



## A STUDY ON COST AND RETURN OF PADDY CULTIVATION IN VELLORE DISTRICT, TAMILNADU, INDIA .

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### Abstract

Agriculture is the main source of income for majority of the people. In India's agricultural policies, self-sufficiency and self-reliance in the production of food grains have long been priorities. On this front, significant progress has been achieved. From 52 million tones in 1951–1952, to 244.78 million tones in 2010–2011, food grain output increased. "India lives in villages and agriculture are the essence of Indian economy," as Mahatma Gandhi once observed. Its people are directly dependent on agriculture for more than two thirds of their income. The mainstay of India's economy is agriculture. About 26% of the gross domestic product comes from it. Food needs are met by agriculture, which also provides a variety of industrial raw resources. India is a special nation in terms of agriculture. It boasts a vast area of flat ground, abundant sunshine, rich soils, wild weather fluctuations ideal for different kinds of crops, and a protracted growing season. India now has a net planted area of 143 million hectares. In the whole world, India has the biggest proportion of land that is farmed. Only one third of the agricultural land in India is truly irrigated, despite the fact that significant regions have been brought under irrigation since the country's independence. Agriculture produces virtually little overall. Monsoon rain is crucial to farming. Food crops make up the majority of the production. It aim of the study is to find the cost and return of paddy cultivation of the farmers in Vellore district. The data have collected from multi-stage random sampling method. The study period is from June 2021 to May 2022

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### 1.1 INTRODUCTION

Rice deserves to be acknowledged as the world's most valuable good because for millions of people, it represents their way of life, culture, tradition, and source of income. It is a significant staple meal that provides consumers with 66 - 70% of their daily body calorie needs. The UN General Assembly proclaimed the International Rice Year on 2004. In fact, compared to 4.72 percent during the Five Years Plan, the agricultural sector grew at

a pace of 2.44 percent. Agriculture growth is projected to be 3.28 percent under the current Five Years Plan, below the 4% goal. In order to achieve inclusive growth, lower poverty levels, improve the rural economy, and increase farm incomes, minimum agricultural growth must be achieved. India is a developing nation with a predominantly agrarian economy. Despite economic growth and industrialization, India's economy is based mostly on agriculture. It serves as India's

economy's major pillar. A considerable portion of the population is active in agro based activities in addition to those who are directly employed in the agriculture sector. Indian agriculture provides for the country's enormous population's food needs. Wet farming is mainly for paddy cultivation, and one crop makes up the majority of the total planted area. In arid areas, there are diverse cropping patterns and no one crop accounts for a significant portion of the total cultivated area. The main types of farming that are practiced in these areas are millet and cash crops. The rice crop is cultivated by farmers whenever there is water, even in arid areas. The greatest area under agriculture is for paddy, then cotton. In Vellore, Odugathur, Gudiyatham, Palikonda, Pennathur, and Thiruvallur, paddy is mostly grown.

## 1.2 STATEMENT OF THE PROBLEM

This research focuses on the paddy cultivation in the Vellore District of Tamilnadu. This study problem which is adversely affecting the paddy cultivation, the major food crop cultivated in this area. The cost of labour and other farm inputs are increasing alarmingly, whereas the prices of output are stagnant which present previews of waiting hazards of agricultural crisis.

The research was taken into examine the of paddy farmers, extent of paddy cultivation, cost and return aspects of paddy cultivation and identify the

current problems in paddy farming were employed.

## 1.3 OBJECTIVES OF THE STUDY

1. To identify the factors that influences the cost and return of paddy cultivation.
2. To suggest the appropriate measures for the development of paddy farming.

