Efficiency of Effective Resources and Use in Agriculture

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Abstract. **This article describes the problems of sustainable use of water and land resources in system irrigated agriculture in Republic Uzbekistan. In conclusion, the important suggestion is made on the ways of improving the economic efficiency of water and land usage in agriculture.**

Keywords: Soil, water, resources, efficiency, economic, irrigation sources, indicators, irrigation systems, coefficients, norms, reclamation, salinization, erosion, soil, crop, moisture.

I. INTRODUCTION

Agriculture in our country cannot be imagined without water, because water is the most important factor for the development of agriculture. Only when the soil has the optimum moisture yields high yields. At present, agriculture accounts for about 15-18% of the gross domestic product [14].

Thousands of tonnes of water is used on every hectare of arable land. For example, 7000-9000 m3 per hectare is used for cotton cultivation, and 25,000-28000 m3 for rice cultivation. -5,5%, water - 0,2%, industry - 1,5%, fishery - 0,8% [14].

Currently, the largest sources of natural water for agriculture in the country are the Amudarya and Syrdarya rivers. However, these are the transboundary rivers.

Like our country, neighboring Kazakhstan, Kyrgyzstan, Turkmenistan and Tajikistan receive water from these rivers. Like other water sources, runoff in these rivers has declined by an average of 30-40% over the next 15-20 years. Also, given the fact that the amount of water supplied to irrigation systems goes directly to the cropland, and that July-September does not receive half of the planned water, we know how important it is to conserve water in our country. The President of the Republic Sh.Mirziyoev: - Further improvement of the reclamation condition of irrigated lands, development of the network of melioration and irrigation facilities, introduction of intensive methods of agriculture, first of all, modern water-saving agricultural technologies, high-efficiency agricultural machinery. It is not accidental that use is one of the priorities of economic development [1].

II. LITERATURE REVIEW

Problems of effective use of land and water resources Gofman KG [2], Dmitriev VS [3], Zuzik DT [4], Karev BB [5], KovalenkoB.G. , Nesterov PM [7], Khachaturov TS [8], Raskin GF [9], Sultanov AS [10], Umirzakov UP [10], Shlik V .I. [11] , Ulanov AP [12], Khachaturov TS [8], Shlik VI have been studied in many works of leading foreign and domestic economists.

It is well-known that, as with any enterprise, the use of land and water resources is an indicator of economic efficiency.

In the works of the above-mentioned researchers [2,3,4,5,6,7,8,9,10,11,12] there are different approaches to calculating the economic efficiency of land and water use in agriculture, in particular: Zuzik D. Calculated the economic efficiency of the T. irrigated land area through the value of gross output from this land area [4] Dmitriev VS whereas, Kovalenko BG suggested that the economic efficiency of irrigated land should be calculated through additional income from increased productivity through reclamation measures [6]. Raskin G.F. In his research, it was recommended to calculate this indicator using the difference in income and expenses from each hectare of irrigated land. [9] Leading economists of the Republic Sultanov AS and Umurzokov O. [10] proposed to determine the economic efficiency of irrigated land through gross income and total costs from cultivated land.

III. ANALYSIS AND RESULTS

Due to climate change in the region in recent years (low rainfall, increasing average annual temperatures), water intake from natural sources is decreasing, as well as for some pumps (some organizational, financial,

technical and other) that pump through the Amu-Zang Canal, one of the region's main water systems.) Source: Irrigation source in Surkhandarya region to fit the size of the water decreases (Table 1).

