907775	325462	857912	572053	632168	561533	468167

A2.10 District wise Cost of Cultivation (In Rs.) Per Hectare of Turmeric during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Wayanad	Kannur	Kasaragod
1	Hired human labour	41984	111219	63462	25867	52077	30217	117625	63960	37265	44984	83314	44460	70408	54232
2	Animal labour														
3	Machine labour	4696			6890		4812	5194		4775	1224			4768	6434
4	Seed /seedlings	20437	14443	18000	55383	28220	58810	27473	26422	27225	24588	31652	52708	47264	48876
5	Farmyard manure and chemical fertilizers	50672	15434	23690	57429	23171	9097	40972	14996	12729	37019	40035	36973	20854	25339
6	Plant Protection			264	758	2215		332	620	1604					
7	Land tax and irrigation cess	734	601	361	457	521	117	197	433	785	400	574	677	375	467
8	Repair and maintenance charges of implements, machinery and building	798	6895	2970	448	2079	321	43			472	866	3007	146	98
9	Interest on working capital	11779	14110	10542	14633	10568	10294	19160	10600	8360	10782	15500	13414	14329	13488
10	Other expenses	18132	3417	9442	23256	14059	7699	62229	10972	8941	9500	6353		15592	5680
11	**Total cost 'A'(1-10)**	149233	166119	128730	185122	132910	121365	273225	128002	101685	128970	178295	151238	173738	154614
12	Interest on fixed capital	1618	2835	1671	8610	2222	2149	966	502	730	814	1193	4787	721	2758
13	**Cost 'B1'(11+12)**	150851	168954	130400	193733	135132	123514	274191	128504	102415	129784	179488	156025	174458	157372
14	Interest on land value	1127039	243374	600568	1021796	1172932	644809	965689	740875	190758	511872	624365	181423	358849	183514
15	**Cost 'B'(13+14)**	1277891	412328	730968	1215529	1308064	768323	1239880	869379	293173	641655	803852	337448	533308	340886
16	Inputed value of household labour	91246	25455	48211	140338	69890	47144	44523	74607	36463	59345	41919	129170	48125	75607
17	**Cost 'C'(15+16)**	1369137	437783	779179	1355867	1377954	815467	1284404	943986	329636	701000	845771	466618	581433	416493

A2.11 District wise Cost of Cultivation (In Rs.) Per Hectare of Pineapple during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Kannur	Kasaragod
1	Hired human labour	38651	121569	59451	52285	61389	39374	62565	84349	98773	146696	94643	40172	80050
2	Animal labour													
3	Machine labour						8675	9745	16728	24555	35678		7160	19227
4	Seed /seedlings	119301	58652	17480	116288	93622	37959	126109	87710	70516	176358	35548	79025	108852
5	Farmyard manure and chemical fertilizers	50433	21748	7011	21094	34260	33380	46644	15399	28788	47191	45606	22880	22529
6	Plant Protection				3029	8512	650	13755	676	2635	7684	3082		369
7	Land tax and irrigation cess		240	361	1010	360	5	36	58	232		3	189	3
8	Repair and maintenance charges of implements, machinery and building		1380	633		230	53	37	17	174	1084	20		11
9	Interest on working capital	20839	20197	8394	19270	19778	12004	25882	20486	22527	41361	17888	14924	23103
10	Other expenses	45942	84821	19380	5589	59143	81225	106253	23301	35173	30035	71811	20402	14347
11	**Total cost 'A'(1-10)**	275166	308607	112711	218564	277295	213325	391025	248725	283373	486087	268601	184750	268490
12	Interest on fixed capital	69	637	447	3342	130	367	346	341	1470	3462	171	1220	584
13	**Cost 'B1'(11+12)**	275235	309244	113157	221906	277425	213693	391371	249067	284843	489548	268773	185970	269074
14	Interest on land value	659984	238351	574525	995212	896225	758138	1126044	454738	998212	103096	207598	268341	203724
15	**Cost 'B'(13+14)**	935219	547595	687683	1217118	1173650	971830	1517415	703805	1283055	592644	476371	454311	472798
16	Inputed value of household labour	35687	6222	13101	44103	36653	978	2015	3027		5077	2941	1823	877
17	**Cost 'C'(15+16)**	970905	553817	700783	1261221	1210304	972808	1519430	706832	1283055	597722	479312	456133	473675

A2.12 District wise Cost of Cultivation (In Rs.) Per Hectare of Bitter Gourd Autumn during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Kannur
1	Hired human labour	64595	132853	57047	29875	90146		55154	42297	48232	90430	42813	43368
2	Animal labour												
3	Machine labour				783				3866	2943			11677
4	Seed /seedlings	7112	4877	11393	8560	4321		5565	5721	13055	7989	13338	11145
5	Farmyard manure and chemical fertilizers	42876	35380	14776	39577	34718		22522	22610	14813	21972	30677	31232
6	Plant Protection	1550	477	1986	4957	6269		1481	2145	4462	7403		
7	Land tax and irrigation cess	140	419	72	433	478		44	342	283	20	247	90
8	Repair and maintenance charges of implements, machinery and building	174	3588	6404	7166	580			46	285	800	494	
9	Interest on working capital	11613	17359	8520	8375	13545		8472	7664	8350	12779	8683	9742
10	Other expenses	79086	27500	18460	69482	39737		23950	41140	23231	43653	73277	65877
11	**Total cost 'A'(1-10)**	207146	222453	118657	169209	189792		117188	125831	115653	185045	169529	173131
12	Interest on fixed capital	1434	2735	72712	79578	741		45976	420	28434	1517	3125	567
13	**Cost 'B1'(11+12)**	208580	225188	191369	248787	190534		163164	126251	144087	186562	172654	173698
14	Interest on land value	337652	65588	245022	524799	723912		800902	830211	168291	250570	291476	260746
15	**Cost 'B'(13+14)**	546232	290777	436391	773587	914445		964066	956463	312378	437132	464131	434444
16	Inputed value of household labour	141215	41453	72769	156610	96181		28493	85698	26512	62752	53764	52564
17	**Cost 'C'(15+16)**	687447	332229	509159	930197	1010627		992559	1042161	338890	499884	517894	487009

A2.13 District wise Cost of Cultivation (In Rs.) Per Hectare of Bitter Gourd Winter during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Wayanad	Kannur	Kasaragod
1	Hired human labour	76598	145246	60671	46219	90215	54021	73367	41693	47759	44621	26715		56434	63025
2	Animal labour														
3	Machine labour			1051	343					5231				7521	19166
4	Seed /seedlings	7830	6052	13466	8678	7607	8167	4615	8101	12694	13970	11154	9880	28753	9993
5	Farmyard manure and chemical fertilizers	50008	36073	19444	38983	27472	18370	11331	19512	14249	31950	32695	23001	30258	42964
6	Plant Protection	1800	1186	3748	10621	11468	3884	247	2578	4130	4734		5558	70	736
7	Land tax and irrigation cess	80	377	56	263	563	24	221	294	200		117	741	258	663
8	Repair and maintenance charges of implements, machinery and building	70	6589	4661	6142	637			50	372	790	936		2126	810
9	Interest on working capital	13624	18856	9838	10484	13676	8444	8956	7188	8406	9527	7056	3844	12304	13588
10	Other expenses	79607	23047	35099	85441	34496	16931	15925	32575	31868	37269	19110	19780	50914	23013
11	**Total cost 'A'(1-10)**	229616	237426	148033	207177	186133	109842	114662	111991	124908	142862	97783	62803	188637	173958
12	Interest on fixed capital	1979	3828	8498	31409	1325	1680	926	5996	23718	1810	3000		21209	74654
13	**Cost 'B1'(11+12)**	231594	241254	156532	238586	187458	111522	115588	117988	148626	144672	100783	62803	209847	248612
14	Interest on land value	328353	105037	178847	457032	865283	316319	607048	674378	261403	302388	297045	80000	200200	207240
15	**Cost 'B'(13+14)**	559948	346290	335379	695619	1052741	427841	722636	792365	410029	447060	397828	142803	410047	455852
16	Inputed value of household labour	156503	59493	81600	161133	119999	50834	21450	117557	22406	72884	39988	251199	78627	239570
17	**Cost 'C'(15+16)**	716451	405783	416979	856752	1172740	478675	744086	909922	432435	519944	437816	394002	488673	695422

A2.14 District wise Cost of Cultivation (In Rs.) Per Hectare of Bitter Gourd Summer during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Wayanad	Kannur	Kasaragod
1	Hired human labour	81309	156901	72637	29755	101179	9984	58655	57972	41179		19793		40425	57041
2	Animal labour														
3	Machine labour											11527		3479	19101
4	Seed /seedlings	7855	5229	13085	11844	5739	4160	4458	8167	8737	9093	13601	3088	47626	11988
5	Farmyard manure and chemical fertilizers	47807	33115	18435	58705	16292	8397	10980	15840	16424	59172	25771	5397	53851	38970
6	Plant Protection	1960	1337	2071	10098	10181	2379	865	1996	3760	5340	714	939		609
7	Land tax and irrigation cess	684	393	154	1228	300		256	1226	292	381	115	158	762	3234
8	Repair and maintenance charges of implements, machinery and building	43	8252	2943	561	218			17	479	17890	2569	1482	261	
9	Interest on working capital	13893	19658	10623	11040	13339	2492	7496	8398	7010	7361	7141	942	14538	12771
10	Other expenses	83040	21147	33750	48056	23174		33643	31372	23453	34298	36567	3211	32625	11164
11	**Total cost 'A'(1-10)**	236591	246032	153698	171287	170423	27412	116353	124989	101335	133535	117798	15216	193566	154878
12	Interest on fixed capital	2396	5361	17608	26696	684	974	1997	4989	14485	49571	45771	850	42707	113637
13	**Cost 'B1'(11+12)**	238987	251392	171306	197983	171106	28385	118350	129978	115820	183106	163569	16066	236273	268515
14	Interest on land value	361697	73889	193525	412706	544362	123500	424230	591565	345027	227807	222800	80000	270482	161624
15	**Cost 'B'(13+14)**	600684	325282	364831	610689	715468	151885	542580	721543	460846	410913	386370	96066	506755	430139
16	Inputed value of household labour	201848	62873	85148	165764	152223	128180	31514	95727	35510	166852	74407	58914	129605	232575
17	**Cost 'C'(15+16))**	802531	388154	449978	776453	867691	280065	574094	817270	496356	577765	460777	154981	636361	662714

A2.15 District wise Cost of Cultivation (In Rs.) Per Hectare of Cowpea Autumn during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Kannur
1	Hired human labour	56908	126840	47693	36583	73852		73762	48271	33819	20533	19513	61218
2	Animal labour												
3	Machine labour			46						2828			15666
4	Seed /seedlings	7465	5310	8423	9596	4367		3490	4138	3619	4510	10448	10125
5	Farmyard manure and chemical fertilizers	44173	34397	18556	51969	32061		18431	17295	11478	21849	43358	19798
6	Plant Protection	1696	460	3003	7738	7410		695	2080	3704	2619	618	
7	Land tax and irrigation cess	168	281	17	423	200		117	208	210		148	85
8	Repair and maintenance charges of implements, machinery and building	210	3709	5288	7844	599			26	25	804		120
9	Interest on working capital	11024	16701	7772	10589	11769		9638	7179	5545	4951	7394	10681
10	Other expenses	96221	26626	23565	101575	39377		35516	48097	12545	29428	22107	53724
11	**Total cost 'A'(1-10)**	217865	214324	114364	226317	169634		141649	127294	73773	84693	103585	171416
12	Interest on fixed capital	1631	2649	20417	40775	933		4328	656	26144	1348	1495	292
13	**Cost 'B1'(11+12)**	219496	216973	134782	267092	170568		145977	127951	99917	86041	105080	171708
14	Interest on land value	360384	49585	295898	429184	596208		935608	665039	156120	251178	402007	150514
15	**Cost 'B'(13+14)**	579880	266558	430680	696276	766776		1081585	792989	256037	337220	507088	322222
16	Inputed value of household labour	162072	42825	85670	175947	110902		41468	66820	29297	79279	30243	32858
17	**Cost 'C'(15+16))**	741952	309383	516350	872223	877678		1123054	859809	285334	416498	537330	355080

