

Original Research Article

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## A Study on Economics of Saffron (*Crocus sativus* L.) Cultivation in Jammu and Kashmir, India

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### ABSTRACT

The Jammu and Kashmir has a varied type of climate from sub-tropical to cold arid. The main crops grown in the state are rice, maize, wheat, pulses, oil seeds, saffron etc. The cultivation of Saffron is mostly confined to the state of Jammu and Kashmir. In Kashmir saffron cultivation is peculiar and the legend about its introduction in to Kashmir shows that it is an ancient industry about 2200 years' old. It is the legendry crop of the well-drained plateau of Pampore. The present study is an attempt to analyse the cost, return and marketing of Saffron in Jammu and Kashmir. The study has been conducted in one of the 22 districts of the state namely Pulwama because the district leads in the area and production of saffron cultivation. For collection of data three villages of tehsil Pampore were selected. The farmers were classified into three strata viz., small farms (20 kanals), medium farms (20-40 kanals) and large farms (above 40 kanals) of land. The study highlights that the resource utilisation patten of the farmers indicate that 48 per cent farmers belong to small size strata and 36 per cent of the saffron growers belong to medium size strata and only 16 per cent farmers belong to the large size strata. The overall average value of fixed assets per hectare worked out to Rs. 78884.97. The ratio for the possession of fixed assets of small, medium and large categories is 1:1.60:2.74. The value of fixed assets per hectare increases with the increase in size of farm. The study reveals that the area and production of Jammu and Kashmir state in last 11 years shows an increasing trend but by a little margin and has increased only by 42 hectares from 4000 ha in 1989-90 to 4042 ha in 1999-2000. The analysis further reveals that the cost of cultivation per hectare of saffron crop in the first year was higher than returns and the total income was negative, during the last year returns increased because of addition of one more operation i.e. digging out of saffron corms. The study reveals that the saffron trade is under private hand which is a big hurdle and the farmers got less benefit, because the benefits are reaped by the middle men (dalals). Nearly 90 percent of farmers sell their produce to the dalals, about 6 per cent sell directly to the consumers and only 2-3 per cent farmers sell through co-operative agencies and other governmental agencies.

#### Keywords

Costs, returns,  
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### Introduction

Agriculture has always occupied a place of pride in Indian Economy (Anonymous, 1986; Dhar *et al.*, 1997; Escribano *et al.*, 2000). The

great significance of agriculture in the country like India is well borne out by the fact that it is the main stay of the people (Gaur *et al.*,

1998). The agricultural sector contributes nearly 33 percent of the net national product (NNP), provides livelihood to 65 percent of the total work force and accounts for nearly 20 percent of the country's exports (Hussain, 1994; Jehangir *et al.*, 1993; Kachroo, 1992). Besides technological breakthrough the application of economic rules in agriculture business has the key effect in ensuring rise in real per capita income (Lattoo *et al.*, 1997; Matto *et al.*, 1992; Munshi *et al.*, 1991). A particular practice may be technologically efficient but not economically sound. Hence, the economics is superficial to all sciences involved in any business, as it puts the stamp of approval on any decision to be taken during trading (Munshi *et al.*, 1989). The Indian agriculture in general is characterized by low productivity, low investment and ultimately low income for a long time. However, sincere efforts have been made in the field of agricultural research and development during recent years in raising the level of productivity of crops (Ranchan, 1993). This has become possible with the development of new technology in agriculture (Rekhi *et al.*, 1997).

The Kashmir saffron can compete with world market because it is believed that the Kashmir saffron is top class among all the saffron grown and traded in the world. The only hindrance in the world market is that neither the Government of J & K nor Govt. of India pays any attention towards this ancient trade. The packaging, marketing and other facilities are not so good as compared to Spain and Iran. Hence, the export potential is decreasing and other countries export saffron to the needy countries at the cheaper rates than India.

Saffron (*Crocus sativus* Linn), the golden condiment, is a condiment medicine, a natural dyestuff. It is an expensive spice called as the scarce spice in the world used on various functions by adding delicate aroma, pleasing

flavour and magnificent yellow colour *i.e.*, to give up the materialistic world, which is a great courage. In Indian flag there is also saffrani colour. Saffron is also used in perfume as it is odourless.

