Economic Essence of Agricultural Melioration and Scientific-Methodologic Aspects of Its Development

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Abstract

Reclamation plays a major role in increasing the efficiency of the agricultural sector. Poor or lack of land reclamation might be the reason for less efficiency of the sector. This paper focuses on the theoretical framework of ameliorative, classification of ameliorative, and factors that affects sustainable development. Our findings show that the weather conditions, soil fertility, availability of sufficient water resources, and other factors have a major impact on crop yields, livestock productivity, labor costs, and product.

Keywords: Melioration, land reclamation, efficiency, sustainable development

Introduction

There are different types of land resources that plays a major role in the production of agricultural products. The task of improving land reclamation is one of the main objectives of our country to ensure sustainable development of the agricultural sector. The quality of products, which are harvested from worse land-reclamation area, may be low. This basically is because such kind of areas has little chemical, biological, and other elements that affect the quality of agricultural products. As a result, some decrees have been enacted to improve land-reclamation in our Republic. One of the main decrees which were approved by the president of Uzbekistan on the 29th of October 2007 was about "The actions of improving the system of land-reclamation". By implementing this decree, productivity increased to about 200-400 kg per hectare.

However, the main objective based on economic modernization entails: creating scientific recommendations on ameliorative actions and evaluating their efficiency, fostering the impact of reclamation based on increasing the income of agricultural enterprises, and having a stable financial source of reclamation and other actions.

This paper focuses on the following: First, we learn theoretical framework of reclamation, followed by the classification of agricultural reclamation, then factors that affects sustainable development and, lastly, we gave our conclusions.

Theoretical Framework of Melioration

It is difficult to assess efficiency of ameliorative activities due to different types of framework such as the mechanical, physical, chemical, and microbiological properties of the soil composition. Therefore, in assessing the effectiveness of land reclamation activities and financial resources allocated to them, it is desirable to define the economic essence of the ameliorative actions and its main directions.

The other side of the problem is that the word "melioration" is used as a set of different activities. This is used such that scientists and experts have different perspectives and attitudes. Their analysis shows that in some approaches to the concept of "melioration", there is a narrow definition in a broad sense and direction.

In general, due to the complex and diverse activities of melioration, different definitions have been given to it. So, land reclamation is a system of organizational-economic and agro-technical measures that envisages a radical improvement of agricultural production in adverse weather conditions for efficient use of land resources.

According to N. Voronin (1989), land reclamation method include "melioration irrigation, water extraction in the coastal and semi-arid regions, swamping, swamping and damping, irrigation, water and wind erosion, land salinization, as well as measures to improve land degradation. The most common of these is the hydrotechnical method of land reclamation - irrigation and drainage."

Melioration is important as a set of measures that combines extensive and intensive factors, allowing for improved soil fertility, eliminating the factors that impede its natural properties and reduce its use, and provide extensive agricultural production. According to V. Demirriev (1984), the melioration allows for agricultural landing to be added to new areas, smaller layers of large massifs, and, secondly, to improve the use of cultivated lands and turnover of agricultural crops.

The National Encyclopedia of Uzbekistan describes melioration (in Latin, melioraio - improvement), agricultural melioration, as a series of organizational-economic, engineering, and agro-technical measures aimed at radically improving soil fertility.

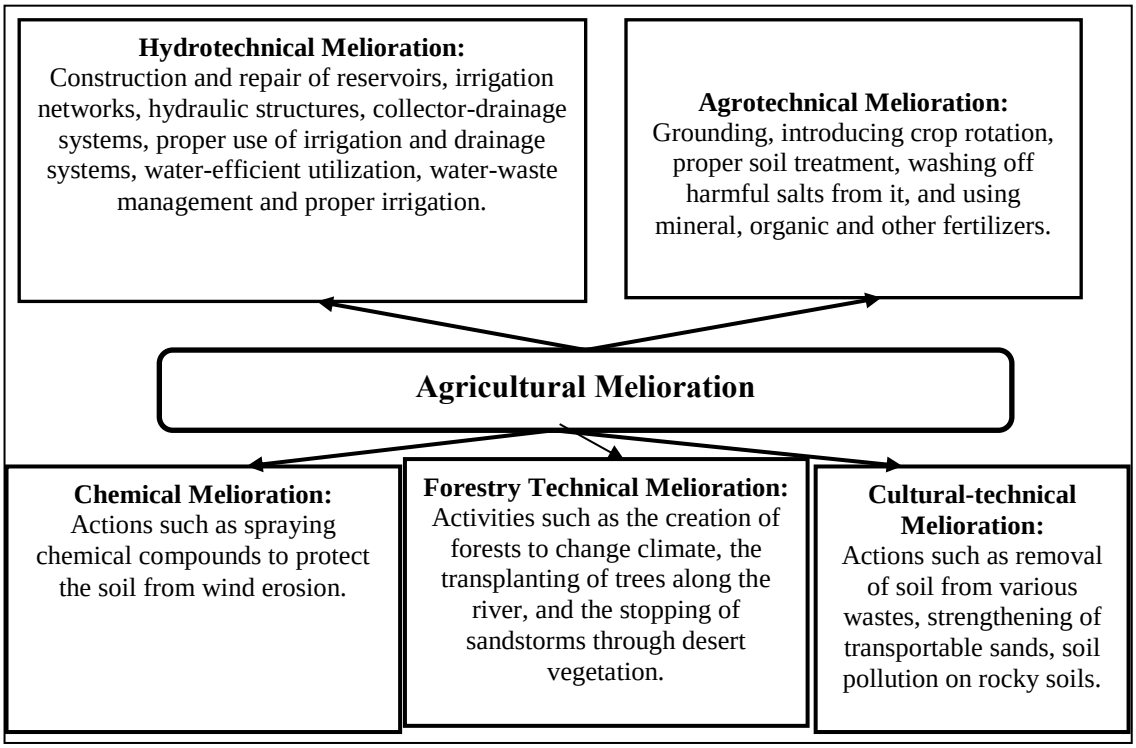
According to A. Sultonov (2007), melioration "….is aimed at optimal solution of a complex interconnection between soil and water, the atmosphere and plant, that is, the radical improvement of the land, which is the main means

of production. Melioration measures identify changes occurring in the soil and ensure high yields. The economic essence of land reclamation is the same." Therefore, the aim of melioration is to improve soil fertility for the rational use of cultivated crops, which is a major tool for agricultural production.