A2.16 District wise Cost of Cultivation (In Rs.) Per Hectare of Cowpea Winter during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Wayanad	Kannur	Kasaragod
1	Hired human labour	108606	158735	41174	62393	96076	45055	71836	39479	29886	27757	23605	19153	64730	35480
2	Animal labour														
3	Machine labour			1181	273			9262	4286	2946	130			12878	11585
4	Seed /seedlings	8944	6401	9522	12262	5579	4262	2859	4375	3735	3489	14715	6285	8543	9024
5	Farmyard manure and chemical fertilizers	50880	32519	19127	40785	25137	9168	11672	19714	12952	21588	44416	23510	25122	40341
6	Plant Protection	1748	1449	3125	5499	8257	651	581	2123	3413	3742		8869		548
7	Land tax and irrigation cess	103	382	1100	415	435	15	129	249	245	21	368	741	178	253
8	Repair and maintenance charges of implements, machinery and building	26	6122	4195	8351	686			87		535	736	4528	466	235
9	Interest on working capital	17018	19910	7413	12121	13505	5914	9621	6998	5293	5671	8274	5782	11127	9698
10	Other expenses	99483	26822	29704	86474	31817	25259	94297	39351	13449	33567	17518	37751	48014	14697
11	**Total cost 'A'(1-10)**	286806	252339	116543	228573	181492	90324	200258	116662	71918	96501	109631	106619	171059	121861
12	Interest on fixed capital	1539	3796	11108	41007	958	859	2479	6160	20981	1055	2200	7616	8238	99988
13	**Cost 'B1'(11+12)**	288345	256134	127651	269580	182451	91183	202738	122822	92898	97556	111831	114235	179297	221849
14	Interest on land value	502800	108079	177345	698649	505785	515678	809697	473808	186342	291990	424393	88668	188551	238423
15	**Cost 'B'(13+14)**	791144	364213	304996	968229	688236	606862	1012435	596630	279240	389546	536224	202903	367848	460272
16	Inputed value of household labour	137761	58283	106240	154950	88909	71756	25472	111981	33300	89483	50381	303057	71584	200946
17	**Cost 'C'(15+16)**	928906	422496	411236	1123179	777145	678618	1037906	708611	312541	479029	586605	505960	439432	661218

A2.17 District wise Cost of Cultivation (In Rs.) Per Hectare of Cowpea Summer during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Wayanad	Kannur	Kasaragod
1	Hired human labour	115318	135230	58288	46542	87529	67347	72491	50962		36837	23124	20841	40957	49828
2	Animal labour														
3	Machine labour							12703	2348		3005	8429		2186	9700
4	Seed /seedlings	9518	5986	7579	12760	6373	7751	3090	4292	1415	3172	11418	9498	18193	13706
5	Farmyard manure and chemical fertilizers	51299	31490	14302	39695	31244	15674	11927	16396	10087	20470	35374	15762	42412	36561
6	Plant Protection	1776	1110	1310	6704	7019	2314	855	2153	2223	1439	1586	4195		1000
7	Land tax and irrigation cess	763	402	394	562	481	36	99	402	507		161	790	830	3321
8	Repair and maintenance charges of implements, machinery and building	320	8403	2465	8985	841	600	1129			3125	1836	3821	874	1617
9	Interest on working capital	17791	17382	8148	10570	13217	9308	10107	7615	1372	6492	7993	5030	10375	11080
10	Other expenses	80614	21083	29562	48187	26570	17242	71844	25531	10441	24387	24633	463	28640	7823
11	**Total cost 'A'(1-10)**	277400	221084	122048	174003	173273	120271	184245	109700	26045	98926	114553	60400	144467	134636
12	Interest on fixed capital	2136	5080	5005	20222	1069	818	16508	4937	10689	11067	14052	12131	29995	66172
13	**Cost 'B1'(11+12)**	279536	226164	127053	194225	174343	121089	200753	114636	36734	109993	128605	72531	174461	200807
14	Interest on land value	388862	86427	279855	296478	445546	370203	371863	634813	212432	241294	243789	193152	260585	166627
15	**Cost 'B'(13+14)**	668398	312591	406908	490703	619889	491292	572616	749449	249166	351287	372394	265683	435046	367434
16	Inputed value of household labour	132811	57757	97002	138020	94158	43012	37290	96519	62394	81294	106652	138891	116741	184042
17	**Cost 'C'(15+16)**	801209	370348	503910	628723	714047	534304	609906	845969	311560	432581	479046	404574	551788	551476

A2.18 District wise Cost of Cultivation (In Rs.) Per Hectare of Cardamom during 2022 - 2023

Sl.No	Components	Idukki	Palakkad	Wayanad
1	Hired human labour	74891	142790	89431
2	Animal labour			
3	Machine labour			
4	Seed /seedlings			
5	Farmyard manure and chemical fertilizers	28515	48221	23334
6	Plant Protection	4029	21428	2863
7	Land tax and irrigation cess	115	1976	721
8	Repair and maintenance charges of implements, machinery and building	48		2254
9	Interest on working capital	10743	21244	11563
10	Other expenses	4736	70272	21735
11	**Total cost 'A'(1-10)**	123077	305931	151900
12	Interest on fixed capital	516	818	11320
13	**Cost 'B1'(11+12)**	123593	306749	163221
14	Interest on land value	135490	85092	271793
15	**Cost 'B'(13+14)**	259083	391841	435014
16	Inputed value of household labour	19856	41641	92555
17	**Cost 'C'(15+16)**	278939	433481	527569

A2.19 District wise Cost of Cultivation (In Rs.) Per Hectare of Ash gourd - Autumn during 2022 – 2023

Sl.No	Components	Kollam	Pathanamthitta	Alappuzha	Kottayam	Ernakulam	Thrissur	Palakkad	Malappuram	Kannur
1	Hired human labour	143260	68861	30875	35427	20593	25069	24679	38146	51314
2	Animal labour									
3	Machine labour			4411		4049		1428	778	5678
4	Seed /seedlings	790	6287	4499	3924	2979	2647	3939	1771	12412
5	Farmyard manure and chemical fertilizers	59576	18765	20069	13043	20129	18820	14560	12663	21580
6	Plant Protection		659	4411	2294	291	1819	1706	3014	
7	Land tax and irrigation cess	494		619	268	10	238	135	43	127
8	Repair and maintenance charges of implements, machinery and building	7410	4117	26464	1200		37		826	17
9	Interest on working capital	20363	9457	6426	5469	4804	4836	4631	5637	9098
10	Other expenses	24700	26571	10233	8596	37050	17275	9859	14571	31514
11	**Total cost 'A'(1-10)**	256593	134716	108007	70220	89904	70741	60936	77448	131740
12	Interest on fixed capital	4600	2192	24173	2304	78104	673	1788	3707	489
13	**Cost 'B1'(11+12)**	261193	136908	132180	72524	168008	71414	62724	81156	132229
14	Interest on land value	154375	582218	1384964	472172	869827	748268	159162	222051	250858
15	**Cost 'B'(13+14)**	415568	719126	1517144	544696	1037835	819683	221886	303207	383088
16	Inputed value of household labour	19760	46915	80275	47198	9531	64968	31525	18056	39046
17	**Cost 'C'(15+16)**	435328	766041	1597419	591894	1047366	884651	253412	321263	422134

A2.20 District wise Cost of Cultivation (In Rs.) Per Hectare of Ash gourd - Winter during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Kannur	Kasaragod
1	Hired human labour		167960	41600	39520	32653		25688	28686	47435	27946	14820	10545	28034
2	Animal labour													
3	Machine labour				4117					695			7885	19829
4	Seed /seedlings		790	6630	5166	1536		2512	2971	3354	2407	12350	6194	6009
5	Farmyard manure and chemical fertilizers		59576	20098	58745	5634		12593	17619	17054	19629	41043	41990	38330
6	Plant Protection			504	4488	16055		607	2170	2024	2489			
7	Land tax and irrigation cess		494		309	464		82	224	370	113		617	439
8	Repair and maintenance charges of implements, machinery and building		7410	3900					31	730	1331	4117	3344	69
9	Interest on working capital		22833	6883	11204	5588		4140	5145	7056	5247	6821	6661	9220
10	Other expenses			31200	133273	8398		26758	26915	11532	14314	41167	37506	8460
11	**Total cost 'A'(1-10)**		259063	110815	256821	70328		72380	83761	90250	73477	120318	114743	110390
12	Interest on fixed capital		4200	2625	72413	3570		3346	12054	5138	6164	2108	31874	86258
13	**Cost 'B1'(11+12)**		263263	113440	329234	73898		75726	95815	95388	79641	122426	146616	196648
14	Interest on land value		41990	391570	793899	870871		291460	489477	91237	261359	279439	232978	659996
15	**Cost 'B'(13+14)**		305253	505010	1123133	944769		367186	585292	186625	341000	401865	379594	856644
16	Inputed value of household labour		39520	59865	195706	42306		29805	62299	14205	40446	22230	80731	141572
17	**Cost 'C'(15+16)**		344773	564875	1318839	987075		396991	647591	200830	381447	424095	460325	998216

A2.21 District wise Cost of Cultivation (In Rs.) Per Hectare of Ash gourd - Summer during 2022 - 2023

Sl.No	Components	Kollam	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Kannur	Kasaragod
1	Hired human labour	100035	43588		47095		29163	31390		17546	11132	11626	33508
2	Animal labour												
3	Machine labour						12946	2187		3295	16235		15600
4	Seed /seedlings	2371	6635	3156	4940		4599	2614	2939	3390	8378	6522	7211
5	Farmyard manure and chemical fertilizers	30974	19111	63122	6299		6361	12965	20501	48315	42465	38804	24736
6	Plant Protection		533		3293		842	1371	2470	693	1623		
7	Land tax and irrigation cess	642		494	634		324	415		56	271	849	6023
8	Repair and maintenance charges of implements, machinery and building	8028	5812	17153			937	86		968	1600	193	
9	Interest on working capital	13338	6987	6628	6163		5391	5053	2591	7324	7983	5695	8105
10	Other expenses	9880	27122	42127	11774		43780	11174	14820	24773	20688	26417	11429
11	**Total cost 'A'(1-10)**	165268	109787	132680	80197		104342	67253	43321	106359	110377	90108	106612
12	Interest on fixed capital	3400	2155	52257	417		19561	10181	3833	25004	13328	25202	28133
13	**Cost 'B1'(11+12)**	168668	111942	184937	80613		123903	77435	47155	131363	123705	115309	134744
14	Interest on land value	79040	290970	123500	559867		763002	519589	52778	359310	246170	378026	806360
15	**Cost 'B'(13+14)**	247708	402912	308437	640480		886905	597024	99933	490673	369875	493335	941105
16	Inputed value of household labour	19760	61726	240798	41661		18312	75529	63306	61758	78170	113803	165956
17	**Cost 'C'(15+16)**	267468	464638	549235	682141		905217	672553	163239	552430	448046	607139	1107060

A2.22 District wise Cost of Cultivation (In Rs.) Per Hectare of Cucumber - Autumn during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Ernakulam	Thrissur	Palakkad	Malappuram	Kannur
1	Hired human labour	33414	88920	11144	30429	24474	38824	10695	25935	41981	48978
2	Animal labour										
3	Machine labour			689			4693			1583	11098
4	Seed /seedlings	3522	5558	4340	4237	976	3385	3815	1358	996	5839
5	Farmyard manure and chemical fertilizers	24519	11362	13702	8385	19415	9124	15302	21560	16386	20352
6	Plant Protection	1665	1390	3322	327	2809	554	1230	2399	3144	
7	Land tax and irrigation cess	318	247	92	454	351	67	247	188	16	126
8	Repair and maintenance charges of implements, machinery and building	190	6587	3274	8221	514		50		817	
9	Interest on working capital	6312	10723	3320	4338	4767	5658	3104	5125	6409	8627
10	Other expenses	26130	34580	31622	3988	6818	40250	9412	10586	16622	25756
11	**Total cost 'A'(1-10)**	96070	159366	71503	60378	60124	102555	43856	67152	87954	120774
12	Interest on fixed capital	1732	4750	5862	55552	841	1140	766	4651	1026	567
13	**Cost 'B1'(11+12)**	97801	164116	77365	115930	60965	103695	44622	71803	88980	121341
14	Interest on land value	359432	95177	317186	367375	852314	406989	525638	169382	270511	220085
15	**Cost 'B'(13+14)**	457234	259293	394551	483305	913280	510684	570260	241185	359491	341426
16	Inputed value of household labour	129600	29640	45772	67002	31869	8196	55361	36697	36486	41160
17	**Cost 'C'(15+16)**	586834	288933	440323	550308	945149	518880	625621	277882	395978	382586

