



## **Investigating the role of agricultural development in sustainable rural development**

*Morad Keykhosravi<sup>1</sup>, Sahar Dehyouri<sup>2\*</sup>, Seyed Mehdi Mirdamadi<sup>3</sup>*

<sup>1</sup>*Agricultural Development Department, Science and Research Branch, Islamic Azad University, Tehran, Iran.*

<sup>2\*</sup> *Agricultural Department, Environmental Science Research Center, Islamshahr branch, Islamic Azad University, Islamshahr, Iran*

*Dehyouri.s@gmail.com, <https://orcid.org/0000-0001-9447-3762>*

<sup>3</sup> *Agricultural Development Department, Science and Research Branch, Islamic Azad University, Tehran, Iran*

### **Abstract**

The purpose of this research is to investigate the role of agricultural development in the sustainable rural development of Bilvar district of Kermanshah (including Duestan behind Varazavor dam) and to identify the agricultural abilities and talents of the region. The research method is descriptive-analytical, and the necessary information was collected based on survey and library studies, and the SWAT model was used to identify weaknesses and strengths, opportunities and threats, and the binomial test method was used to test the hypotheses. The statistical population of this research is tomato farmers and rural experts of the study area, 235 farmers and 20 sector experts were selected as the sample size using Cochran's formula, and 200 farmers' questionnaires were returned. Cronbach's alpha coefficient was used to determine the reliability of the questionnaire, which is 0/77 for the farmers' questionnaire and 0/71 for the experts' questionnaire. In this research, EXEL and SPSS software were used for data analysis and GIS software has been used to prepare geographical location maps. The findings show that the hypothesis of Bilvar region has the potential for agriculture and horticulture has been rejected by the farmers and confirmed by the experts, and the agricultural hypotheses will increase the employment and reliable income of agriculture in the study area, and summer work, especially tomato cultivation in Achieving sustainable rural development has the greatest impact, confirmed by both groups. The final results of the research show that agriculture, especially tomato cultivation, has had a significant impact on sustainable rural development in Bilwar.

**Key words:** Agricultural Development, Sustainable Rural Development, SWOT Model

### **Introduction**

Rural development, like the concept of development, has had different definitions over time, and its limits include various economic, social and cultural categories. A

group considers rural development to be synonymous with rural development, within the framework of this concept, rural development is a comprehensive and multi-dimensional concept that includes the development of agriculture and its related

activities, as well as economic infrastructure, social services. It includes related facilities and human development. In this sense, rural development is a feedback from social, economic, cultural, institutional and physical factors (Bahrami, 1383: 145) According to most experts, agriculture has important and fundamental roles at different levels. including having a major contribution in achieving the development goals of the third millennium, sustainable development and poverty reduction, income generation for the rural poor in developing countries Whelan, 2003: 7 Creating food security Gilis 1383: 10 Reducing food expenses in the Rahimi household budget 1379:10, Changing the structure of the production economy, Qadiri Masoum, 1382:110, Stabilization of prices of agricultural products, proper use of geographical infrastructure in rural areas, Francis and others, 1387:395 Deep dependence on natural resources and impact on environmental sustainability, User Being the agricultural sector, Rahimi, 1379: 12, and the foundation of non-agricultural activities in the village and district, Dalhamer, 2007: In addition, in the process of national development, the roles of agriculture such as: Helping the development of other sectors by creating an economic surplus, providing capital, providing energy and raw materials for handicrafts and industry, helping to provide capital for economic growth, helping to provide foreign exchange resources, helping to save labor force, helping the market of industrial goods, Shakuri, 2014 7: Achieving self-sufficiency in agriculture in order to prevent being dominated, changing the logical direction of migration at the level of the country and different sectors, Qadiri

Masoom, 1382: 117, the role of tourism in agriculture in rural areas, Firoznia, 1382: 114, pointed out. Bilwar district of Kermanshah city (includes Dodestan behind Varazavor Darband) due to the relatively suitable power and talent of water and soil, the villagers of the district have the field of activity in agriculture, agriculture and tomatoes. This district is the tomato hub of the province. The main issue of this article is how to take advantage of the facilities and capabilities available in the rural development of Bilwar district. The present study tries to investigate the role of agriculture in the sustainable rural development of Bilwar district by asking the following questions and identify the problems of agricultural development in the region and suggest solutions to solve them:

Research questions

- 1- What are the agricultural capabilities of the region?
- 2- What solutions can be taken for sustainable rural development?
- 3- To what extent is the role of summer work, especially tomato cultivation, in sustainable rural development of the region?

