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National saffron mission in Kashmir: An impact analysis

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Abstract
The study was carried out in district Pulwama of Kashmir Valley. Only two blocks namely, block Pampore and block Awantipora were purposively selected owing to the maximum area and production in these two blocks of the district. Out of the two blocks, 150 respondents from five villages were selected through stratified random sampling method. The study reveals that there has been no increase/decrease in area under saffron cultivation before and after the inception of Saffron mission. With the launch of National Saffron Mission in the valley, the farmers began to catch up with the modern technology which was evident from the fact that majority of the respondents were following the recommended packages and practices of SKUAST- K like soil treatment, application of manure and fertilizers, use of cultivation tools and post-harvest management practices. The production of dried saffron increased by 16-22 per cent after the inception of Saffron Mission while as the cost of production decreased by 12.60-16.30 per cent. The net returns of the respondents increased by two and a half times.

Keywords: national saffron mission, respondents, production and packages of practices

Introduction
Saffron valued as a medicinal perennial herb and a dye; has been prized the world's most expensive spice since times immemorial. The legendary crop is acclimatized to hillsides and plateaus (locally called Karewas) at altitudes between 1500 to 2400 metres. Saffron requires a well-drained loamy soil with neutral to slightly alkaline reactions and is well adapted to areas with cold, rainy winters and warm dry summers. The official data reveals that before 1985 saffron was cultivated on 5800 hectares of land in J&K, now the area under cultivation has reduced from 5,707 hectares in 1996 to 3,715 hectares in 2009-10 and presently it is confined to 3,674 hectares only (Zahid, 2016) [9]. Further a survey of saffron industry conducted by Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir (SKUAST-K) in 2010 found that yield has gone down from the intended target of 4.5 kg per hectare to less than 2 kg per hectare. The incessant greed on the part of merchandise and adulteration has damaged the prized spice so much that its death seems to be imminent. Almost 96 to 98% of saffron in J&K is grown in Kashmir valley and 2 to 4% of it is being grown in Kishtawar district of Jammu region. During the last decade, half of the total area under saffron cultivation has been reduced by 25%, while the production and productivity also receded significantly. As per the data available from the State Financial Commissioner, Srinagar (J&K) the total area under saffron cultivation in the year 1997 was 5361 hectares, production was recorded at 17.37 metric tonnes and productivity was estimated at 3.24 Kg per hectare. However in the year 2009 the total area under saffron was 3675 hectares, the production was 9.18 metric tonnes, while productivity was recorded as 2.50 kg per hectare (Malik, 2012). Keeping 1997 as the bench mark, the percentage change during the aforesaid period reveals that area has receded to 31%, and the production level reduced to 47% while the productivity has declined to about 23%. Concerned over the declining trend of the saffron production in the valley, the govt. of India came up with a flagship programme "National Saffron Mission" in order to revive the saffron industry in Kashmir.

Methodology
Selection of respondents
A list of farmers was obtained from Nodal Officer, National Saffron Mission (NSM), Pampore. Out of the list, village wise beneficiaries were sorted out as per their acreage under the NSM programme. Village with a minimum of 10 beneficiaries under National Saffron Mission was selected for the present study. Five villages meeting the requirement were selected and the beneficiaries of NSM were distributed as per their acreage (kanals) viz; 0-3, 3-

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6, and 6 & above. A sample of 150 respondents was obtained by Stratified Random Sampling proportional to size which is depicted here under:

S. No	Villages	Acreage (Kanals)		
		0-3	3-6	6 & above
1.	Lethpora	280	150	129
2.	Hatiwara	54	19	23
3.	Barsoo	52	03	10
4.	Khinbugh	16	04	15
5.	Samboora	07	---	03
	Total	409 (80)	176 (35)	180 (35)

Figures in parenthesis indicate number of respondents

Selection of study variables
The dependent and independent variable for the study were selected as under:

Dependent variables
Impact of national saffron mission
Impact was operationalized with respect to productivity and profitability of the respondents before launch of National Saffron Mission (2010) and after (2016) launch of National Saffron Mission.

Independent variables
Based on the available literature and opinion of the experts the following independent variables having relevance to the present investigation, were selected for the present study.
1. Age
2. Income
3. Education
4. Extension contacts
5. Size of holding
6. Knowledge

The details of operational measurement of these variables have been given in the foregoing pages.

