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POSSIBILITIES OF USING COLLECTOR WATERS IN IRRIGATED AGRICULTURE

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Abstract: In this article, the level of salinity of irrigated areas of Bukhara region and the melioration of irrigated lands in Kogon district, as well as the Korak collector-zovur network, which serves inter-households in the district, are studied and analyzed. Also, the authors commented on the positive and negative aspects of this collector.

Key words:Collector-zovor, inter-farm collector, drainage, water resources, irrigated lands.

As a result of the rapid increase in the number of people in the world, natural resources, especially the intensive use of land and water resources, cause negative environmental problems such as pollution of water bodies, degradation of irrigated areas. To combat these problems, international organizations, including the UN program for sustainable development until 2030, set the task of "Protection and restoration of terrestrial ecosystems, their effective and rational use, stopping the degradation of irrigated lands and preventing the decrease of biological diversity."

These tasks require research on the analysis, evaluation and prevention of expected negative natural processes, especially in "ecologically fragile" arid climate regions under the influence of anthropogenic factors. PF-60 of the President of the Republic of Uzbekistan dated January 28, 2022 is of great importance for the development of measures for the effective use of water resources in the Republic, including the collection and storage of water, in the development strategy of the New Uzbekistan for 2022-2026. A number of measures aimed at effective use of existing water resources, improvement of land reclamation, increase of soil fertility, formation of additional water sources are being developed and implemented in our republic in times of water shortage. In particular, in this regard, comprehensive works are being carried out in the irrigated fields of Bukhara region. In our region, the majority of the population lives in the desert region and is mainly engaged in agriculture and animal husbandry.

As a result, in places where river water does not come, people use underground water to grow grain and fodder for livestock with the help of artesian wells. Water resources are limited, and in the years of water scarcity, inter-district and inter-farm collector water is used in a 50/50 ratio depending on the level of mineralization, and in some cases, it is used directly for irrigation of agricultural crops. A collector is an open channel that receives water from the water collecting part of the drainage network and discharges it from the area to be meliorated. The collector is divided into such types as farm, inter-farm and highway. All these form a collector-drainage network. Usually, collectors are placed in the lowlands, along the boundaries of agricultural and crop rotation fields. In flat areas, the length of collector-zovors is built at an interval of 0.8-1.2 km from each other, taking into account the operation of agricultural machinery. The cross-section of an open collector is often trapezoidal. The water level in the collector should be 0.1-0.3 m lower than the level of the collector and ditch that will be poured

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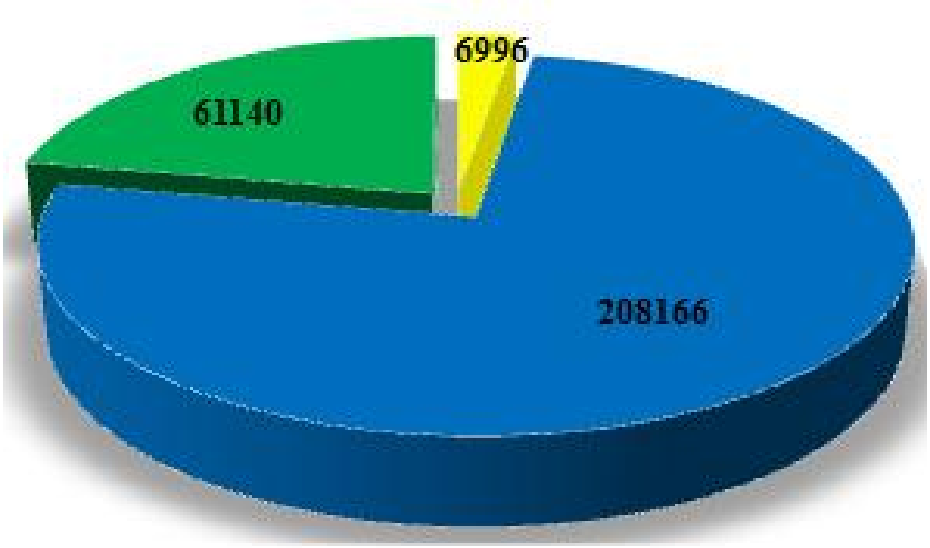
into it. If it is not possible to drain the drainage water, pumping stations will be built to the collectors. The most common dimensions of the cross-section of collectors;

- the depth of intra-farm collectors is 3.0-3.6 m, the width of the bottom is 1.0-1.5 m, the width of the shore is around 40-80 m.

- the depth of inter-farm collectors is 4.5-8.0 m, the width of the bottom is 1.0-3.0 m, the width of the coast is 80-140 m.

The use of artificial irrigation leads to the consumption of water for filtration, which leads to an increase in the level of groundwater in areas with a low level of natural drainage. In order to lower the level of sizot water and remove it, collector-water networks are widely used. Currently, the irrigated areas in the region are 274.6 thousand ha. The level of mineralization of groundwater in irrigated areas is calculated as follows. That is, areas with salinity of 0-1 g/l are 6,996 hectares, areas with 1-3 g/l are 208,166 hectares, and areas with 3-5 g/l are 61,140 hectares. **Figure 1.**



The use of collector-waste water in agriculture has the following advantages: water reserves increase, due to its direct use in places, there is no need to build mains and distribution channels, due to the fact that it contains little waste and a lot of salts, the irrigation networks are less muddy and weedy, due to the fact that less water is taken from water sources for the irrigation system, the consumption of water for filtration decreases, the level of seepage waters decreases. The total irrigated areas in Kogon district are 18.6 thousand hectares, of which 17.3 thousand hectares are provided with ditch networks.

