

Knowledge Level of Saffron Growers in Pashtoon Zarghon District, Heart, Afghanistan

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Abstract: Saffron (*Crocus sativus* L.) is the most precious and most expensive spice in the world and is one of the important commercial crops in Afghanistan. Since the saffron re-cultivation and introduction started by 2002, the farmer knowledge on package of practices remain conspicuous. The present study was conducted in Pashtoon Zarghon district of Herat province, Afghanistan during 2012 to assess the knowledge level of the saffron growers regarding recommended cultivation practices. A total of 120 saffron farmers from Shah Abad and Golmir were interviewed using a pre-tested schedule. It was found that the over-all knowledge level of farmers in these areas varied significantly, about 65.0% of saffron growers had medium level knowledge, 21.7% had high level knowledge and 13.3% had low level of knowledge regarding recommended cultivation practices. Among the 120 farmers interviewed, 95.8-98.3% had correct knowledge on duration of the recommended corm, corm rate, fungi control, suitable month for sowing, number of stigma in each flower, appropriate weight for corm, recommended corm, earthing up, crust-breaking after planting and annually. Age, education, land holding and mass media participation of saffron growers had a positive and significant relationship with knowledge level. Hence, a series of educational activities should be undertaken by the agencies which focus on the good agricultural practices to improve the knowledge level of farmers.

Key words: Saffron (Crocus sativus L.), Saffron in Afghanistan, knowledge level, cultivation recommendation

1. Introduction

Saffron (*Crocus sativus* L.) is the most precious and most expensive spice in the world and is one of the important commercial crops in Afghanistan. It is a spice derived from the flower of saffron plant. The flower has three stigmas and these are often collected and dried to make the saffron spice. It is regularly cultivated in more than 7 provinces, with a total area of around 250 hectares involving approximately 1,300 farmers. Approximately 67,500 work days have been created, and around 3000 kg of saffron is the estimate for the current year — with a value of around \$3.9M, calculated according to an average price of \$1300/kg (in addition to annual 1406.25 MT of livestock fodder produced as a by-product).

In 1973, the Afghanistan government implemented a saffron trial planting in Ordokhan farm of Herat. However, the results of the production trials are not available anymore. After the return of refugees from Iran to Afghanistan in 1991, some who had worked in saffron fields in Iran brought back with them saffron corms, also referred to as bulbs or onions, and on their return planted saffron in Ghorian District of Herat Province. In 1998, DACAAR established saffron trails with four local farmers in semi-arid villages of Pashtoon Zarghon District of Herat Province. As a result of DACAAR's positive experiences with saffron up to 2002, the Ministry of Agriculture and some other NGOs began to distribute saffron corms to farmers and other saffron growers in the provinces of Herat, Mazar-i Sharif, Baghlan, Kandahar, Ghazni, Helmand,

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Logar, and others. The productivity and production of the saffron crop is mainly indicated by the saffron growers' adoption level. Therefore a study was undertaken to assess these aspects in detail with the following objectives:

(1) To study the knowledge level of saffron growers with respect to recommended saffron cultivation practices.

(2) To know the relationship between knowledge level of saffron growers and recommended individual cultivation practices.

2. Methodology

The study was conducted in Pashtoon Zarghon district of Herat province, Afghanistan during 2012. The Pashtoon Zarghon district has maximum area under saffron crop among 15 district of Herat province. A list of saffron growers was prepared for each of the selected villages, among the enlisted saffron growers, 60 saffron growers were randomly selected using simple random sampling technique. Thus, the total sample size for this study constituted 120 respondents from Shah Abad and Golmir villages to assess the knowledge level of the saffron growers regarding recommended cultivation practices. Data collection was done by personal interview method with the help of the well-structured schedule. The statistical tools such as frequency, percentage, mean and Chi-square (X^2) were used to analyze the data.