*Research hypotheses*

- ♣ It seems that Bilvar district has the talent for agriculture and horticulture.
- ♣ It seems that agriculture increases the employment and reliable income of agriculture in the study area will be
- ♣.It seems that the role of summer work, especially tomato cultivation, in achieving sustainable rural development It has the greatest effect.

*Research purposes*



The main purpose of this research is to investigate the role of agriculture in the sustainable development of the rural areas of Bilwar district (including Dudhestan behind Darband Varazavor). In this research, all the efforts are that all the factors that are somehow involved in the agriculture of the region be investigated.

Other research objectives are:

- 1- Identifying the agricultural talents of the region
- 2- Identification of agricultural limitations in the region
- 3- Providing solutions to strengthen the strengths and eliminate the weaknesses of agriculture
- 4- Providing solutions for the rural development of the region with an emphasis on profitable and profitable agriculture.

### **Background research**

The topic of sustainable development gradually entered the academic literature of Iran since 1370. So far, many books and articles have been published on the topic of sustainable development, which mostly dealt with the theoretical foundations of sustainable development. In the field of regional studies, articles and theses have been compiled, and some of these works are introduced below:

Sustainable development of agriculture, as one of the basic axes of growth and development, plays an important role in the economic development of countries. Since, in Iran, like other developing countries, agriculture is one of the most important economic sectors, it includes a significant percentage of production and employment. Sustainable agriculture plays an important

role in preserving productive resources, biodiversity, ensuring environmental health and other aspects of agricultural production (economic, social, and political). ", first examines the report of the Pearson, Brant and Bruntlan commission and then emphasizes the requirements of sustainable development of agriculture in the world.

This article explains the relationship between the farmer and the consumer and, in short, aims at the usefulness and excellence of human resources in achieving a sustainable form of agriculture. Graham 1998 in his book entitled "Sustainable development of agriculture and rural development" deals with the relationship between these two categories and discusses the role of sustainable agriculture on sustainable rural development. The topics discussed are: the need to meet basic human needs, sustainable development of agriculture, the central role of sustainable agriculture in sustainable rural development, and finally introducing a strategy for sustainable agriculture and rural development. Badri et al. in sustainable rural development (case study): Qir and Karzin cities, Fars province. The results show that the family exploitation system has a direct relationship with sustainable rural development and can play an effective role in the sustainable rural development of Qir and Karzin. Pishrou et al 2019 (an article entitled the role of Nakhilat in sustainable rural development of Dashtestan) with an emphasis on economic dimensions. The results of this research show that the stability of rural development in this region is low depending on palm tree activities, and the continuation of the current situation cannot ensure sustainable development for rural

areas. Shayan et al., 2019 investigated the role of agriculture in rural development (case study: Mian Kongi sector of Sistan). The findings of the research indicate that among the four dimensions of agriculture, the social dimension is the most homogeneous and the productive dimension is the most heterogeneous, and in the three rural dimensions, the social dimension is the most homogeneous and the ecological dimension is the most heterogeneous. Farahani et al., 2013, in the article titled Analysis of Socio-Economic Sustainability of Saffron Production and its Impact on Rural Development Case: Bala Dehistan, Torbat Heydarieh Province, came to the conclusion that: Socio-economic sustainability of saffron production with the independent human variables of population and literacy has a positive relationship and It is significant and has a negative and significant relationship with the natural independent variable of distance to the city. All-round development of the land relies on countless factors. One of the basic parameters to achieve macro-development and especially the development of rural settlements as spaces that accommodate a large part of the population is the sustainable development of the agricultural sector (Qadiri-Masoom and Hajipour, 2015). In fact, one of the most important goals of any economic system is to achieve economic development, of which agriculture is one of the most important parts (Shakri Bostanabad and Salehi Kamrodi, 2019).

### *Conceptual framework*

In the definition of development, the Indian economist Misra stated that: Development as

a transcendental concept is a human achievement and a multidimensional phenomenon, and it is considered an ideological profession in itself. Due to the fact that development is considered a human achievement, it has cultural coordinates in its content and appearance and implies organic evolution. The goal of development is to create a productive life that is defined by culture. Therefore, development is the increasing achievement of one's cultural values. This concept includes the following:

- 1- Development is a process.
- 2- Development ultimately ends with values.
- 3- These values are related to the people who want to follow the development process (Morso and Bahrami Paveh, 1390).