Preparation of research instrument
For obtaining reliable and valid data, an interview schedule (Appendix-I) was prepared keeping in view the objectives of the study. It consisted of two parts:

Part I: The information in respect of each independent variable was collected as under:

Age
A suitable question was framed for obtaining the information regarding the age of respondents.

Income
Suitable questions were framed to obtain the annual income of the respondents.

Education
Level of education was measured in terms of number of years of formal schooling. Appropriate question was framed to get information in this respect.

Extension contacts
Extension contacts were measured through framing questions regarding frequency of contacts of respondents with extension personnel of different levels.

Size of holding
Size of holding referred to total operational holding of the respondent and was obtained through number of kanals owned (1ha=20 kanals) including rented in but excluding rented out.
Size of holding = Area owned +Area rented in – Area rented out.

Knowledge
Special knowledge test was developed and standardized for this purpose. The major steps followed for this purpose are outlined below:

Collection of items
For measuring farmers knowledge of saffron practices the items were collected through available literature and by discussing with the Department of Agronomy, SKUAST-Kashmir and experts of Saffron Research Station, Konibal Pampore, SKUAST-K. A preliminary knowledge test consisting of 23 items pertaining to package of practices followed by saffron growers is depicted in annexure I.

Selection of items
The test was administered to 27 farmers selected at random from the non-sample area. The responses were then quantified by giving a score of one to the correct answer and zero to incorrect answer. The total score of a respondent was obtained by adding his score for all items. The questions for the final test were retained on the basis of 'Difficulty index' and 'Discrimination index'.

(A) Difficulty index
The 'difficulty index' was expressed in terms of percentage of correct responses obtained for a particular question and worked out as under:

$$\text{Difficulty Index (p)} = \frac{\text{Number of respondents giving correct answer}}{\text{Total number of respondents}} \times 100$$

In the present study, the items with 'P' values ranging from 25 to 80 were retained for the final selection.

(B) Discrimination index
The index of item discrimination indicates the ability of the items to differentiate the well informed respondents from the poorly informed ones. Singh (1980) used $3\sqrt{E}$ method to find out item discrimination index. This method was used because of its simplicity in the present study. The following formula was adopted for working out $3\sqrt{E}$.

$$3\sqrt{E} = \text{Index of discrimination}$$
$$= \frac{(S_1 + S_2) - (S_5 + S_6)}{N/3}$$

Where, S_1, S_2, S_5, S_6 are the frequencies of correct answers in the group of G_1, G_2, G_5, G_6 respectively. G_1 to G_6 are group containing equal number of respondents after arranging them in descending order in respect of their knowledge scores.

N = Total number of respondents in the items analysis.

The items with $3\sqrt{E}$ values 0.25 and above were included in the final test. The values of Difficulty index and

Discrimination index in respect of each item are given in Appendix II.

Reliability and validity of the knowledge test

The reliability of the knowledge test was measured with the help of split-half method and calculated with the help of the following formula given by Rulon (1939):

$$\text{Variance in attest } r_{tt} = 1 - \frac{\sigma^2 d}{\sigma^2 t}$$

Where,

d = Difference between the two half scores
$\sigma^2 d$ = Standard deviation of those differences
$\sigma^2 t$ = Standard deviation of total score
r_{tt} = Reliability of total test.

The coefficient of reliability of the test came out to be 0.25. The intrinsic validity was calculated by taking the square root of the reliability co-efficient and came out to be 0.49. Besides, the content validity was ensured through consultation with subject matter experts of saffron from SKUAST-Kashmir.

Part II: It was designed to collect information by identifying total area put under saffron by the respondents. This part contained questions wherein the respondents were asked to recall various practices followed by them before the National Saffron Mission (2010) and the practices followed by the respondents after National Saffron Mission (NSM) 2016. This part also contained questions pertaining to constraints, if any, faced by the respondents in the production and marketing of saffron.

The research instrument so prepared was pre-tested in village Chandhara of Development Block, Pampore which was a non-sample area. The necessary modification in the light of the pre-testing were made to perfect the interview schedule before its final use.

Data collection

The data was collected through personal interview with the help of interview schedule during November-December 2016. Every effort was made to clarify the questions posed to the respondents in their local language (Kashmiri) to get the true responses.

Processing of data

The scoring procedures for measurement of independent and dependent variables is given in Table 1.