Though the saffron, which is known by different names, throughout the world is a world famous agricultural crop but even a decimal of the population do not know its production, utilization and trade. Even the experts of agriculture in India don't know much about saffron cultivation even though India has the monopoly for its cultivation in sub-continent and possess largest area throughout the world. In this backdrop the study makes an attempt to select this crop for study and try to bring the clear picture of the problem before the people and government. Though a much has been written on saffron throughout the world and the researchers have conducted a lot of research on saffron but it is not even a single droplet in the literature of sea.

The study tries to add a droplet in this sphere. Thus, the study has a great importance not only at the state level but also at national level so that efforts are made to save the state exchequer and state money from flowing to other nations on which our country has immense potential to produce. This will generate extra employment. The study is based on the following objectives; to study the resource structure on the different size of the farms, to examine the cost and return structure on the different size of farm in different years, to suggest measure for accelerating the production of saffron.

### **Materials and Methods**

Saffron is cultivated in six districts of Jammu and Kashmir out of 14 districts, in which five districts are in Kashmir division and the one in Jammu division. For collection of data

purposive and multi-stage random sampling techniques were adopted to select the farmers, villages, block and district in the study area. The district Pulwama was selected purposively as it has the highest area and production of saffron cultivation in J & K.

This district also represents the general agro-climatic attributes for saffron cultivation. The district is comprising of 6 developmental blocks, and out of six developmental blocks, block 'Pampore' was selected randomly, as this very block is famous worldwide for saffron and comprises a good number of villages under saffron cultivation with its farmers having ample experience and knowledge about this particular crop. Out of 39 villages of the Pampore block, three villages of the Pampore block *viz.*, Lethpora, Hatiwara and Chandhara were selected randomly.

A sample of 45 saffron growers was drawn randomly from every size group. From selected 3 villages, majority of farmers were in small category (48%), only 165 were in large size group. The medium size framers were at second rank of 36%. The number of farmers and villages selected for the study are shown in table 1.

## **Results and Discussion**

Agriculture is the main occupation in district Pulwama and about 68% of total workers are either directly or indirectly associated with agriculture.

### **Area sown under different crops**

The area sown under different crops and intensity of cropping of Pulwama district during 2000-01 is given as under in table 2.

Table 2 depicts that out of total cropped area during 2000-01, 66.42% of total cropped area is under food crops, and 33.58% of total

cropped area is under non-food crops. The cropping intensity for the district is 142.65.

### **Cost and returns of saffron**

The study of farm business as a whole alone can give an idea of the profitability of the farm and efficiency of resource use. Such a study takes into account inputs and outputs involved in the business of farming. The farm receipt consists of the value of all the produce on a farm whether sold, consumed or stocked. Similarly, the farm expenses include cost of human labour, hired as well as family, bullock labour both owned as well as hired, seed, manure and fertilizer, pesticides and other changes. The value of farm inputs varies from area to area.

### **Cost of cultivation of saffron**

Agriculture production is the function of various inputs used in the production process. The inputs used. In each operation according to their requirements for growing a crop, each operation has its own importance and required special attention. A little carelessness with any of them may cause the decrease in production.

### **Operation-wise and Item-wise cost of saffron in 1<sup>st</sup> year**

#### **Operation-wise cost of saffron per hectare in 1<sup>st</sup> year**

The operation-wise cost of saffron in 1<sup>st</sup> year has been given in table 3. The table reveals that the total operational cost on saffron in small size group in 1<sup>st</sup> year is Rs.124853.3. Sowing is the important operation contributing about 81% of the total cost. The other important operations are interculture, which also includes the value of fertilizers (fertilizers are applied in this operation) and manuring. Expenditure on sowing saffron crop is high because the corms (seed) are very expensive.

### **Item-wise cost of saffron per hectare in 1<sup>st</sup> year**

The value of inputs per hectare item-wise in 1<sup>st</sup> year on saffron crop is given in table 4. The 4 shows that the total expenditure per hectare on the small size group in 1<sup>st</sup> year is Rs. 137344.5, the total working capital contributes about 90.91% in which the value of seed alone occupies nearly 72.81% of total cost.

The value of human labour and manure is Rs. 9359.98 and Rs. 4000 and their share to the total expenditure is about 7% and 3% respectively.

Interest on working capital contributes about 5.45% of total variable cost. Further, it is revealed from the table that the percentage share of bullock labour is more than machine labour, which is only 0.49 percent of total cost. The fact is that the small farmers have own bullock labour and they cannot afford the expenditure on machine labour.

As the fixed cost assumed to be constant during entire span of crop therefore only Rental value of land is included as the item of fixed cost which occupies 3.64% of the total cost in 1<sup>st</sup> year.