A2.23 District wise Cost of Cultivation (In Rs.) Per Hectare of Cucumber - Winter during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Kannur	Kasaragod
1	Hired human labour	72613	53105	37690	30385	20560	21060	14576	41831	33369		17228	33636
2	Animal labour												
3	Machine labour			2013			569					13483	10970
4	Seed /seedlings	2745	5650	10927	10909	1854	5821	3139	1297	3581		3172	6709
5	Farmyard manure and chemical fertilizers	45962	11362	26292	36874	19716	11845	18962	20501	21328	74100	43572	39938
6	Plant Protection	1583	1390	8103	1196	4714	46	1445	2454	2480			256
7	Land tax and irrigation cess	79	247	6843	188	734	250	279		47		629	489
8	Repair and maintenance charges of implements, machinery and building	38	11733	2104	2166	663		27		631	3952	963	145
9	Interest on working capital	12290	7151	8503	7936	4684	3934	3812	6608	6076	7410	7745	9151
10	Other expenses	46431	22693	15790	62652	11882	10075	12650	18501	15319	46930	26139	7563
11	**Total cost 'A'(1-10)**	181742	113330	118264	152306	64808	53600	54891	91192	82831	132392	112931	108856
12	Interest on fixed capital	2292	4250	28091	97882	1514	1313	11009	3746	1038	1350	22575	32584
13	**Cost 'B1'(11+12)**	184035	117580	146355	250188	66323	54913	65899	94938	83869	133742	135506	141440
14	Interest on land value	406790	85894	225074	696914	629666	827125	442421	175572	293425	659984	311316	170739
15	**Cost 'B'(13+14)**	590825	203474	371430	947103	695988	882038	508321	270510	377293	793726	446823	312179
16	Inputed value of household labour	127211	19760	80613	90880	41496	8743	78488	25400	41711	155116	89328	104808
17	**Cost 'C'(15+16)**	718036	223234	452043	1037983	737484	890780	586808	295910	419005	948842	536150	416987

A2.24 District wise Cost of Cultivation (In Rs.) Per Hectare of Cucumber - Summer during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Kannur	Kasaragod
1	Hired human labour	73851	161673	62198	47579	31630		22318	21546	13076	19506	13775	16560	33875
2	Animal labour													
3	Machine labour							3266			2918	11555	9765	8367
4	Seed /seedlings	2821	2665	5111	15328	2393	1647	2015	3188	1297	2653	7069	4341	5724
5	Farmyard manure and chemical fertilizers	33585	30504	16974	35991	19263	10325	8798	14492	20501	30215	39496	53079	42779
6	Plant Protection	1977	786	1285	1900	4042		1463	1347	2499	1572	1620		263
7	Land tax and irrigation cess	262	597	62	719	513		61	234		52	141	740	1342
8	Repair and maintenance charges of implements, machinery and building	1019	7672	3728	19546	760		374			2826	2018	402	257
9	Interest on working capital	11223	19563	8557	10080	5733	1197	3786	4057	3737	5687	7352	8375	9101
10	Other expenses	45715	13278	28979	44333	12725	22230	62551	11309	14384	24129	25846	20593	7159
11	**Total cost 'A'(1-10)**	170452	236738	126894	175477	77059	35398	104632	56174	55495	89558	108872	113855	108868
12	Interest on fixed capital	2281	4315	1755	44986	1587	2250	8029	12027	9235	37398	7687	15713	19750
13	**Cost 'B1'(11+12)**	172733	241053	128649	220462	78646	37648	112661	68201	64730	126957	116559	129568	128617
14	Interest on land value	364843	91877	252733	610850	1179831	758784	390244	764413	506825	340398	261354	297043	168616
15	**Cost 'B'(13+14)**	537576	332929	381382	831312	1258477	796432	502905	832613	571555	467355	377913	426611	297233
16	Inputed value of household labour	132965	50148	54391	106558	34462	71301	8383	78853	54221	80996	70664	105026	76340
17	**Cost 'C'(15+16))**	670541	383078	435773	937871	1292938	867733	511288	911466	625776	548351	448577	531637	373574

A2.25 District wise Cost of Cultivation (In Rs.) Per Hectare of Snake gourd - Autumn during 2022 - 2023

Sl. No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Ernakulam	Thrissur	Palakkad	Malappuram	Kannur
1	Hired human labour	56225	121067	38550	33751	61914	46189	24274	42740	22483	60588
2	Animal labour										
3	Machine labour				1015		2519		4609		12951
4	Seed /seedlings	6335	3567	5984	5517	3992	1087	5416	3534	3574	8348
5	Farmyard manure and chemical fertilizers	25641	19955	15828	32042	30570	14511	17030	15563	22510	28878
6	Plant Protection	1639	26693	3251	7469	5365	343	1475	3544	5459	
7	Land tax and irrigation cess	261	206	42	394	268	247	129	258	71	180
8	Repair and maintenance charges of implements, machinery and building	55	4631	3016	3434	738		21		2478	
9	Interest on working capital	8984	17128	6361	7979	10184	6465	4820	6999	5403	11076
10	Other expenses	56951	40526	24855	83549	24911	21366	53138	14095	24257	64380
11	**Total cost 'A'(1-10)**	156091	233774	97888	175151	137941	92727	106303	91344	86235	186402
12	Interest on fixed capital	1631	4074	13091	50513	810	201413	593	24230	3532	928
13	**Cost 'B1'(11+12)**	157722	237848	110979	225664	138751	294140	106896	115574	89766	187330
14	Interest on land value	314562	48722	237599	285749	652283	850915	1001504	141765	275874	181705
15	**Cost 'B'(13+14)**	472283	286570	348578	511413	791034	1145055	1108401	257339	365641	369035
16	Inputed value of household labour	128741	51645	73462	112723	78971	13783	68647	27360	109032	63139
17	**Cost 'C'(15+16)**	601024	338215	422039	624136	870006	1158837	1177047	284698	474672	432174

A2.26 District wise Cost of Cultivation (In Rs.) Per Hectare of Snake gourd - Winter during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Wayanad	Kannur	Kasaragod
1	Hired human labour	86380	107458	42404	40072	80851	48275	37158	29912	35149	59013	32335		66567	
2	Animal labour														
3	Machine labour			1288	3923			831	3403	3063				4076	
4	Seed /seedlings	5841	9820	9785	7686	5593	2346	1090	5007	4446	5263	8973	4631	13931	12819
5	Farmyard manure and chemical fertilizers	48388	19561	14658	39239	25272	16343	6357	14731	12029	41752	63591	31616	43260	66295
6	Plant Protection	1524	1213	2385	5203	7279	1098	768	1148	2290	4024				5681
7	Land tax and irrigation cess	126	316	2178	228	468		48	98	265	61	269	741	408	148
8	Repair and maintenance charges of implements, machinery and building	201	11051	4200	3731	772	343		14		2089	898		2766	
9	Interest on working capital	14213	13805	7052	9612	11900	6806	4620	5420	5698	11005	10490	3625	12783	8480
10	Other expenses	60287	30582	36898	69276	16148	22367	47255	40134	17413	42180	23128	16467	39878	21736
11	**Total cost 'A'(1-10)**	216960	193807	120847	178970	148283	97579	98129	99868	80353	165389	139684	57080	183668	115159
12	Interest on fixed capital	2159	5603	7784	31284	801	890	980	3951	25580	4407	2595		39403	155250
13	**Cost 'B1'(11+12)**	219118	199409	128631	210254	149083	98469	99108	103819	105933	169796	142280	57080	223070	270409
14	Interest on land value	277774	90537	172523	472266	479997	317840	512736	520067	155580	356810	252614	109999	168331	197847
15	**Cost 'B'(13+14)**	496893	289946	301154	682520	629080	416309	611844	623886	261512	526606	394893	167079	391401	468256
16	Inputed value of household labour	143164	40233	90757	127321	71137	60241	14013	67030	38425	92752	56585	271173	102130	305045
17	**Cost 'C'(15+16)**	640056	330179	391911	809841	700217	476549	625857	690916	299938	619358	451479	438252	493530	773301

A2.27 District wise Cost of Cultivation (In Rs.) Per Hectare of Snake gourd - Summer during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Wayanad	Kannur	Kasaragod
1	Hired human labour	33485	179793	58073	25178	79673	101072	45174	33523	14250	27444	9263		44989	17784
2	Animal labour														
3	Machine labour				1616				4486			12350		2470	7410
4	Seed /seedlings	5719	3837	9833	10911	6612	4162	1243	4585	11628	5879	9216		15102	12350
5	Farmyard manure and chemical fertilizers	41770	26768	17823	35117	15841	14925	9166	10876	14645	38903	35460		44488	81263
6	Plant Protection	1974	1034	1232	5583	3864	4435	704	1059	2223	4190	3088			2100
7	Land tax and irrigation cess	898	565	54	472	162	17	110	77	505		77		600	309
8	Repair and maintenance charges of implements, machinery and building	587	9478	3549	8124	1145	361	206	14		3385	8460		706	
9	Interest on working capital	8295	21143	8696	7841	10599	12459	5629	5453	4275	7642	6938		10705	12091
10	Other expenses	27219	11580	40605	46775	19219	28486	42463	36190	23180	27570	30474		51764	12597
11	**Total cost 'A'(1-10)**	119949	254199	139865	141618	137116	165917	104694	96263	70706	115012	115324		170825	145903
12	Interest on fixed capital	2713	6200	3141	19179	1152	2218	1390	2991	13308	32009	19727		36643	117138
13	**Cost 'B1'(11+12)**	122661	260399	143007	160797	138267	168135	106085	99253	84014	147021	135051		207467	263040
14	Interest on land value	325372	103108	224018	498958	356544	374376	197808	548288	197918	370743	312230		390613	73977
15	**Cost 'B'(13+14)**	448033	363507	367024	659755	494812	542511	303892	647542	281932	517764	447280		598080	337017
16	Inputed value of household labour	157180	49256	103391	172375	67393	40025	26415	61788	61997	95337	102937		158645	255954
17	**Cost 'C'(15+16)**	605213	412763	470415	832130	562205	582536	330308	709330	343929	613101	550218		756725	592971

A2.28 District wise Cost of Cultivation (In Rs.) Per Hectare of Ladies finger - Autumn during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Kannur
1	Hired human labour	57047	78975	64632	94770	39815	30605	29507	33564	76497	4446	50063
2	Animal labour											
3	Machine labour			2058			1491		6483	1098		5414
4	Seed /seedlings	6695	3234	4467	25324	3439	1038	6185	3220	4325	10745	17256
5	Farmyard manure and chemical fertilizers	58815	21911	17169	49153	27093	10348	15944	22485	15708	21143	41137
6	Plant Protection	1851	726	2237	1300	1804	146	1458	3139	809		
7	Land tax and irrigation cess	926	331	82	450	262	102	135	369	21	74	156
8	Repair and maintenance charges of implements, machinery and building	901	7312	10909	15990	1287	15	28	515	1111		
9	Interest on working capital	12441	10485	9056	17055	7215	4363	5309	6889	9844	3633	11387
10	Other expenses	31844	12025	19760	29432	18496	21996	14442	14185	15588	31122	23966
11	**Total cost 'A'(1-10)**	170520	135000	130370	233474	99411	70103	73010	90849	125001	71163	149380
12	Interest on fixed capital	2648	4735	99125	93524	1089	119214	569	30144	2679	1355	647
13	**Cost 'B1'(11+12)**	173169	139736	229495	326997	100501	189317	73579	120993	127680	72518	150027
14	Interest on land value	313566	88335	464369	959400	685121	2187046	731077	123251	308600	347776	350764
15	**Cost 'B'(13+14)**	486735	228071	693864	1286397	785622	2376363	804656	244245	436280	420294	500790
16	Inputed value of household labour	126875	38350	36268	56290	49044	24773	47524	24024	31200	70148	43976
17	**Cost 'C'(15+16)**	613610	266421	730132	1342687	834665	2401136	852180	268268	467480	490442	544767

