



## **An Analysis of the Effects of Saffron Cultivation on the Quality of Life of Rural Households (Case Study: Rostaq Dehestan in Khalilabad County)**

**Seyyed Amir Mohammad Alavizadeh<sup>1\*</sup> - Aliakbar Zendehdel<sup>2</sup>- Ali Izadi<sup>3</sup>**

1- Assistant Prof. in Geography and Rural Planning, Payam-e-Noor University, Tehran, Iran

2- MSc. Student in Geography and Rural Planning, Payame Noor University, Kashmar, Iran

3- MSc. Student in Geography and Rural Planning, Zabol University, Zabol, Iran

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### **Abstract**

**Purpose-** This study aimed to analyze the effects of saffron cultivation on the quality of life of rural households in Rostaq Dehestan in Khalilabad county.

**Design/methodology/approach-** This is an applied study based on a descriptive-analytical method used to examine the understudy parameters. The data were collected from 337 sample households based on field studies and by the Cochran sampling method. Then, the data were also collected based on selected indicators and using a household questionnaire. The validity of the questionnaire was evaluated by the university professors of geography and rural planning and agricultural promotion and training. The validity coefficient of the questionnaire was obtained using the SPSS software of 0.85. Kendall's statistical tests and one-way variance analysis was used in SPSS software to analyze the collected data.

**Findings-** The research findings show that Neghab village with a similarity index of 0.48 has the greatest impact of saffron cultivation on the quality of life of the households among the villages of Rostaq Dehestan. On the other hand, the results of the Kendall test confirmed the relationship between saffron cultivation and quality of life with 99% confidence. Moreover, the results of one-way ANOVA showed that the economic dimension among other effective dimensions of the saffron cultivation on the quality of rural households is more pronounced.

**Research limitations/implications-** The lack of access to statistical information when visiting the Agricultural Jihad of Khalilabad, Khalilabad Governorship, the Natural Resources Administration of Khalilabad, as well as completing the questionnaire depending on the issue at the village level are some of the challenges of the present study.

**Practical implications-** According to the research findings, solutions to promote and train the ways for production and productivity of households in this village are recommended for the cultivation of this supra-strategic product (Saffron).

**Originality/value-** The present study is important since it focuses on the impact of saffron cultivation for improving the quality of life of rural households with respect to the income generation process of this product.

**Key words:** Effects of cultivation, Saffron, quality of life, income generation, Rostaq Dehestan.

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## 1. Introduction

Saffron is an agricultural product that is adapted to the climate of the Middle East, Central Asia and part of Europe, which, along with its high nutritional value, has many industrial and even medical applications. This product, which is compatible with the climatic conditions of parts of the eastern and northeastern provinces of Iran, (Perme, Hosseini, Nabizadeh, & Mohebi, 2009) has a lot of support in the global markets so that Iran is the main exporter of high quality saffron in the world now (Farajzadeh & Mirzabiati, 2007). This product plays a major role in agricultural exchange earnings. The share of saffron exports to total non-oil exports and exports of traditional agricultural commodities is high and has had a positive upward trend in recent years. The growing trend of the saffron export on the one hand and income generation and entrepreneurship for the villagers of Iran, on the other hand, increase the need for attention to this product (Farahmand, Daneshvar Kakhki, Shahnoshi, Ghasemi & Hemati Kakhki, 2012). This product is remarkable for other agricultural products due to its advantages such as high water productivity in comparison with other agricultural products, the employment of the villagers and the prevention of their migration, the high value as a medicine and a kind of spice, ease of maintenance and transportation, and most importantly, its high income generation (Asghari Lafamjani, 2015). In general, the high economic value of saffron, the employment capacity of labor force during planting, growing and harvesting in the unemployment season of farmers in the region (Monazam Ismail Pour & Kurdavani, 2010) are some of the significant clear advantages of saffron cultivation over other dominant plantings in the region. The production of saffron for many saffron growers is recognized as a complementary yet valuable economic asset. In other words, employment in the production of saffron due to its seasonality and the possibility of simultaneous cultivation with other products do not contradict other agronomic and non-agronomic activities, and many people who work on this product may be busy with other economic activities in the rest of the year. In fact, because the time limit for saffron harvesting is almost short and up to a month and a half (apart from the steps involved in

land preparation and weeding), there is also a good opportunity for employment in other fields (Bazrafshan & Ebrahimzadeh, 2006). The cultivation of saffron can lead to a sustainable economy for farmers and villagers, but it can also create a special economic and political status for a given country. This product, which is mostly found in arid and desert areas, can play a vital role in the social and economic status of farmers and in general, in improving the quality of life of dwellers in arid and semi-arid regions. People were seeking to have a high quality of life since ancient times to the present era; in the past, this wish was limited to the improvement of the appearance of individuals, but today, a wide range of qualitative and mental variables are considered (Mokhtari & Nazari, 2010). Meanwhile, saffron cultivation in Khalilabad city was ranked fourth in the province of Khorasan Razavi. Among four rural counties, Rostaq county, with a smaller area than other rural counties, ranked first in saffron harvesting (Agriculture Jihad of Khalil-Abad, 2017). According to the (Agriculture Jihad of Khalil-Abad, every year 10% saffron is added to the saffron in under cultivation area. In this region, given that drought has greatly affected the lives of people in the past two decades, especially villagers whose lives are entirely dependent on nature and agriculture, products that require less water and are more profitable are cultivated. So, cultivating this low water-consuming crop in the area could reduce or minimize some of the drought damages, because the saffron water demand is 4000 mm<sup>2</sup>/ha and its watering rate is five times a year. Therefore, the cultivation of this product in addition to increasing income and creating job opportunities, increases the general level of welfare of villagers, improves the physical environment of the village and the housing, prevents migration to the city, increases the life expectancy and educational level of the villagers, increases the rate of saving, improves the nutritional status and the ability to buy vehicles, and so forth. Thus, we seek to investigate and analyze the effects of saffron cultivation on the quality of life of rural households in Rostaq (Khalilabad county). In this regard, the following research questions are dealt with:

- 1- What is one of the most important factors in the quality of life of rural households among the effects of saffron cultivation?
- 2- What kind of relationship is there between the effects of saffron cultivation and the quality of life of rural households?