### **Cost in 2<sup>nd</sup> year**

#### **Operation-wise cost of saffron per hectare in 2<sup>nd</sup> year**

The operation-wise cost of saffron per hectare in 2<sup>nd</sup> year in small farms is shown in table 5. The table reveals indicates that total cost during 2<sup>nd</sup> year is Rs. 10853.33 in which interculture has the maximum share of about 70.5% of the total cost followed by the operation picking of flower, which is about 18.5% of the total cost and the share of manuring is about 8%.

### **Item-wise cost of saffron per hectare in 2<sup>nd</sup> year**

The per hectare expenditure on various inputs used in the cultivation of saffron by small farmers in 2<sup>nd</sup> year is given in table 6. The table 7 reveals that total operational cost of Rs. 11033.31. The interculture occupied highest share in total cost of saffron (about 70%) followed by the picking of flowers and manuring. The share of picking of flowers to the total cost is about 18%. Expenditure on manuring covers about 8% of the total cost. The miscellaneous cost is nil.

#### **Item-wise cost of saffron per hectare in 3<sup>rd</sup> year**

The item-wise cost of cultivation for saffron crop for 3<sup>rd</sup> year in small farms is given in table 8. The result from the above table indicates that human labour and value of fertilizers is the main item of cost having 40.09 and 22.52% respectively. Table also reveals that the total variable cost and fixed cost is 70% and 30% respectively to the total cost which was Rs. 16695.30.

### **Costs in 4<sup>th</sup> year**

#### **Operation-wise cost of saffron per hectare in 4<sup>th</sup> year**

The operation-wise cost of saffron per hectare in 4<sup>th</sup> year on various categories of farms has been shown in table 9. Table 9 presents the operation-wise cost for saffron cultivation. The average total operational cost is Rs. 9574.47 per hectare and it varies from Rs. 10946 in small size group to Rs. 9289.94 in medium size and Rs. 8926.04 in large size groups. The interculture, picking of flower and manuring are the most important operations about 94% of total cost in which interculture alone contributes about 715. The table indicates that the total cost decreases with the increase in size of holding.

Expenditure on plant protection is very low covering 2.03 % of total expenditure.

### **Break-up of input per hectare item-wise in 4<sup>th</sup> year**

The item-wise cost of cultivation for saffron crop per hectare in various farm size categories in 4<sup>th</sup> year is given in table 10.

The table 13 reveals that per hectare overall total variable cost is Rs. 10148.94, which was as high as Rs. 11602.76 on small farms and as low as Rs. 9461.60 on large farm size group. Value of human labour and fertilizers are the items occupying maximum share in total cost followed by interest a working capital, value of manure and machine labour. The cost of family labour is maximum on small farm size group and it decreases with the increase in farm size. The machine labour in turn also decreases from Rs. 140 on small farms to Rs. 69.56 on large farms. It is due to fact that the machine power covers large area in case of large farmers. The expenditure on manure, fertilizer and interest on working capital are same in all farms groups. The miscellaneous charges (includes transport charges) is not seen in large farms. The land of different farm size categories is used only for saffron cultivation hence, the rental value of land per hectare was the same, which occupied 30.11, 33.68 and 34.5% in case of small, medium and large farms respectively to the total cost i.e., Rs. 16602.76, Rs. 14847.34, Rs. 14466.60 for respective categories.

### **Cost in 5<sup>th</sup> year**

#### **Operation-wise cost in 5<sup>th</sup> year**

The operation-wise cost is same as in 4<sup>th</sup> year because the same operations are followed in remaining years (Table 14).

#### **Item-wise cost in 5<sup>th</sup> year**

Is same as in 4<sup>th</sup> year

**Cost for 6<sup>th</sup> year:** (a) Same as in 4<sup>th</sup> year (b) Same as in 4<sup>th</sup> year (Table 14).

**Cost during 7<sup>th</sup> year:** (a) Same as in 4<sup>th</sup> year (b) Same as in 4<sup>th</sup> year (Table 15).

**Cost of 8<sup>th</sup> year:** (a) Same as in 4<sup>th</sup> year (b) Same as in 4<sup>th</sup> year (Table 16a,b,c).

**Cost during 9<sup>th</sup> year:** (a) Per hectare operation-wise cost of saffron in 9<sup>th</sup> year is given in table 17a,b,c

Per hectare operation-wise cost of saffron in 9<sup>th</sup> year on different farm size groups has been shown in table 11.