## 1.4 RESEARCH METHODOLOGY

The research was based on the paddy cultivation in Vellore District. The study aims to analyze the paddy cultivation in Vellore District of Tamilnadu . It covers the various categories of the farmers in six taluks of Vellore district such as Vellore, Katpadi, Anaicut, Gudiyattam, Pernambut and K.V.Kuppam. Brief description method is presented in this section. A multi stage sampling approach was used to choose the farms. At the second step, 10 significant paddy growing village panchayats using both types of rice agriculture were chosen from each zone. The type of land with irrigation infrastructure was taken into consideration when choosing the sample. Five villages from each of the three groups of sample villages are fully wet land, semi wet land, and partly wet lands were chosen for the study. The aspects regarding the nature of source of paddy farmers, extent of paddy cultivation, cost benefit aspects are analyzed with the help of the information gathered from the sample households during April to June 2022

**Table 1.1 Cost of Paddy Cultivation**

Sl. No	Activity	Mean Average
<b>Labour Costs</b>		
1.	Land Preparation	1500
2.	Sowing	200
3.	Transplanting	1200
4.	Weeding	1500
5.	Plant Protection	-
6.	Harvesting	2350
	Total	6750
<b>Material Costs</b>		
1.	Seed	1500
2.	Fertilizer	3500
3.	Weedicide	400
4.	Insecticide	500
	Total	5900
<b>Machine Labour</b>		
1.	Tractor or Tiller	2000
2.	Threshing	1500
3.	Pumping	2500
	Total	5500
	Grant Total	18150

### **HUMAN LABOUR COST INCURRED IN PADDY CULTIVATION**

Labour costs consists of the cost of human labour which includes the cost of hired human labour and imputed value of household labour and exchange labour, animal labour costs and costs of machine labour.

**Table 1.2 Association between Workers Cost and Paddy Cultivation**

Paddy Cultivation		Family Labour				Total
		Men	Women	Bullock Pair	Machine Labour	
Land Preparation	Count	4	23	45	45	117
	% Paddy Cultivation	3.4%	19.7%	38.5%	38.5%	100.0%
	% Family labour	7.5%	15.0%	21.8%	20.8%	18.6%
Sowing	Count	11	23	43	46	123
	% Paddy Cultivation	8.9%	18.7%	35.0%	37.4%	100.0%
	% Family labour	20.8%	15.0%	20.9%	21.3%	19.6%
Fertilizer Application	Count	8	39	47	43	137
	% Paddy Cultivation	5.8%	28.5%	34.3%	31.4%	100.0%
	% Family labour	15.1%	25.5%	22.8%	19.9%	21.8%
Spraying	Count	7	29	47	43	126
	% Paddy Cultivation	5.6%	23.0%	37.3%	34.1%	100.0%
	% Family labour	13.2%	19.0%	22.8%	19.9%	20.1%
Weeding	Count	11	29	20	29	89
	% Paddy Cultivation	12.4%	32.6%	22.5%	32.6%	100.0%
	% Family labour	20.8%	19.0%	9.7%	13.4%	14.2%
Others	Count	12	10	4	10	36
	% Paddy Cultivation	33.3%	27.8%	11.1%	27.8%	100.0%
	% Family labour	22.6%	6.5%	1.9%	4.6%	5.7%
Total	Count	53	153	206	216	628
	% Paddy Cultivation	8.4%	24.4%	32.8%	34.4%	100.0%
	% Family labour	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Compiled from the Primary Data

The above table 1.2 shows that the Association between workers cost and paddy cultivation is revealed that maximum of 216 respondents with 34.4 percent have Machine labour. Bullock pair followed by 206 respondents with 32.8 percent, Next to this, 153 of the total respondents to the tune of 24.4 percent has women labour and 53 labours with 8.4 percent having men.

Generally both male and female members are participating in all the farm activities whereas either the family labour or hired labour to be used on the basis of the availability of labour force in the study area. Usually daily labourers work for eight hours in a day and the amount of male and female labour days needed to perform the above operations in the study area.

**Table 1.3 Association between Workers Cost and Paddy Cultivation**

Chi Square Tests			
	Value	DF	Asymptotic Significance
Pearson Chi Square	42.609	15	.000
Likelihood Ratio	40.908	15	.000
Linear by Linear Association	4.026	1	.045
N of Valid Cases	628		

The above table 1.3 shows that there is no significant association between workers cost and paddy cultivation by the respondents and their opinion about the

workers cost. Hence, the calculated value greater than table value (.045>0.05). So the research hypothesis rejected and the null hypothesis accepted.

