

Investigating the Effective Factors in Achieving Sustainable Agricultural Development

Mehdi Zohdi Aghdam

Department of Agriculture and Plant Breeding, Khoy Branch, Azad Islamic University, Khoy, Iran.

How to cite this paper: Mehdi Zohdi Aghdam. (2023) Investigating the Effective Factors in Achieving Sustainable Agricultural Development. *International Journal of Food Science and Agriculture*, 7(1), 11-15.

DOI: 10.26855/ijfsa.2023.03.002

Received: November 28, 2022

Accepted: December 30, 2022

Published: January 30, 2023

***Corresponding author:** Mehdi Zohdi Aghdam, Department of Agriculture and Plant Breeding, Khoy Branch, Azad Islamic University, Khoy, Iran.
Email: mehdi_zohdi53@yahoo.com

Abstract

Today, the growing population has caused more human needs for food, which has led to the expansion of agricultural production and adverse effects on soil and basic resources. Sustainable agriculture is a system that, while properly managing and using resources to meet human food needs, enhances the quality of the environment and natural resource reserves. Also, this system is economically dynamic and the resulting food does not have a negative effect on human life, and efforts have been made to preserve and care for resources for future generations. The purpose of this study is to investigate the factors affecting the development of sustainable agriculture. The research method of the present article is descriptive-analytical in the form of library study. The results of the study show that the government and related organizations can accelerate the achievement of sustainable agricultural development process with proper planning and optimal modeling.

Keywords

Factors, Sustainable Development, Sustainable Agriculture, Strategies, Elements

1. Introduction

Sustainable development is a combination of two words that unite two different aspects (economic-industrial progress and environmental quality) into one symbol (sustainable development). In other words, the two concepts of economics and ecology are put together to form the basis of the sustainable development strategy. What is common in the definitions of sustainable development is its dynamic aspect, meeting basic needs, paying special attention to environmental protection and preventing its degradation and pollution. More than three decades have passed since the global focus on environmental protection and about two decades on sustainable development. Before that, in all development projects, only the economic perspective and creating more economic income and efficiency were considered. However, in the 1790s, this mentality was introduced in the minds of policy makers and development planners that such a process of economic growth eventually leads to environmental degradation, social inequality, resource depletion, and so on. And compensating for these problems in the long run will cause great economic losses, [1]. In 1799, the World Commission on Environment and Development defined sustainable development as: a development that meets the needs of present generations without compromising the ability of future generations to meet their own needs. This concept was more precisely defined in the following definition for the food and agriculture sectors and was accepted by the FAO Council in 1799 [2].

Sustainable development is the management and maintenance of natural resources and the direction of changes and administrative structure, so as to ensure the continuous provision of human needs and the satisfaction of present and future generations. Such sustainable development (in agriculture, forestry and fisheries) is associated with the protection of land, water and plant and animal genetic resources. It has no environmental degradation, uses appropriate technology, is economically viable and sustainable, and is socially acceptable [3].

[4] states that the necessary condition for achieving sustainable development, maintaining efficiency in resource allocation and its sufficient condition is:

- 1) Reduce and regenerate non-renewable resources

- 2) Replacement of renewable sources with non-renewable sources
- 3) Balancing the absorption of waste by the environment against the amount of waste imported into the environment. The importance of the agricultural sector in various economic, social, political, etc. in our country and the sensitive role of basic and natural resources in this sector, to achieve sustainable development agriculture is essential.

2. Methods

The method of the present research is descriptive-analytical with the method of library study which was analyzed by reviewing books, magazines, internet and research related to the subject.

2.1. Sustainable agricultural development

Sustainable agricultural development is a dynamic and sustainable process for increasing agricultural production and optimal changes in farmers' lives [5]. Agricultural Development According to the Food and Agriculture Organization of the United Nations, Sustainable Agricultural Development is a model of development that protects land, water and plant and animal genetic resources, is environmentally friendly without degradation, is technically appropriate, and is economically viable. And be valid and socially acceptable [6].