3. Results and Discussion

The data in Table 1 revealed that about 65% of saffron growers had medium knowledge while 21.7 and 13.3% of them had low and high knowledge category, respectively. The results may be due to the lack of exposure of farmers to the new practices that are developed in the district. Another important reason could be the low level of educational status in the study area. The farmers who had higher educational status possessed higher knowledge about the recommended cultivation practices of the saffron.

Category	Score	Shah Abad village n = 60		Golmir village n = 60		Overall districts n = 120	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Low	< 18	6	10	10	17	16	13.3
Medium	18-21	40	67	38	63	78	65.0
High	> 21	14	23	12	20	26	21.7
Total		60	100	60	100	120	100

Table 1 Knowledge level of the respondents with respect to recommended saffron cultivation practices.

Comparing the level of knowledge of saffron growers between the two villages, Chi-square (X^2) test showed no significant difference indicating that the level of knowledge was not influenced or affected by the origin or place of birth of the growers.

The data in Table 2 revealed that 98.3% of the saffron growers had correct knowledge about the practices like seed rate per Jerib and chemicals used for controlling rats. Further 95.5-97.5% of saffron growers had correct knowledge about the practices like appropriate weight of seed size corms, recommended

shape of corms, suitable month for sowing, recommended method of sowing, earthing up, crust-breaking after planting and annually, and method of harvesting. More than 90.0% of the saffron growers had correct knowledge about practices like number of pre-sowing ploughings, chemicals used for seed treatment, recommended dose of farmyard manure, ridge height, plant to plant spacing, row to row spacing, appropriate time of harvesting and post harvest practices. About 86.7% of saffron growers had correct knowledge on irrigation potential. More than 50.0% of

CL N		Knowledge level			
SI. No	Recommended cultivation practices	Correct	Percentage	rcentage Incorrect 92.5 19 95.8 5 95.8 5 94.2 7 97.5 3 95.8 5 98.3 2 90.0 12 51.7 58	Percentage
1	Number of pre-sowing ploughings	111	92.5	19	15.8
2	Appropriate weight of seed corms	115	95.8	5	4.2
3	Recommended corm shape	115	95.8	5	4.2
4	Chemical used for seed treatment	113	94.2	7	5.8
5	Suitable month for sowing	117	97.5	3	2.5
6	Recommended method of sowing	115	95.8	5	4.2
7	Seed rate per jerib/(2000 m ²)	118	98.3	2	1.7
8	Farmyard manure	108	90.0	12	10.0
9	Urea dose	62	51.7	58	48.3
10	Diammonium phosphate	59	49.2	61	50.8
11	Chemicals rat control	118	98.3	2	1.7
12	Plant to plant spacing	109	90.8	11	9.2
13	Row to row spacing	110	91.7	10	8.3
14	Irrigation potential	104	86.7	16	13.3
15	Ridge height	111	92.5	9	7.5
16	Earthing up, crust-breaking after planting and annually	115	95.8	5	4.2
17	Name of the pest or disease attacking the plant	7	5.8	113	94.2
18	Bio-control agents to control pest and disease	-	-	120	100.0
19	Chemicals used to control pest and disease	63	52.5	57	47.5
20	Appropriate time of harvesting	113	94.2	7	5.8
21	Method of harvesting	116	96.7	4	3.3
22	Post harvest practices	112	93.3	8	6.7
23	Yield	43	35.8	77	64.2

Table 2 Knowledge of the saffron growers with respect to individual recommended cultivation practices (n = 120).

saffron growers had correct knowledge about recommended dose of urea and diammonium phosphate and chemicals used to control pest and diseases. Awareness could be attributed to the fact that saffron is considered a commercial crop with high potential returns to the farmers which might have motivated them to learn more about the crop cultivation technologies. Added to this, it could also be mentioned that the farmers in the study area are involved in cultivating the crop for quite a long time and their past experience in cultivating the crop must have also added to their present level of awareness. Only 5% of saffron growers had the ability to identify the pests or diseases attacking their farms while none among the farmers knew anything about bio-control agents of pests and diseases. This indicates lack of extension contact and scientific training of saffron growers with government agencies. This is due to lack of awareness, extension contact, extension participation and mass media participation. Being, relatively a latest extension agency has made special efforts in educating the farmers on the importance of using bio-control agents in controlling pest and diseases on one side and on another side even the saffron growers have not established good contact with extension agency and did not take part in extension activities carried out by the field extension functionaries. The findings were in conformity with the findings of Aslami (2007) [1].