Development can be defined as a process and broad participation in

Social transformation defined that in order to create material and social progress, more equality, freedom and

Other valuable features are done for the majority of people and through gaining more on the environment Marsoosi and Bahrami Paveh, (1390) are found around them

### *Sustainable rural development*

Sustainable rural development is the process of managing rural areas in a way that meets the needs of the current generation without compromising the ability of future generations to meet their needs. In this regard, Jonathan Murdoch sees sustainable rural development as a type of development in which mutual relationship Preserved environment and society, so that economic, social and environmental factors along with special deep thinking



It leads to the creation of organized behavioral patterns, in such a way that the needs of the current rural generation are met harming the natural resources on which the life of future generations depends, and the future generations as well should be considered in this type of development of environmental support systems in preventing pollution, destruction, destruction The life and diversity of the ecosystem works effectively and takes into account the needs of society and environmental limitations places and does not forget the correlation between environment and society (Murdoch, 1993)

### **Research Methods**

This research is theoretical and practical in terms of purpose and descriptive-analytical in nature. For The collection of information was done through library and documentary methods and survey in the form of preparing a questionnaire. The collected information has been analyzed and concluded using the SWOT model and according to the obtained information has been used to investigate the abilities and talents of agriculture in the region

Investigations on the internal and external environment of the region, a list of strengths, weaknesses, opportunities And the threats were identified, then to eliminate the weak and strong points, by polling Doge Kar and the farmers of the second group from the study consisting of the case of the district in the statistical data of the society The experts of the members of the councils and villagers and the experts of agricultural jihad using the Cochran formula are eliminated 609 farmers in four studied villages, 235 tomato farmers

and 20 experts in the region were selected as samples . The questionnaire was distributed among them, out of 235 questionnaires among farmers It was broadcasted, according to the return rate, 200 questionnaires were answered and the rest were not returned. Then According to the views of the respondents, it was made alive to each and every influential factor. Weighting to each which of the factors is based on the Likert scale. Finally, by adjusting the internal and external factors that the basis for developing strategies is the SWOT matrix, extracted from it and then based on the results here are some solutions to improve the agricultural situation in the region. To rank the weaknesses, strengths, Friedman's test was used for opportunities and threats, and binomial binomial test was used to test hypotheses.

### *Study area*

Kermanshah city is the center of the province and located in the west of the country Kermanshah city. According to the latest national divisions, it has 4 divisions, 4 cities and 13 villages. Kermanshah, the city of Kermanshah, the geographical coordinates are 47 04 east longitude and 45 18 34 north latitude and an altitude of 1420 meters above sea level with a mild to moderate to cold climate. and semi-arid and semi-humid as one of the wettest regions of Iran, with an average rainfall of 460 mm and an average of 89 days of frost per year, 3 a short distance from the southern slopes of Perau Mountains (Peru) to Atfa 3359 meters and Baloch Mountain (Darbid) to The height is 2850 meters and it is located next to the Qarasu

River. Kermanshah is 511 kilometers away from Tehran and through an asphalted road. With the construction of first-class roads and highways, Kermanshah is connected to various other cities, including the border cities of Naft Shahr, Qasr Shirin, and Nausud, and other border points with Iraq, and therefore has strategic and communication importance.

Bilwar region is divided between the two provinces of Kermanshah and Kurdistan. This region, which is located in the east of the asphalt road from Kermanshah to Sanandaj, extends from the north to Sanandaj, from the east to Sanghar and Dinur, from the south to Kermanshah, and from the west to Sanandaj. It is limited (Sultani 2014) Bilwar region was initially considered a part of Kurdistan, but in the later period it was divided between Kurdistan and Kermanshah provinces. Mirza Shokrullah Sanandji has considered Bilwar

as one of the regions of Kurdistan. He writes in this regard (Bilwar is one of the blocks of Kurdistan, which is located near Palangan Castle. This block is connected to the land of Kermanshahs. It has forty villages and about six thousand people (Sanandji, 28:1366). Dizgaran, Marzbani, Kahriz, Rezin and Sumaq are among the important villages of Bilwar (ibid: 1370). In terms of facilities, Bilwar villages in Kurdistan are more deprived than Bilwar in Kermanshah. The scope and territory of both Bilwar are also different and in all country divisions, the territory of Kermanshahan Bilwar was before Kurdistan, and the territory of Kurdistan became smaller in each division, so that from a total of 64 settlements in Bilwar Kurdistan in 1329, to 19 settlements in 1385. Decreased (Geographic Dictionary, 2015); while its geographical range in Kermanshah has been increasing in recent years

## **Research findings**

### *Descriptive findings*

Information about the respondents: The variables used in this section include: 1- land area, 2- land type, 3- rent amount, 4- participation of the number of family members, 5- source of income other than agriculture, 6- living expenses, 7- Permanence factor 8-Annual income from tomato cultivation.