Among the most important criteria for sustainable agricultural development are:

- 1) Providing the basic food needs of the present and future generation in terms of quantity and quality and at the same time providing agricultural products.
- 2) Creating permanent jobs, sufficient income and suitable living and working conditions for those who are engaged in the process of agricultural production.
- 3) Maintaining and enhancing the production capacity of basic natural resources and renewable resources without disrupting the functioning of basic ecological cycles and natural balances.
- 4) Reducing the vulnerability of the agricultural sector to natural, economic and social factors and other threats and strengthening the self-reliance of this sector.

2.2. Basic goals of sustainable agricultural development

- 1) Food security by striking the right balance between self-sufficiency and self-reliance.
- 2) Generate income and employment in rural areas, especially to eradicate poverty.
- 3) Preservation of natural resources and protection of the environment [7].

2.3. Sustainable development features

- a) Development: The first feature and, in a sense, the requirement of sustainable development is the realization of development itself, to talk about its sustainability. Development is a multidimensional process that requires fundamental changes in social structure, attitudes of people, national institutions, accelerating economic growth, reducing inequality and eradicating absolute poverty. Development, in principle, must show that the set of the social system, in harmony with the various basic needs and desires of individuals and social groups within the system, leads from an undesirable state to a better life (materially and spiritually). This goal is achieved when available human, physical and natural resources are allocated efficiently to achieve this goal. Efficient use of natural resources means that there is no excess in their use. The behaviors of the beneficiaries are based on justice and there is no monopoly and multiplication in their use.
- b) Environmental health: The second step is to provide a healthy environment and prevent its destruction. Because even if we can achieve economic growth, without such an environment, human comfort will not be provided. Therefore, another feature of sustainable development is paying close attention to environmental issues and observing its indicators. This feature is so important in the literature of sustainable development that in addition to intergenerational justice in many sources, it has also defined sustainable development.
- c) Flexibility: In the path of stability, failures and obstacles occur from the environment and its users. One of the characteristics of sustainable development is the capacity of society to respond to such natural barriers imposed, in other words, the flexibility or ability of the system to repair or maintain the level of productivity in the short or long term irregularities. Clearly, this feature is the same as the previous feature in order to maintain the balance in the elements of nature, and flexibility is the ability of the environmental system to deal with imbalances or return the situation to equilibrium [8].

2.4. Strategies for sustainable agricultural and rural development

Three key criteria for selecting strategic approaches to industrialized and developing countries are equally applicable.

- 1) Increase efficiency and productivity: Efficiency and productivity can be increased through more sustainable use of resources, including labor, better access to new technologies, proper use of biological inputs and cycles, and

on-farm processing.

- 2) Creating diversity: In this regard, two different types of diversity can be achieved. Diversity in production systems and diversity in economic activities. The first type is achieved by adapting cropping patterns, livestock activities, aquaculture systems, fishing methods and forestry practices to the talents and limitations of natural resources. The second type is obtained as a result of combining agricultural production, forestry and fisheries with processing of produced products and combining on-farm jobs with off-farm jobs.
- 3) Increase reversibility and minimize risks: Most of the methods used for production, processing, purchase and sale and consumption of crops, livestock and fish cause a loss of resources and inputs and have significant losses before and after harvest. This not only reduces output and income, but also leads to environmental degradation, ie plant destruction, soil erosion, groundwater pollution and food pollution. But on the farm itself, waste can be recycled as inputs or used as by-products (such as fuels derived from living organisms). Increasing reliance on the biological processes that nature provides can reduce input costs [9]. [10] has classified the indicators related to sustainable agricultural development in the table below.

