

## Marketing and Trade Mechanism of Saffron (*crocus Sativus*)

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**Abstract:** Horticulture is one of the oldest industries in Jammu and Kashmir and plays an important role in the state economy. During the last two decades horticulture has shown a remarkable contribution to the state domestic product (SDP). The main horticulture produce which has a greater efficiency and marketing area is saffron. The saffron is only concentrated in some areas of Kashmir valley approximately 80% of total area lies in the Pampore tehsil of Pulwama district. At present approximately 55% of population of Jammu and Kashmir is directly or indirectly involved in the horticulture related activities the state earns a handsome amount from the horticulture sector. Thus all the above factors clearly shows that this sector has a bright potential to the economic development of the state it is because of this sector that government of Jammu and Kashmir has declared horticulture sector of high priority. The success of this sector mainly depends on the market structure. Organized market structure has an encouraging as well as regulatory influence on the production methods.

**Keywords:** Economy, Horticulture, Marketing, Saffron, *Crocus Sativus*,

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### I. Introduction

The importance of horticulture, marketing especially saffron any study on this part will be awesome. On behalf of this background the present study will analyze the functioning of present marketing mechanism of saffron produce in Jammu and Kashmir in general and Pulwama District in particular. The saffron horticulture crops have been selected in this study because these horticulture products of Jammu And Kashmir State. Saffron is cultivated only in the state of Jammu and Kashmir particularly in pulwama district with a monopolistic market. The total area under saffron in Jammu and Kashmir is about (4000 ha) in i.e. pulwama, Budgam, Srinagar, Anantnag districts of Kashmir valley and Kishtwar district of Chenab valley in Jammu division. Pulwama occupies 90% of the entire saffron production and area of the state and country. The majority of population is dependable on horticulture sector especially apple and saffron. Keeping in mind the above parameters it is quite visible that horticulture has direct relationship with the state economy of Jammu and Kashmir. The objective of this study is marketing mechanism of saffron produce in Jammu And Kashmir State.

### II. Methodology

The adopted methodologies were made by using both primary data and secondary data. Primary data was collected from Growers, Forwarding Agents, Pre Harvest Contractors, Pesticides and Fungicides Dealers, Marketing Agents and associations, and Dalals were taken into consideration. However the main source of data is secondary data which is published by government of Jammu and Kashmir. The pulwama district has been taken for the study purposes as it has approximately 4000 ha of land available under saffron which contributes about 90% of total area of J & K in general and India particular. However field investigations were carried out to analyze the physical marketing in practical.

### III. Results and Discussion

District pulwama has been selected for present investigation .as the district pulwama contributes 81.24% of area and 83.10% of production of Jammu and Kashmir pampore tehsil has 99% of landuse under Saffron crop based on the concentration of saffron Fields and practices, 120 households were selected out of 16 villages.

- Area under Operational Holdings and Tenancy Status
- Production Area and Productivity
- Cost and Return from Saffron an Analysis
- Output/Returns
- Marketing and Trade Mechanism of Saffron Produce
- Export of Saffron

Size Class	No Of House Holds	Area Under Operational Holdings	Area Under Saffron(Acres)	%Age Area Under Saffron
Below 2 Acre	52	145.995	57.865	12.5
2- 4 Acre	33	167.47	95.245	20.5
Above 4 Acre	35	731.425	309.3	66.8
Total	120	744.89	462.41	100