Analysis of data

The data were analyzed by means of frequencies, percentages, chi-square test.

Table 1: Scoring procedure for measurement of independent and dependent variables

S. No	Variables (Independent variables)	Scoring Procedure	Categories
i)	Age	Age of the respondents was obtained in chronological years	Young Below 53 Middle 53-65 Old 65 & above
ii)	Annual Income	Total income from khariff and rabi season including fruit crops and secondary source was calculated	Low Below 3lakhs Medium 3-5lakhs High 5lakhs & above
iii)	Annual income from saffron	Income generated only from saffron was calculated	Low 8000-40000 Medium 40000-90000 High 90000-135000
iii)	Education (No. of years of formal schooling)	one score was given for each year of formal schooling	Low Below 3 Medium 3-6 High 6 & above
iv)	Extensional contacts (Scores)	Measured on four point continuum as follows: Frequency of contacts: Once in a week 4 Once in a fortnight 3 Once in a month 2 Once in a season 1 Never 0. A sum of scores of extension contacts of a respondents gave the total score.	Low Below 10 Medium 10-12 High 12 & above
iii)	Size of holding (Kanals)	Measured in terms of number of kanals owned plus rented in, minus rented out	0-3 Small 3-6 Medium 6 & above Large
iv)	Knowledge	Measured in terms of number of knowledge scores obtained in the knowledge test	Below 9 Poor 9-12 Good 12 & above Excellent
Dependent variable		**Scoring procedure**	
Impact of National Saffron Mission		Impact was operationalized with respect to productivity and profitability of the respondents before launch of National Saffron Mission (2010) and after launch of National Saffron Mission (2016).	

Results

The findings of the study have been presented and discussed under the following heads:

1. Profile of saffron growers

A perusal of the data presented in Table 2 would reveal that age of the majority of the respondents (42.00%) was 53-65 years followed by those (33.33%) who were 65 and above years. Only 24.67 per cent respondents were below 53 years. In case of income, majority of the respondents (48.66%) were having an annual income of below 3Lakh followed by 28.67 per cent with an annual income of 3-5Lakh. Only 22.67 per cent respondents were having an annual income of 5Lakh and above So far as income from saffron only is concerned,

majority of the respondents (40.00%) were having an annual income of 40000-90000 followed by 35.34 per cent with an annual income of 90000-135000. Only 24.66 per cent respondents were having an annual income of 8000-40000.

In case of education majority of the respondents 52.00% were having formal schooling of below 6 followed by 33.33% of the respondents with a formal schooling of 12 and above only 14.66 per cent of the respondents were having formal schooling of (6-12 years). In case of extension contact scores, majority of the respondents 51.33% were having extension contact scores of 12 and above. Thirty six per cent respondents were having extension contact scores of 10-12. Only

Table 2: Profile of the respondents (N=150)

Particulars	Category	Number	Percentage
Age (years)	Below 53	37	24.67
	53-65	63	42.00
	65 & Above	50	33.33
Income (per annum)	Below 3 lakhs	73	48.66
	3-5 lakhs	43	28.67
	5 lakhs & above	34	22.67
Income from saffron	8000-40000	37	24.66
	40000-90000	60	40.00
	90000-135000	53	35.34
Education (No. of years of formal schooling)	Below 3	78	52.00
	3-6	22	14.67
	6 & above	50	33.33
Extension Contacts (Scores)	Below 10	19	12.67
	10-12	54	36.00
	12 & above	77	51.33
Size of holding (Kanals)	Below 3	80	53.34
	3-6	35	23.33
	6 & above	35	23.33
Credit availability	Availing credit facility from bank	110	73.33
	Great Ease	30	27.28
	Ease	45	40.90
	Difficulty	25	22.73
	Great Difficulty	10	9.09

12.67 per cent respondents obtained extension scores below 10. The farm size of majority of the respondents (53.34%) was below 3 kanals. An equal number of respondents (23.33%) had farm size of 3-6 kanals and 6 and above. The data further reveals that majority of the respondents (73.33%) availed credit facility from the banks and those availing credit facility from the bank, quite a good percentage of respondents (68.18%) obtained credits with ease and only 31.82 per cent respondents faced difficulty in obtaining credits from banks.