A2.29 District wise Cost of Cultivation (In Rs.) Per Hectare of Ladies finger - Winter during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Kannur	Kasaragod
1	Hired human labour	37555	95000	49572	97036	38510	30574	25864	20092	26112	18474	23499	49372
2	Animal labour												
3	Machine labour			3774			904		10074			4021	8158
4	Seed /seedlings	6903	4265	4796	11487	4733	2050	7562	3753	5052	2099	15257	6545
5	Farmyard manure and chemical fertilizers	41504	24510	17053	31188	22378	7387	15347	34589	26091	36865	30483	49189
6	Plant Protection	1798	427	7393	291	3920	480	2030	2617	2798			1839
7	Land tax and irrigation cess	280	152	137	619	115	105	363	380	32	154	500	282
8	Repair and maintenance charges of implements, machinery and building		8075	4460	2906	2036		35	295	1596	762	1459	
9	Interest on working capital	8776	12420	8259	14000	6954	4140	5080	7112	6005	5744	7326	11510
10	Other expenses	26402	23142	21956	20287	11499	22591	8509	11135	19261	39211	14774	11625
11	**Total cost 'A'(1-10)**	123218	167992	117398	177814	90146	68232	64791	90048	86947	103309	97319	138520
12	Interest on fixed capital	4537	2960	55300	47306	3218	1771	11577	22463	4064	2465	20269	102493
13	**Cost 'B1'(11+12)**	127755	170953	172698	225120	93364	70003	76369	112511	91011	105774	117588	241013
14	Interest on land value	259174	53732	354940	985405	352695	514483	522496	114058	370628	314854	379277	275001
15	**Cost 'B'(13+14)**	386929	224685	527639	1210526	446059	584486	598864	226569	461640	420628	496865	516014
16	Inputed value of household labour	119350	25840	56638	62684	46843	14052	69912	30973	68230	43925	94365	108697
17	**Cost 'C'(15+16)**	506279	250525	584277	1273210	492902	598538	668776	257542	529870	464553	591231	624711

A2.30 District wise Cost of Cultivation (In Rs.) Per Hectare of Ladies finger - Summer during 2022 - 2023

Sl.No	Components	Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Kannur	Kasaragod
1	Hired human labour	47652	177840	67364	121600	26377	32372	24936		17427	35800	40205	34961
2	Animal labour												
3	Machine labour						2055		7623		8040	5200	9958
4	Seed /seedlings	6181	2470	5034	28538	4052	1289	5072	4879	6401	10309	13798	6909
5	Farmyard manure and chemical fertilizers	62800	64467	9079	65356	21016	6269	14974	56484	34098	37584	27482	40325
6	Plant Protection	2769		468	1212	4813	837	1451	2470	2780	1114		125
7	Land tax and irrigation cess	955	494	3787	809	564	197	380	448	10	334	592	3598
8	Repair and maintenance charges of implements, machinery and building	146	5558	4865	64790	1267	601	29	610	6274	1986	331	98
9	Interest on working capital	11940	24478	8194	21671	5626	4282	4643	7146	6071	9285	8669	9228
10	Other expenses	19562		26852	15352	11645	36688	8365	13661	30729	24458	24062	9670
11	**Total cost 'A'(1-10)**	152005	275306	125643	319328	75360	84589	59852	93321	103790	128909	120339	114872
12	Interest on fixed capital	3242	3413	15241	98165	1848	12746	9554	19364	40481	37340	14911	54977
13	**Cost 'B1'(11+12)**	155247	278719	140884	417493	77207	97336	69405	112685	144271	166249	135249	169849
14	Interest on land value	434629	23465	389723	1012700	532728	1366135	614077	84136	315807	479681	231955	136267
15	**Cost 'B'(13+14)**	589876	302184	530607	1430193	609935	1463470	683483	196820	460078	645930	367205	306116
16	Inputed value of household labour	161016	59280	26590	77140	47097	19017	72656	48644	89474	80784	104945	138061
17	**Cost 'C'(15+16)**	750892	361464	557197	1507333	657033	1482487	756139	245464	549552	726713	472150	444177

A2.31 District wise Cost of Cultivation (In Rs.) Per Hectare of Cabbage - Summer during 2022 - 2023

Sl.No	Components	Idukki
1	Hired human labour	13620
2	Animal labour	
3	Machine labour	5293
4	Seed /seedlings	3176
5	Farmyard manure and chemical fertilizers	3811
6	Plant Protection	1694
7	Land tax and irrigation cess	
8	Repair and maintenance charges of implements, machinery and building	
9	Interest on working capital	2759
10	Other expenses	11997
11	**Total cost 'A'(1-10)**	42350
12	Interest on fixed capital	429
13	**Cost 'B1'(11+12)**	42778
14	Interest on land value	864500
15	**Cost 'B'(13+14)**	907278
16	Inputed value of household labour	
17	**Cost 'C'(15+16)**	907278

A2.32 District wise Cost of Cultivation (In Rs.) Per Hectare of Tomato – Autumn during 2022 - 2023

Sl.No	Components	Palakkad
1	Hired human labour	49742
2	Animal labour	
3	Machine labour	8605
4	Seed /seedlings	10032
5	Farmyard manure and chemical fertilizers	47787
6	Plant Protection	3043
7	Land tax and irrigation cess	508
8	Repair and maintenance charges of implements, machinery and building	258
9	Interest on working capital	11921
10	Other expenses	14354
11	**Total cost 'A'(1-10)**	146250
12	Interest on fixed capital	32539
13	**Cost 'B1'(11+12)**	178790
14	Interest on land value	100081
15	**Cost 'B'(13+14)**	278870
16	Inputed value of household labour	22999
17	**Cost 'C'(15+16)**	301869

A2.33 District wise Cost of Cultivation (In Rs.) Per Hectare of Tomato - Winter during 2022 - 2023

Sl.No	Components	Palakkad
1	Hired human labour	47439
2	Animal labour	
3	Machine labour	9753
4	Seed /seedlings	9797
5	Farmyard manure and chemical fertilizers	47370
6	Plant Protection	3187
7	Land tax and irrigation cess	467
8	Repair and maintenance charges of implements, machinery and building	512
9	Interest on working capital	11755
10	Other expenses	14699
11	**Total cost 'A'(1-10)**	144979
12	Interest on fixed capital	26572
13	**Cost 'B1'(11+12)**	171551
14	Interest on land value	110685
15	**Cost 'B'(13+14)**	282236
16	Inputed value of household labour	17585
17	**Cost 'C'(15+16)**	299821

A2.34 District wise Cost of Cultivation (In Rs.) Per Hectare of Tomato – Summer during 2022 - 2023

Sl.No	Components	Palakkad
1	Hired human labour	47866
2	Animal labour	
3	Machine labour	11263
4	Seed /seedlings	15032
5	Farmyard manure and chemical fertilizers	71390
6	Plant Protection	2470
7	Land tax and irrigation cess	658
8	Repair and maintenance charges of implements, machinery and building	1182
9	Interest on working capital	14802
10	Other expenses	18811
11	**Total cost 'A'(1-10)**	183473
12	Interest on fixed capital	28676
13	**Cost 'B1'(11+12)**	212150
14	Interest on land value	123633
15	**Cost 'B'(13+14)**	335782
16	Inputed value of household labour	21931
17	**Cost 'C'(15+16)**	357713

A3.1. Percentage of Hired human labour hours to total human labour hours under Autumn Paddy

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	42.21	34.49	**76.7**
2	Kollam	45.73	42.86	**88.59**
3	Pathanamthitta	41.62	46.6	**88.22**
4	Alappuzha	33.7	59.78	**93.48**
5	Kottayam	47.19	21.46	**68.65**
6	Idukki	41.73	45.87	**87.6**
7	Ernakulam	62.38	22.25	**84.63**
8	Thrissur	76.49	10.4	**86.89**
9	Palakkad	28.24	58.42	**86.66**
10	Malappuram	50.18	29.94	**80.12**
11	kozhikode	58.84	17.77	**76.61**
12	Wayanad	-	-	**-**
13	Kannur	14.32	66.01	**80.33**
14	Kasaragod	16.51	55.84	**72.35**
	State	**43.09**	**40.82**	**83.91**

A3.2. Percentage of Hired human labour hours to total human labour hours under Winter Paddy

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	53.26	28.98	**82.24**
2	Kollam	47.41	38.94	**86.35**
3	Pathanamthitta	48.19	38.42	**86.61**
4	Alappuzha	12.43	84.39	**96.82**
5	Kottayam	53.5	17.71	**71.21**
6	Idukki	38.14	59	**97.14**
7	Ernakulam	71.75	13.75	**85.5**
8	Thrissur	72.3	8.12	**80.42**
9	Palakkad	27.84	62.29	**90.13**
10	Malappuram	53.31	28.41	**81.72**
11	kozhikode	64.57	20.59	**85.16**
12	Wayanad	39.61	43.99	**83.6**
13	Kannur	10.29	63.58	**73.87**
14	Kasaragod	16.72	53.89	**70.61**
	State	**40.08**	**46.42**	**86.51**

A3.3. Percentage of Hired human labour hours to total human labour hours under Summer Paddy

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	33.78	31.68	**65.46**
2	Kollam	60.42	26.97	**87.39**
3	Pathanamthitta	54.32	28.52	**82.84**
4	Alappuzha	20.52	74.18	**94.7**
5	Kottayam	58.4	13.65	**72.05**
6	Idukki	22.42	29.2	**51.62**
7	Ernakulam	70.3	13.19	**83.49**
8	Thrissur	66.24	12.73	**78.97**
9	Palakkad	29.42	57.17	**86.59**
10	Malappuram	66.63	11.23	**77.86**
11	kozhikode	43.57	47.25	**90.82**
12	Wayanad	35.97	39.56	**75.53**
13	Kannur	22.5	45	**67.5**
14	Kasaragod	17.94	44.09	**62.03**
	State	**44.91**	**39.42**	**84.33**

A3.4. Percentage of Hired human labour hours to total human labour hours under Coconut

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	79.84	0.09	**79.93**
2	Kollam	81.1	0	**81.1**
3	Pathanamthitta	73.23	0.07	**73.3**
4	Alappuzha	81.54	0.36	**81.9**
5	Kottayam	81.53	1.87	**83.4**
6	Idukki	85.58	0.48	**86.06**
7	Ernakulam	87.02	0	**87.02**
8	Thrissur	71.06	6.6	**77.66**
9	Palakkad	62.56	26.61	**89.17**
10	Malappuram	78.26	2.9	**81.16**
11	kozhikode	68.21	3.33	**71.54**
12	Wayanad	80.75	1.12	**81.87**
13	Kannur	71.45	16.2	**87.65**
14	Kasaragod	44.6	32.1	**76.7**
	State	**74.1**	**7.15**	**81.25**

A3.5. Percentage of Hired human labour hours to total human labour hours under Arecanut

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	54.95	0	**54.95**
2	Kollam	85.28	0	**85.28**
3	Pathanamthitta	57.36	0	**57.36**
4	Alappuzha	37.51	0	**37.51**
5	Kottayam	78.84	0	**78.84**
6	Idukki	89.75	10.25	**100**
7	Ernakulam	77.91	2.23	**80.14**
8	Thrissur	70.65	10.84	**81.49**
9	Palakkad	68.57	18.52	**87.09**
10	Malappuram	72.74	5.78	**78.52**
11	kozhikode	78.84	2.49	**81.33**
12	Wayanad	77.76	6.45	**84.21**
13	Kannur	45.51	31.82	**77.33**
14	Kasaragod	42.5	32.74	**75.24**
	State	**63.23**	**14.84**	**78.07**

A3.6. Percentage of Hired human labour hours to total human labour hours under Tapioca

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	48.9	0	**48.9**
2	Kollam	70	0	**70**
3	Pathanamthitta	54.32	0.98	**55.3**
4	Alappuzha	22.44	0.29	**22.73**
5	Kottayam	46.69	3.2	**49.89**
6	Idukki	77.1	12.56	**89.66**
7	Ernakulam	81.99	3.06	**85.05**
8	Thrissur	57.19	6.25	**63.44**
9	Palakkad	33.95	31.2	**65.15**
10	Malappuram	63.62	2.77	**66.39**
11	kozhikode	69.86	1.35	**71.21**
12	Wayanad	48.72	20.05	**68.77**
13	Kannur	70.4	8.26	**78.66**
14	Kasaragod	22.54	18.88	**41.42**
	State	**55.93**	**5.11**	**61.04**

A3.7. Percentage of Hired human labour hours to total human labour hours under Banana

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	36.97	0	**36.97**
2	Kollam	76.32	0	**76.32**
3	Pathanamthitta	54.7	0	**54.7**
4	Alappuzha	53.35	0.5	**53.85**
5	Kottayam	47.29	1.05	**48.34**
6	Idukki	96.76	0.82	**97.58**
7	Ernakulam	83.4	0	**83.4**
8	Thrissur	42.09	5.43	**47.52**
9	Palakkad	65.84	14.31	**80.15**
10	Malappuram	55.7	0.19	**55.89**
11	kozhikode	69.33	0	**69.33**
12	Wayanad	58.32	4.43	**62.75**
13	Kannur	56.83	22.87	**79.7**
14	Kasaragod	16.39	15.05	**31.44**
	State	**58.12**	**3.6**	**61.73**