**Table.1:** Category Wise Area under Operational Holdings of Saffron Crop

**Area under Operational Holdings and Tenancy Status**

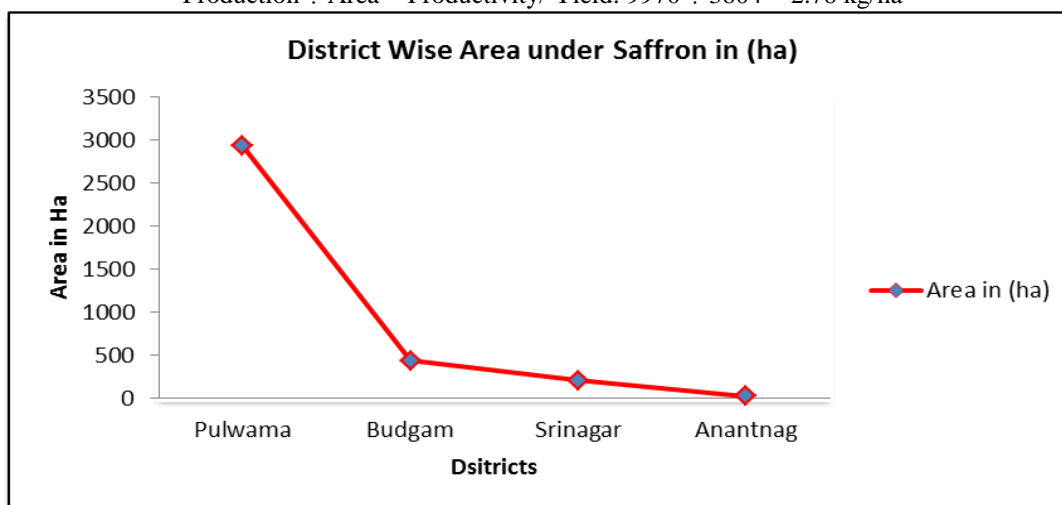
It can be observed from the Table 1 that the total area under saffron cultivation of 120 households is 462.41 acres and the total area under operational holdings is 744.89 acres which means 62 percent of the total cropped area. Out of 120 sample households 52 (43.3%) were marginal (small) farmers, 33 (27.5%) were medium farmers and 35 (29.16%) were large farmers. The production of land devoted to saffron cultivation is largest in case of large size farmers 66.8 percent. The smallest size group accounts for only 12.5percent and the medium size class has a share of 20.5percent.

**Table.2.** District Wise Distribution of Area, Production and Productivity of Saffron

Districts	Area in (ha)	Production in		Percentage of Total area under saffron	Percentage of Total production of saffron	Yield (kg/ha)
		Kg	Mt			
Pulwama	2928	8286	8.286	81.24	83.10	2.83
Budgam	439	1093	1.093	12.18	10.96	2.49
Srinagar	210	518	0.518	5.82	5.19	2.47
Anantnag	27	73	0.073	0.74	0.73	2.67
Total	3604	9970	9.97	100%	100%	10.46