Examining the land area of the farmers who responded to the research questionnaires showed that more than 80% of the respondents had less than 20 hectares of land. Also, an examination of the type of land of the farmers showed that more than 68% of the respondents owned land and more than 60%

of the farmers who rented land, they pay between 3 and 7 million tomans annually. The survey of the participation of family members in agricultural work showed that for about 70% of farmers, between 1 and 4 family members help them. The survey of respondents' sources of income showed that 29% of farmers had other sources of income and 71% had no other source of income. Also, about 63% of farmers said that their living expenses are covered by tomato cultivation. About 79% of the respondents have considered agriculture as the factor of sustainability in the village. Also, the findings of the research showed that the annual income of more than 70% of farmers is less than 200 million Tomans.



*SWAT analysis*  
*Ranking of weaknesses, strengths, opportunities and threats*

Friedman's non-parametric test was used to prioritize weaknesses, strengths, opportunities and threats. In the table below, according to the result of the Friedman test, between the priority of the weak points from the farmers' point of view, such as the level

The significance is 001% and less than 05%, there is a significant difference, 0.05 sig> and

for the priority of strengths from the experts' point of view, because the significance level is 633% and above 05%, there is no significant difference. sig>0.05, according to Friedman test results, there is no significant difference between the priority of opportunities from the point of view of experts, as the significance level is 228%.5 sig>0.05, and also between the priority of threats from the perspective of farmers, as the significance level is 174% and more is from 0.05, there is no significant difference.) Sig>0.05

**Table 1.** Friedman's test results for weaknesses, opportunities and threats

meaningful	Degrees of freedom	Chi-square	Number	
0/001	7	143/591	200	Prioritize weaknesses
0/633	5	3/434	20	Prioritizing strengths
0/288	7	9/353	20	Prioritizing opportunities
0/174	1	1/846	199	Prioritizing threat points

**Table 2.** the weaknesses are prioritized according to the average rank.

Prioritizing weaknesses	Average	Priority
Has the growth of agriculture in the region reduced social problems and crimes in the region?	5/09	1
Has agriculture provided a suitable platform for the development and promotion of culture and customs in the region?	5/02	2
Has agriculture in the region improved the quality of people?	5/00	3
Has agriculture made you interested in doing other activities in the region?	4/72	4
Has agriculture created a platform for cultural activities in the region?	4/71	5
To what extent does the income from crops provide enough for your life?	4/49	6
Has tomato cultivation created a permanent and cultural sales market in the region?	3/96	7
Do you have a market for selling products?	3/01	8

*Summary of strengths, weaknesses, opportunities and threats*

The summary of the opinions of farmers and experts to determine the strengths, weaknesses, opportunities and threats in the region is given in the table below.