A3.8. Percentage of Hired human labour hours to total human labour hours under Pepper

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	48.86	0	**48.86**
2	Kollam	75.07	0	**75.07**
3	Pathanamthitta	58.36	1.01	**59.37**
4	Alappuzha	24.38	0	**24.38**
5	Kottayam	43.98	0.73	**44.71**
6	Idukki	64.59	2.58	**67.17**
7	Ernakulam	72.98	4.92	**77.9**
8	Thrissur	66.47	7.17	**73.64**
9	Palakkad	81.72	9.78	**91.5**
10	Malappuram	61.02	6.4	**67.42**
11	kozhikode	75.46	0	**75.46**
12	Wayanad	54.21	4.49	**58.7**
13	Kannur	71.98	7.34	**79.32**
14	Kasaragod	33.94	14.62	**48.56**
	State	**61.56**	**5.13**	**66.69**

A3.9. Percentage of Hired human labour hours to total human labour hours under Ginger

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	28.62	0	**28.62**
2	Kollam	80.01	0	**80.01**
3	Pathanamthitta	46.92	2.83	**49.75**
4	Alappuzha	21.33	1.69	**23.02**
5	Kottayam	56.01	0	**56.01**
6	Idukki	62.23	16.36	**78.59**
7	Ernakulam	49.17	18.6	**67.77**
8	Thrissur	40.15	10.1	**50.25**
9	Palakkad	16.7	57.81	**74.51**
10	Malappuram	37.88	0	**37.88**
11	kozhikode	48.9	2.59	**51.49**
12	Wayanad	53.55	33.85	**87.4**
13	Kannur	35.74	18.11	**53.85**
14	Kasaragod	17.56	22.53	**40.09**
	State	**44.12**	**22.85**	**66.97**

A3.10. Percentage of Hired human labour hours to total human labour hours under Turmeric

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	31.52	0	**31.52**
2	Kollam	81.29	0	**81.29**
3	Pathanamthitta	51.15	5.15	**56.3**
4	Alappuzha	12.44	0.31	**12.75**
5	Kottayam	42.46	1.3	**43.76**
6	Idukki	28.83	11.7	**40.53**
7	Ernakulam	54.51	14.32	**68.83**
8	Thrissur	37.21	8.17	**45.38**
9	Palakkad	7.49	47.42	**54.91**
10	Malappuram	31.69	5.79	**37.48**
11	kozhikode	59.46	6.17	**65.63**
12	Wayanad	10.57	15.56	**26.13**
13	Kannur	43.65	15.86	**59.51**
14	Kasaragod	18.07	23.88	**41.95**
	State	**38.38**	**10.13**	**48.51**

A3.11. Percentage of Hired human labour hours to total human labour hours under Pineapple

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	51.99	0	**51.99**
2	Kollam	95.13	0	**95.13**
3	Pathanamthitta	81.99	0	**81.99**
4	Alappuzha	58.82	0	**58.82**
5	Kottayam	60.14	2.92	**63.06**
6	Idukki	88.98	8.58	**97.56**
7	Ernakulam	69.79	26.63	**96.42**
8	Thrissur	86.27	10.35	**96.62**
9	Palakkad	100	0	**100**
10	Malappuram	95.98	0	**95.98**
11	kozhikode	86.6	10.47	**97.07**
12	Wayanad	-	-	**-**
13	Kannur	60.06	35.89	**95.95**
14	Kasaragod	42.7	56.35	**99.05**
	State	**75.46**	**15.04**	**90.5**

A3.12. Percentage of Hired human labour hours to total human labour hours under Bitter Gourd – Autumn

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	31.03	0	**31.03**
2	Kollam	75.95	0	**75.95**
3	Pathanamthitta	44.26	0	**44.26**
4	Alappuzha	14.79	0	**14.79**
5	Kottayam	42.65	0.1	**42.75**
6	Idukki			**0**
7	Ernakulam	59.13	2.2	**61.33**
8	Thrissur	19.82	13.97	**33.79**
9	Palakkad	23.22	45.37	**68.59**
10	Malappuram	55.93	0	**55.93**
11	kozhikode	47.27	0	**47.27**
12	Wayanad			**0**
13	Kannur	21.01	26.48	**47.49**
14	Kasaragod	-	-	**-**
	State	**37.3**	**10.45**	**47.75**

A3.13. Percentage of Hired human labour hours to total human labour hours under Bitter Gourd – Winter

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	33.12	0	**33.12**
2	Kollam	71.18	0	**71.18**
3	Pathanamthitta	42.49	0	**42.49**
4	Alappuzha	20.53	0	**20.53**
5	Kottayam	36.45	7.24	**43.69**
6	Idukki	34.91	16	**50.91**
7	Ernakulam	73.58	0.47	**74.05**
8	Thrissur	19.99	6.97	**26.96**
9	Palakkad	25.68	46.39	**72.07**
10	Malappuram	33.88	0	**33.88**
11	kozhikode	37.97	0	**37.97**
12	Wayanad	0	0	**0**
13	Kannur	14.57	31.27	**45.84**
14	Kasaragod	10.06	11.88	**21.94**
	State	**30.23**	**13.13**	**43.36**

A3.14. Percentage of Hired human labour hours to total human labour hours under Bitter Gourd – Summer

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	27.82	0	**27.82**
2	Kollam	71.39	0	**71.39**
3	Pathanamthitta	46.52	0	**46.52**
4	Alappuzha	12.5	0	**12.5**
5	Kottayam	37.03	2.99	**40.02**
6	Idukki	4.5	3	**7.5**
7	Ernakulam	59.05	1.76	**60.81**
8	Thrissur	30.42	7.6	**38.02**
9	Palakkad	53.11	0	**53.11**
10	Malappuram	0	0	**0**
11	kozhikode	14.43	0	**14.43**
12	Wayanad	0	0	**0**
13	Kannur	22.47	1.39	**23.86**
14	Kasaragod	11.6	8.07	**19.67**
	State	**33.08**	**2.52**	**35.6**

A3.15. Percentage of Hired human labour hours to total human labour hours under Cowpea – Autumn

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	25.72	0	**25.72**
2	Kollam	74.7	0	**74.7**
3	Pathanamthitta	35.3	0	**35.3**
4	Alappuzha	8.43	0.23	**8.66**
5	Kottayam	37.18	0.14	**37.32**
6	Idukki	-	-	**-**
7	Ernakulam	51.38	8.13	**59.51**
8	Thrissur	30.3	11.63	**41.93**
9	Palakkad	11.58	49.83	**61.41**
10	Malappuram	19.6	0.32	**19.92**
11	kozhikode	35.82	0	**35.82**
12	Wayanad	-	-	**-**
13	Kannur	19.51	49.9	**69.41**
14	Kasaragod	-	-	**-**
	State	**31.68**	**10.13**	**41.81**

A3.16. Percentage of Hired human labour hours to total human labour hours under Cowpea – Winter

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	43.94	0	**43.94**
2	Kollam	73.92	0	**73.92**
3	Pathanamthitta	30.49	0	**30.49**
4	Alappuzha	26.46	0.26	**26.72**
5	Kottayam	46.71	6.11	**52.82**
6	Idukki	26.93	11.9	**38.83**
7	Ernakulam	57.82	12.98	**70.8**
8	Thrissur	16.67	10.29	**26.96**
9	Palakkad	12.06	45.05	**57.11**
10	Malappuram	21.04	0	**21.04**
11	kozhikode	28.98	0	**28.98**
12	Wayanad	5.79	0	**5.79**
13	Kannur	27.79	21.3	**49.09**
14	Kasaragod	5.46	11.42	**16.88**
	State	**31.74**	**8.33**	**40.07**

A3.17. Percentage of Hired human labour hours to total human labour hours under Cowpea – Summer

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	48.09	0	**48.09**
2	Kollam	69.95	0	**69.95**
3	Pathanamthitta	36.83	1.92	**38.75**
4	Alappuzha	23.64	0	**23.64**
5	Kottayam	23	2.4	**25.4**
6	Idukki	34.5	27.23	**61.73**
7	Ernakulam	55.43	6.86	**62.29**
8	Thrissur	27.29	7.16	**34.45**
9	Palakkad	0	0	**0**
10	Malappuram	30.22	0	**30.22**
11	kozhikode	11.39	0	**11.39**
12	Wayanad	10.91	2.42	**13.33**
13	Kannur	19.35	7.41	**26.76**
14	Kasaragod	12.38	10.09	**22.47**
	State	**29.56**	**4.16**	**33.71**

A3.18. Percentage of Hired human labour hours to total human labour hours under Cardamom

Sl.No	District	Male	Female	Total
1	Idukki	51.95	29.11	**81.06**
2	Palakkad	11.1	69.11	**80.21**
3	Wayanad	28.63	20.44	**49.07**
	State	**18.15**	**54.41**	**72.55**

A3.19. Percentage of Hired human labour hours to total human labour hours under Ash Gourd – Autumn

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	-	-	**-**
2	Kollam	87.88	0	**87.88**
3	Pathanamthitta	59.93	0	**59.93**
4	Alappuzha	6	26	**32**
5	Kottayam	37.33	4.44	**41.77**
6	Idukki	-	-	**-**
7	Ernakulam	57.34	3.75	**61.09**
8	Thrissur	20.17	10.03	**30.2**
9	Palakkad	25.52	21.8	**47.32**
10	Malappuram	67.78	0	**67.78**
11	kozhikode	-	-	**-**
12	Wayanad	-	-	**-**
13	Kannur	32.23	25.9	**58.13**
14	Kasaragod	-	-	**-**
	State	**34.81**	**14.29**	**49.09**

A3.20. Percentage of Hired human labour hours to total human labour hours under Ash Gourd – Winter

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	-	-	**-**
2	Kollam	80.95	0	**80.95**
3	Pathanamthitta	41.56	0	**41.56**
4	Alappuzha	11.49	5.38	**16.87**
5	Kottayam	35.66	6.99	**42.65**
6	Idukki	-	-	**-**
7	Ernakulam	41.6	0	**41.6**
8	Thrissur	27.29	4.24	**31.53**
9	Palakkad	51.11	23.67	**74.78**
10	Malappuram	41.5	0	**41.5**
11	kozhikode	40	0	**40**
12	Wayanad	-	-	**-**
13	Kannur	8.46	3.48	**11.94**
14	Kasaragod	4.59	14.81	**19.4**
	State	**33.6**	**12.74**	**46.34**

A3.21. Percentage of Hired human labour hours to total human labour hours under Ash Gourd – Summer

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	-	-	**-**
2	Kollam	83.51	0	**83.51**
3	Pathanamthitta	42.06	0	**42.06**
4	Alappuzha	0	0	**0**
5	Kottayam	53.06	0	**53.06**
6	Idukki	-	-	**-**
7	Ernakulam	46.72	10.04	**56.76**
8	Thrissur	23.54	5.15	**28.69**
9	Palakkad	0	0	**0**
10	Malappuram	17.54	0	**17.54**
11	kozhikode	7.53	0	**7.53**
12	Wayanad	-	-	**-**
13	Kannur	7.71	1.88	**9.59**
14	Kasaragod	9.79	6.49	**16.28**
	State	**19.09**	**3.12**	**22.2**

A3.22. Percentage of Hired human labour hours to total human labour hours under Cucumber – Autumn

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	21.22	0	**21.22**
2	Kollam	75	0	**75**
3	Pathanamthitta	19.8	0	**19.8**
4	Alappuzha	26.6	2.3	**28.9**
5	Kottayam	43.27	0.23	**43.5**
6	Idukki	-	-	**-**
7	Ernakulam	65.77	14.29	**80.06**
8	Thrissur	10.29	8.08	**18.37**
9	Palakkad	37.42	4.52	**41.94**
10	Malappuram	54.6	0	**54.6**
11	kozhikode	-	-	**-**
12	Wayanad	-	-	**-**
13	Kannur	34.82	21.04	**55.86**
14	Kasaragod	-	-	**-**
	State	**30.99**	**4.2**	**35.2**

A3.23. Percentage of Hired human labour hours to total human labour hours under Cucumber – Winter