Table 3 showed that age, education, land holding and mass media participation of saffron growers were significantly related to their knowledge level at 5% probability level and other characters viz., family size,

Sl. No.	Variable	Correlation co-efficient ("r" value)	
1	Age	0.194*	
2	Education	0.181*	
3	Family size	0.127 ^{NS}	
4	Land holding	0.158*	
5	Annual income	0.118 ^{NS}	
6	Extension contact	0.067^{NS}	
7	Extension participation	0.042^{NS}	
8	Social participation	-0.076 ^{NS}	
9	Mass media participation	0.158*	
10	Economic motivation	-0.082 ^{NS}	
11	Innovativeness	-0.065 ^{NS}	

Table 3 Correlation between the selected personal, socio-economic and psychological characteristics of the respondents and their knowledge level (n = 120).

* Significant at the 0.05 level; NS = Not Significant

extension annual income. extension contact. participation, social participation, economic motivation, and innovativeness were not related to their knowledge level. It is revealed in the statistical study that as the age, education and the land holding increased, the knowledge level was also increased. Hence, it is recommended that to increase the knowledge level of the farmers, it is advisable to promote education programs, trainings etc. increase the production level of the saffron in the province.

The results showed that more number of the respondents belonged to medium knowledge level which was in line with the findings of Dadkhah (2003) and Miri Saed (2007) [2, 3]. Age and education were found to be significant with regards to the knowledge level of the farmers about the cultivation practices of the saffron. Hence, to improve the knowledge level, a series of educational activities should be undertaken by the government and non-government agencies focusing on complex practices which could be made available to the farmers through demonstrations.

Multiple regression analysis as presented in the Table 4 revealed that all the eleven variables fitted together in the regression model explained only 13% of the variation in the knowledge level of saffron growers' farmers. The calculated "t" value was significant at 0.05 level for age and education. The two partial b values had

Table 4Multiple regression analysis of knowledge level offarmers with independent variables (n = 120).

Sl. No.	Variables	b	Std. Error	"t" value
1	Age	0.052	0.024	2.128*
2	Education	0.245	0.122	2.006*
3	Family size	-0.006	0.092	-0.011 ^{NS}
4	Land holding	0.112	0.128	1.052^{NS}
5	Annual income	0.000	0.000	-0.727 ^{NS}
6	Extension contact	0.040	0.058	0.464^{NS}
7	Extension participation	0.015	0.072	0.303 ^{NS}
8	Social participation	-0.015	0.039	-0.452 ^{NS}
9	Mass media participation	0.062	0.041	1.418 ^{NS}
10	Economic motivation	-0.054	0.067	-1.007 ^{NS}
11	Innovativeness	-0.049	0.092	-0.656 ^{NS}

 $R^2 = 0.133$; *Significant at the 0.05 level; NS = Not Significant

positive relationship. Based on the "t" test criterion, these two variables had contributed most for variation in the knowledge level of saffron farmers. As revealed in the results, these variables had significantly contributed to the change in knowledge level of the farmers.

4. Conclusion and Recommendation

Afghanistan has grate potential to grow saffron because of its climate and its high quality than Iran saffron who produces 80% of the world. Hence, to improve the knowledge level, a series of educational activities should be undertaken by the governmental and non-governmental agencies focus on the good agricultural practices through demonstrations by keeping in view of the plant protection practices where farmers did not had considerable knowledge regarding these practices.

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