2. Level of knowledge of saffron growers
A perusal of the data presented in the Table 3 reveals that

majority of the respondents 58.67% were having good knowledge (scores 9-12) about saffron cultivation. However, the percentage of respondents with excellent level of knowledge (scores 12 and above) were 22. The data further reveals that almost 20 per cent were possessing poor knowledge (scores upto 9) about saffron. The extension personnel of the department of agriculture and the scientists of KVK/Saffron Research Station, Konibal, Pampore should organise awareness camps before the sowing season of the saffron corms for educating the farmers about the useful tips for increasing the productivity in their fields. Besides, the Department of Agriculture should arrange exposure visits of the farmers to Saffron Research Station Konibal, Pampore so that the saffron growers interact with the scientists and also see the technologies adopted in saffron fields themselves.

Table 3: Distribution of respondents as per the level of knowledge regarding saffron cultivation

Level of knowledge regarding saffron cultivation	Number	Percentage
Poor (Below 9)	29	19.33
Good (9-12)	88	58.67
Excellent (12 & above)	33	22.00

A perusal of the data presented in Table 4.A reveals that the majority of the respondents 77.41% with poor knowledge of saffron had income less than 3 lakh. The percentage of respondents having excellent knowledge of Saffron with income less than 3 lakh were 34.89. The data further reveals that 25.58 per cent respondents having excellent knowledge of saffron were having income of 5 lakh and above. However only 12.91 per cent respondents with poor knowledge of Saffron were having income of 5 lakh and above.

The statistical analysis of the data revealed significant association between income & knowledge ($\chi^2=13.62$) at (0.008577) level of significance which shows that as the knowledge regarding saffron increase, the income of the respondents also increase.

A perusal of the data presented in Table 4.B reveals that the majority of the respondents 54.09% in the age group of 53-65 years had high income 5 lakh and above. 47.37 per cent respondents in the age group of below 53 years were having income of below 3 lakh. However the percentage of respondents having per annum income of 5 lakh and above were 27.44 per cent. The data further reveals that 16.40 per cent respondents in the age group of 53-65 years were having income of below 3 lakh.

The statistical analysis of the data revealed significant association between income & age ($\chi^2=16.39$) at (0.002534) level of significance which shows that as the age increase the income of the respondents also increase.

Table 4A: Association between knowledge of saffron growers and income

Income	Distribution of respondents according to knowledge of saffron							
	Poor (<9)		Good (9-12)		Excellent (12 & above)		Row total	
	No.	%age	No.	%age	No.	%age	No.	%age
Low (Below 3 lakh)	24	77.41	40	52.63	15	34.89	79	52.67
Medium (3-5 lakh)	3	9.68	20	26.32	17	39.53	40	26.67
High (5 lakh & above)	4	12.91	16	21.05	11	25.58	31	20.66
Column total	31	100.00	76	100.00	43	100.00	150	100.00

$\chi^2=13.62$
P-value=0.008577

Table 4B: Association between age of saffron growers and income

Income	Low (<53)		Medium (53-65)		High (65 & above)		Row Total	
	No.	% age	No.	% age	No.	% age	No.	% age
Low (Below 3 lakh)	18	47.37	10	16.40	16	31.38	44	29.33
Medium (3-5 lakh)	9	23.69	18	29.51	21	41.18	48	32.00
High (5lakh & above)	11	28.94	33	54.09	14	27.44	58	38.67
Column total	38	100.00	61	100.00	51	100.00	150	100.00

χ^2=16.39
P-value=0.002534

A perusal of the data presented in Table 5 reveals that the majority of the respondents (52.00%) with 12 and above years of formal schooling had high income (5 Lakh and above). Further 45.45 per cent respondents having formal schooling of below 6 years were having income of 5Lakh and above. The percentage of respondents with formal schooling of 6-12 years and having income of below 3Lakh were 42.22 per cent. However the percentage of respondents with income of 3-5Lakh having formal schooling of 6-12 years were 37.78 per cent.

The statistical analysis of the data revealed significant association between income & education (χ^2=22.28) at (0.0001759) level of significance which shows that as the level of education increase the income of the respondents also increase.

A perusal of the data presented in table 6 reveals that the majority of the respondents (60.00%) having small holding (Below 3 kanal) were having low income (Below 3Lakh). However 48.57 per cent respondents with large holding size (6 & above) were having high income of (5Lakh and above). The data further reveals that nearly an equal percentage of respondents with medium holding size (3-6 kanal) were having income of more than 3Lakh. Only 16.25 per cent respondents possessing small holdings were having high income (5Lakh and above).