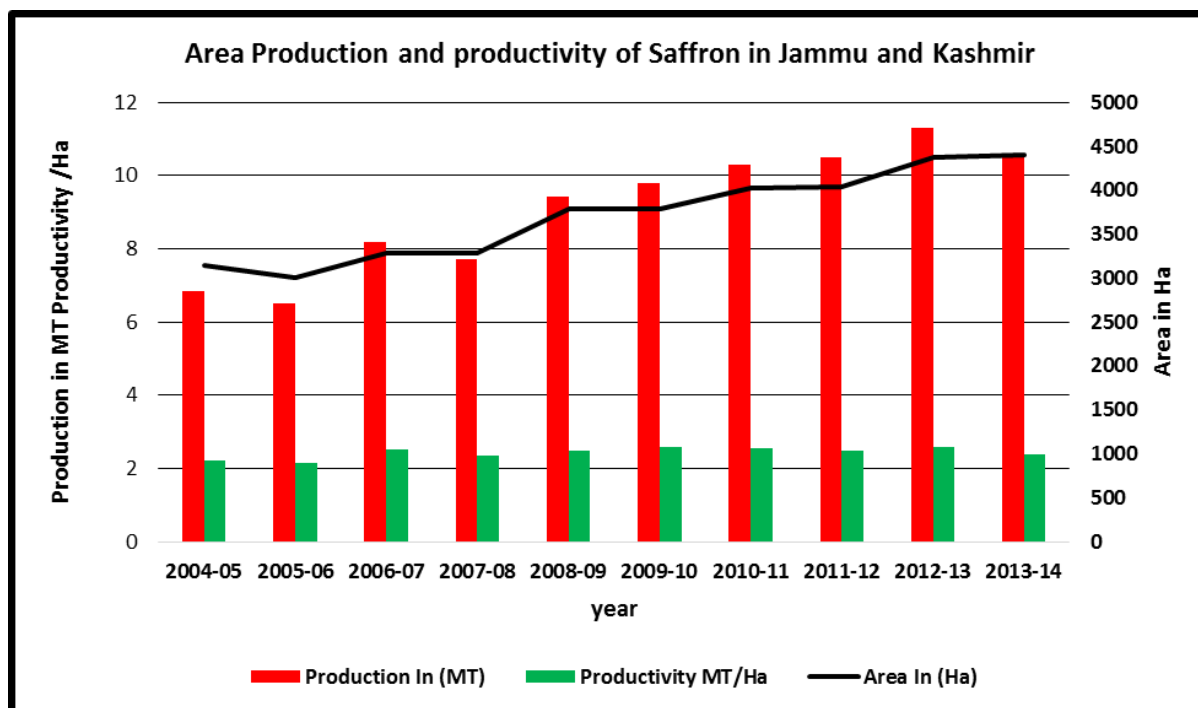
*J&k digest of statistics*

Production ÷ Area = Productivity/ Yield: 9970 ÷ 3604 = 2.76 kg/ha



**Table.3:** Area Production and productivity of Saffron in Jammu and Kashmir

Year	Area In (Ha)	Production In (MT)	Productivity MT/Ha
2004-05	3143	6.85	2.23
2005-06	3010	6.5	2.15
2006-07	3280	8.2	2.5
2007-08	3280	7.7	2.34
2008-09	3785	9.42	2.48
2009-10	3790	9.78	2.58
2010-11	4030	10.31	2.55
2011-12	4044	10.5	2.49
2012-13	4370	11.3	2.58
2013-14	4400	10.5	2.38



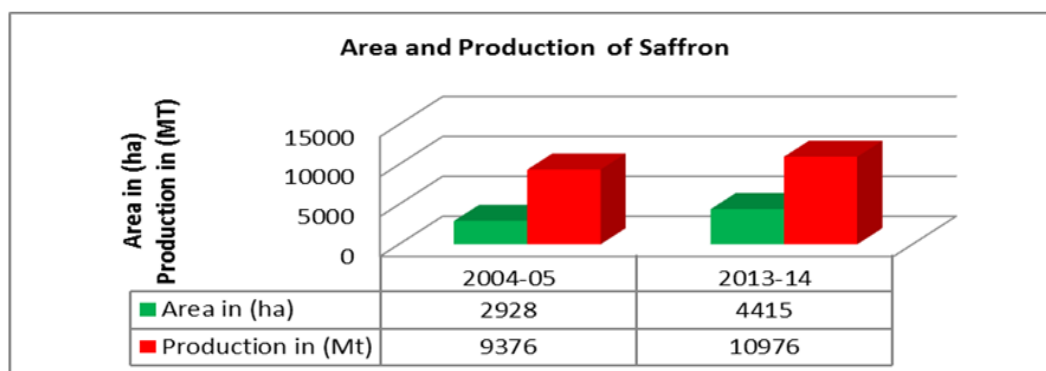
**Production Area and Productivity:**

The pulwama district has the largest potential for the production of Saffron and is the leading producer of saffron comparing to other districts which are producing saffron like Budgam, Srinagar, Anantnag, and Kishtwar Districts. The annual production of Saffron in pulwama is 2928 MT at an average yield of 2.83 kg per hectare, however the production and productivity of Saffron crop is fluctuating during last decade i.e. from 2004-05 to 2013-14, this is due to some agro climatic and land use change conditions in the study area.

In spite of this Saffron production has increased from 4850 kg in year 2004-05 to 10976 kg in 2013-14 that is approximately 44.18% increase in production. with an average productivity of around 2.0 Kg. per hectare. The largest saffron is produced in Iran with an average production of 160 tons and average productivity of 5 Kg. per hectare. Spain is the second largest producer of saffron producing 29.15 tons with an average productivity of 6.96 Kg. per hectare. While in terms of average productivity Jammu and Kashmir (India) occupies a 6th rank, as per quality Kashmir saffron is second only to that grown in Spain (Agarwal et al.). The increase in production is due to the increase of area under cultivation because diversification of agriculture land into the horticulture land especially Saffron fields,

**Table.4:** Production and productivity of Saffron in Jammu and Kashmir

District	Tehsil	Area in (ha)	Production in (Mt)
		2004-05	2013-14
Pulwama	Pampore	2928	4415
		9376	10976