The table 11 presents that the total operational cost shows the decreasing trend with the increase in size of farms. The total operational cost on small, medium and large farm size groups is Rs. 13959, Rs. 11178.94 and Rs. 10546.04 respectively. The overall total operational cost on saffron in 9<sup>th</sup> year is Rs. 11650.75. One more operation is added in the 9<sup>th</sup> year than previous years *i.e.*, digging out of saffron corms, which is major operation after interculture in the sense that it contributes nearly 18 percent of the total cost after 58% expenditure of total cost on interculture. Picking of flower alone occupied about 14% of total operational cost. Percentage share of manuring is 6 percent.

### **Item-wise cost of cultivation per hectare of saffron in 9<sup>th</sup> year**

Table 12 gives the per hectare expenditure on various inputs used in the saffron crop in 9<sup>th</sup> year on different categories of farms, the table depicts that total expenditure (total cost) on the small, medium and large size groups is Rs. 19796.54, Rs. 16849.68 and Rs. 16178.80 respectively. The overall analysis shows that average cost of cultivation per hectare is Rs. 17349.79. The cost of variable inputs constitutes about 67.15% of total cost. Among total variable cost the human labour constitutes the highest percentage followed by



fertilizers and interest on working capital. The value of manure and fertilizer is same in all the farm size groups. The overall human labour cost decreases from small to large farms because of increased machinery power. Percentage share of machine labour is nearly 4% of total cost in large farms, which is higher than medium and small farms. The bullock labour is highest in small farms than medium farms. The table also reveals that the large farm size groups are not using the bullock labour.

The table shows that the overall average total cost of cultivation of saffron per hectare for nine years was Rs. 263638.82. It is Rs. 273354.64, Rs. 91086.38 and Rs. 88486.80 for small, medium and large size groups respectively. The total cost of cultivation was highest in 1<sup>st</sup> year because it includes the value of seed, which is expensive. The cost per hectare depicts the decreasing trend in the successive years. It remains same during 4<sup>th</sup>, 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> years and then again

increases in the 9<sup>th</sup> year. During 8<sup>th</sup> year the production of saffron mongra decreases up to 1.5 kg and pati to 680 grams and the total returns is Rs. 54540 in small groups. It is Rs. 63635 and Rs. 72700 in medium and large farm size groups. The returns are highest during 9<sup>th</sup> year due to the production of saffron corms. But during this year the production of saffron mongra also decreases (Table 13).

Table 19 indicates that the overall gross income of saffron on different frame size groups is Rs. 655808.30, which varies from Rs. 584830 in small size group to Rs. 587810 in medium size group and Rs. 656400 in large group. The table further shows that the overall gross income during whole gestation period is highest during 9<sup>th</sup> year and is lowest during 1<sup>st</sup> year. The gross income increases from 1<sup>st</sup> year to 4<sup>th</sup> year and remains constant from 4<sup>th</sup> to 7<sup>th</sup> year and then increases in 9<sup>th</sup> year with a slight decrease in 8<sup>th</sup> year (Table 19).

**Table.1** Number of selected villages and farmers in block Pampore district Pulwama

S. No	Name of the villages	No. of selected farmers			Total
		Below 2 ha.	2-4 ha.	Above 4 ha.	
1.	Lethpora	5	5	5	15
2.	Hatiwara	5	5	5	15
3.	Chandhara	5	5	5	15
		15	15	15	45
	TOTAL	(33.3)	(33.3)	(33.3)	(100)

Note: Figures in parenthesis indicate percentage to total.

**Table.2** Area sown under different crops and intensity of cropping of Pulwama district during 2000-01

S. No.	Particulars	Area under crops (000 ha)	%age to total cropped area
1.	Area under food crops	51.47	66.42
2.	Area under non-food crops	26.02	33.58
3.	Total cropped area	77.49	100
4.	Net area sown	54.32	-
5.	Cropping intensity	-	142.65

Source: Financial Commissioners office (J & K Govt.)