## 2. Research Theoretical Literature

Today, agricultural sector is one of the most important economic sectors of Iran, with more than a third of gross national production and more than a quarter of employment and about 87% of the food supply and nearly 36% of non-oil exports (Shakoori, 2005). Indeed, the sustainability of the agricultural sector is among the main factors contributing to social stability and economic growth (Nilsson & Suinson<sup>3</sup>, 2005). In this regard, among the agricultural products, saffron, as a strategic product, on the one hand, has created good economic conditions for farmers and rural households and, on the other hand, has played a major role in inflow exchange of Iran. In addition to Iran and Spain, this product is cultivated in France, Greece, Algeria, Egypt, Morocco, Italy, Germany, Australia, Mexico, India, Pakistan, China, and Turkey (Foladi Targhi & Hosseini Mazinani, 2013). Iran is the largest producer of saffron in the world (Karbasi & Rastegari Pour, 2014). According to statistics reported by the Islamic Republic of Iran Customs Administration (IRICA), in 2013, the export of saffron was 149 tons, based on which Iran has earned \$ 139 million in exporting this product (Ghaddoosi, Mohtashemi, Motevalli Habibi & Shaedati, 2015). Therefore, the necessity of developing the under cultivation area of this product is justified due to the low need for water, especially with regard to the occurrence of subsequent droughts in recent years that is also suitable for the dry climate of Iran (this plants needs water notably in the autumn and winter), significant employment to prevent the migration of villagers, exports and appropriate inflow exchange with respect to the proper markets of this product, the few consequences and diseases of saffron (Mojarrad & Ghafourizadeh, 2014). It is noteworthy that according to the available information, in 2011, during the production and processing of saffron, 148500 Khorasani exploiters and a population of more than 600,000 people earned living using this precious product (Sadeghi, 2012) indicating that

saffron plays an important role in providing their revenues (Sabourbilandi, 2007).

This income has improved the quality of life of saffron farming households in terms of economic (job security, ensuring the occupational future and earning money, purchasing power of daily necessities, monthly savings, and so forth), social (satisfaction with job and income, the amount of trust in each other, participation in the rural affairs, the opportunity for the children to continue their education, and so forth), human (ability to pay for medical expenses, the availability of health services and suitable sports facilities and healthy water, having skills), and ultimately physical aspects (the quality of materials used in housing, having access to facilities and equipment for housing, the number of public transport vehicles in the village). Because quality of life is a complex and multidimensional concept influenced by factors such as time and space, and individual social value, it has different implicit meanings for different people and groups. Some have considered it as an area's survivability, others have interpreted it as measures for the level of attractiveness, and some as general welfare, social welfare, happiness, satisfaction, and so on (Epley & Menon, 2008). The quality of life reflects the general socio-economic characteristics of an area's environment, which can be used as a powerful tool for monitoring the social development planning. The quality of rural life is also defined as the conditions of the life of families and the village (Pal & Kumar<sup>5</sup>, 2005). Therefore, findings of quality of life can be used to recognize previous policy strategies and to design future planning policies (Lee, 2008). The concept of quality of life includes living standards and, according to the needs of individuals, provides indicators for improving the quality and standard of living of individuals (Fadda & Jiron, 1999). From Smith's view, the concept of quality of life is an intellectual abstraction to help consider the people's lifestyles in the frameworks in which the judgments can be facilitated about what can be better or worse and is similar to concepts like development, welfare, and well-being (Smith, 2002). The World Health Organization (WHO) defines the quality of life as a personal perception of the status of a person's life, in relation to the goals, expectations, standards and concerns

(attachments) of their lives. WHO introduces an international concept of 25 clauses that are summarized in six categories: 1. physical factors; 2. physiological factors; 3. independence; 4. social relations; 5. environment; and 6. spirituality (including religious and personal beliefs) (Jirojanakul, Skevington, & Hudson, 2003). Quality of life refers to a degree of high features of life or life satisfaction. The existential status of a person or the life satisfaction is determined by

external and internal factors on the one hand and, and on the other hand, by the inner perception and assessment of the facts as well as social and personal factors (Van Kamp, Leidelmeijer, Marsman & De Hollander, 2003).

A review of the literature indicates that a number of studies have focused on the role of saffron in the quality of rural households in Iran. Some of these are addressed as follows (Table 1).

**Table 1. Literature review**  
Source: Research findings, 2017

Title	Authors	Year	Results
Socio-economic sustainability analysis of saffron production and its impact on rural development; case: Balavelayat county of Torbat Heydarieh	Farahani et al.	2012	The results showed that rural economic conditions, such as low income, fluctuations in saffron prices, and so on affect the economic instability of villages, but villages are more socially sustainable. Also, there is a positive and significant between socioeconomic stability of saffron production and independent human variables of population and literacy and there is a negative and significant relationship between socioeconomic stability of saffron production and the distance from the city.
Analysis of socioeconomic effects of strategic products on the development of rural areas (Case Study: pistachio cultivation in Sheshtaraz county of Khalil-Abad City)	Fal Soleiman et al.	2013	The results showed that there is a significant relationship between the average environmental and economic causes as well as the public and private sector's supports, and increasing exploiters' incentives to develop pistachio crop. Also, the results show that pistachio product has been effective on the life of pistachio growers, so that its cultivation has improved economic and social indicators such as increasing the amount of savings, improving housing conditions, generating income, purchasing vehicles, etc.
Analysis of the effects of saffron cultivation on income and employment of producers in Lorestan province	Karami	2015	The results showed that, despite the small area of saffron farms and their harvesting, compared to other crops, the income and employment of farmers before and after cultivation of saffron were significant at 99% level.
Role of producing saffron strategic product in livelihoods of rural households (case study: Bajestan)	Asghari Lefmajani et al.	2015	The results showed that the income from saffron production in 29% of the households is higher than other incomes. Also, the amount of saffron production in households has increased in 46.7% of these households and has been unchanged or reduced in other households over the past 10 years.
Analysis of socioeconomic effects of saffron cultivation in Torbat Haydarieh and Neyshabur	Mahdian Moghadam and Tosan,	2015	The results showed that Torbat Heydarieh and Neyshabur have a comparative advantage in saffron production. The input and product market is economically and socially supported, and net social profitability in all cases is positive.
Effects of saffron cultivation on economic sustainability in villages of Baghazi county of Neyshabour city	Alawizadeh et al.	2016	The results of the Morris Davis model showed that 4 villages have low sustainability and 6 villages have moderate sustainability. In line with the results of this research, a proposal based on maintaining employment and supporting the saffron producers in the region to encourage saffron cultivation is mentioned.