The statistical analysis of the data revealed significant association between income & size of holding (χ^2=21.39) at (0.0002641) level of significance which shows that as the size of holding increases the income of the respondents also increases.

Table 5: Association between Education of saffron growers and income

Income	Low (upto 6)		Medium (6-12)		High (12 & above)		Row total	
	No.	%age	No.	%age	No.	%age	No.	%age
Low (Below 3 lakh)	7	12.73	19	42.22	17	34.00	43	28.67
Medium (3-5 lakh)	23	41.82	17	37.78	7	14.00	47	31.33
High (5 lakh & above)	25	45.45	9	20	26	52.00	60	40.00
Column Total	55	100.00	45	100.00	50	33.33	150	100.00

χ^2= 22.28
P-value = 0.0001759

Table 6: Association between size of holding of saffron growers and income

Income	Small (0-3)		Medium (3-6)		Large (6 & above)		Row total	
	No.	%age	No.	%age	No.	%age	No.	%age
Low (Below 3 lakh)	48	60.00	10	28.57	8	22.85	66	44.00
Medium (3-5 lakh)	19	23.75	13	37.15	10	28.58	42	28.00
High (5 lakh & above)	13	16.25	12	34.28	17	48.57	42	28.00
Column total	80	100.00	35	100.00	35	100.00	150	100.00

χ^2=21.39
P-value=0.0002641

A perusal of the data presented in Table 7 reveals that majority of the respondents (44.59%) with medium extension scores (10-12) had high income (5 lakh and above). The data further reveals that 44.12 per cent respondents with low extension scores had low income of (Below 3 lakh). However the percentage of respondents with low extension scores and having income of 5 lakhs and above were 32.36 per cent.

The statistical analysis of the data revealed significant association between income & extension contacts (χ^2=9.49) at (0.04984) level of significance which shows that as the extension contacts of the farmer with extension personnel increase the income of the respondents also increases.

3. Impact of national saffron mission on profitability of saffron growers
This section deals with the impact of National Saffron Mission on profitability of saffron growers. The impact of

National Saffron Mission with respect to productivity and profitability of the saffron growers was assessed by asking them the adoption of recommended practices before the launch of National Saffron Mission and during the year 2016 (after the launch of National Saffron Mission). The findings are presented here under:

4. Area expansion by the respondents before and after national saffron mission
The findings revealed that there was no change in the area brought under saffron by the saffron growers before and after the launch of National Saffron Mission. The possible reason for the same might be that respondents under study have inherited the land from their ancestors and the ancestral land was fragmented into smaller holdings, those who had other occupations other than agriculture might have less acres of land holdings.

Table 7: Association between extension contacts of saffron growers and income

Income	Distribution of respondents according to extension contact scores							
	Low (Below 10)		Medium (10-12)		High (12 & above)		Row total	
	No.	%age	No.	%age	No.	%age	No.	%age
Low (Below 3 lakh)	15	44.12	15	20.28	17	40.48	47	31.34
Medium (3-5 lakh)	8	23.52	26	35.13	14	33.33	48	32.00
High (5 lakh & above)	11	32.36	33	44.59	11	26.19	55	36.66
Column Total	34	100.00	74	100.00	42	100.00	150	100.00

$\chi^2 = 9.49$
P-value = 0.04984

5. Raised bed with furrows followed/adopted by the respondents before and after National Saffron Mission

The finding revealed that there was no change in the practise of raising bed with furrows by the respondents before and after National Saffron Mission. The probable reason might be that raised bed with furrows is a traditional recommended practise for saffron and no need was felt to change the practise.

A perusal of the data presented in Table 8 reveals that before National Saffron Mission none of the respondent adopted soil treatment in Saffron but after the launch of National Saffron Mission 100 per cent respondents practised soil treatment in Saffron. The possible reason might be that the respondents have been advised by the experts during National Saffron Mission that productivity of saffron is increased by soil treatment and pre-treatment to soil enhances both corm and pistol quality.