Table-1. Surface water intake in Surkhandarya region, mln.m3, (2019)

№	Regions	Total amount of water	including:			
			From the rivers	Rivers and chanels From	Groundwater-From	Drain-from
1.	Angor	152,8	147,8	-	-	5,0
2.	Boysun	40,9	-	40,9	-	-
3.	Denau	209,7	-	204,0	4,7	1,0
4.	Jarkurgon	236,3	186,7	45,0	-	4,6
5.	Qizirik	249,5	43,5	293,3	-	12,7
6.	Kumkurgon	262,2	126,0	127,9	-	9,4
7.	Muzrabot	432,41	421,91	-	-	10,5
8.	Oltinsoy	137,1	-	130,3	-	6,8
9.	Sariosiyo	104,8	-	95,6	7,7	1,5
10.	Termiz	141,1	109,3	24,6	-	7,4
11.	Uzun	116,3	-	109,1	5,8	1,4
12.	Sherobod	327,4	38,2	276,6	1,8	10,8
14.	Shurchi	150,4	-	141,5	-	8,9
	Total	2661,0	107,2	1488,8	20,0	80

Source: Amu Surkhon Irrigation Systems Basin Management Information, 2018

At present the figure is 2661.0 million m3. In the 90s of the last century this figure was 4020 million m3. Consequently, between 1990 and 2019, the amount of water needed for irrigation in the region decreased by an average of 1360 million m3.

In order to increase the efficiency of irrigated land in the country, repeated crops are being planted on the fields that are free from early crops. This not only causes additional water shortages but also increases the salinity of the land. As a result, the fertility is decreasing and the land becomes unsuitable for cultivation. The groundwater was at a depth of 15-20 meters. Now it is 1.5-2 meters. This can be attributed to the excessive use of available water resources as irrigation requires the soil to feed vegetatively active soil for vegetation growth. Land reclamation has worsened as a result of surface sedimentation. m mumkin.Mavjud sewers and drains are many cases ishlamaydi.Ularning a large part of the repair [15]

Rational use of irrigation water is now more urgent than ever. Now, during high technical and technological development, it is not enough to calculate the cost-effectiveness of production and capital expenditure in the calculation of economic efficiency of enterprises. Currently, it is impossible to ignore the environmental impact of any development. The use of water resources can also be monitored. In other areas, there is a shortage of water.

Also, due to over-watering, land reclamation, soil erosion, and degradation of arable land due to salinization are occurring. can be expressed as:

$$Э=СД-З_{ро}-З_{рк}-З_{эмх,}\ сўм,$$

Whereas: Э- Environmental and economic efficiency of land use in E-Agriculture, UZS;

СД- Net profit, calculated in plan, UZS;

$З_{ро}$- damage from loss of productivity due to unauthorized use of irrigation water (due to increased salinity of cultivated areas), soum;

$З_{рк}$- losses from failure to get the established harvest in arable land, UZS;

$З_{эмх}$ – costs for reclamation of erosion and salinized soils, UZS;

9. Land use efficiency index:

$$P_K=\frac{Э}{}\cdot 100\%,$$

$$X+ З_{ро}+З_{рк}+З_{мх,}$$

here: P_K – Land use efficiency index,%;

X- production costs, UZS.

Much of the water received from water sources is lost in irrigation systems. In general, the efficiency of inter-farm and inter-farm irrigation networks is 0.5-0.6. In other words, more than 40-50% of irrigation water is lost until it reaches the cropland. Therefore, an increase in the efficiency of irrigation systems is one of the most important water saving opportunities.

Currently, a number of works are being carried out in the country to provide modern hydraulic structures and water meters in the irrigation systems, install water intake channels and apply other advanced irrigation methods.

IV. CONCLUSIONS

Based on the analysis, we believe that the following measures should be taken to increase the efficiency of land and water use in agriculture:

- Repair of existing irrigation points and collector-drainage systems;
- Widespread use of irrigation and sprinkler irrigation methods;
- Scientifically revised water supply limits in on-farm irrigation networks;
- Introduce a form of payment for the use of water in some of the district's water management systems, which, as a rule, exceed the limit;
- Reproduction of crops requiring less water;
- In determining the cost-effectiveness of land and water resources, take into account the impact of irrigation on soil erosion and land reclamation.

The above suggestions will lead to more efficient use of land and water resources in agricultural enterprises. As a result, in the conditions of economic liberalization, the export potential of the country increases in agriculture.

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