**Table 1.**

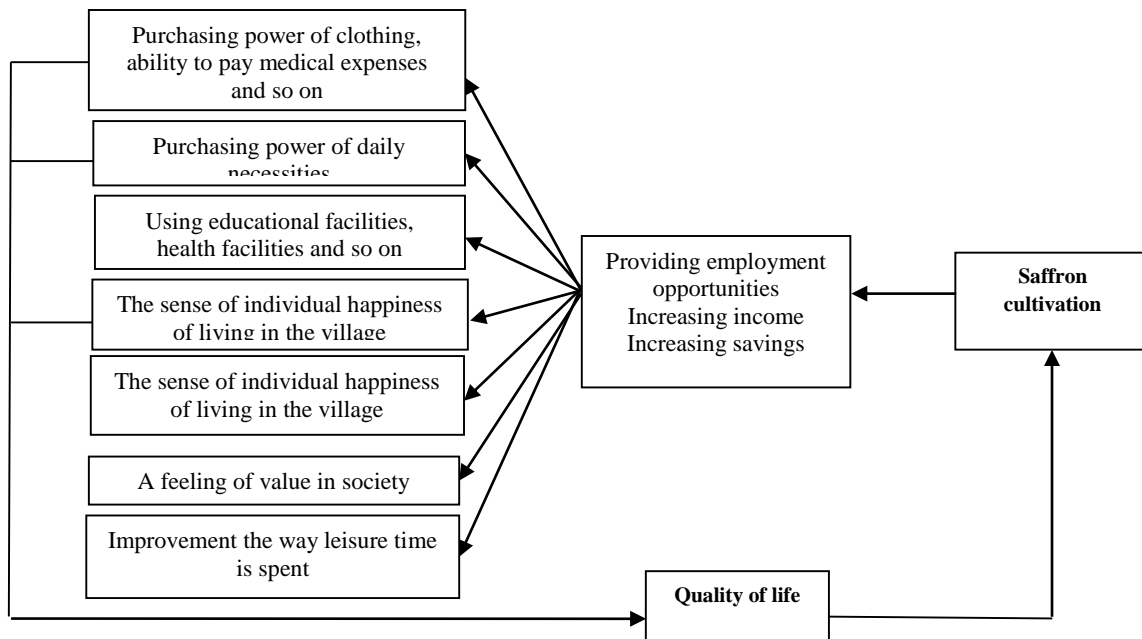
Title	Authors	Year	Results
Analysis of the socioeconomic effects of saffron cultivation on rural households with an emphasis on sustainable agriculture. case study: Balavaelayat county, Bakharz city	Bouzarj oMheri et al.	2016	The results indicate that the environmental conditions of the region are suitable for saffron cultivation, and also the positive socioeconomic effects of saffron cultivation on rural households have been proved, so that the income of saffron compared to other agricultural products has been confirmed at 1%.
The role of the quality of life and economic values on the rural business premises	Johnson <sup>1</sup> and Rasker	1995	The results show that four factors of economic value, qualitative value, social values and recreational values are important in choosing a place of rural business.
Analysis of the quality of life of elderly people in rural areas	Nilssona <sup>2</sup> et al.	2012	The results showed that the quality of life of the elderly will be favorable in the presence of a social network, namely, having a role in the family and society, social support and having a safe financial situation.

A large number of researchers, including McCall (1975), Mizzer (1987), Davidson and Carter (1991), O'Brien and Eide (1991), agree that the concept of quality of life always includes the following five dimensions:

1. Physical dimension: Concepts such as power, energy, ability to perform daily activities and self-care.
2. Psychological dimension: Anxiety, depression and fear
3. Social dimension: Relationship between the individual and the family, friends and colleagues, and ultimately the society.
4. Spiritual dimension: Person's understanding of life, purpose and meaning of life. It has been

proved that the spiritual dimension is not a subset of psychological dimension and is considered as an important and independent domain.

5. Symptoms of the disease or treatment changes such as pain, nausea and vomiting. This dimension is considered more prominently in specified tools (Nejat, 2008). However, considering the role of saffron in the quality of life of rural households and the susceptibility of some parts of Iran to its production, it seems that this product can maximize the quality of life in these areas. Finally, based on theoretical foundations and research background, the final model for analysis was as follows (Figure 1).



**Figure 1. Conceptual model**  
Source: Research findings, 2017

### 3. Research Methodology

#### 3.1 Geographical Scope of the Research

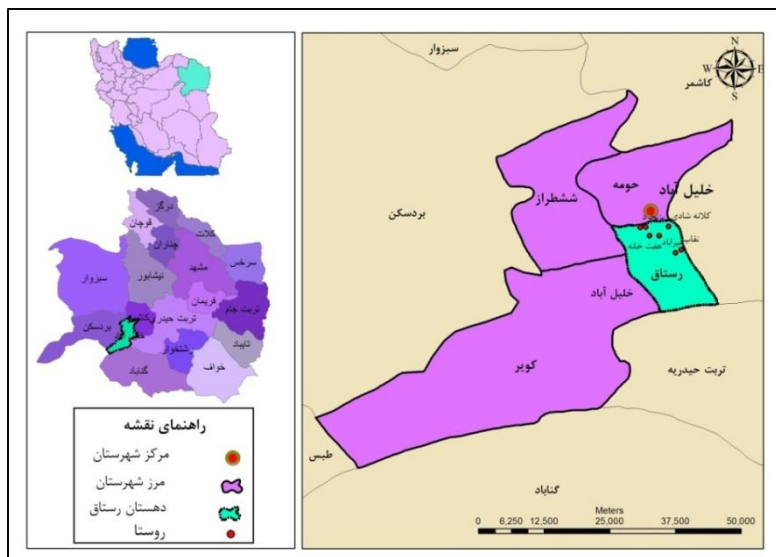
Khalil Abad city with an area of 57,671 km<sup>2</sup> is one of the cities of Khorasan Razavi province, with a long history of saffron cultivation. The city has two districts and four counties. The Rostaq county from the central district was studied (Figure 2). In the 2016 census, the population of this county was 8441 people and 2748 households, of whom 4328 were male and 4,113 were women. Based on the statistics of Khorasan Razavi Jihad Agriculture Organization in 2015, 4495 hectare of Khalilabad lands were under saffron cultivation,

1367 of which belongs to Rostaq county (Table 2). The average harvest of this product is 4 kg/ha. The market for sale of rural saffron in this county, is mainly in Kashmar. There is no packaging workshop in this city, and the product is sent by merchants and dealers to Mashhad or Tehran. Since the major part of the product is exported, the price of the product is highly dependent on the exchange rate. This is due to the fact that the price of saffron is closely linked to the exchange rate fluctuations and ultimately affects the income and the lives of the villagers in this part of Iran.