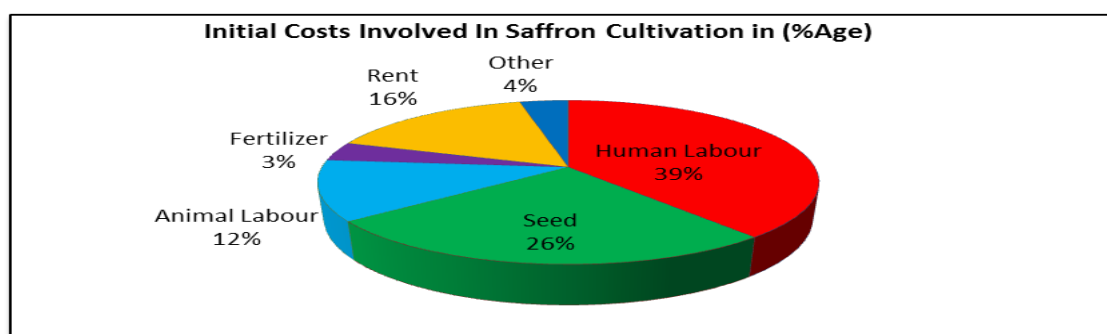


**Cost and Return from Saffron an Analysis:**

Saffron is one of the important crop of temperate region of western Himalayas of Kashmir valley, after planting corn seeds (normal breed). So as to study whether saffron cultivation is a gainful wander, we are required to study the costs and return and yield per hectare (profitability). Costs are generally considered as the expenditures brought about in cultivation by a farmer as variable costs and fixed costs. The variable costs (human work, mechanical work, creature work, manures) and fixed costs (normal estimation of the seed/corm, rental estimation of land, deterioration of devices and hardware) include the aggregate cost of generation. The examination of the information for the experimental estimation of the previously mentioned variables has been done with regards to farm sizes. For this reason, the farms have been ordered into three classes' viz., small farms with a size of under 2 sections of land, medium size farms running between 2 to 4 sections of land and large farms with a size of more than 4 sections of land. It will be appropriate to specify here that our try will likewise be to study whether there is any connection between the profitability and the extent of holdings.

**Table.5:** Category wise Cost Structure (One kanal is equal to 1/8 of Acre)

Farm Size	Human Labour	Seed	Animal Labour	Fertilizer	Rent	Other	Total Cost	Cost Per	
								Kanal	Acre
Small	39.25	24.78	12.65	2.7	16.65	3.97	100	2420	19366
Medium	43.11	23.52	10.29	3.85	15.96	3.27	100	2551	20412
Large	33.92	29.08	12.73	4.62	15.6	4.05	100	2063	16509
All Three	38.76	25.79	11.89	3.72	16.08	3.76	100	2345	18762



Generally on an average the grower/cultivator invests Rs 2345 per kanal or 18762 Rupees per Acre of Saffron Cultivation. Maximum portion of this amount is cost of human labour which accounts for about 39% of total initial costs followed by seeds/corns 26%, rent 16%, animal labour 12%, Fertilizers 3% and other/miscellaneous 4%.

**Output/Returns**

The output of saffron incorporates the flowers, seed (corm) and by item (Patti). Amid the reporting season corm was not sold by the farmers in the market. Prior they used to offer the surplus corm in the market but since of dry spell conditions and Corm Spoil ailment they didn't have adequate quantities notwithstanding for their own property. They additionally used to offer by-item Patti in the market at the rate of Rs 40 for each tola. But during the reporting season it was not accepted by the intermediaries. Only one type of saffron was sold i.e., Lacha. Along these lines it is obvious that these segments are excluded in our analysis and are liable to lessen the extent of returns to the farmers. From our analysis, as shown in the table, it can be watched that yield per section of land (profitability) displayed by the large farms is the least i.e., only 0.64 Kgs. /acre of land, while as it is at its most elevated estimation of 0.8 Kgs/acre of land if there should arise an occurrence of medium size farms, trailed by the small farms with an efficiency of 0.74 Kgs for every section of land. On the average the yield is worked out to be 0.72 Kgs/section of land (1.8 Kgs/hectare). It is appropriate to note here that for Kashmir division profitability per hectare, by utilizing the official secondary data, amid the period 1990 to 1998 (pre drought period) turns out to be 3.05 Kgs/hectare, while somewhere around 1998 and 2001 (drought period) it works out to be 1.27 Kgs/hectare, and in the period from 2002 to 2004 (post drought period) efficiency on the average expanded to 1.76 Kgs/hectare. It might, hence, be inferred that our farm analysis for the year 2007-08 uncovers a pattern that nearly harmonizes with the official secondary data if there should be an occurrence of efficiency of saffron for the entire valley in the post drought period.