**Table.3** Per hectare operation-wise cost of saffron crop (1st year) on small farms

S. No.	Operations	Category
		Small
1.	Preparatory tillage	
	(a) Human labour	500
	(b) Value of seed treatment	3000
	<b>Total</b>	3500 (2.80)
2.	Seed Treatment	
	(a) Human labour	466.66
	(b) Value of seed treatment	4000
	<b>Total</b>	4466.66 (3.58)
3.	Sowing	
	(a) Human labour	1100
	(b) value of seed	100000
	<b>Total</b>	101000 (80.90)
4.	Manuring	
	(a) Human labour	1200
	(b) Machine labour	666.66
	(c) Value of FYM	4000
	<b>Total</b>	5866.6 (4.70)
5.	Interculture	
	(a) Human labour	3866.66
	(b) Value of fertilizers	3760
	<b>Total</b>	7626.66 (6.11)
6.	Picking of flower	
	Human labour	1993.33
		1993.33 (1.60)
7.	Guarding	333.33 (0.26)
8.	Miscellaneous	66.66 (0.05)
	<b>Grand Total</b>	124853.3 (100.00)

Note: Figures in parenthesis indicate percentage.

**Table.4** Item-wise break up of total cost per hectare of saffron crop (1st year) on small farms

S. No.	Items	Category
		Small
A.	Variable cost	
1.	(a) Family labour	2026.64
	(b) Hired labour	7333.34
	Total	9359.98 (6.82)
2.	Bullock labour	3000 (2.18)
3.	Machine labour	666.66 (0.49)
4.	Value of seed	100000 (72.81)
5.	Value of manure	4000 (2.91)
6.	Value of fertilizer	3760 (2.74)
7.	Value of seed treatment	4000 (2.91)
8.	Miscellaneous	66.66 (0.05)
<b>Total working capital</b>		124853.3 (90.91)
<b>Interest on working capital</b>		7491.20 (5.45)
<b>Total variable cost</b>		123344.50 (96.36)
B.	<b>Fixed cost</b>	
	Rental value of land	5000 (3.64)
<b>Total Cost (A+B)</b>		137344.5 (100)

**Table.5** Per hectare operation-wise cost of saffron crop (2nd year) on small farms

S. No.	Operations	Category
		Small
1.	Manuring	833.33 (7.68)
2.	Interculture	7626.68 (70.27)
3.	Picking of flower	1993.33 (18.37)
4.	Guarding	333.33 (3.07)
5.	Miscellaneous	66.66 (0.61)
	<b>Total</b>	10853.33 (100)

Note: Figures in parenthesis indicate percentage



**Table.6** Item-wise break up of total cost per hectare of saffron crop (2nd year) on small farms

S. No.	Items	Category
<b>A.</b>	<b>Variable cost</b>	
1.	Human labour	
	(a) Family labour	960
	(b) Hired labour	5533.34
	<b>Total</b>	6493.34 (39.34)
2.	Machine labour	133.33 (0.81)
3.	Value of FYM	400 (2.42)
4.	Value of fertilizers	3760 (22.78)
5.	Miscellaneous	66.66 (0.40)
	Total working capital	10853.33 (65.75)
	Interest on working capital	651.20 (3.95)
	Total variable cost	11504.53 (69.70)
<b>B.</b>	Fixed cost	
	Rental value of land	5000 (30.30)
	Total cost (A+B)	16504.53 (100)

Note: Figures in parenthesis indicate percentage

**Table.7** Per hectare operational cost of saffron crop (3rd) year on small farms

S. No.	Operations	Categories
		Small
1.	Plant protection	246.66 (2.23)
2.	Manuring	833.33 (7.56)
3.	Interculture	7626.66 (69.12)
4.	Picking of flower	1993.33 (18.07)
5.	Guarding	333.33 (3.02)
6.	Miscellaneous	–
	<b>Total</b>	11033.31 (100)

Note: Figures in parenthesis indicate percentage

**Table.8** Item-wise break-up of total cost per hectare of saffron crop (3rd) year on small farms

S. No.	Items	Category
A.	<b>Variable cost</b>	
1.	Human labour	
	(a) Family labour	<b>1160</b>
	(b) Hired labour	5533.34
	<b>Total</b>	6693.32 (40.09)
2.	Machine labour	133.33 (0.80)
3.	Value of manure	400 (2.40)
4.	Value of fertilizers	3760 (22.52)
5.	Value of plant protection material	<b>46.66</b> (0.28)
6.	Miscellaneous	
	Total working capital	1033.31 (66.09)
	Interest on working capital	661.99 (3.97)
	Total variable cost	11695.30 (70.06)
B.	Fixed cost	
	Rental value of land	5000 (29.94)
	Total cost (A+B)	16695.3 (100) (100)