**Table 1.4 Association between Family Labour and Paddy Cultivation**

		Men	Women	Bullock Pair	Machine Labour	Total
Land Preparation	Count	8	17	32	60	117
	% Paddy Cultivation	6.8%	14.5%	27.4%	51.3%	100.0%
	% Family Labour	12.9%	15.0%	17.9%	21.9%	18.6%
Sowing	Count	8	24	37	54	123
	% Paddy Cultivation	6.5%	19.5%	30.1%	43.9%	100.0%
	% Family Labour	12.9%	21.2%	20.7%	19.7%	19.6%
Fertilizer Application	Count	9	25	45	58	137
	% Paddy Cultivation	6.6%	18.2%	32.8%	42.3%	100.0%
	% Family Labour	14.5%	22.1%	25.1%	21.2%	21.8%
Spraying	Count	11	16	37	62	126
	% Paddy Cultivation	8.7%	12.7%	29.4%	49.2%	100.0%
	% Family Labour	17.7%	14.2%	20.7%	22.6%	20.1%
Weeding	Count	12	18	21	38	89
	% Paddy Cultivation	13.5%	20.2%	23.6%	42.7%	100.0%
	% Family Labour	19.4%	15.9%	11.7%	13.9%	14.2%
Others	Count	14	13	7	2	36
	% Paddy Cultivation	38.9%	36.1%	19.4%	5.6%	100.0%
	% Family Labour	22.6%	11.5%	3.9%	0.7%	5.7%
Total	Count	62	113	179	274	628
	% Paddy Cultivation	9.57%	17.99%	28.50%	43.63%	100%
	% Family Labour	100%	100%	100%	100%	100%

The above table 1.4 shows that the Association between family labour and paddy cultivation the above table revealed that maximum of 274 respondents with 43.63 percent has Machine labour, Bullock Pair followed by 179 respondents with 28.57 percent. Next to this, 113 of the total respondents to the tune of 17.99 percent have women labour and 62 labours with 9.57 percent having men.

Generally both male and female members are participating in all the farm activities whereas either the family labour or hired labour to be used on the basis of the availability of labour force in the study area. Usually daily labourers work for eight hours in a day and the amount of male and female labour days needed to perform the above operations in the study area. At the time of our survey the land preparation for male and female labourers were 9.57 percent and 17.99 percent respectively.

For farming operations like sowing, harvesting, managing and plant protection works piece rates are given. The piece rate wages for the same activity

vary from one locality to another locality in the same village and in the same locality itself it shows differences based on the size of the paddy land holdings and bargaining power of the farmers.

During the last summer crop season the prevailing rates per acre in the study area were Rs 60 to 80 for sowing and Rs 70 to 90 for managing. For spraying weedicides and insecticides the existing rates per container was 8 to 12 and 15 to 18 respectively. 182 In addition to normal wages, about 70 percent of the sample farmers in the study area used to give incentives. In addition to normal wages, about 70 percent of the sample farmers in the study area used to give incentives to their workers in the forms of refreshments and conveyance charges.

All farmers on the basis of the size of area they cultivate share costs on the repair of ring bunds and dewatering. On an average the sample farmers of the study area had spent 11,600 per acre as human labour costs.

**Table 1.5 Association between Asymptotic Significance Family Labour and Paddy Cultivation**

Chi Square Tests			
	Value	DF	Asymptotic Significance
Pearson Chi Square	32.709 <sup>a</sup>	15	.000
Likelihood Ratio	37.508	15	.000
Linear by Linear Association	2.026	1	.067
N of Valid Cases	628		

The above table 1.5 shows that the there is no significant association between workers cost and paddy cultivation by the respondents and their opinion about the workers cost. Hence, the calculated value greater than table value (.067>0.05). So

the research hypothesis rejected and the null hypothesis accepted.

## COST OF INPUT IN PADDY CULTIVATION

Production costs in paddy cultivation can be broadly classified into material costs, labour costs (human, animal and machine). The different cost items for the marginal, small, medium and large sample farmers in the study area are separately estimated in this part of the present study. Cost of seeds generally farmers used to buy seeds from co-operative societies at subsidized rates.

Then some are relied on farmers of other areas who had raised the second crop, to meet their seed requirements. Even though the farmers had to pay higher prices to purchase seeds from private

farmers and the quality of such seeds bought from them had been relatively better. Many of the farmers who had got seeds from co-operative societies and government seed farms at a lower price complained that the germinating rate of the seeds was very poor.