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	36.04	0	**36.04**
2	Kollam	72.88	0	**72.88**
3	Pathanamthitta	32.07	0	**32.07**
4	Alappuzha	5.01	0	**5.01**
5	Kottayam	27.36	6.74	**34.1**
6	Idukki	-	-	**-**
7	Ernakulam	66.67	0	**66.67**
8	Thrissur	13.35	2.13	**15.48**
9	Palakkad	57.64	5.24	**62.88**
10	Malappuram	43.58	0	**43.58**
11	kozhikode	0	0	**0**
12	Wayanad	-	-	**-**
13	Kannur	5.02	13.71	**18.73**
14	Kasaragod	12.23	14.06	**26.29**
	State	**22.96**	**4.47**	**27.44**

A3.24. Percentage of Hired human labour hours to total human labour hours under Cucumber – Summer

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	34.21	0	**34.21**
2	Kollam	76.33	0	**76.33**
3	Pathanamthitta	53.69	0	**53.69**
4	Alappuzha	9.89	0	**9.89**
5	Kottayam	45.37	0.18	**45.55**
6	Idukki	0	0	**0**
7	Ernakulam	64.68	3.98	**68.66**
8	Thrissur	17.25	4.25	**21.5**
9	Palakkad	19.43	0	**19.43**
10	Malappuram	15.05	0	**15.05**
11	kozhikode	10.51	0	**10.51**
12	Wayanad			**0**
13	Kannur	12.55	0.68	**13.23**
14	Kasaragod	14.48	20.04	**34.52**
	State	**24.4**	**3.72**	**28.12**

A3.25. Percentage of Hired human labour hours to total human labour hours under Snake Gourd – Autumn

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	29.85	0	**29.85**
2	Kollam	70.1	0	**70.1**
3	Pathanamthitta	34.57	0	**34.57**
4	Alappuzha	21.03	0.8	**21.83**
5	Kottayam	41.12	0	**41.12**
6	Idukki	-	-	**-**
7	Ernakulam	54.79	19.63	**74.42**
8	Thrissur	21.89	4.53	**26.42**
9	Palakkad	14.44	52.97	**67.41**
10	Malappuram	18.14	0	**18.14**
11	kozhikode	-	-	**-**
12	Wayanad	-	-	**-**
13	Kannur	33.17	16.34	**49.51**
14	Kasaragod	-	-	**-**
	State	**32.58**	**8.54**	**41.12**

A3.26. Percentage of Hired human labour hours to total human labour hours under Snake Gourd – Winter

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	37.03	0	**37.03**
2	Kollam	72.76	0	**72.76**
3	Pathanamthitta	32.03	0	**32.03**
4	Alappuzha	23.16	0.69	**23.85**
5	Kottayam	52.15	2.24	**54.39**
6	Idukki	31.86	12.5	**44.36**
7	Ernakulam	68.72	0	**68.72**
8	Thrissur	25.15	4.25	**29.4**
9	Palakkad	12.67	39.78	**52.45**
10	Malappuram	33.58	0	**33.58**
11	kozhikode	26.23	0	**26.23**
12	Wayanad	0	0	**0**
13	Kannur	27.45	13.9	**41.35**
14	Kasaragod	0	0	**0**
	State	**35.02**	**5.46**	**40.47**

A3.27. Percentage of Hired human labour hours to total human labour hours under Snake Gourd – Summer

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	18.07	0	**18.07**
2	Kollam	79.24	0	**79.24**
3	Pathanamthitta	36.08	0	**36.08**
4	Alappuzha	12.32	0	**12.32**
5	Kottayam	52.8	2.33	**55.13**
6	Idukki	50.37	21.7	**72.07**
7	Ernakulam	50.74	8.42	**59.16**
8	Thrissur	26.63	7.68	**34.31**
9	Palakkad	17.7	0	**17.7**
10	Malappuram	19.28	0	**19.28**
11	kozhikode	4.83	0	**4.83**
12	Wayanad			**0**
13	Kannur	21.52	0	**21.52**
14	Kasaragod	6.09	0	**6.09**
	State	**32.43**	**3.28**	**35.72**

A3.28. Percentage of Hired human labour hours to total human labour hours under Ladies Finger – Autumn

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	29.42	0	**29.42**
2	Kollam	67.4	0	**67.4**
3	Pathanamthitta	64.61	0	**64.61**
4	Alappuzha	55.4	2.88	**58.28**
5	Kottayam	42.34	3.49	**45.83**
6	Idukki	-	-	**-**
7	Ernakulam	49.43	0.86	**50.29**
8	Thrissur	31.92	6.58	**38.5**
9	Palakkad	10.21	51.63	**61.84**
10	Malappuram	64.48	0	**64.48**
11	kozhikode	6.16	0	**6.16**
12	Wayanad	-	-	**-**
13	Kannur	32.06	25.19	**57.25**
14	Kasaragod	-	-	**-**
	State	**35**	**14.56**	**49.55**

A3.29. Percentage of Hired human labour hours to total human labour hours under Ladies Finger – Winter

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	23.74	0	**23.74**
2	Kollam	78.62	0	**78.62**
3	Pathanamthitta	42.94	0	**42.94**
4	Alappuzha	61.87	0	**61.87**
5	Kottayam	43.77	2.93	**46.7**
6	Idukki	-	-	**-**
7	Ernakulam	61.8	1.87	**63.67**
8	Thrissur	21.85	5.36	**27.21**
9	Palakkad	9.36	31.48	**40.84**
10	Malappuram	22.76	0	**22.76**
11	kozhikode	26.91	0	**26.91**
12	Wayanad	-	-	**-**
13	Kannur	18.52	1.43	**19.95**
14	Kasaragod	13.54	21.77	**35.31**
	State	**26.15**	**10.48**	**36.62**

A3.30. Percentage of Hired human labour hours to total human labour hours under Ladies Finger – Summer

Sl.No	District	Male	Female	Total
1	Thiruvananthapuram	24.67	-	**24.67**
2	Kollam	75	-	**75**
3	Pathanamthitta	73.17	-	**73.17**
4	Alappuzha	62.76	-	**62.76**
5	Kottayam	33.73	3.33	**37.06**
6	Idukki	-	-	**-**
7	Ernakulam	53.27	4.91	**58.18**
8	Thrissur	22.34	2.58	**24.92**
9	Palakkad	-	-	**-**
10	Malappuram	14.08	-	**14.08**
11	kozhikode	23.95	-	**23.95**
12	Wayanad	-	-	**-**
13	Kannur	17.88	11.86	**29.74**
14	Kasaragod	10.61	10.61	**21.22**
	State	**24.81**	**3.31**	**28.12**

A3.31. Percentage of Hired human labour hours to total human labour hours under Cabbage – Summer

Sl.No	District	Male	Female	Total
1	Idukki	65	35	**100**
	State	65	35	**100**

A3.32. Percentage of Hired human labour hours to total human labour hours under Tomato- Autumn

Sl.No	District	Male	Female	Total
1 2	Palakkad	8.17	61.62	**69.79**
	State	8.17	61.62	**69.79**

A3.33. Percentage of Hired human labour hours to total human labour hours under Tomato- Winter

Sl.No	District	Male	Female	Total
1	Palakkad	7.48	68.7	**76.18**
	State	7.48	68.7	**76.18**

A3.34. Percentage of Hired human labour hours to total human labour hours under Tomato- Summer

Sl.No	District	Male	Female	Total
1	Palakkad	10.06	59.44	**69.5**
	State	10.06	59.44	**69.5**

A4.1. District Wise Value of Product and by – product per hectare (in Rs) Of Autumn Paddy

Sl.No	District	Product	By Product	Total
1	Thiruvananthapuram	122257	45286	167543
2	Kollam	99528	38033	137561
3	Pathanamthitta	87786	14596	102382
4	Alappuzha	138941	508	139449
5	Kottayam	153869	1341	155211
6	Idukki	40486	-	40486
7	Ernakulam	102091	7354	109445
8	Thrissur	91494	225	91719
9	Palakkad	146976	5302	152278
10	Malappuram	94327	7412	101739
11	kozhikode	40217	29719	69936
12	Wayanad	-	--	-
13	Kannur	72396	37545	109941
14	Kasaragod	91037	36505	127542
	State	111218	10367	121585

A4.2. District Wise Value of Product and by – product per hectare (in Rs) Of Winter Paddy

Sl.No	District	Product	By Product	Total
1	Thiruvananthapuram	120329	46532	166861
2	Kollam	108314	36043	144357
3	Pathanamthitta	114016	7193	121210
4	Alappuzha	110862	18472	129334
5	Kottayam	150297	339	150636
6	Idukki	91512	13996	105508
7	Ernakulam	108546	11795	120341
8	Thrissur	130694	11724	142418
9	Palakkad	169872	19216	189088
10	Malappuram	126606	19079	145685
11	kozhikode	40600	29763	70363
12	Wayanad	99025	22600	121625
13	Kannur	70884	42219	113103
14	Kasaragod	86129	39432	125561
	State	116555	15045	131600

A4.3. District Wise Value of Product and by – product per hectare (in Rs) Of Summer Paddy

Sl.No	**District**	**Product**	**By Product**	**Total**
1	Thiruvananthapuram	102589	42672	145261
2	Kollam	98468	34007	132475
3	Pathanamthitta	117974	6439	124412
4	Alappuzha	127058	23412	150470
5	Kottayam	150329	782	151111
6	Idukki	129675		129675
7	Ernakulam	105911	12771	118682
8	Thrissur	149089	7133	156222
9	Palakkad	162149	14237	176386
10	Malappuram	139258	11914	151172
11	kozhikode	55762	37853	93615
12	Wayanad	169950	20542	190492
13	Kannur	105123	57304	162427
14	Kasaragod	86524	33368	119892
	State	121430	17844	139274

A4.4. District Wise Value of Product and by – product per hectare (in Rs) Of Coconut

Sl.No	District	Product	By Product	Total
1	Thiruvananthapuram	280993	2096	283088
2	Kollam	128026	299	128325
3	Pathanamthitta	116937	2261	119198
4	Alappuzha	176577	4398	180975
5	Kottayam	185894	624	186518
6	Idukki	160646		160646
7	Ernakulam	197199		197199
8	Thrissur	155482	1724	157205
9	Palakkad	135635	6305	141940
10	Malappuram	158656	13004	171660
11	kozhikode	100725	6031	106756
12	Wayanad	150607		150607
13	Kannur	146591	6118	152709
14	Kasaragod	142843	2093	144937
	State	157701	4302	162003

A4.5. District Wise Value of Product and by – product per hectare (in Rs) Of Arecanut

Sl.No	District	Arecanut
1	Thiruvananthapuram	145714
2	Kollam	138355
3	Pathanamthitta	189919
4	Alappuzha	239073
5	Kottayam	271811
6	Idukki	101185
7	Ernakulam	588221
8	Thrissur	298428
9	Palakkad	487447
10	Malappuram	319943
11	kozhikode	502243
12	Wayanad	248687
13	Kannur	425755
14	Kasaragod	665490
	State	396410

A4.6. District Wise Value of Product and by – product per hectare (in Rs) Of Tapioca

Sl.No	District	Product	By Product	Total
1	Thiruvananthapuram	469078	11770	480849
2	Kollam	360405	6207	366612
3	Pathanamthitta	525930	7369	533299
4	Alappuzha	704892	12133	717026
5	Kottayam	517339	5818	523156
6	Idukki	311245		311245
7	Ernakulam	351166	2209	353375
8	Thrissur	354044	138	354182
9	Palakkad	846868	14225	861093
10	Malappuram	387070	2143	389213
11	kozhikode	448206	-	448206
12	Wayanad	356035	382	356417
13	Kannur	705980	3623	709603
14	Kasaragod	359009	-	359008
	State	458596	4877	463473

A4.7. District Wise Value of Product and by – product per hectare (in Rs) Of Banana

Sl.No	District	Product	By Product	Total
1	Thiruvananthapuram	588852	19630	608482
2	Kollam	491393	24275	515668
3	Pathanamthitta	603429	12168	615596
4	Alappuzha	786447	7333	793781
5	Kottayam	667412	4979	672391
6	Idukki	475376		475376
7	Ernakulam	533701		533701
8	Thrissur	643804	13876	657681
9	Palakkad	638944	7864	646807
10	Malappuram	547493	12698	560191
11	kozhikode	838661	14618	853278
12	Wayanad	517432	30	517462
13	Kannur	729216	19465	748681
14	Kasaragod	704613	22230	726843
	State	613052	11256	624307

A4.8. District Wise Value of Product and by – product per hectare (in Rs) Of Pepper, Ginger and Turmeric

