



# DEVELOPMENT OF THE USAGE OF WATER-SAVING TECHNOLOGIES IN AGRICULTURE OF UZBEKISTAN

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## ABSTRACT

*The article discusses the current state of water-saving technologies in agriculture in the Republic of Uzbekistan, the measures taken, their economic efficiency and the strategy for further development of these measures.*

**KEYWORDS:** *agriculture, water resources, drip irrigation technology, efficiency, cotton growing, incentives, promising strategies.*

## DISCUSSION

It is known that the problem of water shortage is compounded throughout the world every year. According to the UN global climate change itself will exacerbate water shortage by 20 percent, will worsen the lives of 2 to 5 billion people in 45 countries, and in the current process of development by 2040 with an increase of the world population to nine billion, clean water resources will cover only 70 percent of human needs.

According to the statistics, the global consumption of water has increased by 7 percent over the last hundred years, which means that the amount of water that can be allocated to each person has decreased by 60 percent. In the next 25 years, the reserves of water probably will double again.

The economy of the Republic of Uzbekistan, located in the Sands of Central Asia, also suffers from water problems. Most of the agricultural lands of the country are based on irrigated agriculture, while Uzbekistan consumes a significant portion of the water of the Amudarya, the Syrdarya and the Zarafshan, which have transboundary significance.

Until 1990, 64 billion cubic meters of water were used for different purposes in Uzbekistan, but in 2008 this figure dropped to 51 billion. Until 1985, 22,4 thousand cubic meters of water were used for

irrigating 1 ha, but by 2019, this number was reduced to 5-10 thousand cubic meters due to the use of modern resource-saving technologies.

Today about 20 percent of the water used in Uzbekistan formed in the country, and the remaining 80 percent is taken from transboundary rivers – the Amudarya and the Syrdarya. On average the country uses 44 to 48 billion cubic meters of water per year, and the main part of the water resources or more than 85 percent is used for agricultural irrigation.

Agriculture consumes 46 billion cubic meters of water by 3.2 million hectares. 60 percent of this water goes to crops, because 23 percent of the 180000 km of irrigation networks covered with concrete, which has not been updated for 30-35 years.

Besides, 98 percent of arable land is irrigated in the old-fashioned way, and the crops are not planted properly. As the result of the abovementioned and other objective reasons the water supply in the country is 68 percent, more than 11000 villages in the regions are not provided with clean water, 38 percent of the water supply networks are in poor condition. As a result, today Uzbekistan has economical irrigation technology at 328000 hectares of irrigated land or only 7 percent of the total cultivated area. Only this year there has been introduced a new water-saving irrigation system on the 25000 hectares



of cotton fields. Efforts were made to rehabilitate 1.1 million hectares of decommissioned land.

According to the World Institute for water resources, by 2040 Uzbekistan can be among the 33 countries with the worst water shortage.

The President of the Republic of Uzbekistan has set the task to bring the reform to a new level by planning not only today but in future. On February 7, 2017 in order to achieve this target the President of the Republic of Uzbekistan passed the decree No. PF 4947 "On the strategy of further development of the Republic of Uzbekistan", which envisages the annual increase of water use efficiency and its monitoring. There was stressed the need to adopt water-saving technologies on the area of thousand hectares. It is known that systematic and quality introduction of drip irrigation technology will reduce the amount of water used for traditional irrigation, by 40-50 percent, the complexity and consumption of resources by 30 percent, increase the yield of 15-20 quintals. Besides it will prevent from soil erosion, salinity and rising of groundwater level.

To further expand mechanisms for encouraging the implementation of water-saving irrigation technology in agriculture and increasing water use efficiency and productivity of agricultural land, 25 Oct 2019, the President of the Republic of Uzbekistan adopted Resolution № PQ-4499 "On measures to expand mechanisms to encourage the introduction of water-saving technologies in agriculture".

As the result of the taken measures, and also of mechanisms of economic support introduced by state, in 2019 water-saving irrigation techniques were implemented on 33.2 thousand hectares of land, or land which uses similar technologies 44 percent of the area.

However, the fact that the total area of water-saving irrigation technologies is only 75000 hectares or 1.7 percent of the total area of irrigated land stresses the need of strengthening measures to increase the use of water-saving technologies in agriculture and efficiency in water use.

Following this decision, the Ministry of water resources of the Republic of Uzbekistan jointly with the Ministry of Agriculture, the Council of farmers, dekhkan farms and landowners of Uzbekistan, Council of Ministers of the Republic of Karakalpakstan and regional khokimiyats will work on 43825 hectares in 2020 including:

- in the cotton fields – 24859 hectares;
- in the field of fruit crops – 11498 hectares;
- in the vineyards – 4987 hectares;
- in other arable lands – 2481 hectares to ensure the effective implementation of the approved

forecast for the introduction of water-saving irrigation techniques.

According to the analysis of the land, where the technology of drip irrigation was introduced in the agriculture of the country during 2013-2018, drip irrigation technology was only used on 43017 hectares of land for the last 6 years.

The analysis shows that this technology was implemented with a very low rate in 2013-2016, or in 2013 at 2362 hectares in 2014, 4898 hectares in 2016 5906 hectares, and in 2017 there was a sharp acceleration of this technology. In 2017, there was used 9030 hectares, and in 2018 – 15153 hectares.

The Analysis of these changes by region shows that in the Republic of Karakalpakstan, Khorezm and Syrdarya regions the technology has been introduced in less than 1 percent of irrigated land (due to the relatively high salinity and other reasons), in Bukhara and Jizzakh regions in 2.5 and 5.2 percent in other regions in 10 or more percent.

Today the market of production and introduction of water-saving technologies and services consists of more than 100 domestic and foreign enterprises and organizations, and due to incomplete formation of the infrastructure of this market, the competition between market participants is not good enough. As a result the cost of water-saving technologies is much higher than the level of financial capacity of households that use it.

In our opinion, the basic principle and criterion for determining the development of production of water-saving technologies should be the choice of effective and efficient system and the method of receipt (savings) additional 1000 cubic meters of water for irrigation.

Today water resources for irrigation are re-used and supplemented for irrigation of crops using various systems, methods, and techniques. These systems and methods include desalination of saltwater; repair of irrigation system; redistribution of water resources in the territories; wastewater treatment; regulation and improvement of reservoir management; introduction of water-saving technologies, etc.

According to the experts, the use of additional water resources for irrigation with the introduction of water-saving technologies is the most cost-efficient, on average 1 to 5 dollars per 1000 cubic meters of irrigation water.

As economic incentives and organizational and regulatory support of the production of water-saving technologies, the government proposes the following:

- state introduction of order delivery of raw materials (polyethylene granules) to the manufacturers, who supply components for water-



saving irrigation technologies with low (declared) prices and cheap polyethylene granules for all types of raw materials, not just for one type;

- value added exemption from tax for manufacturers of components for water-saving irrigation techniques;

- the inclusion of priority to local producers in the selection of production orders in tender procedures for the introduction of the order giving;

- giving priority to tenders, if the composition of local raw materials and components to product manufacturers is 2/3 or more;

- as an exception, introducing the order of priority to the enterprises, open for this purpose, in tenders for land allocation for the creation of enterprises producing water-saving technologies, for the development and production support in the regions;

- until January 1, 2025, exemption from customs duties on the import of components and raw materials required by local producers for production of water-saving technologies;

- Credit for the introduction of water-saving technologies to cover the costs associated with the implementation of water-saving technologies.

In conclusion, it should be noted that the state is actively taking measures to widely introduce water-saving technologies in agriculture, thereby contributing to reducing the shortage of water resources.

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