There are instances in which farmers had to sow their fields for a second time due to the poor quality of the subsidized seeds. Even though the recommended quantity of seeds needed per acre is 40 kilograms they spent usually more than that. On an average a sample paddy farmer in the study area spent, 2000 as the cost of seeds per acre.

**Table 1.6 Association between Material Cost and seeds of Paddy Cultivation**

Seed	Material Cost	Below Rs.200	Rs.201 to 250	Rs.251 to 300	Rs.301 to 350	Rs.351 and above	Total
Below 25 kg	Count	15	12	24	51	49	151
	% within Seed	9.9%	7.9%	15.9%	33.8%	32.5%	100.0%
	% within Material Cost	27.8%	27.9%	22.2%	27.7%	23.2%	25.2%
25 to 30 kg	Count	14	11	44	45	58	172
	% within Seed	8.1%	6.4%	25.6%	26.2%	33.7%	100.0%
	% within Material Cost	25.9%	25.6%	40.7%	24.5%	27.5%	28.7%
30 to 35 kg	Count	10	7	14	42	13	86
	% within Seed	11.6%	8.1%	16.3%	48.8%	15.1%	100.0%
	% within Material Cost	18.5%	16.3%	13.0%	22.8%	6.2%	14.3%
35 to 40 kg	Count	4	10	10	27	47	98
	% within Seed	4.1%	10.2%	10.2%	27.6%	48.0%	100.0%
	% within Material Cost	7.4%	23.3%	9.3%	14.7%	22.3%	16.3%
40 kgs and above	Count	11	3	16	19	44	93
	% within Seed	11.8%	3.2%	17.2%	20.4%	47.3%	100.0%
	% within Material Cost	20.4%	7.0%	14.8%	10.3%	20.9%	15.5%
Total	Count	54	43	108	184	211	628
	% within Seed	9.0%	7.2%	18.0%	30.7%	35.2%	100.0%
	% within Material Cost	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The above table 1.6 shows that the Association between material cost and seeds of paddy cultivation is revealed that maximum of 211 respondents with 35.2 percent has Rs.351 and above, Rs.301 to 350 followed by 184 respondents with 30.7 percent. Next to this, 108 of the total respondents to the tune of 18 percent have Rs.251 to 300 and 43 labours with 7.2

percent having Rs.201 to 250 and left of them 54 respondents has 9.0 percent of farming system.

40 kgs and above seeds 93 respondents with 15.5% percent, 35 to 40 kg seeds has 98 respondents with 16.3 percent 30 to 35 kg seeds of paddy cultivation in the above table is revealed that of 86 respondents with 14.3 percent.

**Table 1.7 Association between Material Cost and seeds of Paddy Cultivation**

Chi Square Tests			
	Value	DF	Asymptotic Significance
Pearson Chi Square	28.703 <sup>a</sup>	16	.026
Likelihood Ratio	28.069	16	.031
Linear by Linear Association	14.077	1	.000
No of Valid Cases	628		

The above table 1.7 shows that the there is no significant association between workers cost and paddy cultivation by the respondents and their opinion about the

workers cost. Hence, the calculated value greater than table value (.000>0.05). So the research hypothesis rejected and the null hypothesis accepted.

**Table 1.8 Association between Seeds (Quantity K g / g / L/ m) and Fertilizer of Paddy Cultivation**

Fertilizer		Below 25 kg	25 to 30 kg	30 to 35 kg	35 to 40 kg	40 kgs and above	Total
Below Rs.2500	Count	30	22	16	14	4	86
	% within Fertilizer	34.9%	25.6%	18.6%	16.3%	4.7%	100.0%
	% within Seeds	18.1%	12.0%	18.4%	14.3%	4.3%	13.7%
Rs.2501 to 2600	Count	7	19	3	2	5	36
	% within Fertilizer	19.4%	52.8%	8.3%	5.6%	13.9%	100.0%
	% within Seeds	4.2%	10.3%	3.4%	2.0%	5.4%	5.7%
Rs. 2601 to 2700	Count	28	34	17	10	10	99
	% within Fertilizer	28.3%	34.3%	17.2%	10.1%	10.1%	100.0%
	% within Seeds	16.9%	18.5%	19.5%	10.2%	10.8%	15.8%
Rs.2701 to	Count	42	55	17	44	27	185