Sl.No	District	Pepper	Ginger	Turmeric
1	Thiruvananthapuram	268076	807238	705306
2	Kollam	361773	447588	234931
3	Pathanamthitta	231266	445121	290800
4	Alappuzha	374501	682594	599207
5	Kottayam	453835	499038	235571
6	Idukki	132685	276948	201562
7	Ernakulam	198735	528170	533887
8	Thrissur	341295	355689	317310
9	Palakkad	228764	776165	377570
10	Malappuram	165836	309249	279937
11	kozhikode	175822	487643	229706
12	Wayanad	145733	1041165	295283
13	Kannur	287089	645782	254798
14	Kasaragod	273303	399780	367506
	State	246405	637842	380041

A4.9. District Wise Value of Product and by – product per hectare (in Rs) Of Pineapple

Sl.No	District	Product	By Product	Total
1	Thiruvananthapuram	453492	111150	564642
2	Kollam	405457	6436	411893
3	Pathanamthitta	240287	9310	249597
4	Alappuzha	485640	54088	539727
5	Kottayam	431110	38447	469557
6	Idukki	268109		268109
7	Ernakulam	540302	8826	549128
8	Thrissur	373423	1311	374734
9	Palakkad	562966	29059	592025
10	Malappuram	745666	85627	831292
11	kozhikode	546872	4199	551071
12	Wayanad	-	-	-
13	Kannur	336500	1198	337697
14	Kasaragod	416887	4047	420933
	State	437111	11229	448340

A4.10. District Wise Value of Product and by – product per hectare (in Rs) Of Bitter Gourd

Sl.No	District	Autumn	Winter	Summer
1	Thiruvananthapuram	545892	579808	595008
2	Kollam	483900	449476	476913
3	Pathanamthitta	367891	506117	450363
4	Alappuzha	560327	529288	572678
5	Kottayam	407727	277765	455957
6	Idukki	-	178258	186056
7	Ernakulam	314151	474045	276299
8	Thrissur	276825	375999	389065
9	Palakkad	543777	596627	408472
10	Malappuram	385954	328603	341107
11	kozhikode	312867	317720	287892
12	Wayanad	-	432250	145236
13	Kannur	254063	288229	373109
14	Kasaragod	-	443112	415717
	State	431547	467260	431623

A4.11. District Wise Value of Product and by – product per hectare (in Rs) Of Cowpea

Sl.No	District	Autumn	Winter	Summer
1	Thiruvananthapuram	512199	536235	552602
2	Kollam	471681	460982	440337
3	Pathanamthitta	380693	492525	447538
4	Alappuzha	584783	737363	543652
5	Kottayam	410184	434944	430834
6	Idukki	-	176023	252492
7	Ernakulam	322065	794177	292224
8	Thrissur	291589	322575	383488
9	Palakkad	389180	334468	158439
10	Malappuram	250701	271247	210169
11	kozhikode	132096	274678	245082
12	Wayanad	-	771628	201401
13	Kannur	257358	248607	497579
14	Kasaragod	-	435557	373891
	State	388859	401508	386758

A4.12. District Wise Value of Product and by – product per hectare (in Rs) Of Cardamom

Sl.No	District	Product
1	Idukki	294527
2	Palakkad	524923
3	Wayanad	323504
	State	433204

A4.13. District Wise Value of Product and by – product per hectare (in Rs) Of Ash Gourd

Sl.No	District	Autumn	Winter	Summer
1	Thiruvananthapuram	-	-	-
2	Kollam	506350	494000	310109
3	Pathanamthitta	309124	692250	406218
4	Alappuzha	424090	562162	1628059
5	Kottayam	161489	223015	358726
6	Idukki	-	-	-
7	Ernakulam	165556	233703	199818
8	Thrissur	206244	212811	226736
9	Palakkad	232303	297404	279933
10	Malappuram	143456	168412	146555
11	kozhikode	-	218183	255761
12	Wayanad	-	-	-
13	Kannur	251582	394126	400613
14	Kasaragod	-	305903	310678
	State	207445	276150	259477

A4.14. District Wise Value of Product and by – product per hectare (in Rs) Of Cucumber

Sl.No	District	Autumn	Winter	Summer
1	Thiruvananthapuram	356521	513541	514840
2	Kollam	151493	150917	326807
3	Pathanamthitta	287703	331829	411531
4	Alappuzha	352416	298004	400206
5	Kottayam	135653	163657	146934
6	Idukki	-	-	128440
7	Ernakulam	182664	189865	201159
8	Thrissur	156167	192058	215537
9	Palakkad	175723	188039	210676
10	Malappuram	160297	146875	188993
11	kozhikode	-	333450	215199
12	Wayanad	-	-	-
13	Kannur	238136	447325	404672
14	Kasaragod	-	242363	240846
	State	222863	269466	282096

A4.15. District Wise Value of Product and by – product per hectare (in Rs) Of Snake Gourd

Sl.No	District	Autumn	Winter	Summer
1	Thiruvananthapuram	343798	400547	548301
2	Kollam	435730	443250	418292
3	Pathanamthitta	258612	427079	432206
4	Alappuzha	407602	461786	1076578
5	Kottayam	314631	387300	652285
6	Idukki		223775	247072
7	Ernakulam	192779	242002	242024
8	Thrissur	242847	259349	251281
9	Palakkad	384690	347716	184680
10	Malappuram	359347	285297	166332
11	kozhikode		316609	269014
12	Wayanad		335920	
13	Kannur	459246	484651	279957
14	Kasaragod		467571	490666
	State	335532	359336	468760

A4.16. District Wise Value of Product and by – product per hectare (in Rs) Of Ladies Finger

Sl.No	District	Autumn	Winter	Summer
1	Thiruvananthapuram	465382	465796	494979
2	Kollam	293166	373397	462508
3	Pathanamthitta	198876	277944	348738
4	Alappuzha	475501	853116	779276
5	Kottayam	184525	239307	160492
6	Idukki	-	-	-
7	Ernakulam	342818	185596	198988
8	Thrissur	217871	299402	265240
9	Palakkad	224229	241149	239072
10	Malappuram	258323	211600	279865
11	kozhikode	150176	389437	285605
12	Wayanad	-	-	-
13	Kannur	213334	252727	201240
14	Kasaragod	-	324693	288819
	State	272446	306208	309081

A4.17. District Wise Value of Product and by – product per hectare (in Rs) Of Cabbage

Sl.No	District	Summer
1	Idukki	49400
	State	49400

A4.18. District Wise Value of Product and by – product per hectare (in Rs) Of Tomato

Sl.No	District	Autumn	Winter	Summer
1	Palakkad	239734	219371	280698
	State	**239734**	**219371**	**280698**

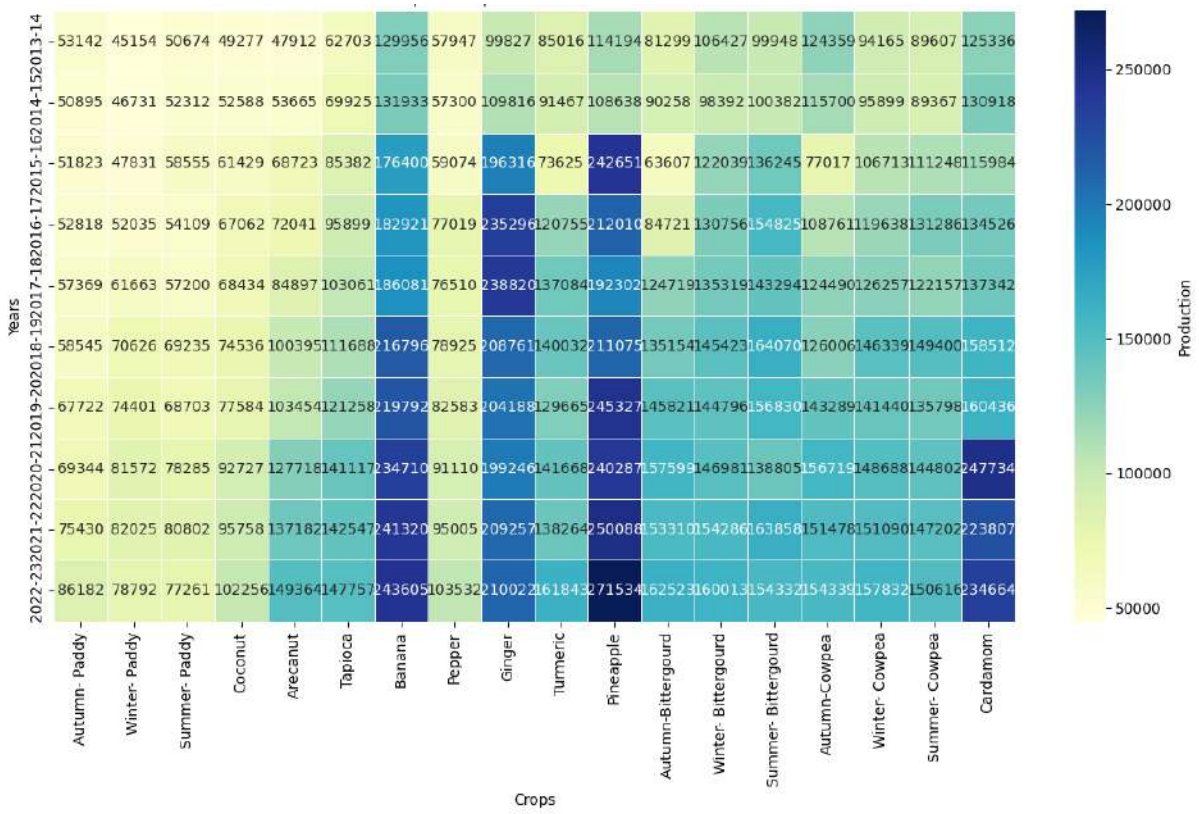
A5.Cropwise timeseries data

Comparison table for the cost of cultivation Cost A of crops such as Paddy (3 Seasons), Coconut, Arecanut, Tapioca, Banana, Pepper, Ginger, Turmeric from 2011-2012 to 2022-2023 is given in the table below. Cost of Cultivation of Crops during 2011-2012 has more or less doubled during 2022-23.