**Table.6:** Category Wise Cost, Returns and Profitability

Holding Size	Total Area In Acres	Total Quantity of Saffron In Kg	Yield Per Acre In Kg	Total Gross Returns		Cost Per Acre	Net Returns (Profitability)	
				FGP@Rs. 370 per tola	Market price@Rs.1000per tola		F G P	M K T Pri ce
S	57.86	43.02	0.74	27,508	74,345	19,366	8,142	54,979
M	95.24	76.33	0.8	29,652	80,140	20,412	9,240	59,728
L	309.3	199.21	0.64	23,830	64,406	16,509	7,321	47,897
Average	462.4	318.56	0.72	26987	72937	18,762	8,225	54,175

Returns can be computed in two courses i.e., at farm gate prices at a rate of Rs 370 for each tola as reported by the farmers and checked from the market; and at market prices at which Dalals and intermediaries offer the item in the market. The market price of saffron was accounted for at the season of the review to be Rs 1000 for each tola. From the table, it is entirely apparent that the gross returns at farm gate prices (FGP) are shown to be highest (about Rs 29,652 for every acre) in the event of medium size farms, trailed by small farms (about Rs 27,508 for every acre) and most minimal in the event of large farms (around Rs 23,830 for each acre). On an average, the gross returns represented Rs.26, 987 for every one of the farms taken together. After deducting the relating expense of production which amounts to Rs.18,762, the net returns per acre, on an average, work out to be Rs.8,225 at FGP. These net returns are seen to be most reduced i.e. Rs.7, 321 for large farms and highest i.e. Rs.9,240 for medium measured farms. The net returns, on an average, could however be raised by more than six overlay to Rs.54,175 if the cultivators could offer the deliver at market prices. In any case, by and large it was watched that because of strength of middlemen and intermediaries over the promoting channels this net return of Rs.54,175 is circulated amongst middlemen and producers in the succession of Rs.45,950(85%) and Rs.8,225(15%) separately. Consequently, it turns out to be clear that intermediaries remove the lions share from net returns and farmers share is low, which is an obstacle for its expansion.

**Table 7:** Distribution of Gross and Net Returns per acre

Farm Size	Total cost (Rs)	Gross Returns (Rs.)		Net Returns (Rs.)	
		FGP@ Rs.300	Market Price@ Rs.1000	FGP	Market Price
Small	19,366	27,508	74,345	8,142	54,979
Medium	20,412	29,652	80,140	9,240	59,728
Large	16509	23,830	64,406	7,321	47,897
All Three Average	18,762	26,996	72,963	8,234	54,201

An examination of the data recommends that medium size farms have an edge over the small and large farms in efficiency and profitability both in the absolute and relative terms. Absolute commitment of these farms interims of yield, gross returns, and net returns is highest among all the three categories of farms at both FGP and market prices. Indeed, even these farms are the largest suppliers of livelihood as is apparent from the per acre utilization of human work (see the table above), because of which their cost of production per acre is likewise highest. In relative terms their execution was worked out by utilizing gross margin, net margin and benefit cost ratio at both FGP and market prices. In every one of these pointers they demonstrate better returns aside from gross margin at FGP which is because of their relatively higher variable costs inferable from the higher use of human work.

Large farms utilize less data sources in view of which their yield (efficiency) and net returns (benefit per acre of yield) stays low, showing a wonder of problematic utilization of assets. This perception is supplemented by the confirmation from the medium farms that utilization higher amounts of sources of info, thus maximizing both yield and net returns. Notwithstanding, there is one imperative guide worth toward be made which is with respect to the propensity of the consistent losses as reflected in the declining estimation of the gross margin for medium size farms from 0.64 to 0.60 as delineated in the Tables 8 and 9.

**Table.8:** Net and Gross Profit Margin per acre production at FGP (Farm Gate Price)

Farm	Gross Returns (Rs)	Total production Cost (Rs)	Net Returns (Rs)	Total Variable Cost (Rs)	Gross Margin	Net Margin
S	27508	19366	8142	10572	0.61	0.29
M	29652	20412	9240	11684	0.6	0.31
L	23830	16509	7321	8462	0.64	0.30
All three Average	26996	18762	8234	10239	0.62	0.30

**Table. 9:** Net and Gross Profit Margin per acre production at Market Price

Farm	Gross Returns (Rs)	Total production Cost (Rs)	Net Returns (Rs)	Total Variable Cost (Rs)	Gross Margin	Net Margin
S	74345	19366	54979	10572	0.85	0.73
M	80140	20412	59728	11684	0.85	0.74
L	64406	16509	47897	8462	0.86	0.74
All three Average	72963	18762	54201	10239	0.85	0.74

