DEVELOPMENT OF IRRIGATION REGIME USING WATER-SAVING TECHNOLOGIES IN RICE CULTIVATION

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Abstract
This article is about the development of the irrigation regime using water-saving technologies in the cultivation of rice. The problem of water shortage has always been relevant for our country. In our republic, on the basis of economical and efficient use of water resources, effective work will be carried out to increase the amount of crops obtained from irrigated areas, expand the production of food products, improve their quality, and improve the living standards of the country's population by filling the domestic market. As a result of the performed works, it is possible to quickly manage water and ensure its timely delivery to consumers, as well as the reduction of technical losses and filtration in irrigation networks.
Key words: modernization, innovation, water resources, efficient use of water, resource saving, water saving technologies.
Introduction: In the conditions of the market economy, the increase of agricultural products can be carried out at the expense of intensification of production processes, introduction of modern agrotechnology and innovative technologies, increase of labor productivity and rational use of production resources. Since there are very limited opportunities to expand the arable land for farming and increase the amount of resources required for the agricultural sector, the only way to develop the sector is through the introduction of innovative technologies, based on the achievements of science and technology.
Along with the increasing demand for water resources in most parts of the world, and in our region, including our country, the water shortage is also increasing year by year. Until 2000, a low water season was observed every 6-8 years, but in recent years this process has been repeated every 3-4 years. In this case, water shortage is deeply felt, especially by consumers located in the lower part of rivers and far from canals and other water sources.
Problem: The problem of water shortage has always been relevant for our country. Especially in recent years, the tragedy of Arol and the lack of precipitation due to global climate change require a new approach to this issue. 92% of fresh water in our country is used in agriculture. Its consumption is very high, and if we don't use economical technologies today, many problems related to water shortage may arise in Central Asia, and many of them are already present: increased desertification, water pollution, loss of biodiversity.
Result: In our country, with the help of several types of water conservation, the necessary measures are being implemented step by step. Including 5 thousand km every year. irrigation, 12,000 km of collector-drainage, 50,000 km of canal networks are being cleaned, 200 km. more than 30 km of canals, 30 km of channels and 500 km of collector networks,

more than 400 hydrotechnical structures and many other objects are being reconstructed and built.

At the same time, the diversification of agricultural production also has a positive effect on water conservation. During the years of independence, water-demanding crops such as cotton and rice were reduced, and instead of them, the area of grain crops, vegetable-police crops, and orchards and vineyards was expanded. In particular, compared to the 80s, cotton areas were reduced by almost 50%, and rice areas were reduced by 75%.

It is also effective to organize irrigation by draining sap and timely processing between the rows, not to throw water away and waste it in the ditch, and not to allow weeding and weeding.

Several types of water-saving technologies are used in our country, and they are as follows:

1. Irrigation by laying a film on the soil;
2. Using flexible film pipes instead of pipes;
3. Applying irrigation technology from under the soil, the amount of water supplied to the field is reduced to 25-30%, it is not taken;
4. Sprinkler irrigation (mainly annual crops are irrigated).
5. Drip irrigation.

In drip irrigation, as the water is delivered to the plant through hoses, the field soil does not harden, as a result, there is no need to soften the soil (cultivation) and take a ditch. The area where the soil has not hardened can be plowed easily at the end of the season. Since the fertilizer is given together with water, the need to use equipment for fertilizing disappears.

To build a drip irrigation system, you will need a water pump, a filter pond-filter, a fertilizing device, main and distribution pipes, irrigation hoses, drippers, auxiliary and dead parts. In addition, the costs of construction work and the design of the project are included.

Based on research conducted in 2013-2014, an average of 6-7 million soums are spent on one hectare of land.

95 percent of equipment and supplies required for this technology are produced in our republic. 5-6 years ago, under the conditions of our country, some parts of the drip irrigation system were produced in only one Saniplast joint venture, and now the number of such enterprises has increased somewhat.

If the water pump is manufactured at the Suvmash plant, the filter, plastic pipes of various diameters, hoses, auxiliary and connecting parts are produced at the Shurtangazkimyo, Makhsuspolimer, Jizzakhplasmassa and other enterprises. The most important thing is that the droppers (kapelnitsa), which were previously completely imported, are now produced in our own enterprises "Pipeline tekhnologis" (Tashkent region), "Agroplast montaj servis" (Namangan region).

Taking into account the importance of using advanced water-saving irrigation technologies in increasing the efficiency of water resources use, the development of this direction is being supported by the leadership of our country.

