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EFFECTIVE USE OF WATER IN AGRICULTURE OF THE REPUBLIC OF UZBEKISTAN AND ITS PROBLEMS

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Annotation: The article analyzes the state of water use in agriculture in Uzbekistan and examines the reasons for their waste. Also, in Namangan region, econometric models of changes in the volume of production depending on the conditions of water use in arable lands were developed and analyzed. As an indicator of water efficiency, crop yields have been studied, and suggestions and recommendations for water efficiency have been made.

Keywords: agriculture, water, water management, water scarcity, irrigated lands, water consumer associations, productivity.

Introduction:

In the Republic of Uzbekistan, agricultural production and care of the main agricultural crops are fully borne by farms, and the fact that farms are gaining the main weight in the production of food products, including fruits and vegetables, livestock products, indicates that the production is carried out on the basis of full private ownership.

In recent years, consistent reforms have been implemented in the country to ensure food security, increase the quality of agricultural products and export potential. The export of agricultural and food products brings about 20-25 percent of the total export income to the Republic of Uzbekistan. Currently, more than 180 types of agricultural and food products are exported to more than 80 countries.

At the same time, there are a number of unused opportunities for further development of the sector, increasing farmers' income, ensuring food security, and sustainable use of natural resources. In particular, the increase in the number of water-using agricultural enterprises operating on the basis of private ownership, as a result of the increasing complexity of the water use system, causes the process of emergence of problems in water distribution issues in the water management subsystem to intensify.

Such negative consequences can be observed not only in the Republic of Uzbekistan, but also on a global scale. Studies show that agriculture accounts for 70% of the world's freshwater consumption, but water use efficiency in many countries is less than 50%. According to the forecast of the FAO organization, by 2050, the increase in water for agriculture will increase by 50 percent, taking into account the needs of the growing population.

However, the world's supply of fresh water is decreasing due to improper and unintended use of water and climate change, resulting in problems such as water scarcity and pollution in many countries of the world, which will seriously affect food security and environmental sustainability in the future. Also, as a result of the global climate change, the periodic water shortage and the failure of the main part of the internal irrigation networks in recent years have led to the deterioration of the reclamation condition of the irrigated crop lands and their abandonment for years.

In this regard, in the Republic of Uzbekistan, large-scale irrigation and land reclamation activities are being carried out within the framework of state programs in order to increase the productivity of irrigated areas, improve land reclamation and water supply. As a result, during 2008-2017, the water supply of more than 1.7 million hectares of irrigated areas and improvement of land reclamation of 2.5 million hectares was achieved. It should be noted that the basis of rational and effective use of water resources is the valuable attitude of consumers to the supplied water. In this case, it is important for water consumers to work in cooperation with water supply organizations and to properly use water.

Literature review

Innovative management of agriculture in foreign countries, diversification of agricultural products, sustainable development of agriculture, regulation of agriculture, sustainable development of agriculture and its obstacles and consequences have been studied by many scholars and researchers. Including Goetz Renan[1], Ademola A. Adenle, E. Jane Morris, Govindan Parayil[2], Rozélia Laurett, Arminda Paço, Emerson, Wagner Mainardes[3], Jessica Rudnick, Meredith Niles, Mark Lubell, Laura Cramer[4] M. Roobavannan[5] and others researched these problems. From CIS scientists R.G. Kravchenko[6], M.M. Tsvil[7], V.M. Sinelnikov, N.F. Korsun, A.S. Markov, E.I. Podashevskaya[8], F.I. .Ereshko, V.I. Medennikov, V.V. Kulba [9], A.M. Nosonov[10], I.A. Ivanova[11], V.I. Savkin[12], A.A. Baidakov [13], V.I.Medennikov[14] and others' scientific

studies have highlighted issues such as effective use of resources in economic processes in agriculture and reduction of natural and economic risks, as well as their solutions.

Research methodology:the methods used in the process of conducting research are always chosen based on the purpose. The article uses a number of methods, including statistical grouping, comparison, economic and modeling (forecasting) methods, to search for rational measures and determine the optimal solution in new economic and organizational conditions.