This decrease in the estimation of gross margin from large to medium farms is ascribed to the way that as the aggregate variable costs/expenditure increment by around 38 percent (from Rs.8462 per acre if there should be an occurrence of large farms to Rs.11684 in the event of medium farms), the relating increment in the gross returns/revenues per acre was noted around 24 percent only (from Rs.16509 large farms to Rs. 20412 medium farms). Since human work is the dominant info running somewhere around 33.92 and 43.11 percent of the aggregate cost and somewhere around 66.17 and 75.31 percent of the variable cost. Which implies work must take most extreme share of the expanded expenditure. It takes after that percentage increment in the expenditure made on work information is connected with not exactly proportionate increment in the yield per hectare, consequently the inclination for the consistent losses to set in. This is affirmed from the data given in the table that expansion in the expenditure made on employing more work per acre from medium farms to large farms in absolute terms is Rs.3200, which in percentage terms amounts to an increment of around 36 percent contrasted with a relating increment of around 24 percent in the yield per acre in monetary terms as pointed out above.

**Table. 10:** Net Returns per Rupee of Investment (Benefit-Cost Ratio) at FGP and Market Prices

Farm size	Net Returns at market Prices(Rs)	Net Returns at Farm gate Price(Rs)	Total Production cost (Rs)	Benefit-Cost ratio at Market Price	Benefit-Cost ratio at Farm Gate Price
S	54979	8142	19366	2.8	0.42
M	59728	9240	20412	2.9	0.45
L	47897	7321	16509	2.9	0.44
Average Of All Three	54201	8234	18762	2.8	0.44

However, to improve the land and labour productivity, there seems to be scope for judicious combination of technical inputs like fertilizers and especially assured irrigation facilities in the form of drip and sprinkle irrigation, given the fact that saffron cultivation in this part is totally dependent upon the rain water.

**Marketing Mechanism of Saffron Produce**

Agricultural marketing in its wide sense comprises every one of the operations required in the development of produce and raw material from the farm to the final consumer. It incorporates the treatment of the item at the farm, beginning handling, evaluating and bundling with a specific end goal to keep up and upgrade the quality and avoid the wastages. Marketing of the saffron is moved in the hands of a few merchants in light of the fact that a common grower can't directly sell his small produce as he can't review, pack and store the produce at individual level (Zaki et al., 2002). As a result of the poor financial status the farmers are provoked to sell their produce through middlemen to the proprietors of the exchanging firms. Between the grower and a definitive consumer there exists a long chain of the intermediaries. The fundamental marketing channels of saffron in the valley of Kashmir are shown underneath:

The (Table 9) shows the growers' transactions with various sorts of marketing agencies. The data in the table has been accumulated amid our field study. The greater part of the selected households (50 percent) wanted to sell their produce to dalals, though around 40 percent of the example households liked to sell their produce to sub-firms. The marketing channels dispossess a considerable extent of the benefit from both growers and in addition the consumers. In Pampore, the customary saffron marketing focus of Kashmir valley, the huge traders buy the showcased surplus at relatively cheaper prices from the growers and Dalals amid the months of November to January, basically to hoard. The growers who need back and storage facilities and have no clue about the demand supply conditions at the terminal markets incur huge losses.

**Table .11:** Growers' Preferences to various channels

Channel	No. of Growers				%age of total
	Large	Medium	Small	Total	
Dalals	9	10	41	60	50
Local Traders	-	6	1	7	5.8
Agents	1	2	-	3	2.5
Sub Firms	25	15	10	50	41.6
Total	35	33	52	120	100

### Export of Saffron

Despite the fact that domestic production is not adequate to take care of demand, India exports Saffron in small quantities. Amid 2009-10, India exported around 1.5 tons of Saffron. As a result of strong domestic demand, domestic prices went up from 0.30 lakh/kg to < 2.70 lakh/kg (current price), which has debilitated fare of Saffron. The amount imported is simply 0.3 tons (< 480 lakh). It is trusted that a considerable amount of Iranian Saffron enters the nation clandestinely, and is blended with the nearby produce and sold as Kashmiri Saffron. (Table 10). Solid domestic demand and high domestic prices are supporting factors to rejuvenate Saffron cultivation in J & K. As per exchange estimates, domestic demand is in the range of 20 MT per annum, while current domestic production is in the scope of only 10-15 MT. Consequently, it is attractive to concentrate on profitability enhancement, improvement of post-harvest handling and straightforward marketing channels for the general development in the Saffron economy, what's more, upgrade wage of Saffron farmers