**Table 3.** SWOT matrix the main factors affecting agriculture in Bilwar region

Internal	external
<p>strength(s)</p> <p>S1-Agriculture has been able to create a platform for cultural works in the region</p> <p>S2- Economic prosperity in the region has prevented the migration of villagers to urban areas</p> <p>S3- Agriculture has been able to prevent young people from taking false jobs in the region</p> <p>S4- Appropriate investment in agriculture and horticulture</p> <p>S5- a support rate is applied by the government for the sale of tomato products</p> <p>S6- The prosperity of the agriculture sector has created a job platform for young people and reduced unemployment in the region</p>	<p>opportunities (o)</p> <p>O1-Agriculture provides a suitable platform for the development and promotion of the culture and customs of the region</p> <p>O2- Has agriculture in the region reduced social problems and crimes in the region?</p> <p>O3- Has the growth of agriculture in the region improved the quality of life of the people?</p> <p>O4-Bilwar region is suitable for growing all kinds of crops</p> <p>O5-Bilwar region is suitable for growing all kinds of garden products</p> <p>O6-Bilwar region is suitable for summer cultivation, including tomato cultivation</p> <p>O7 -The establishment and establishment of conversion factories, including paste making, with regard to tomato cultivation in Bilvar region, has an economic justification.</p> <p>O8-Environmental conditions are suitable for the cultivation of organic crops</p>
<p>Weaknesses (W)</p> <p>W1- The growth of agriculture in the region has not been able to reduce social problems and crimes?</p> <p>W2 -Agriculture has not been able to provide a suitable platform for the development and promotion of the culture and customs of the region</p> <p>W3- Agriculture has not been able to improve the quality of life of the people in the region</p> <p>W4- Agriculture has been able to create a platform for cultural works in the region</p> <p>W5 -agriculture has been able to make farmers interested in doing economic activities in the region and place of residence</p> <p>W6 -Tomato cultivation has not created a permanent sales market in the region</p> <p>W7 -The market for selling products is not available to farmers</p>	<p>threats(T)</p> <p>T1 - Farmers are facing the problem of lack of water to continue and expand tomato cultivation.</p> <p>T2- farmers are facing the problem of plant pest to continue and expand tomato cultivation.</p> <p>T3- the use of chemical fertilizers and pesticides in tomato fields has an impact on the environment and health</p>

*Inferential findings*

*Testing research hypotheses*

Each of the hypotheses have been examined separately by farmers and experts using the binomial test.

*Binomial test 1*

Which is sometimes called the ratio test, is used when we want a ratio let's examine something special in society.

*The first hypothesis:*

It seems that Bilvar region has the talent for agriculture and horticulture.





To test this hypothesis, the null hypothesis and the opposite hypothesis are written as follows:

The proportion of those who believe that Bilvar region is a talent for agriculture and

horticulture is equal to 50% of respondents.

H0: P=0.50

The proportion of those who believe that Bilvar region has a talent for agriculture and horticulture is not equal to 50% of the respondents. H1: P# 0.50

**Table 4.** Result of the first research hypothesis test

Test result	sig	Observed probability		Test of the first hypothesis
Not meaningful	832%	51%	49%	From the perspective of farmers
Meaningful	0/001%	100%	60%	From the point of view of experts

In the above table, from the point of view of farmers, hypothesis zero and hypothesis 1 have a very small difference, that is, the proportion of those who answered the medium and higher option (<3) and confirmed hypothesis 1 is equal to 51% of the respondents, which is significantly higher than 50% of the respondents. The respondents are almost equal and 100% of the experts have answered the medium and higher options, but because the significance level is 832% from the farmers' point of view, it is greater than 50%, so this hypothesis is rejected from the farmers' point of view, but from the experts' point of view, the significance level is 0.01 % and because it was less than 05% and 100% responded to medium and higher options, therefore the research hypothesis has been confirmed by the experts.

*The second hypothesis:*

It seems that agriculture increases the employment and reliable income of agriculture in the area will be studied.

To test this hypothesis, the null hypothesis and the opposite hypothesis are written as follows:

The proportion of those who believe that agriculture increases employment and reliable income of agriculture

The area to be studied is equal to 50% of respondents

H0: P=0.50

The proportion of those who believe that agriculture increases employment and reliable income of agriculture

The area to be studied is not equal to 50% of the respondents. H1: P# 0.50

**Table 5.** Results of the second hypothesis test of the research

Test result	sig	Observed probability		Test of the second hypothesis
Not meaningful	0/009	60%	41%	From the perspective of farmers
meaningful		100%	60%	From the point of view of experts

In the above table, from the point of view of farmers, hypothesis 0 is rejected and

hypothesis 1 is confirmed, that is, the proportion of those who have confirmed

hypothesis 1 is equal to 60% of respondents, which is significantly more than 50% of respondents, that is, 60% of farmers and 100% of experts. Medium and higher options answered and because according to the farmers the significance level is 0.09%, it is less than 05%, and according to the experts, the significance level is 0.01% and it is less than 05%, so the hypothesis of the research is from the point of view of both farmers and experts Confirmed.

*The third hypothesis*

It seems that summer work, especially tomato cultivation, is reaching sustainable development Rural has the greatest impact.