**Table 2. Saffron under cultivation areas by villages**

Source: Agricultural Jihad Organization of Khalilabad County, 2017

No.	Village	Under cultivation (ha)	Percentage
1	Bezanjard	315	23.4
2	Mir Abad	104	7.61
3	Neghab	223	16.31
4	Hossein Abad	119	8.55
5	Kalate Shadi	292	21.26
6	Ibrahim Abad	220	16.6
7	Haftkhaneh	94	6.72
8	Total	1367	100



**Figure 2. The position of the understudy area**

Source: Research findings, 2017

#### 3.2. Methodology

This is an applied research that uses a descriptive-analytical method to examine the parameters under study. The statistical population consisted of all rural households of Rostaq county of

Khalilabad, which consists of 2748 households, of whom 337 households were selected as the sample based on the number of households in sample villages (2748 households) and using the Cochran formula (at 95% confidence level) and

the sample size in each village was determined (Table 3).

**Table 3. Estimating sample size by villages**  
(Source: Population and housing census, 2011)

No.	Village	Household	Sample
1	Bezanjard	402	49
2	Mir Abad	268	33
3	Neghab	780	95
4	Hossein Abad	183	23
5	Kalate Shadi	281	34
6	Ibrahim Abad	681	84
7	Haftkhaneh	153	19
8	Total	2748	337

In the next step, in this research, based on the sources and documentary studies as well as the preliminary observations made in the understudy area, a researcher-developed questionnaire was

used to collect field data. The questionnaire was prepared using the indicators, components and criteria of the study in the form of a five-point Likert scale (Table 4).

**Table 4. understudy indicators**  
Source: Research findings, 2017

Dimensions	Indicator
Economic	Job security, ensuring the occupational future and earning money, purchasing power of daily necessities, monthly savings, the use of durable goods, having luxury furniture, annual savings, ability to pay for medical expenses, purchasing power of meat, fruits, and so on, purchasing power of clothing, weekly consumption of dairy products, weekly consumption of protein (meat and fish) in the diet, the fanatical ability to travel with family
Social	Satisfaction with job and income, the desire to continue the lives and activities of children, the sense of individual happiness of living in the village, the feeling of success in implementing decisions, feeling valuable in the community, feeling of having enough facilities, satisfaction with the way leisure time is spent, satisfaction with the time available for spending leisure time, the amount of trust in each other, participation in the rural affairs, the opportunity for the children to continue their studies
Human	The use of educational facilities, libraries, and classes in the Literacy Movement Organization, the availability of health services and suitable sports facilities
Physical	The quality of materials used in housing, access to facilities and equipment for housing, the number of public transport vehicles in the village, the quality of communication routes, the availability of recreational facilities

In the next step, to increase the research validity, the content and face validity method and technique were used by confirming the research questions by the experts' judgment (university professors). Then, 30 questionnaires were completed in order to determine the reliability of the questionnaire. After completing and entering them in SPSS software, Cronbach's alpha coefficient was calculated for them and its value was 0.85. Considering that the alpha value in the variables is higher than the level of 70%, therefore, it can be said that the research tools have a very good reliability and the research items (questionnaire) have a high internal correlation. In

the present study, in order to analyze the data for comparing villages of county in terms of the impact of saffron strategic product on the level of quality of life, according to the viewpoint of its inhabitants, the similarity approach to the ideal fuzzy option was used. Finally, the hypothesis was evaluated using the one-way ANOVA and Kendall's correlation test.

#### 4. Research Findings

In this study, according to the research problem, the effects of saffron cultivation on the quality of life of rural households in Rostaqcounty of Khalilabad were investigated and analyzed. Of the 337 households in the sample population, 94.3%

of the households were male and 5.7% female. The age of the subjects is divided into five categories. Among them, the age group of 40-49 years old (46.1%, 154 people) accounts for the largest number of participants in this study. Also, the minimum number of participants is above the age of 60, which is 3% of the total number of participants. According to the information obtained, 4.5% of the respondents were illiterate. 47.9% of them had the degree of the fifth grade of elementary school, 30.2% of them had the degree of the third grade of guidance school, 14.4% had a diploma and 2.1% of respondents had a bachelor's degree and higher.

According to the respondents, the average under-cultivation area of saffron in understudy villages is 2767.5 m. The largest number of respondents are cultivating on the areas of 2250 and 3375 m (20 and 30 I per unit and local area). The amount of dry saffron production among respondents who had cultivated saffron (237 people) was shown in (Table 5). The highest frequency, that is, more than 51%, is related to a group that has cultivated

less than 1 kg of saffron and the smallest of which belongs to a group with more than 2 kg. Of course, it should be noted that more than 41% of respondents (99 people) have annually harvested between 1 and 2 kilograms of dry saffron. Accordingly, about 90% of saffron farmers have annually harvested less than 2 kilos of saffron; this can be explained by the small size of the crop land. From saffron farmers' point of view, harvesting saffron took 10 to 20 days, and all respondents stated that they would use family labor to harvest and clean saffron. Due to the fact that flowers of saffron should be harvested daily, on days with a high harvest rate, in addition to the help of the family members, workers who are often residents of the village participate, too. One of the special advantages of this product is that its fruiting period occurs when the rest of the agricultural products of the region are harvested (the end of November and early December) while the farmers are free and are not employed. So, for a month, villagers, especially rural women, are harvesting and cleaning saffron.

**Table 5. Annual saffron harvest rate by the respondent farmers**

Source: Research findings, 2017

No.	Group	Frequency	Percentage
1	Lower than 1 kg	221	51.05
2	1-2 kg	99	41.77
3	Higher than 2 kg	17	7.18
4	Total	337	100

According to the supplementary questionnaire, table 6 presents the participants' annual income of the saffron crops. Most of the respondents' income was 3-5 million tomans with 28.27% and a

frequency of 67. The lowest income group was higher than 10 million tomans with about 10% and a frequency of 22.

**Table 6. Annual income of saffron respondents**

Source: Research findings, 2017

No.	Group	Frequency	Percentage
1	lower than 1 million tomans	53	21.51
2	1-3 million tomans	110	27.42
3	3-5 million tomans	120	28.27
4	5-10 million tomans	32	13.50
5	Higher than 10 million tomans	22	9.30
6	Total	337	100

As far as the participation rate of villagers is concerned, as shown in table 7, after the cultivation of saffron, the amount of financial and manual participation has expanded at the village level. However, the amount of advisory

contributions has also reduced. In general, the amount of participation in the two periods before and after the cultivation of saffron did not change much due to the high level of participation spirit



among the villagers, which led to the high amount of participation before cultivating saffron.