Note: Figures in parenthesis indicate percentage

**Table.9** Per hectare operation-wise cost of saffron crop (4th year) on different farm size group

S. No.	Operations	Categories			
		Small	Medium	Large	Overall
1.	Plant protection	263 (2.40)	173.17 (1.86)	177.38 (1.99)	194.96 (2.030)
2.	Manuring	855 (7.81)	665.89 (7.17)	626.07 (7.01)	698.85 (7.29)
3.	Interculture	7610 (69.52)	6612.27 (71.18)	6377.39 (71.45)	6779.54 (70.80)
4.	Picking of flower	1868 (17.07)	1543.17 (16.61)	1475.64 (16.53)	1600 (16.75)
5.	Guarding	310 (2.83)	281.81 (3.03)	269.56 (3.02)	285.05 (2.97)
6.	Miscellaneous	40 (0.37)	13.63 (0.15)	-	16.09 (0.16)
	<b>Total</b>	109946 (100)	9289.94 (100)	8926.04 (100)	95749574.47 (100).47 (100)

**Table.10** Item-wise break-up of total cost per hectare of saffron crop (4th year) on different farm size groups

S. No.	Items	Category			Overall
		Small	Medium	Large	
1.	Human labour				
	(a) Family labour	1218	754.51	727.82	-
	(b) Hired labour	5335	4243.18	3934.75	
	<b>Total</b>	6553 (39.47)	4997.69 (33.66)	4662.57 (32.24)	5266.66 (34.77)
2.	Machine labour	140 (0.84)	81.81 (0.55)	69.56 (0.48)	91.95 (0.61)
3.	Value of manure	400 (2.41)	400 (2.70)	400 (2.77)	400 (2.64)
4.	Value of fertilizers	3760(22.65)	3760 (25.32)	3760 (26)	3760 (24.82)
5.	Value of plant protection material	53 (0.32)	36.81 (0.25)	33.91 (0.24)	39.77 (0.26)
6.	Miscellaneous	40 (0.24)	13.63 (0.09)	-	16.09 (0.11)
	Total working capital	10946 (65.93)	9289.94 (65.57)	8926.04 (61.73)	9574.47 (63.21)
	Interest on working capital	656.76 (3.96)	557.40 (3.75)	535.56 (3.70)	574.47 (3.79)
	Total variable cost	11602.76 (69.89)	9847.34 (66.32)	9461.60 (65.43)	10148.94 (67.00)
<b>B.</b>	<b>Fixed cost</b>				
	<b>Rental value of land</b>	5000.00 (30.11)	5000.00 (33.68)	5000.00 (34.57)	5000.00 (33.00)
	<b>Total cost (A+B)</b>	16602.76 (100)	14847.34 (100)	14461.60 (100)	15148.94 (100)

**Table.11** Per hectare operation-wise cost of saffron (9th year) on different categories of farms

S. No.	Operation	Categories			Overall
		Small	Medium	Large	
1.	Plant protection	263 (1.89)	173.17 (1.55)	177.38 (1.68)	194.96 (1.67)
2.	Manuring	855 (6.12)	665.89 (5.96)	626.07 (5.94)	698.85 (6.00)
3.	Interculture	7610 (54.52)	6612.27 (59.15)	6377.39 (60.47)	6779.54 (58.19)
4.	Picking of flower	1868 (13.38)	1543.17 (13.80)	1475.64 (13.99)	1600 (13.73)
5.	Guarding	310 (2.22)	281.81 (2.52)	269.56 (2.56)	285.05 (2.45)
6.	Digging out of saffron corms	3013 (21.58)	1889 (16.90)	1620 (15.36)	2076.26 (17.82)
7.	Miscellaneous	40 (0.29)	13.63 (0.123)	-	16.09 (0.14)
	<b>Total</b>	13959 (100)	11178.94 (100)	10546.04 (100)	1111650.75 (100)