2800	% within Fertilizer	22.7%	29.7%	9.2%	23.8%	14.6%	100.0%
	% within Seeds	25.3%	29.9%	19.5%	44.9%	29.0%	29.5%
Rs.2801 and Above	Count	59	54	34	28	47	222
	% within Fertilizer	26.6%	24.3%	15.3%	12.6%	21.2%	100.0%
	% within Seeds	35.5%	29.3%	39.1%	28.6%	50.5%	35.4%
Total	Count	166	184	87	98	93	628
	% within Fertilizer	26.4%	29.3%	13.9%	15.6%	14.8%	100.0%
	% within Seeds	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The above table 1.8 shows that the Fertilizer use and costs all of the sample farmers in Vellore villages use chemical fertilizers in their fields. The average per acre cost of chemical fertilizers they had spent 5000 for its purchase. It is observed

that none of the farmers at present uses farm yard manures like cow dung or ash. The average consumption and the cost of different types of fertilizers for the different categories of farmers are given in table 1.8

**Table 1,9 Association between Seeds and Fertilizer of Paddy Cultivation**

Chi Square Tests			
	Value	DF	Asymptotic Significance
Pearson Chi Square	47.295 <sup>a</sup>	16	.000
Likelihood Ratio	48.011	16	.000
Linear by Linear Association	10.512	1	.001
No of Valid Cases	628		

The above table 1.9 shows that the there are no significant association seeds and fertilizer of paddy Cultivation by the respondents and their opinion about the seeds and fertilizer of paddy Cultivation.

Hence, the calculated value greater than table value (.001>0.05). So the research hypothesis rejected and the null hypothesis accepted.

**Table 1.10 Association between Seeds Quantity and Fertilizer of Paddy Cultivation**

Weedicide		Below 25 kg	25 to 30 kg	30 to 35 kg	35 to 40 kg	40 kgs and above	Total
Below Rs.150	Count	30	46	4	15	13	108
	% within Weedicide	27.8%	42.6%	3.7%	13.9%	12.0%	100.0%
	% within Seeds	18.1%	25.0%	4.6%	15.3%	14.0%	17.2%
Rs.151 to 175	Count	10	22	5	2	4	43
	% within Weedicide	23.3%	51.2%	11.6%	4.7%	9.3%	100.0%
	% within Seeds	6.0%	12.0%	5.7%	2.0%	4.3%	6.8%
Rs.175 to 200	Count	38	32	19	21	24	134
	% within Weedicide	28.4%	23.9%	14.2%	15.7%	17.9%	100.0%
	% within Seeds	22.9%	17.4%	21.8%	21.4%	25.8%	21.3%
Rs.201 to 225	Count	38	49	42	30	21	180
	% within Weedicide	21.1%	27.2%	23.3%	16.7%	11.7%	100.0%
	% within Seeds	22.9%	26.6%	48.3%	30.6%	22.6%	28.7%
Rs.225 & above	Count	50	35	17	30	31	163
	% within Weedicide	30.7%	21.5%	10.4%	18.4%	19.0%	100.0%
	% within Seeds	30.1%	19.0%	19.5%	30.6%	33.3%	26.0%
Total	Count	166	184	87	98	93	628
	% within Weedicide	26.4%	29.3%	13.9%	15.6%	14.8%	100.0%
	% within Seeds	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The above table 1.10 shows that the past few years the use of weedicides is becoming increasingly popular among the sample farmers. On the other hand the extent of the use of insecticides has been declining in this area. Most of the sample farmers have reduced the quantity of pesticides they used during the cultivation. The present survey reveals that majority of them had applied many varieties of pesticides or insecticides in their fields

during the last season.

The per acre application of pesticides in the study area cost is estimated to be in the range 500 to 1000 rupees. Due to the variations in the types of used insecticides, their total quantity and costs are not having any relation. Per acre application of weedicides and pesticides and their respective costs for the different categories of farmers are given in table 1.8

**Table 1.11 Association between Seeds and Fertilizer of Paddy Cultivation**

Chi Square Tests			
	Value	DF	Asymptotic Significance
Pearson Chi Square	53.182	16	.000
Likelihood Ratio	54.374	16	.000
Linear by Linear Association	5.489	1	.019
N of Valid Cases	628		

The above table 1.11 shows that there is no significant association between seeds and fertilizer of paddy cultivation by the respondents and their opinion about the seeds and fertilizer of paddy

Cultivation. Hence, the calculated value is greater than table value (.019 > 0.05). So the research hypothesis is rejected and the null hypothesis is accepted.