**Table 7. Percentage of community participation in two periods before and after saffron cultivation (%)**

Source: Research findings, 2017

Kind of participation	Before cultivation	After cultivation
Financial	22.3	23.5
Manual	39.2	40.4
Advisory	28.3	25.3
No response	10.2	10.8
Total	100	100

Table 8 shows the frequency, mean, standard deviation and rank of each of the indices studied in households with saffron cultivation. This research includes 35 indicators. As shown in the table 8, in households with saffron cultivation, the indices of weekly consumption of dairy products and access to housing equipment and facilities with the mean of 3.62 and 3.53, respectively, were

the highest and the indicators of the amount of library use and holding the literacy movement classes with the mean of 1.97 and 2.03, respectively, have the lowest rates. This suggests that cultivating saffron has been effective in increasing household income, improving nutrition and housing and, consequently, improving their quality of life.

**Table 8. Frequency, mean weight and standard deviation of quality of life indicators in saffron farming households According to respondents**

Source: Research findings, 2017

Indicators	Frequency					Mean	SD	Rank
	Very low	Low	Medium	High	Very high			
The desire to continue life and children's activities	16.2	14.1	38.9	18.8	12	2.96	1.209	12
Individual satisfaction with living in village	3	12.8	38.5	29.1	16.6	3.44	1.1010	4
A feeling of success in implementing the decisions	2.6	12.8	41.9	32.1	10.6	3.35	0.925	5
A feeling of value in society	4.1	14.1	35	29	17.80	3.46	1.036	3
Satisfaction with sufficient facilities	7.3	20.1	52.6	15	5	2.91	0.917	16
Using the educational facilities	9.8	31.6	43.2	10.7	4.7	2.81	2.198	18
Opportunity for children to continue studying	13.7	25.2	33.8	18.8	9.3	2.83	1.143	17
Using the libraries	38	35.9	17.9	6.8	1.3	1.97	0.976	34
Using the literacy movement classes	34.2	36	17.8	9	3	2.03	0.944	33
Using the health care services	4.7	21.8	46.6	21.8	5.1	3.01	0.912	10
weekly consumption of protein (meat and fish) in the diet	6.6	8.4	52.4	22.8	9.9	3.16	0.949	6
weekly consumption of dairy products	7.3	8.1	53.8	22.6	8.1	3.62	0.881	1
suitable sports facilities	1.7	4.7	40.2	36.3	17.1	2.20	2.104	32
the fanatical ability to travel with family	39.7	25.2	27.4	5.1	1.7	2.45	0.980	28
satisfaction with the way leisure time is spent	15.4	40.2	32.1	8.5	3.8	2.68	0.996	24
satisfaction with the time available for spending leisure time	12	29.9	41.9	11.1	5.1	2.73	0.835	21
the amount of trust in each other	7.7	28.2	48.7	14.5	9	3.10	1.031	8
participation in the rural affairs	8.5	16.2	38	30.8	6.4	3.11	0.941	7
Job satisfaction	5.1	17.5	45.3	25.6	6.4	2.91	1.097	13
ensuring the occupational future and earning money	13.2	20.9	38	17.5	10.3	2.59	0.995	26

**Table 8.**

Indicators	Frequency					Mean	SD	Rank
	Very low	Low	Medium	High	Very high			
purchasing power of daily necessities	14.1	16.2	39.7	23.9	6.1	2.76	0.891	19
monthly savings	15.4	27.4	44.9	7.7	4.7	2.25	0.994	31
Using the durable goods	8.1	26.9	49.6	12	3.4	2.89	1.641	15
Satisfaction with income	27.4	30.8	32.9	7.3	1.7	2.50	1.012	27
having luxury furniture	9.4	32.5	32.1	19.3	6.4	2.71	1.201	22
Annual savings	18.8	28.2	42	8	3	2.38	1.029	29
ability to pay for medical expenses	20.5	20.9	33.8	17.7	8.1	2.58	1.029	25
purchasing power of meat, fruits, and so on	24.4	28.2	35	10.3	2.1	2.58	1.058	24
purchasing power of clothing	9	13.2	57.3	13.2	7.3	2.97	0.958	11
The quality of materials used in housing	4.7	26.5	50.9	9.8	9.1	2.90	0.933	14
access to facilities and equipment for housing	8.1	19.7	44.4	17.9	9.8	3.02	1.048	9
the number of public transport vehicles in the village	4.3	9.8	35.9	29.1	20.9	3.53	1.061	2
the quality of communication routes,	23.1	17.9	28.2	22.6	8.1	2.75	1.264	20
the availability of recreational facilities	7.9	17.5	42.7	18.4	3.4	2.72	1.264	23

Table 9 shows the frequency, mean, standard deviation and rank of each of the studied indicators. As shown in table 9, in households without saffron cultivation, the indicators of weekly consumption of dairy products and access to facilities and equipment for housing with the average of 3.38 and 3.37, respectively, are the highest and the indicators of having luxury furniture and monthly savings rates with the average of 1.83 and 1.82, respectively, are the lowest.

As mentioned above, in both households with and without saffron cultivation, the indicators of weekly consumption of dairy products and access to facilities and equipment for housing with the mean of +3 had the highest mean, but in the lowest average of the indicators in the households

with saffron cultivation, the indicators of the rate of using the libraries and the rate of holding the literacy movement classes were the lowest with the mean of 1.97 and 2.32, respectively. However, in households without saffron cultivation, the lowest average belongs to the having luxury furniture and annual savings (with average of 1.83 and 1.82). This suggests that households with and without saffron cultivation are almost equal in daily spending, but what is noteworthy is that households without saffron cultivation have a low saving rate, while the average of this indicator in households with saffron cultivation is about two times. It can be seen that cultivation of saffron has been effective in increasing the quality of life of saffron farmers.

**Table 9. Frequency, mean weight, and standard deviation of quality of life indicators in households without saffron cultivation According to respondents**

Source: Research findings, 2017

Indicators	Frequency					Mean	SD	Rank
	Very low	Low	Medium	High	Very high			
The desire to continue life and children's activities	30	14	38	12	6	2.50	1.210	18
Individual satisfaction with living in village	18	6	50	20	6	2.90	1.106	7
A feeling of success in implementing the decisions	17.2	14.1	36.1	13.9	18.4	3.01	1.307	4
A feeling of value in society	12.1	8.9	32.2	34.6	12.3	3.26	1.160	3
Satisfaction with sufficient facilities	17.2	11.6	55.2	14.4	1.6	2.76	0.996	11

Table 9.