**Table.12:** Statement Showing Growth in Area, Production, and Yield of Saffron. (Base Year 1990)

Country	Acreage under Saffron (000ha)with Rank	%age Area of the world	Avg. annual production (tons) with rank		%age share of the world production	Productivity kg/ha	Productivity Rank	Quality rank
Iran	32.0(1st)	74	160 (1st )		78.43	5	3rd	
Spain	4.2 (2nd)	9.7	29.5	(2nd)	14.46	6.9	1st	1st
J&K	3.8 (3rd )	8.9	6.46	(3rd)	3.15	2.28	6th	2nd
Greece	1.0 (4th)	2.3	4.3	(4th)	2.1	4.3	4th	
Azerbaijan	0.7(5th)	1.6	3.7	(5th)	1.81	5.4	2nd	
Morocco	0.5(6th)	1.1	1	(6th)	0.49	2	7th	
Italy	-	-	0.28	(7th)	0.13	3.1	5th	

**Table.13.** Export Data of Indian Saffron Mongra In (Kgs) To Major Exporters

Year	Destination	Quantity	Value in (INR)	Per Unit (INR)
2014	Australia	40	7524453	1715181
	Oman	40	7861900	393095
2015	Australia	17	3627545	855750
	Oman	20	4284584	214229
	United States	4	537888	401010
2016	Australia	9	2001670	680573
	Oman	20	4479242	223962

Source 2013 Zaub Technologies & Data Services Pvt Ltd

India exported saffron mongra worth USD 489,437 with aggregate quantity of 153 kgs. Oman is the largest buyer of Indian saffron mongra representing exports out worth USD 265,106 took after by Australia and Joined States which imported Indian saffron mongra worth USD 208,556 and USD 8,653 separately.

All shipments were exported from Delhi Air Cargo Average cost of Indian saffron mongra per unit is USD 3,198.43 and average esteem for every shipment is 20,393. Amid past few years saffron cultivation, be that as it may, has gotten a serious misfortune because of different economic, non-economic and climatic considers Kashmir valley. Range under saffron cultivation has shrunk from 5707 hectares in 1996-97 to only 3883 hectares in 2004-05. Generation of saffron is reported to have gone down from 173.82 quintals to 80 quintals from 1997-98 to 2004-05. There has likewise been a sharp fall in productivity from 3.17 Kg. per hectare to around 2.0 Kg. per hectare in 2004-05 (Directorate of Agriculture, 2004). This reality nearly fits in with the consequences of our field contemplate where per section of land productivity was observed to be 0.73 Kg. (1.82 Kg. per hectare).

At the global level India is reported to occupy the third place, where the whole generation originates from the condition of Jammu and Kashmir, contributing 4.46 tons with an average productivity of around 2.0 Kg. per hectare. The largest saffron is created in Iran with an average generation of 160 tons and average productivity of 5 Kg. per hectare. Spain is the second largest maker of saffron creating 29.15 tons with an average productivity of 6.96 Kg. per hectare. While in terms of average productivity Jammu and Kashmir (India) possesses a sixth rank, according to quality Kashmir saffron is second just to that grown in Spain (Agarwal et al.)

### IV. Summary of Major Findings

- Role of the banks and coordinated financial associations is thoroughly lost in advancing this meander. Growers generally incline toward interest free credits from their relatives and companions. Nevertheless, an essential degree of farmers get stores from mediators i.e. Dalals.
- All the agriculturists were found making an unpredictable usage of chemical manures well past the recommended measurements which has truly adversely influenced the yield, as is demonstrate by our econometric study.

- Human and bullock work is prevailing information speaking to around 50 percent of cost of creation, trailed by cost of seed which speaks to around one-fourth of total cost, showing that saffron development in Kashmir valley is especially work escalated development.
- A value spread of around 300 percent has been seen between ranch door and market costs. Since marketing channels are overpowered by middle people, they get the opportunity to be huge beneficiaries leaving saffron growers with a little edge.
- The yield per acre (Productivity) increments with the expansion in the span of holding from small farms to medium size farms, yet demonstrates a declining pattern from medium to large estimated farms.
- Medium farms display the most astounding gross and net returns furthermore represent most noteworthy cost per acre, yet at the same time these farms demonstrate the most elevated benefit out of three classes of farms.
- The concentrate likewise demonstrates that large farms are slightest beneficial in view of their low productivity and not because of the higher cost of creation which in actuality is most minimal for this situation.