**Table 1.12 Association between Seeds and in seedicide of Paddy Cultivation**

		Below 25 kg	25 to 30 kg	30 to 35 kg	35 to 40 kg	40 kgs and above	Total
Below Rs.250	Count	20	16	10	4	2	52
	% within In seedicide	38.5%	30.8%	19.2%	7.7%	3.8%	100.0%
	% within Seeds	12.0%	8.7%	11.5%	4.1%	2.2%	8.3%
Rs.251 to 300	Count	14	20	2	5	4	45
	% within In seedicide	31.1%	44.4%	4.4%	11.1%	8.9%	100.0%
	% within Seeds	8.4%	10.9%	2.3%	5.1%	4.3%	7.2%
Rs.301 to 350	Count	36	45	35	24	13	153
	% within In seedicide	23.5%	29.4%	22.9%	15.7%	8.5%	100.0%
	% within Seeds	21.7%	24.5%	40.2%	24.5%	14.0%	24.4%
Rs.351 to 400	Count	37	29	6	37	33	142
	% within In seedicide	26.1%	20.4%	4.2%	26.1%	23.2%	100.0%
	% within Seeds	22.3%	15.8%	6.9%	37.8%	35.5%	22.6%
Rs.401 & above	Count	59	74	34	28	41	236
	% within In seedicide	25.0%	31.4%	14.4%	11.9%	17.4%	100.0%
	% within Seeds	35.5%	40.2%	39.1%	28.6%	44.1%	37.6%
Total	Count	166	184	87	98	93	628
	% within In seedicide	26.4%	29.3%	13.9%	15.6%	14.8%	100.0%
	% within Seeds	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The above table 1.12 shows that The present survey reveals that majority of them had applied many varieties of pesticides or insecticides in their fields during the last season. The per acre application of pesticides in the study area cost is estimate d to be in the range 500 to

1000 rupees. Due to the variations in the types of used insecticides, their total quantity and costs are not having any relation. Per acre application of weedicides and pesticides and their respective costs for the different categories of farmers are given in table 1.12.

**Table 1.13 Association between Seeds and Inseedicide of Paddy Cultivation**

Chi Square Tests	Value	DF	Asymptotic Significance
Pearson Chi Square	66.114	16	.000
Likelihood Ratio	69.462	16	.000
Linear by Linear Association	9.852	1	.002
N of Valid Cases	628		

The above table 1.13 shows that the there is no significant association Seeds and in seedicide of paddy cultivation by the respondents and their opinion about the seeds and in seedicide of

Paddy Cultivation. Hence, the calculated value greater than table value (.002>0.05). So the research hypothesis rejected and the null hypothesis accepted.

**Table 1.14 Profitability of Paddy Crop in the Study Area (Cost in ₹ /Acre)**

Sl. No	Particulars	Mean Average
1.	Production	35
2.	Price per Unit	800
3.	Total Value of the Product	28,000
4.	Production Cost	18,150
5.	Profit in ₹	<b>9,850</b>

The above tale 1.14 the profitability of the paddy cultivation has been analyzed. The cost of cultivation has the shares and it is calculated and presented.

Per acre gross return of the sample farmers in the study area is calculated as the

difference between the average paid out production costs and value of the product whereas the net return per acre is estimated after adding interest to the paid out costs. During the summer crop of 2021-22 the average per acre gross return of the sample farmers amounted to 9850.

## 1.5 CONCLUSION

It observed that the average cost of production of paddy cultivation per acre was Rs

18150 Similarly gross return per acre for both groups were found to be Rs 9850 The main

problems of paddy cultivation in out of 628 respondents 11 percentage of their respondents faces

labour problems. During the peak seasons of hearvesting 21.26 percentage of respondents are

facing irrigation problem. 20.51 percentages and 5.74 percentages of respondents are facing

Problem of availability of finance and proper inputs.

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