Indicators	Frequency					Mean	SD	Rank
	Very low	Low	Medium	High	Very high			
Using the educational facilities	17.2	20.4	46.6	8.1	7.7	2.63	1.060	13
Opportunity for children to continue studying	14.1	30.2	14.5	20.9	20.3	2.96	1.363	6
Using the libraries	35.3	21.6	23.4	10	9.7	2.34	1.304	20
Using the literacy movement classes	50.1	8.9	29.2	8.5	3.3	2.01	1.150	25
Using the health care services	17.2	31.6	35.5	12.4	3.3	2.47	0.969	19
weekly consumption of protein (meat and fish) in the diet	17.2	6.3	60.5	12.3	3.7	2.76	0.986	11
weekly consumption of dairy products	2.1	10.3	39.9	40	7.7	3.38	0.838	1
suitable sports facilities	45.5	20.2	29.9	3.3	1.1	1.90	0.937	28
the fanatical ability to travel with family	25.6	28.9	36.1	6.2	3.2	2.29	1.066	21
satisfaction with the way leisure time is spent	12.5	14.8	59.5	6.2	7	2.77	0.962	11
satisfaction with the time available for spending leisure time	22.3	16.7	14.2	11.5	35.3	2.50	1.335	18
the amount of trust in each other	20.2	16.8	15.5	35.3	12.2	3.56	1.363	5
participation in the rural affairs	11.1	31.2	27.8	24.4	5.5	2.76	1.084	13
Job satisfaction	23.6	20.5	35.1	18.6	2.2	2.53	1.105	16
ensuring the occupational future and earning money	23.7	28.6	22.4	12.1	13.2	2.59	1.303	14
purchasing power of daily necessities	31.2	20.4	41.1	1.1	6.2	1.27	1.100	22
monthly savings	22.2	17.2	41.2	10.2	9.2	2.52	1.087	17
Using the durable goods	42.2	31.2	21	3.2	2.4	1.83	0.865	29
Satisfaction with income	22.2	26.2	27.3	15.2	9.1	2.52	1.185	17
having luxury furniture	42.3	21	25.3	6.8	4.6	2.15	1.201	23
Annual savings	50.2	19.1	25.4	2.2	3.1	1.82	0.936	30
ability to pay for medical expenses	41.6	14.2	38.2	2.2	3.8	1.99	0.959	27
purchasing power of meat, fruits, and so on	34.1	27.2	22.3	10.2	6.2	2.14	1.083	24
purchasing power of clothing	17.7	32.2	24.1	20.4	5.6	2.59	1.120	15
The quality of materials used in housing	17.7	21.2	37.3	16.9	6.9	2.72	1.129	10
access to facilities and equipment for housing	23.4	8.1	51.6	9.2	7.7	2.65	1.123	12
the number of public transport vehicles in the village	6.1	12.5	33.4	27.2	20.8	3.37	1.116	2
the quality of communication routes,	33.6	9.2	25.1	17.6	14.5	2.71	1.445	9
the availability of recreational facilities	18.2	11.5	40.2	23.6	6.5	2.86	1.128	8

Also, in table 10, the fuzzy similarity method has been used to measure the dimensions of the research study, which is one of the important dimensions of saffron cultivation in rural households. These include economic, social, human and physical dimensions. The fuzzy TOPSIS score calculations show that Neghab

village has the highest level of saffron cultivation impact on quality of life in the Rostaq county. The villages of Ebrahim Abad, Baznjan, and Mir Abad are also moderately effective. On the other hand, the villages of Hossein Abad, Kalateh Shadi, and Haft Khan have a low impact rate.

Table 10. The results of calculations of the fuzzy topsis method in the studied dimensions of in Rostaq County

Source: Research findings, 2017

C	Ideal solution	Anti-ideal solution	Similarity index	Effectiveness
Neghab	3.07	2.82	0.48	Acceptable
Ibrahim Abad	3.08	2.18	0.41	Medium
Bezanjerd	3.10	2.09	0.40	

**Table 10.**

C	Ideal solution	Anti-ideal solution	Similarity index	Effectiveness
Mir Abad	3.14	2.07	0.40	Weak
Hossein Abad	3.30	2.04	0.39	
Kalateh Shadi	3.16	1.93	0.39	
Haftkhan	3.32	2.03	0.38	

On the other hand, in this research, one-way ANOVA was used to analyze the level of effect of saffron cultivation on the quality of life of rural households. The results of the test show that with

a confidence level of 99%, there is a significant difference between the level of effect of saffron cultivation and quality of life (Table 11).

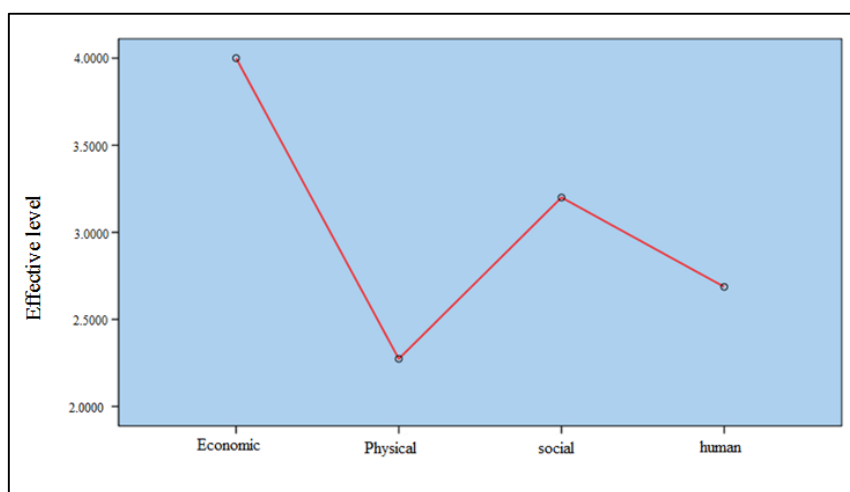
**Table 11. Results of one-way ANOVA on the effect of saffron cultivation on the quality of rural households in the understudy area**

(Source: Research findings, 2017)

Level of effect	Sum of square	df	Mean square	F	Sig
Intergroup	73.581	3	8.164	1.521	0.000
Intragroup	16.661	445	0.006		
Total	90.242	448			

The results of comparing the level of the effect of saffron cultivation on the quality of life of rural households in the understudy villages indicate that

economic factors among the effects of saffron cultivation on the quality of life of households are more prominent than other factors (Figure 3).



**Figure 3. Comparison of the effect levels of saffron cultivation on the quality of life of rural households in Rostaq County**

Source: Research findings, 2017

In order to prove the second question, Kendall Tau test was used. The Kendall Tau correlation test shows a significant relationship. The Kendall correlation coefficient is known as the symmetry coefficient and is similar to Spearman's correlation for ordered (or ranked) attributes. Therefore, the Kendall Tau correlation measures the intensity of the correlation between the two sequential variables or a sequential variable and a

distance variable (in a population with a large sample size). Spearman correlation also has all the features of Kendall, but it is used in low sample size population. In this research, the Kendall correlation coefficient was found as 0.142. Due to the fact that the significance value in this study is 0.002 and this value is smaller than 0.05, then this correlation coefficient is significant at the level of 0.05. In this research, zero assumption ( $H_0$ ) is

based on the absence of a relationship between saffron cultivation and quality of life of villagers. Therefore, it can be concluded that there is a

significant relationship between saffron cultivation and rural life quality (Table 12).