Classification of Agricultural Melioration

Based on the above mentioned scientific views and the definitions given for various types of land reclamation, measures to improve the reclamation status of agricultural land (considering unfavorable climatic, soil and water resources) can be grouped into the following (Figure 1).

Figure 1. Classification of agricultural melioration



Furthermore, the key factors that affect the sustainability of agricultural production helps to improve the reclamation status of irrigated lands, to develop a network of melioration and irrigation facilities, and to ensure a rational and sustainable use of water resources. As a result, Uzbekistan pays more attention to ameliorative actions.

In general, one of the main goals of the real sector of the economy, including the agricultural sector, is to ensure stability and sustainable development in the sector.

Sustainable Development and Factors that Affects It

One of the main conditions for ensuring sustainable agricultural development is to consider the factors affecting it. In the evaluation of Sustainable Development of Scientists, we stated that the use of the Indicators System is desirable.

In our opinion, it is better to consider the factors influencing the sustainable development of agriculture in the following order:

(1) The condition of land and water supply;
(2) Soil-climatic and natural conditions (soil fertility, water quality, positive temperature);
(3) Development of material and technical base and service delivery system;
(4) Supply and development of market infrastructure facilities;
(5) Establishing of production and management;
(6) Regulatory and legal framework;
(7) Government support system;
(8) Investment (investment climate, activity and scope and amount of investments);
(9) Innovation (science and innovation introduction);
(10) Personnel (staffing, efficiency of training and retraining of personnel);
(11) Foreign economic relations and export;
(12) National traditions and customs.

Consequently, we assess the interaction and the linkages between these factors. They are given the horizontal and vertical factors (currently 12 factors) and are based on the comparison of the horizontal and vertical factors. Assessing: dependent - 2; otherwise - 0. The results are shown in Table 1 (Priority Matrix).

The following formula was used to determine the priority of factors:

$$W_j = \frac{\sum_{i=1}^{n} \mathrm{x}_i}{\sum_{n=j}^{n} \sum_{n=i}^{n} X_{ij}} \qquad (1)$$

Where W_j - The value of factors of priority;

$\sum X_i$ - The maximum sum of factors to evaluate;

$\sum \sum X_{ij}$ - The value of total evaluation (horizontal and vertical). Based on our calculations, this indicator is 148.

Table 1. The degree of interdependence of the factors affecting the sustainable development of agriculture

K	1	2	3	4	5	6	7	8	9	10	11	12	$\sum X_i$	Wj	Priority
1	1	2	2	0	0	2	2	2	2	0	0	2	15	0,101	3
2	2	1	2	0	0	2	2	2	2	2	0	2	17	0,115	1
3	2	2	1	0	2	0	0	2	2	2	0	0	13	0,088	6
4	0	0	0	1	2	0	0	2	2	2	0	0	9	0,061	9
5	2	2	2	2	1	0	0	2	2	2	0	0	15	0,101	5
6	0	2	0	0	0	1	2	0	0	2	2	0	9	0,061	10
7	2	2	2	2	0	0	1	2	2	2	2	0	17	0,115	2
8	0	2	2	2	0	0	0	1	2	2	2	0	13	0,088	7
9	2	2	2	2	2	0	0	0	1	2	2	0	15	0,101	4
10	0	2	2	2	2	0	2	0	2	1	0	0	13	0,088	8
11	0	0	0	0	0	0	2	2	0	0	1	2	7	0,047	11
12	0	0	0	0	2	2	0	0	0	0	0	1	5	0,034	12
$\sum X_j$	11	17	15	11	11	7	11	15	17	17	9	7	148	1,00	-

As shown by the results of the assessment, natural factors have a considerable impact on it. This, however, is because agricultural production is based on the use of natural resources. The weather conditions, soil fertility, availability of sufficient water resources, and other factors have a major impact on crop yields, livestock productivity, labor costs, and product quality. The distinctive feature of the factor of the environment and natural conditions is that it changes in different regions and periods. In the development of agriculture, it is important to adapt it to climatic and soil conditions.

Conclusion

In summary, in determining the priorities for the sustainable development of agriculture, it is recommended to consider the interdependence of these factors and to develop a set of appropriate measures to address the issues of the effective use of the factors that have a direct positive impact.

In this regard, the main areas that have a positive impact on the melioration factors are as follows:

(1) The reclamation factor primarily regulates the chemical, mechanical, and physical properties of the fertile soil layer, microstructure and bioorganic substances, and positively affects normalization.

(2) The implementation of melioration actions helps to achieve the improvement of crop yields and quality of agricultural products, which further helps to improve the soil and the environment.

(3) With the positive impact of the reclamation factor, due to the availability of micro and bioorganic substances in the soil, the efficient and normative use of mineral and organic fertilizers expands the cost of

chemorganic chemistry, reducing the cost of the subsistence products, and increasing the incomes of economic entities.

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