**Table.12** Item-wise break up of total cost per hectare of saffron crop (9th year) on different categories of farms

S No.	Items	Categories			
		Small	Medium	Large	Overall
1.	Human labour				
	(a) Family labour	1746	1063.54	994.82	-
	(b) Hired labour	6920	5173.15	4737.78	
	<b>Total</b>	8666 (43.78)	6236.69 (37.01)	5732.60 (35.43)	6661.89 (38.40)
2.	Machine labour	140 (0.71)	81.81 (0.49)	619.56 (3.83)	237.35 (1.37)
3.	Value of FYM	400 (2.02)	400 (2.37)	400 (2.47)	400 (2.30)
4.	Value of fertilizers	3760 (18.99)	3760 (22.31)	3760 (23.24)	3760 (21.67)
5.	Value of plant protection material	53 (0.27)	36.81 (0.22)	33.91 (0.21)	39.77 (0.23)
6.	Miscellaneous	40 (0.20)	13.63 (0.08)	-	16.09 (0.09)
	Total working capital	13959 (70.52)	11178.94 (66.34)	10546.04 (65.18)	11650.75 (67.15)
	Interest on working capital	837.54 (4.23)	670.74 (3.98)	632.76 (3.91)	699.04 (4.03)
	Total variable cost	14796.54 (74.75)	11849.68 (70.32)	11178.80 (69.09)	12349.79 (71.18)
<b>B.</b>	<b>Fixed cost</b>				
	<b>Rental value of land</b>	5000.00 (25.25)	5000.00 (29.68)	5000.00 (30.91)	5000.00 (28.82)
	<b>Total cost (A+B)</b>	19796.54 (100)	16849.68 (100)	16178.8 (100)	17349.79 (100)

Note: Figures in parenthesis indicate percentage

**Table.13** Per hectare returns of saffron during 5th year in different farm size groups

<b>A. Small size group</b>	
Total returns same as in 4 <sup>th</sup> year	= Rs. 72700
<b>B. Medium size group</b>	
Total returns same as in 4 <sup>th</sup> year	=Rs. 83605
<b>C. Large size group</b>	
Total returns same as in 4 <sup>th</sup> year	=Rs. 94510

**Table.14** Per hectare returns of saffron during 6th year in different farm size groups

<b>A. Small size group</b>	
Total returns same as in 4 <sup>th</sup> year	= Rs. 72700
<b>B. Medium size group</b>	
Total returns same as in 4 <sup>th</sup> year	=Rs. 83605
<b>C. Large size group</b>	
Total returns same as in 4 <sup>th</sup> year	=Rs. 94510

**Table.15** Per hectare returns of saffron during 7th year in different farm size groups

<b>A. Small size group</b>	
Total returns same as in 4 <sup>th</sup> year	= Rs. 72700
<b>B. Medium size group</b>	
Total returns same as in 4 <sup>th</sup> year	=Rs. 83605
<b>C. Large size group</b>	
Total returns same as in 4 <sup>th</sup> year	=Rs. 94510

The returns are same as during 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> year.

**Table.16a** Per hectare returns of saffron during 8th year in small size group

S. No.	Particulars	Quantity (kg)	Rate (Rs)	Amount (Rs)
1.	Saffron mongra	1.500	35/gm	52500
2.	Pati	0.680	3/gm	2040
	Total returns			54540

**Table.16b** Per hectare returns of saffron during 8th year in medium size group

S. No.	Particulars	Quantity (kg)	Rate (Rs)	Amount (Rs)
1.	Saffron mongra	1.750	35/gm	61250
2.	Pati	0.795	3/gm	2385
	Total returns			63635

**Table.16c** Per hectare returns of saffron during 8th year in large size group

S. No.	Particulars	Quantity (kg)	Rate (Rs)	Amount (Rs)
1.	Saffron mongra	2	35/gm	70000
2.	Pati	0.900	3/gm	2700
	Total returns			72700

**Table.17a** Per hectare returns of saffron during 9th year in small size group

S. No.	Particulars	Quantity	Rate (Rs)	Amount (Rs)
1.	Saffron mongra	1kg.	35/gm	35000
2.	Pati	0.450kg.	3/gm	1350
3.	Saffron corms	55 qts	2500/ctl	137500
	Total returns			173850

**Table.17b** Per hectare returns of saffron during 9th year in medium size group

S. No.	Particulars	Quantity	Rate (Rs)	Amount (Rs)
1.	Saffron mongra	1kg.	35/gm	35000
2.	Pati	0.450kg.	3/gm	1350
3.	Saffron corms	55 qts	2500/ctl	137500
	Total returns			173850

**Table.17c** Per hectare returns of saffron during 9th year in large size group

S. No.	Particulars	Quantity	Rate (Rs)	Amount (Rs)
1.	Saffron mongra	1.600 kg.	35/gm	56000
2.	Pati	0.720 kg.	3/gm	2160
3.	Saffron corms	59 qts	2500/ctl	147500
	Total returns			205660