The Korak collector is 17.4 km long and serves to remove underground water from 3 regions in the district. This collector starts from the village of Jaloir and ends at the lower village of Nishovur. The drainage area is 234 hectares. It can hold 5.6 volumes of water. The parallel collector pours its water into the parallel collector. The parallel collector pours its water into the Sea Lake. The water contains 2.931 grams of solids, 0.319 grams of chlorine.

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Figure 1. A view of the collector

In the saline area, the collector-source waters are mineralized to different degrees. In irrigated lands, collector-waste water is one of the main sources of surface water pollution. Irrigation water can be divided into 5 groups according to the content of salt.

The use of collector water in agriculture has the following advantages: water reserves increase, due to its direct use in places, there is no need to build mains and distribution channels, due to the fact that it contains little waste and a lot of salts, the irrigation networks are less muddy and weedy, due to the fact that less water is taken from water sources into the irrigation system, the consumption of water for filtration is reduced, the level of seepage water is reduced.

Korak collector was built by local citizens in 1946 to develop new land and reduce salinity in irrigated areas. The salt washing period of this collector falls on January, February and March. During brine washing, 40% of its water is lost.

Every inter-district and inter-household and intra-household collector-waters in the region are cleaned once every 3 years by the Department of Reclamation Expedition under the Amu-Bukhara Irrigation Systems Basin Department.

The protection zone of the Korak collector, which is considered an inter-farm collector, is 25 m. Twice a year, i.e., during vetation periods, the water consumption and salinity level of collectors and ditches are determined by the Departments of Ecology and Irrigation Basin. Due to the fact that the Korak collector passes through the inhabited area, it causes positive and negative consequences for the population. Basically, this collector is important for the residents of the village of Akchamamat, that is, it takes away the underground water in this area. Residents use this water to irrigate crops for livestock. However, due to the fact that the safety of the population is not taken into account, cases of drowning are observed among young children. In addition, as a result of the warming of the air temperature in the summer months, all kinds of insects and bad smells are coming from the collector to the residential houses.

To eliminate such problems, first of all, in order to ensure the safety of the population, it is necessary to install fences made of wire or iron around the collector. In addition, it would be appropriate if the organizations and residents organize cleaning at least 2 times a year and clean the surroundings of the collector.

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Figure 2. The importance of the Korak collector in the economy

In Bukhara region, he conducted hydrogeological research in the following areas based on the groundwater and geological assignment for 2017-2023.

1. Obtaining information about the status of underground water resources by conducting seasonal and multi-year observations of the level of underground water and geochemical regimes.
2. Efficient use of underground water and control of its pollution level.
3. Maintenance of the state report and state cadastre of underground water includes the following main tasks that must be performed in solving the above-mentioned tasks.
4. Effective use of underground water and control of its pollution level.

Used literature:

1. Xayitov Yozil Kosimovich, Toshbekov Nurbek Axmadovich, Jumaeva Tozagul Ahzamovna. The Formation of Water Collector-Resources Drainage Network of Zarafshan Oasisand the Questions of Recycling. TEST Engineering & Management. 2020. 7380 – 27385. 2
2. Y.K Khayitov, NA Toshbekov, TA Zhumaeva. Efficient use of water resources of the amu-bukhara canal. academik An International multidisciplinary Research Journal 5, 30. 2020.
3. Toshbekov Nurbek Ahmadovich, Xayitov Yozil Kosimovich. Efficient Use Of Collector-Drainage Networks (On The Example Of Bukhara Region). The American Journal of Agriculture and Biomedical Engineering 2 (2), 10-15. 2021.
4. Toshbekov Nurbek Ahmadovich. Definition of ditches and possibilities of using them. Sovremennaya rossiyskaya nauka: aktualg‘nqe voprosq. 2021.
5. Xayitov Yozil Kosimovich, Toshbekov Nurbek Axmadovich, Jumaeva Tozagul Ahzamovna. The Formation of Water Collector-Resources Drainage Network of Zarafshan Oasisand the Questions of Recycling. TEST Engineering & Management, 27380 –27385.
6. Khayitov Yozil Qosimovich, Toshbekov Nurbek Ahmadovich, Zhumaeva Tozagul Aozamovna. Efficient use of water resources of the amu-bukhara canal. academik. An International multidisciplinary Research Journal 5, 30.

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Journal: https://www.academicpublishers.org/journals/index.php/ijai

7. Toshbekov Nurbek Ahmadovich. Criteria and scales of the secondary use of collector-drainage waters (on the example of the Bukhara oasis). Bulletin of the Karakalpak branch of the Academy of Sciences of the Republic.
8. Toshbekov Nurbek Ahmadovich. Hydrological Assessment Of The Meliorative Condition Of Collector Drink Water In Bukhara Region. Nature and Science. MARSLAND PRESS 18 (4), 2020.99-101
9. Toshbekov Nurbek Ahmadovich. Efficient use of water resources of the Amu-Bukhara canal. academik. An International multidisciplinary Research Journal 30, 2020.15-18
10. Toshbekov Nurbek Axmadovich. Scientific basis of water resources and their exploitation use (on the example of Bukhara region). Electronic journal of actual problems of modern science, education and.
11. N. Toshbekov. Scientific basis of water resources and their exploitation use (on the example of Bukhara region). Electronic journal of actual problems of modern science, education and. 2020.