Table 1. Indicators of sustainable agricultural development

Social dimensions	Economic dimensions
Dealing with poverty	Protection and operation of fresh water
Population and sustainable development	Sustainable exploitation of soil resources
Nurturing, educating and sensitizing	Coping with desertification and drought
Protecting the health of the people	Sustainable development of mountainous areas
Sustainable forms of human habitation	Sustainable agriculture and development of rural spaces
Eco-friendly technology transfer	Preserving genetic diversity
Create and organize local groups	Eco-friendly behavior in the use of biotechnology
Strengthen, promote and advance rural participation	How to act on the issue of waste and sewage
Strengthen and promote the participation of more non-governmental organizations	Proper use of chemicals and toxins

Trotman (2005) outlines the main elements of sustainable agricultural development in the form of Tapakur framework.

a) Coherent activities

- 1) At the state level: policies, levers, development plans, land reform, nutrition surveys, food quality and safety, data, monitoring, early warning systems.
- 2) At the level of rural communities: development of local organizations and capacity building for public participation, education, promotion.
- 3) At the level of production units: agricultural systems, diversification to increase incomes, creation of rural industries, credit and marketing.
- 4) At the consumer level: improving nutrition and food quality, setting diet patterns, marketing products.

b) Key natural resources

- 1) Land: land use planning, land management, soil protection, land reclamation.
- 2) Water: Improve irrigation, water protection, development of water database, formation of water consumers associations.
- 3) Plant and animal biological resources: conservation of genetic resources, development of species and species.
- 4) Fisheries: reducing fishing operations in order to maximize production, increase aquaculture production, exploitation of new species.
- 5) Trees and forests: Deforestation reduction, forest management and sustainable logging, upgrading Non-wood forest applications and industries, habitat protection.

c) Key external inputs

- 1) Pest control: Coherent pest control programs and projects, control of the use of pesticides.
- 2) Plant nutrition: Coherent plant nutrition programs and projects.
- 3) Rural energy: technology transfer and national strategies for the sustainable development of rural energy.

3. Results

3.1. Problems and bottlenecks in achieving agricultural development

- 1) Lack of proper management of water resources
- 2) Lack of sufficient conversion industries in the region

- 3) No guarantee of purchase and price fluctuation in many agricultural products
- 4) Investing in agriculture is less profitable than other sectors.
- 5) Low banking facilities in the agricultural sector
- 6) Destruction of natural resources in the region, due to pasture cultivation and overgrazing of livestock in rangelands
- 7) Lack of knowledge of farmers about new methods of cultivation and as a result reduce the level of production.
- 8) High attention to urban development and lack of government investment in rural areas for agricultural development

4. Discussion

Agriculture is one of the important sectors in the country's economy that does not use its actual and potential capacities. Although the changes of this sector in the last two decades have led to a significant increase in the production of various agricultural products, but the growth trend of factors that destroy basic resources is a cause for concern. Sustainable development is an approach that meets the needs of the current generation. Without compromising the ability of future generations to meet their own needs. Sustainable agricultural development is a system in which it avoids inefficient traditional and non-economic methods and relies on the use of modern agricultural knowledge and methods, which by using this method and considering environmental issues to be economical and the higher production efficiency also pays enough attention. Proper water, soil and climate are the determining factors in agricultural development. Given that in Piranshahr region, the three mentioned cases are relatively good, so it is necessary to pay attention to such important factors in order to achieve sustainable agricultural development in the region.

5. Conclusion

Therefore, the most important effective factors involved in achieving sustainable development in each region include:

- 1) Need to change existing institutions and create new ones
- 2) Policy development and consulting planning, which includes analysis of agricultural policies, security Food, forest management and aquaculture management is responsible and sustainable.
- 3) The role of leadership in nurturing and enhancing development efforts from above
- 4) The role of civil society organizations in advancing bottom-up development
- 5) Integrating development with social and cultural structure
- 6) Strengthening and strengthening human resources and institutional capacity building that education, nutrition and food quality, development includes villagers and rural participation in development.
- 7) Appropriate use of agricultural data that strengthen crops and soil fertility, pest and pest management caches include energy for rural development and agricultural productivity and management of technology application.

Acknowledgements

I would like to thank the librarian of Khoi Islamic Azad University for providing me with some resources.

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