Analysis and results

The total area of agricultural land in the republic is 20,236.3 thousand hectares, of which arable land is 3,988,5 thousand hectares, perennial trees are 383,1 thousand hectares, gray land is 76 thousand hectares, hay fields and pastures are 11,028,3 thousand hectares, other lands are 4,760, It is 4 thousand hectares[15]. Agriculture is the leading branch of the country's economy, employing 3.6 million people (27 percent of the economy). The share of the network is 32% of the country's gross domestic product. As a result of the implemented reforms, the cluster method of production in agriculture was established, with which the volume of agricultural land was covered by crop types in cotton-textiles - 62%, in animal husbandry - 8%, in fruit and vegetable - 7.5%.

In the case of agriculture in the Namangan region of the Republic of Uzbekistan, we aimed to analyze the effects of land and water on the gross yield of agricultural products separately using econometric models.

To do this, first of all, we will consider the analysis of cotton and wheat crops, which were grown according to the state order in the early periods of the agriculture of the Republic of Uzbekistan, and which are now grown according to demand. For this purpose, the correlation coefficient of the effect of water consumption for cotton cultivation-Ssc and the land area allocated for cotton-Emcni on the change of cotton crop grown in Namangan region-Ycni in 2001-2020 is determined. According to the determined results, water consumption for cotton cultivation -Ssc(rYc, Ssc =0.7307) and land area allocated for cotton-Emc(r Yc,Emc =0.722) are correctly connected to the volume of the cotton crop grown in the region.

It should be noted that since the units of measurement of the selected indicators are different, it is appropriate to take the natural logarithm of each indicator column. First of all, this allows to ensure the reliability of the obtained result, as well as to avoid various conflicts arising from the defined equation. Based on the results of the regression equation coefficients on the calculated columns and their significance, the following equation was obtained:

$$LnYc=1{,}944LnEms-1{,}0934222LnSsc+4{,}62 \quad (1)$$

Logarithmic equations are usually exponentiated in order to make the future results of the regression equation (1) more reliable and easier to calculate. When this equation is exponentiated, it looks like this:

$$Yc = \frac{Emc^{1,944} * e^{4,62}}{Ssc^{1,0934222}} \qquad (1^*)$$

Determined 1*-If we interpret the model economically, it was found that if we increase the area of cotton by 1 hectare, then the volume of cotton cultivation will increase by 4.8 tons, and if we reduce the water consumption by 1000 cubic meters, it can be increased by 0.4 tons.

Now, if we perform an econometric analysis on wheat cultivation, the following regression equation is derived:

$$Yb = \frac{Emb^{2,82} * Ssb^{0,254863}}{e^{22,4}} \qquad (2^*)$$

According to the result of this equation, if the land area allocated for wheat cultivation is increased by one hectare, it is possible to increase the total yield by an additional 13.5 tons, and if the water consumption is increased by one thousand cubic meters, it is possible to increase the water consumption by 0.3 tons. (precipitation) was determined not to be saturated.

This means that in our country, according to the state order, in the cultivation of the main agricultural products, it is necessary to follow the technology of water consumption in the process of irrigation of cotton, and to a certain extent measures are developed for water consumption for wheat.

Conclusions and suggestions

In conclusion, land and water resources play an important role in agricultural development and are closely related to the global challenges of poverty and food security, climate change adaptation and mitigation, and natural resource degradation, which affect the well-being of millions of people around the world. depends. Current projections show that the world population will grow from the current 6.9 billion to 9.1 billion in 2050. In addition, economic development, especially in developed countries, is driving increased demand for food products and diverse diets. As a result, demand for food will rise, and food production is expected to increase by 70% globally and 100% in developing countries. However, the land and water resources that underpin food production are not infinite and are already under severe stress, and the future of agriculture must be both more efficient and sustainable.

Agriculture is one of the main sources of economy in our republic. 92% of the total water consumption in the republic is for agriculture. The development of this sector is directly related to the improvement of land reclamation, construction, reconstruction and repair of irrigation networks, maintenance of working conditions and other agro-activities, increase of crop productivity, and supply of water resources.

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