**Table 12. Results of Kendall Tau test**

Source: Research findings, 2017

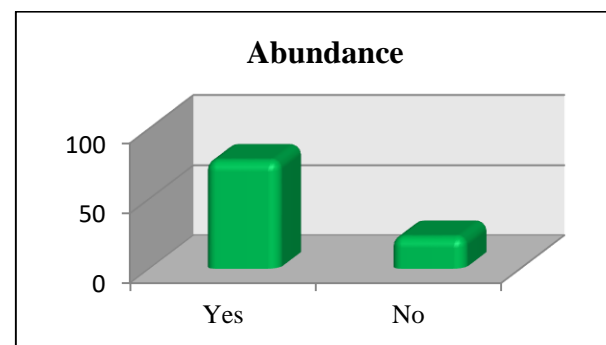
Saffron cultivation	Quality of life	test	
0.142	1	Correlation	Kendall Tau
0.002	0	Number of samples	
337	337	Correlation	
1	0.141	Sig	
0	0.002	Number of samples	
337	337		

## 5. Discussion and Conclusion

Agricultural sector is one of the most important economic sectors and the first economic sector of Iran based on the value-added production. So, about 25% of gross domestic product and foreign exchange earnings from non-oil exports and nearly 80% of the food needs of the community, and about 25% of the employment in Iran is generated through the agricultural sector. Due to the major role in the employment, income and living of villagers, and the importance of providing food for the people, providing basic materials, employment and income generation, the stability and continuity of growth of this sector is one of the most important factors in social stability and economic growth. Therefore, it is the key factor in rural development, agricultural development and its economic consequences, because agriculture is the main source of income for the vast majority of inhabitants of rural areas. Saffron as one of the agricultural products of comparative advantage is valuable, and has a unique position in the world. Saffron that is one of the most important and strategic products, plays a very significant role in the economic and social status and consequently, the quality of life of the villages. In this regard, the present study aimed to analyze the effects of cultivating saffron on the quality of life of rural households in a case study of Khalil Abad city (Rostaq county).

According to the results on the one hand, about 50% of saffron farmers have less than 1 kilogram of saffron, and 40% have harvested between 1 and 2 kilograms. This amount is approximately in line with the average surface area of 2576 mm<sup>2</sup>. Because the average harvest per hectare is 4 kilograms. Of course, it should be noted that given the proper conditions for growing saffron in

this area, the production per household is a small amount due to factors such as the small size of the land and the tendency of villagers to cultivate at least two products to reduce the risk. The land where saffron is cultivated should be changed every few years. For this reason, the villagers tend to garden and plant products with a higher average age, such as pistachios, pomegranates, and grapes. Also, the results of Kendal test on the other hand, indicate a significant relationship between saffron cultivation and improving the quality of life of villagers. In spite of the opportunities offered by the strategic product of saffron for rural households, according to what the respondents have stated, it can be concluded that the cultivation of saffron as a strategic product has been able to improve dramatically the quality of life of rural households in the rural area of Rostaq county (for example, ability to save money and buy luxurious furniture) (Figure 4).



**Figure 4. Effect of saffron cultivation on the quality of life of rural households in understudy area**

Source: Research findings, 2017

In fact, the results are consistent with those of Buzarjomehri, Sheikh Ahmadi & Javani (2016) that stated the positive socio-economic effects of saffron cultivation in rural development. In line with the present research in the field of enhancement and development of saffron cultivation in order to promote and improve the quality of life of rural households in Khalil Abad, the following suggestions are presented:

- 1- Increasing the public sector's support for saffron farmers to increase the willingness of villagers to increase the under cultivation area of saffron.
- 2- Shortening the hands of brokers and intermediaries and, as a result, more benefits for rural saffron farmers.
- 3- Establishing saffron packing centers at the city level and employing villagers in these workshops.
- 4- Training the villagers on how to dry saffron (due to the increase of improper

methods in recent years) and as the result, increasing the quality of saffron.

- 5- Changing the traditional markets into advanced market through buying farm products and storing them by rural cooperatives to sell at the right time at the right price.
- 6- Developing and promoting the saffron cultivation as a sustainable occupation, in order to motivate the population to settle in the villages to reduce unemployment and migration in the Rostaq county.
- 7- Promoting and training the saffron cultivation for applicants of villages with crop cultivation conditions in Rostaq county.

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## تحلیل اثرات کشت زعفران بر کیفیت زندگی خانوارهای روستایی (مطالعه موردی: دهستان رستاق در شهرستان خلیل آباد)

سیدامیرمحمد علویزاده\*<sup>۱</sup> - علی اکبر زنده‌دل<sup>۲</sup> - علی ایزدی<sup>۳</sup>

۱- استادیار جغرافیا و برنامه‌ریزی روستایی، دانشگاه پیام نور، تهران، ایران.

۲- کارشناسی ارشد جغرافیا و برنامه‌ریزی روستایی، دانشگاه پیام نور، کاشمر، ایران.

۳- کارشناسی ارشد جغرافیا و برنامه‌ریزی روستایی، دانشگاه زابل، زابل، ایران.

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### چکیده مبسوط

#### ۱. مقدمه

زعفران از محصولات کشاورزی سازگار با شرایط آب و هوایی منطقه خاورمیانه، مرکز آسیا و قسمتی از اروپا است که ضمن ارزش بالای غذایی، دارای کاربردهای متعدد صنعتی و حتی پزشکی است. این محصول که با شرایط آب و هوایی بخشی از استان‌های شرق و شمال شرقی ایران کاملاً سازگار است. این محصول نقش مهمی در درآمد ارزی کشاورزی دارد. روند رو به رشد سهم صادرات زعفران از یک سو و درآمدزایی و کارآفرینی برای روستاییان کشور از سوی دیگر لزوم توجه به این محصول را دوچندان می‌کند. به طور کلی ارزش اقتصادی بسیار بالای زعفران، قدرت جذب نیروی کار در هنگام کاشت، داشت و برداشت در فصول بیکاری کشاورزان منطقه از جمله دلایلی هستند که برتری چشمگیر زراعت زعفران را به دیگر کاشت‌های غالب در سطح منطقه روشن و آشکار می‌سازد. در این میان، کشت زعفران در شهرستان خلیل‌آباد دارای رتبه چهارم در سطح استان خراسان رضوی بوده و در میان چهار دهستان، دهستان رستاق با وجود مساحت کوچکتر نسبت به دیگر دهستان‌ها، رتبه اول را در برداشت زعفران به خود اختصاص داده است. با توجه به گزارش اداره جهاد کشاورزی شهرستان خلیل‌آباد هر ساله ۱۰ درصد به سطح زیرکشت زعفران افزوده می‌شود. در این منطقه با توجه به اینکه در دو دهه اخیر خشکسالی به شدت در زندگی مردم و به ویژه روستاییان که زندگی آنها کاملاً وابسته به طبیعت و کشاورزی می‌باشد، تاثیرگذار بوده