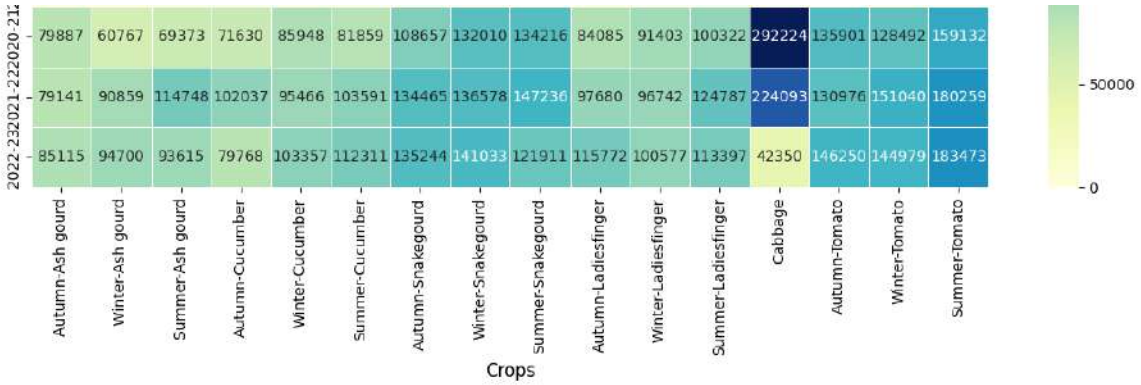
A5.1. Cropwise timeseries data

CROP	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Autumn- Paddy	53142	50895	51823	52818	57369	58545	67722	69344	75430	86182
Winter- Paddy	45154	46731	47831	52035	61663	70626	74401	81572	82025	78792
Summer- Paddy	50674	52312	58555	54109	57200	69235	68703	78285	80802	77261
Coconut	49277	52588	61429	67062	68434	74536	77584	92727	95758	102256
Arecanut	47912	53665	68723	72041	84897	100395	103454	127718	137182	149364
Tapioca	62703	69925	85382	95899	103061	111688	121258	141117	142547	147757
Banana	129956	131933	176400	182921	186081	216796	219792	234710	241320	243605
Pepper	57947	57300	59074	77019	76510	78925	82583	91110	95005	103532
Ginger	99827	109816	196316	235296	238820	208761	204188	199246	209257	210022
Turmeric	85016	91467	73625	120755	137084	140032	129665	141668	138264	161843
Pineapple	114194	108638	242651	212010	192302	211075	245327	240287	250088	271534
Autumn-Bittergourd	81299	90258	63607	84721	124719	135154	145821	157599	153310	162523
Winter- Bittergourd	106427	98392	122039	130756	135319	145423	144796	146981	154286	160013
Summer- Bittergourd	99948	100382	136245	154825	143294	164070	156830	138805	163858	154332
Autumn-Cowpea	124359	115700	77017	108761	124490	126006	143289	156719	151478	154339
Winter- Cowpea	94165	95899	106713	119638	126257	146339	141440	148688	151090	157832
Summer- Cowpea	89607	89367	111248	131286	122157	149400	135798	144802	147202	150616
Cardamom	125336	130918	115984	134526	137342	158512	160436	247734	223807	234664
Autumn-Ash gourd	0	0	0	0	0	0	0	79887	79141	85115
Winter- Ash gourd	0	0	0	0	0	0	0	60767	90859	94700
Summer- Ash gourd	0	0	0	0	0	0	0	69373	114748	93615
Autumn-Cucumber	0	0	0	0	0	0	0	71630	102037	79768
Winter- Cucumber	0	0	0	0	0	0	0	85948	95466	103357
Summer- Cucumber	0	0	0	0	0	0	0	81859	103591	112311
Autumn-Snakegourd	0	0	0	0	0	0	0	108657	134465	135244
Winter-Snakegourd	0	0	0	0	0	0	0	132010	136578	141033
Summer- Snakegourd	0	0	0	0	0	0	0	134216	147236	121911
Autumn-Ladiesfinger	0	0	0	0	0	0	0	84085	97680	115772
Winter- Ladiesfinger	0	0	0	0	0	0	0	91403	96742	100577
Summer- Ladiesfinger	0	0	0	0	0	0	0	100322	124787	113397
Summer Cabbage	0	0	0	0	0	0	0	292224	224093	42350
Autumn-Tomato	0	0	0	0	0	0	0	135901	130976	146250
Winter- Tomato	0	0	0	0	0	0	0	128492	151040	144979
Summer- Tomato	0	0	0	0	0	0	0	159132	180259	183473

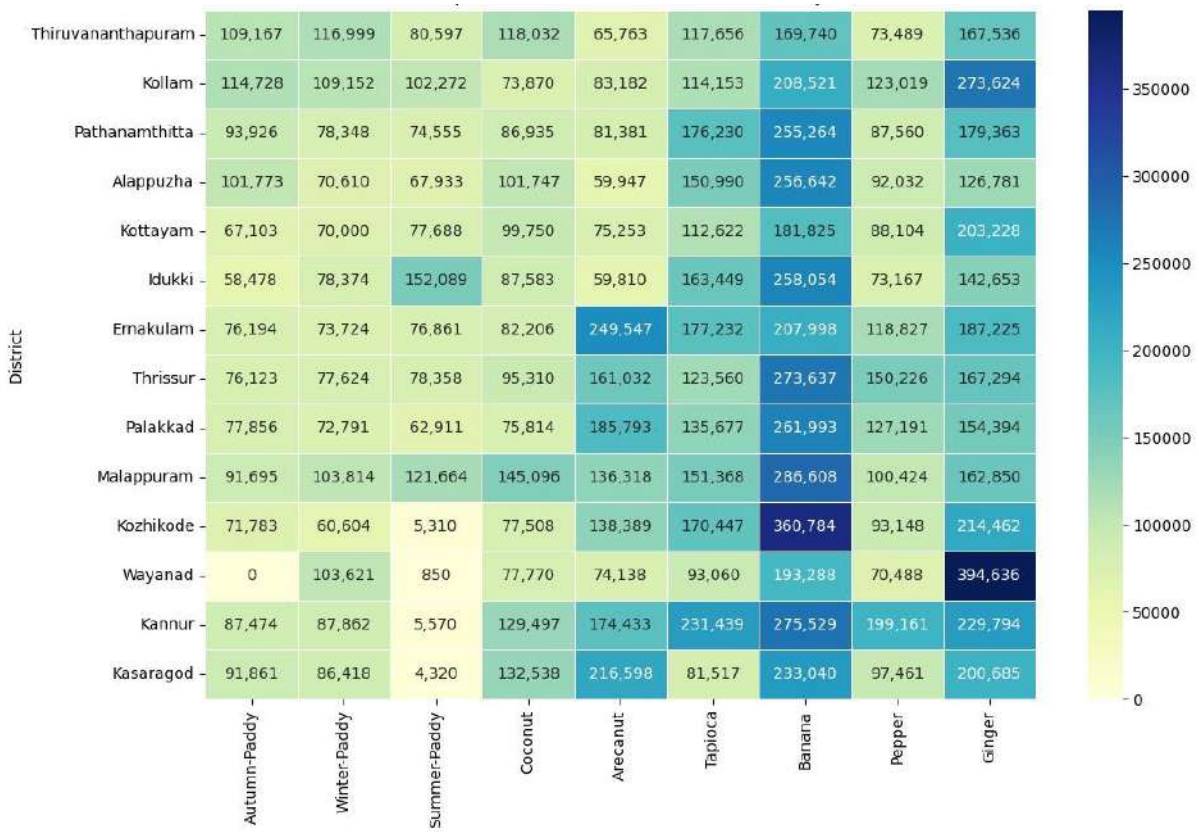
A5.2. Figure on Cropwise comparison of Cost A(statewide) from 2013-14 to 2022-23

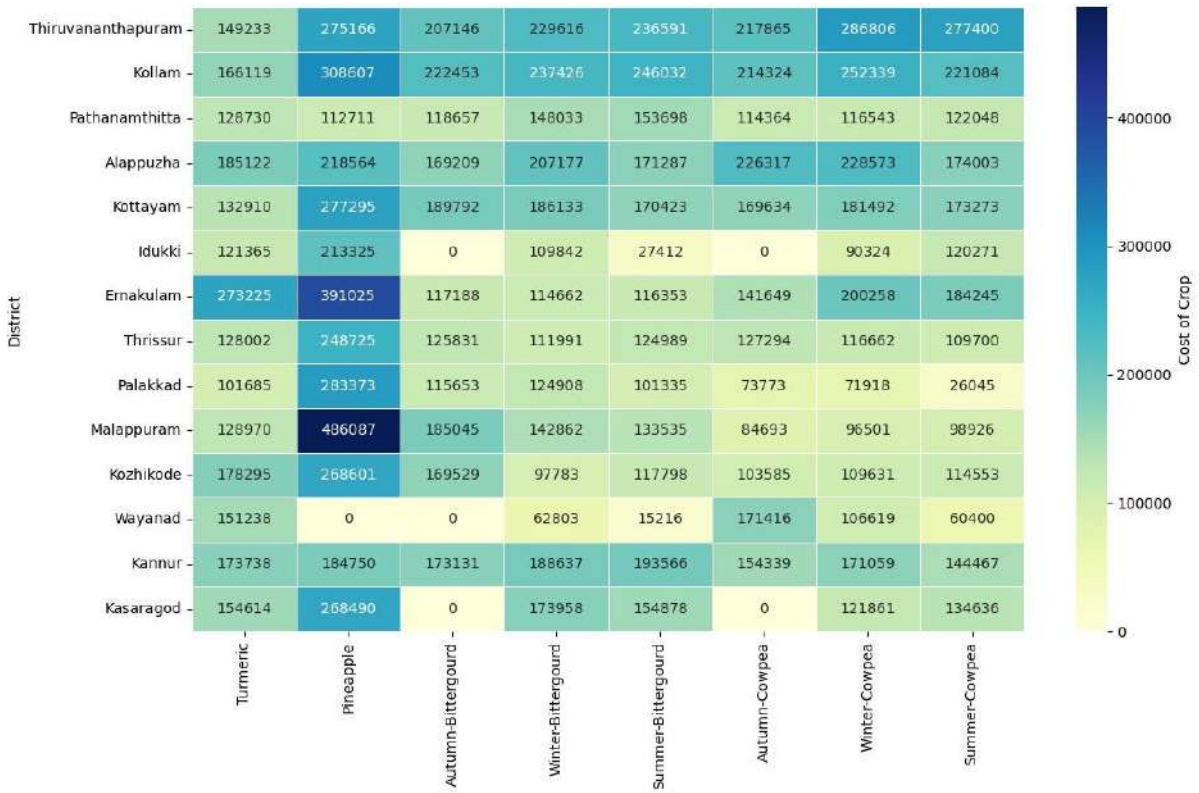


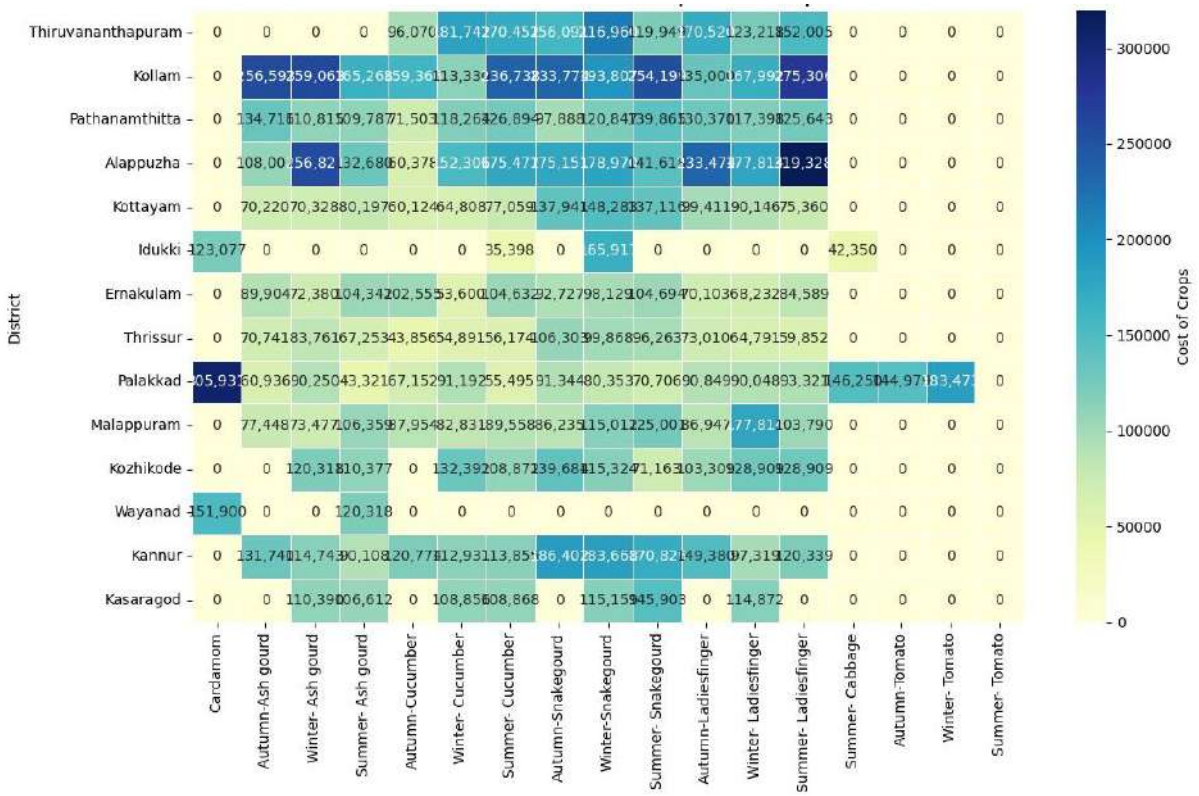
A5.3. Figure on Cropwise comparison of Cost A(statewide) from 2020-21 to 2022-23



A6.1 Figure on Districtwise comparison of Cost A of all Crops






District
Thiruvananthapuram
Kollam
Pathanamthitta
Alappuzha
Kottayam
Idukki
Ernakulam
Thrissur
Palakkad
Malappuram
Kozhikode
Wayanad
Kannur
Kasaragod
Cardamom
Autumn-Ash gourd
Winter-Ash gourd
Summer-Ash gourd
Autumn-Cucumber
Winter-Cucumber
Summer-Cucumber
Autumn-Snakegourd
Winter-Snakegourd
Summer-Snakegourd
Autumn-Ladiesfinger
Winter-Ladiesfinger
Summer-Ladiesfinger
Summer-Cabbage
Autumn-Tomato
Winter-Tomato
Summer-Tomato
Cost of Crops
300000
250000
200000
150000
100000
50000
0