To test this hypothesis, the null hypothesis and the opposite hypothesis are written as follows:

The proportion of those who believe that summer work, especially tomato cultivation, has the greatest role in achieving sustainable rural development is equal to 50% of the respondents. H0: P=0.50

Proportion of those who believe summer work, especially tomato cultivation, in achieving sustainable rural development

It has the greatest effect, it is not equal to 50% of the respondents. H1: P# 0.50

**Table 6.** Result of the third hypothesis test of the research

Test result	sig	Observed probability		Test of the third hypothesis
Not meaningful	0.001	72%	28%	From the perspective of farmers
Meaningful	0.001	100%	60%	From the point of view of experts

In the above table, from the point of view of farmers, hypothesis zero is rejected and hypothesis 1 is confirmed, that is, the proportion of those who have confirmed hypothesis 1 is equal to 72% of the respondents, which is significantly more than 50% of the respondents, that is, 72% to medium and higher options (<3 ) answered and because according to the farmers, the significance level is less than 0.05%, and according to the experts, the significance level is .001% and it is smaller than .05%, so the research hypothesis has been confirmed from the point of view of both the farmers and the experts.

**Conclusion**

Bilvar region has very high abilities in the field of agriculture and especially tomato cultivation, according to the studies and investigations, the following conclusions can be made: The descriptive findings of this research show that 80% of the farmer respondents (have land were less than 20 hectares and 68% had private land, and those who had rented land pay between 3 and 7 million in rent annually. About 70% have between 1 and 4 family members helping them. Also, 71% did not have any other



income other than the income from agriculture, and 63% also had living expenses. They are provided through tomato cultivation. About 79% of the respondents have considered agriculture as the factor of sustainability in the village. Also, more than 70% of farmers have stated that their annual income from tomato cultivation is less than 200 million tomans. SWAT model has been used to identify the strengths, weaknesses, opportunities and threats of Bilwar region. The Friedman non-parametric test has been used to rank the strengths, weaknesses, opportunities and threats. The results of the Friedman test show that by obtaining 001% significant level, there is a significant difference between the priority of the weak points and between the priority of the strong points from the experts' point of view, there is no significant difference with a significance level of 663%, and since the significance level for opportunities is 228%, Therefore, there is no significant difference between the priorities of opportunities from the point of view of experts, and there is no significant difference between the priorities of threats from the point of view of farmers, as the level of significance is 174%. The test of the hypotheses has also been examined from the point of view of farmers and experts separately and using the binomial test. The results of this test show that in the first hypothesis; According to farmers, the significance level is 832%, which is more than 05%, and according to experts, the significance level is 001%, which is less than 05%, so the first hypothesis is rejected from the farmers' point of view and confirmed from the experts' point of view. In the second hypothesis; From the point of view of

farmers, the significance level is 009% and from the point of view of experts, it is 001%, so since they are less than 05%, The research hypothesis has been confirmed from the point of view of farmers and experts. That is, both farmers and experts believe that agriculture will increase employment and reliable income of agriculture in the study area. In the third hypothesis; from the point of view of both farmers and experts, the significance level is 001%, so the research hypothesis has been confirmed from the point of view of farmers and experts. That is, both farmers and experts believe that summer cultivation, especially tomato cultivation, has the greatest effect in achieving sustainable rural development. The final results of the research findings show that agriculture, especially tomato cultivation, has had a significant impact on the sustainable rural development of Bilwar district. According to the results obtained from the findings of the research, in order to increase the indicators of agricultural development and increase the standard of living and economic indicators of Bilwar sector (keikhosravi et al., 2022), the following solutions are presented:

- 1- In order to achieve sustainable rural development in the region, it is recommended to increase the prosperity of agriculture region and solving the youth unemployment problem, reduced social problems and crimes in the region.
- 2- By providing better conditions for agriculture in the region, prevent young people from taking fake jobs.
- 3- Eliminating the problem of water shortage in the region by solving the problem of digging wells in the fields and making them butterfly

4- Injecting capital into the agricultural sector of the region in the field of agriculture and horticulture, also through increasing income farmers and villagers and through allocating appropriate credits with easy conditions to the agriculture sector

5- Efforts to improve the level of literacy of farmers and villagers, especially in the field of their professional activities

6- Providing suitable environmental conditions for growing organic products

7- Optimum use of water and soil resources and control of soil pollution and erosion

8- Providing facilities and grants in the field of agricultural products marketing by organizations government in order to increase the income of producers

9- Optimizing the use of chemical fertilizers and pesticides

10- Taking support measures to increase farmers' income and prevent them from migrating to cities

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