است، محصولاتی کشت می‌شوند که نیاز آبی کمتر و سودآوری بیشتری داشته باشند؛ بنابراین کشت این محصول کم‌آب در منطقه می‌تواند مقداری از خسارات خشکسالی را کاهش داده و یا به حداقل برساند. زیرا نیاز آبی زعفران ۴۰۰۰ مترکعب در هر هکتار و تعداد دفعات آبدهی آن نهایتاً ۵ بار در سال می‌باشد.

#### ۲. مبانی نظری

امروزه بخش کشاورزی یکی از مهم‌ترین بخش‌های اقتصادی کشور است به طوری که بیش از یک سوم تولید ناخالص ملی و بیش از یک چهارم اشتغال و حدود ۸۷ درصد از نیازهای غذایی کشور و نزدیک به ۳۶ درصد از صادرات غیر نفتی به این بخش وابسته است. در این راستا، در میان محصولات کشاورزی، زعفران به عنوان محصولی استراتژیک توانسته است از یک سو، شرایط اقتصادی خوبی را برای کشاورزان و خانوارهای روستایی و از دیگر سو نیز، ارزآوری مناسبی برای کشور بوجود آورد. لازم به ذکر است که بر اساس اطلاعات موجود، در سال ۱۳۹۰ در مراحل تولید و فرآوری زعفران ۱۴۸۵۰۰ بهره‌بردار خراسانی و جمعیتی بیش از ۶۰۰۰۰۰ نفر از محل همین محصول گرانبها امرارمعاش می‌کردند به گونه‌ای که زعفران نقش اصلی در تامین درآمدهای آنان دارد. این درآمد به حدی است که توانسته است در کیفیت زندگی خانوارهای زعفران‌کار تاثیر چشم‌گیری داشته باشد. از آنجا که کیفیت زندگی، مفهوم پیچیده و چند بعدی است که تحت تاثیر مولفه‌هایی چون زمان و مکان، ارزش فردی اجتماعی قرار دارد، از این رو معانی گوناگونی برای افراد و گروه‌های مختلف برای آن



مرتب است. برخی آن را به عنوان قابلیت زیست پذیری یک ناحیه، برخی دیگر به عنوان اندازه‌های برای میزان جذابیت و برخی به عنوان رفاه عمومی، بهزیستی اجتماعی، شادکامی، رضایتمندی و مواردی از این دست تعبیر کرده‌اند.

### ۳. روش تحقیق

این پژوهش از نوع کاربردی است که به شیوه توصیفی-تحلیلی برای بررسی پارامترهای مورد بررسی سود جسته است. داده‌ها براساس مطالعات میدانی و با روش نمونه‌گیری کوکران، از سطح ۳۳۷ خانوار نمونه جمع‌آوری شدند. سپس جمع‌آوری داده‌ها براساس شاخص‌های انتخابی و با استفاده از پرسشنامه خانوار انجام شده است. روایی پرسشنامه توسط اساتید جغرافیا و برنامه‌ریزی روستایی و ترویج و آموزش کشاورزی مورد بررسی قرار گرفت. ضریب پایایی پرسشنامه برابر با ۰/۸۵ بدست آمد. برای تحلیل داده‌های گردآوری شده از آزمون‌های آماری کندال و تحلیل واریانس یک طرفه در نرم‌افزار SPSS استفاده شده است.

### ۴. یافته‌های تحقیق

از یک سو، حدود ۵۰ درصد زعفران‌کاران کمتر از ۱ کیلوگرم زعفران داشته‌اند و ۴۰ درصد نیز بین ۱ تا ۲ کیلوگرم برداشت نموده‌اند. این مقدار با توجه به میانگین سطح زیرکشت که ۲۷۶۷/۵ متر مربع است، تقریباً همخوانی دارد. زیرا میانگین برداشت در هر هکتار ۴ کیلوگرم می‌باشد. البته قابل ذکر است که با توجه به شرایط مناسب رشد زعفران در این منطقه، میزان تولید در هر خانوار، رقم اندکی می‌باشد. از دلایل این امر، می‌توان به عواملی همچون کوچک بودن قطعات زمین، گرایش روستاییان به کشت حداقل دو محصول برای کاهش میزان ریسک، زعفران محصولی است که باید هر چند سال

یک بار زمین آن تعویض شود به همین دلیل رغبت روستاییان به باغداری و کاشت محصولاتی که میانگین سنی بالاتری دارند مانند پسته، انار و انگور بیشتر می‌باشد، اشاره نمود.

### ۵. نتیجه‌گیری

بخش کشاورزی یکی از مهمترین بخش‌های اقتصادی و به اعتبار ارزش افزوده تولیدی، اولین بخش اقتصادی کشور به شمار می‌آید زیرا کشاورزی، منبع عمده درآمد معاش اکثر قریب به اتفاق ساکنان مناطق روستایی است. در این میان زعفران به عنوان یکی از محصولات کشاورزی دارای برتری نسبی، از محصولات ارزشمند است. لذا، پژوهش حاضر به تحلیل اثرات کشت زعفران بر کیفیت زندگی خانوارهای روستایی مطالعه موردی شهرستان خلیل آباد (دهستان رستاق) پرداخته است. نتایج حاصل از آزمون کندال از سویی دیگر، وجود رابطه معنادار بین کشت زعفران و ارتقای کیفیت زندگی روستاییان را بیان می‌کند. در این میان با وجود فرصت‌هایی که محصول استراتژیک زعفران برای خانوارهای روستایی بوجود آورده است و با توجه به آنچه که پاسخگویان اظهار داشته‌اند می‌توان نتیجه گرفت که کشت محصول استراتژیک زعفران توانسته است بر کیفیت زندگی خانوارهای روستایی دهستان رستاق (توانایی پس‌انداز، تامین لوازم لوکس منزل) تاثیر چشم‌گیر و شگرفی داشته باشد.

**کلمات کلیدی:** زعفران، اثرات کشت، درآمدزایی، کیفیت زندگی، دهستان رستاق.

### تشکر و قدرانی

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