**Table.18** Year-wise per hectare cost of saffron on different farm size groups

Farm size groups	Total cost of cultivation in different years									
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	9 <sup>th</sup>	Total
Small	137344.5	16504.53	16695.30	16602.76	16602.76	11602.76	11602.76	11602.76	19796.54	273354.64
Medium	-	-	-	14847.34	14847.34	14847.34	14847.34	14847.34	16849.68	91086.38
Large	-	-	-	14461.60	14461.60	14461.60	14461.60	14461.60	16178.80	88486.80
Overall	137344.5	16504.53	16695.30	15148.94	15148.94	15148.94	15148.94	15148.94	17349.79	26368.82

**Table.19** Year-wise per hectare gross-returns of saffron on different farm size group

Farm size groups	Gross returns in different year									
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	9 <sup>th</sup>	Total
Small	10920	21900	32820	72700	72700	72700	72700	54540	173850	584830
Mediu	-	-	-	83605	83605	83605	83605	63635	189755	587810
Large	-	-	-	94510	94510	94510	94510	72700	205660	656400
Overall	10920	21900	32820	82981.04	82981.04	82981.04	82981.04	63940.69	190303.45	655808.3

**Table.20** Year-wise per hectare net-returns of saffron on different farm size group

Farm size groups	Net returns in different year									
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	9 <sup>th</sup>	Total
Small	-126424.5	5395.47	16124.7	56097.24	56097.24	56097.24	56097.24	37937.24	154053.46	311475.33
Medi	-	-	-	68757.66	68757.66	68757.66	68757.66	48787.66	172905.32	496723.62
Large	-	-	-	80048.40	80048.40	80048.40	80048.40	58238.40	189481.20	567913.20
Overall	-126424.5	5395.47	16124.70	68832.1	68832.1	68832.1	68832.1	48791.75	172953.66	392169.48

The table 20 depicts that the overall net return of saffron is Rs. 392169.48. The overall net income is negative in 1<sup>st</sup> year as Rs. 126424.50 and increases in coming years. The overall net income is highest in 9<sup>th</sup> year, which is Rs. 172953.66. The net income increases from small to large farm size groups.

In conclusion, the saffron trade is in the hands of private dealers. Thus, there is a monopoly of these dealers and grab a large portion of the profit from the saffron growers. These traders own all facilities of storage, transportation; packing and they even provide credit to the farmers. In this way they force the farmers to sell their produce at lower prices. Though the marketing facilities are easily available to the growers through saffron dalals who approach them, village to village and house to house, but still the marketing is not contributing much towards the increase in area and production. The saffron market is unregulated and the Govt. has not paid any attention towards the proper marketing of this valuable spice. Saffron dalals exploit the farmers by purchasing 11.66 grams as one tola and sell it as 10 grams as one tola to the dealers and consumers. The resource utilization pattern of sampled farmers indicate that 48% farmers belong to small size group having only about 29% of the cultivated area, while 36% of saffron growers belong to medium size group occupying nearly 43% of the cultivated land. On the other hand, about 16% holdings belong to large farm size group covering about 29% of the total cultivated land. The average size of holdings of various categories of farms was about 2.45 hectares and it was 1.46 hectare in small, 2.88 hectare in medium and 4.45 hectare in large farm size group. The overall average investment on livestock per farm came to Rs. 46616. The size-wise it comes to about Rs. 26458.33 in small, Rs. 60988.88 in medium and Rs. 74750 in large farm size groups. The overall investment is highest on milch animals. The average value

of fixed assets (bullock power, farm buildings and farm machinery) per farm is Rs. 193426 in which machinery has the highest share of about 52%, farm buildings has nearly 39% and the percentage share of bullock power is only 8.6%. The overall average value of fixed assets per hectare worked out to Rs. 78884.97. The ratio for the possession of fixed assets of small, medium and large categories was 1:1.60:2.74. The value of fixed assets per hectare increases with the increase in the size of farm. Among fixed assets, farm buildings investment showed the decreasing trend from small to large size groups. The findings of the study reveals that the per hectare total cost of cultivation was higher in small size group as Rs. 273354.67 followed by medium size group as Rs. 91086.38 and large size group as Rs. 88486.80. The overall net income on different categories of farms is negative during 1<sup>st</sup> year as Rs. 126424.5 and highest during 9<sup>th</sup> year as Rs. 172953.66. It increases from 1<sup>st</sup> to 7<sup>th</sup> year and remains constant up to 7<sup>th</sup> year; decreases in 8<sup>th</sup> year and then again increases during 9<sup>th</sup> year. The output-input ratio is 1:2.49, which varies from 1:2.14 in small size group to 1:6.45 in medium size group and 1:7.42 in large size group. Thus ratio indicates that the saffron crop is profitable.

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