Table 8: Soil treatment followed/adopted by the respondents before and after National Saffron Mission (N=150)

Distribution of respondents according to adoption of soil treatment in saffron			
Before Mission		After Mission	
Number	Percentage	Number	Percentage
0	0	150	100

6. Treatment of corms followed/adopted by the respondents before and after National Saffron Mission

The findings revealed that corm treatment of saffron was followed by the respondents before and after National Saffron Mission. The possible reason might be that the respondents had been advised by the experts to treat saffron corms before mission and they had been benefited by their technical advice so they continued the practise after National Saffron Mission.

7. Management of rodents followed/adopted by the respondents before and after National Saffron Mission

The findings revealed that the respondents were adopting rodent management in saffron before National Saffron Mission and after National Saffron Mission. The possible reason might be that the farmers are convinced that management of rodents result in increased yield and corms are not damaged.

A perusal of the data presented in Table reveals that all the respondents were replacing saffron corms between 10-15 years before National Saffron Mission but after National Saffron Mission the duration of replacement of saffron corms was 5-10 years (recommended duration of the corm replacement). The National Saffron Mission organised various awareness/training programmes for the saffron growers and extension personnel motivated saffron growers to adopt the recommended duration of saffron corms for their increased yields.

Table 9: Replacement of corm followed/adopted by the respondents before and after National Saffron Mission

Distribution of respondents according to their adoption of duration of corm replacement			
Before Mission		After Mission	
Duration	Percentage	Duration	Percentage
10-15 yrs	100	5-10 yrs	100

Recommended duration of corm replacement is 5-10 years

8. Plant population (No. of corms maintained per Kanal) followed/adopted by the respondents before and after National Saffron Mission

The findings revealed that 10,000 corms/kanal have been maintained by the respondents before and after National Saffron Mission. The possible reason for maintaining the same number of corms/kanal before and after National Saffron Mission is that the respondents are convinced that increased yield is possible only by maintaining the desired plant population.

A perusal of the data presented in Table revealed that majority of the respondents (44.66% and 43.33%) were following the recommendation of SKUAST-Kashmir before and after National Saffron Mission. The percentage of respondents applying more than the recommended dose before and after National Saffron Mission were 34.66 and 38.00 respectively. The data further reveals that almost an equal percentage of respondents applied less than the recommended dose before and after National Saffron Mission. It can be concluded that there is no difference in the application of manures and chemical fertilizers so far as recommendations of SKUAST-K followed by the respondents before and after National Saffron Mission is concerned. The extension personnel should organise training camps for the saffron growers before flowering and motivate the saffron growers to apply the manures and chemical fertilizers as per soil test results thereby increasing their profits by reducing cost of cultivation.

A perusal of the data presented in Table 11 reveals that the respondents had their own conventional equipments/implements before mission which they used in their fields. But after the National Saffron Mission was launched bore-wells, seed-drills, brush-cutters, Weeder, Conventional Heat Driers were provided to the respondents. Since the mission envisages that farmers should go for mechanization for decreasing the cost of production and ultimately increasing the net profits. It has been noticed that a few bore-wells are functional and their visibility in the cluster villages is very less.

Table 10: Fertilizer application followed by respondents before and after National Saffron Mission

| Fertilizers and manures (kg) | Distribution of respondents according to application of manures and chemical fertilizers as per recommendations | | | | | |
| | Before Mission | | | After Mission | | |
	Recommended Dose	Less than Recommended Dose	More than Recommended Dose	Recommended Dose	<Recommended Dose	>Recommended Dose
Urea	20	15	24	25	10	32
DAP	12	5	3	18	4	4
MOP	12	6	5	10	4	14
FYM	23	5	20	12	10	7
Total	67(44.66)	31(20.66)	52(34.66)	65(43.33)	28(18.66)	57(38)

Recommended Dose of SKUAST-Kashmir (kg/Kanal)
Urea=5 DAP=5 MOP=3 & FYM=500 kg (5)

Table 11: Improved equipments/implements tools adopted by respondents before and after National Saffron Mission

| Distribution of respondents according to adoption of improved implements/equipments in Saffron | |
Before Mission	After Mission
Improved equipments supplied/used	Improved equipments supplied/used
Farmers used the conventional tools/equipments	Bore-well, Seed-Drills, Brush cutter, Weeder, Conventional Heat Drier provided

A perusal of the data presented in Table 11 reveals that before National Saffron Mission all the respondents were practising sun drying of saffron flowers (pistils) but after National Saffron Mission majority of the respondents (79.3%) adopted conventional heat driers, thereby increasing the net profits of the respondents.