## V. Conclusion and Recommendations

Analyzing Saffron It has been found that the new instructed generation is not taking up this wander as a profession for their livelihood and because of this the greater part of the control of this action are still in the hands of illiterate and higher age farmers, whose mental status is against the adoption of new technology. The concerned government departments and agencies need to support and include taught unemployed youth in the rural ranges of the saffron developing belts to assume control over this wander on scientific premise. Arranging the foreign visits particularly to the countries like Spain, Netherlands, Iran and so forth is extremely key to propel and empower the informed youth. Poor economic foundation of these farmers constrains them to acquire money ahead of time from dalals coming about into distress deal. This issue needs to be handled by the government by giving cheap credit facilities to the growers. Furthermore, accentuation ought to be given on instilling the soul of cooperative cultivating. By cooperative marketing the chains of middlemen and delegates can be eliminated. Coordinate connection between the ultimate consumers and the growers can improve their monetary status and provide them with the market impetuses important for the extension of this generally shrinking segment. The government agencies ought to likewise provide the farmers with the spray pumps for spraying water over the fields without the normal rains in the month of September-October to upgrade the yield. On the other hand, water reservoirs and tube wells for using the underground water should be worked for guaranteed water system. Another region of serious concern, as uncovered from the field study, is in regards to the utilization of fertilizers in an unscientific route without taking after the standard solutions. Right combinations of water, fertilizers, and human exertion are required to improve the yield which has deteriorated over the timeframe.

## References

- [1] Agarwal, G.D. And P.C. Bansil. (1969). Economic Theory As Applied To Agriculture. Delhi: Vikas Publications.
- [2] Agarwal, S.G., F.A. Nehvi, M.K. Verma. (2004). "Success Stories." Sher-I-Kashmir Agricultural University Of Science and Technology (SKAUST-K), Shalimar, Kashmir.
- [3] Digest Of Statistics Jammu and Kashmir, (2011-12)
- [4] Directorate of Agriculture Jammu and Kashmir (2004)
- [5] Philip Kotler, (1983), Marketing Management: Analysis, Planning and Control, New Delhi: Prentice Hall Of India Pvt.Ltd. P.6
- [6] Singh, V.B, Et Al. (2006), Horticulture for Sustainable Income and Environmental Protection. Concept Publishing Company, New Delhi.
- [7] Zaki, F. A. (2002). Development of Saffron in Kashmir. Sher-I-Kashmir, Agricultural University of Science and Technology (SKAUST-K), Shalimar, Kashmir.
- [8] Zuba, (2013) Technologies and Data Services Pvt Ltd M Ozaki, Y. Adachi, Y. Iwahori, and N. Ishii, Application of fuzzy theory to writer recognition of Chinese characters, *International Journal of Modelling and Simulation*, 18(2), 1998, 112-116.
- [9] Imtiyaz-Ul-Haq, Sahina Shafi; (2014) European Academic Research, Vol. II, Issue 1/ April 2014
- [10] Anonymous (2013). Statement showing area and production of different fruits in J & K State. Department of Horticulture. J & K Govt. Srinagar, India pp. 1-2.
- [11] Digest of Statistics (2012-13). Directorate Of Economics and Statistics. Government of J & K, India.
- [12] Directorate of Horticulture. J & K Govt., India.
- [13] Edwinna von Baeyer, Rhetoric Roses (1984). A History of Canadian Gardening 1900-1930 (Markham, Ontario: Canada, Fitzhenry and Whiteside Ltd., pp 197.
- [14] Greater Kashmir (2013). Population of Kashmir Associated with fruit industry.
- [15] Jindal KK, RC Sharma (2004). Recent Trends in Horticulture in the Himalayas,
- [16] India. Masoodi M Amin (2004). Agriculture in Jammu and Kashmir-A perspective. Mohisarw Book Series, Srinagar, J&K, India.
- [17] Ganie, M. A., & Nusrath, A. (2014). Estimation Of Apple Orchard Using Remote Sensing And Agro-Metrology Land Based Observation " In Pulwama District Of Kashmir Valley. *International Journal of Remote Sensing & Geoscience*, 3(issue 6), 21-26.
- [18] Ganie, M. A., & Nusrath, A. (2016). Determining the Vegetation Indices (NDVI) from Landsat 8 Satellite Data. *International Journal of Advanced Research*, 4(31:), 1459-1463.