In particular, during the years 2013-2017, a drip irrigation system was installed on a total area of 25,000 hectares, a film irrigation method was installed on an area of 45,600 hectares, and portable flexible pipes were installed instead of pipes on an area of 34,000 hectares. It is determined that irrigation methods will be introduced using

10 billion soums were allocated to farms and other land owners for the implementation of the drip irrigation technology implementation projects included in the state program at the

expense of the credit line of the Irrigated Land Improvement Fund. It is determined that these funds will be provided through commercial banks as a 6 percent annual preferential loan.

Today, every project included in the State Program of 2015 is analyzed and works are being carried out to develop a drip irrigation system project in the areas to be implemented and to identify construction contracting organizations.

We believe that the widespread introduction of water-saving technologies in our country and the use of facilities created by the state will serve to develop agricultural production and improve the well-being of our people. In 2020 alone, water-saving technologies were introduced on an additional 133,000 hectares. In 2021, we should attract grants from international organizations and implement one model project in each region to reduce water consumption by leveling crop fields with the help of laser equipment.

Conclusion: This technology differs from other irrigation methods:

-high efficiency, i.e., it allows to obtain a stable high yield with low water consumption in conditions of water resource scarcity;

- controllability of soil moisture and the water supplied to create it, i.e. water is evenly distributed across the field in accordance with the needs of each crop in a certain period;

- creation of a water-physical environment suitable for plants in the soil layer where plant roots develop.

Drip irrigation saves water due to:

- compliance of the irrigation regime with the plant's demand for water;

- lack of water evaporating from the soil;

-water does not spread across the field and does not soak into the soil;

- water should not be thrown into the drain:

Drip irrigation saves 20 to 60 percent of water compared to other irrigation methods. It is the duty of each of us to save water. It is the action of each person in this regard, that is, the activity of saving water, preventing its pollution, ensuring environmental and food safety, that helps to solve the problem and allows us to leave a prosperous and ecologically clean world for our children.

References:

1.Transfer equation for the strain rate tensor and description of an incompressible dispersed mixture (incompressible fluid) by a system of equations of dynamic type Yuldashov, A., Abdisamatov, O., Abdullaev, B., Dustova, S.
E3S Web of Conferences, 2021, 264, 03025

2.Modeling of heat exchange processes in the Metanetka bioenergy plant for individual use Sharipov, L.A., Imomov, S.J., Majitov, J.A., ...Pulatova, F., Abdisamatov, O.S. IOP Conference Series: Earth and Environmental Science, 2020, 614(1), 012035

3.Numerical solution of nonlinear integro-differential equations Shodmonova, G., Islomov, U., Abdisamatov, O., ...Kholiyorov, U., Khamraeva, S. IOP Conference Series: Materials Science and Engineering, 2020, 896(1), 012117

4.Optimization of agricultural lands in land equipment projects Khamidov, F.R., Imomov, S.J., Abdisamatov, O.S., ...Ibragimova, G.Kh., Kurbonova, K.I. Journal of Critical Reviews, 2020, 7(11), pp. 1021–1023

5.Восстановление и использование деградированных орошаемых земель в контексте диверсификации землепользования Усманов Юсуф Аликулович Абдисаматов Отабек Сайдаматович science and innovation international scientific journal volume 1 issue 8 uif-2022: 8.2 | issn: 2181-3337 pp.616-624

6. Кадастровая стоимость как инструмент мониторинга рыночной стоимости недвижимости. построение математической модели оценки рыночной стоимости объектов недвижимости О.С.Абдисаматов1 2023 issn: 2181-3833 | volume 2 | issue 1 | pp.495-502

7.Ерларни мелиоратив ҳолатини яхшилашда замонавий геодезик технологияларни қуллаш. ассис. О.С.Абдисаматов ассис.А.Жураев ассис.И.Каримов “ Халкаро ер куни” муносабати билан “ Ер ресурсларини бошқариш ва мухофаза килишда инновацион ёндошувлар: муаммо ва креатив ечимлар” мавзусида республика илмий-амалий Тошкент 2019 йил 22-23 апрель 316-319-бет.

8.Қишлоқ хўжалигида суғориладиган ерларидан самарали фойдаланишда инновацион технологияларни жорий этиш. О.Абдисаматов, У.Исломов, Ф. Юсупов Илмий-амалий агроиқтисодий журнали 2019й. 151-153-бет.