Table 12: Scientific drying adopted by the respondents before and after National Saffron Mission (N=150)

Distribution of respondents according to adoption of scientific drying of saffron			
Before Mission		After Mission	
Sun drying		Conventional Heat Drier (119)	
No.	%age	No.	%age
150	100	119	79.3

A perusal of the data presented in Table 13 reveals that 80 respondents having holding size of 0-3 Kanals obtained average dried saffron yield of 100g before National Saffron Mission whereas after the launch of National Saffron Mission, the average yield obtained was 116g thereby their yield/kanal basis increased by 16 per cent. Data further reveals that 35 respondents having holding size of 3-6 Kanals obtained an average yield of 95g before National Saffron Mission but after the launch of National Saffron Mission the respondents obtained 116g thereby then average yield per kanal basis increased by 22 per cent. Likewise it was also revealed that 35 respondents having 6 & above holding size obtained average yield of 94g per Kanal and after the launch of National Saffron Mission their average yield increased by 21 per cent. From the data it is clear that percentage increase in yield of dry Saffron per Kanal basis obtained by the respondents was 16-22 per cent.

Table 13: Respondent wise production of dried saffron (g/kanal) before and after National Saffron Mission and its impact (N=150)

| Respondent wise production of dried saffron(g/kanal) before and after mission and impact in percentage | | | |
| Number of Respondents | Production of dried saffron (g/kanal) | | Impact (% Age increase in dried saffron) |
	Before Mission	After Mission	After Mission
80 (0-3)	100	116	16
35 (3-6)	95	116	22
35 (6 & above)	94	114	21

A perusal of the data presented in Table 14 reveals that after the launch of National Saffron Mission the cost of cultivation (Rs./kanal) decreased from 12.6 to 16.3 per cent. The data further reveals that as acreage under saffron increases the cost of cultivation decreases. Since mechanization can be practised on larger holdings so cost of cultivation automatically decreases as compared to small holding under saffron.

Table 14: Cost of cultivation (Rs/kanal) incurred by respondents before and after National Saffron Mission (N=150)

| Number of Respondents | Distribution of respondents according to cost of cultivation (Rs/kanal) of saffron | |
	Before National Saffron Mission	After National Saffron Mission
80 (0-3)	9146	7896
35 (3-6)	7631	6381
35 (6 & above)	6025	5262

Figures in parenthesis indicate the acreage (kanals) of the saffron growers

A perusal of the data presented in Table 15 reveals that respondents having small size of holding (0-3 kanal) under saffron obtained Rs. 854 net returns before National Saffron Mission whereas the same respondents obtained Rs. 7104 during 2016 (after National Saffron Mission) per kanal. Similarly net returns obtained by respondents with medium size of holding (3-6 kanals) under saffron before National Saffron Mission were Rs. 2369 but after National Saffron Mission (2016) the net returns of the respondents were Rs. 8619/kanal. The data further reveals that respondents with large size of holding (6 & above) under saffron obtained Rs 3975 net returns/kanal before National Saffron Mission, whereas the same respondents obtained Rs. 9738 net returns/kanal (2016) after the National Saffron Mission. The increase in net returns may be attributed to the fact that farmers under National Saffron Mission were provided with better tools, equipments, improved corms, improved machinery and visa-viz better recommended package of practise for saffron cultivation. Another possible reason might be the subservient intervention of National Saffron Mission

by providing all the basic facilities required for the cultivation of saffron.

Table 15: Area-wise net returns obtained by respondents before and after National Saffron Mission (N=150)

Number of respondents	Before mission/kanal (Rs)			After Mission/kanal (Rs)		
	Cost of cultivation	Total returns (10 g=1000)	Net returns	Cost of cultivation/kanal	Total returns (10 g=1500)	Net returns
0-3 (80)	9146	10000	854	7896	15000	7104
3-6 (35)	7631	10000	2369	6381	15000	8619
6 & above (35)	6025	10000	3975	5262	15000	9738

Figures in parenthesis indicate size of holding (Kanals)

Conclusion
From the present study, it can be concluded that there has been a drastic change in terms of the adoption of recommended package of practices by saffron growers of the Pulwama district after the launch of National Saffron Mission. However, a lot needs to be done to further expedite the production and productivity of the saffron in the valley. In addition to this, the flagship programme needs to be continued in order to extend its benefits to all the saffron growers of the valley.

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