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Mustafa G. Mustafayev¹, Doctor of agricultural sciences
ORCID ID: <https://orcid.org/0000-0003-2071-3078> **e-mail:** meliorasiya58@mail.ru

A.İ. Hajiyev², doctor of philosophy in agrarian sciences
e-mail: aslan.haciyev@gmail.com

A.Kh. Hasanova², doctoral student, assistant
e-mail: arzu.rzayeva.1980@mail.ru

¹Ministry of Science and Education Republic of Azerbaijan Institute of Soil Science and Agrochemistry, Baku, Azerbaijan Republic

²Azerbaijan Architecture and Construction University, Baku, Azerbaijan Republic

THE POTENTIAL DEVELOPMENT WAY OF AZERBAIJAN'S MELIORATION AND WATER MANAGEMENT AREA

Summary. The article is devoted to improvement of the agriculture of the Republic of Azerbaijan, creation of an abundance of crops, solution of the reliable supply of food products to the population, provision of efficient use of water resources in the country, improvement of water management, etc. The ways of development of the country's reclamation and water management by summarizing the results of multi-year data and scientific-research works were examined and noted, the reforms carried out in this field, major construction works, the potential development of grain growing, cotton growing, tobacco growing, cocoon growing and other fields in the country, as well as new information on the melioration measures performed as a result of the implementation of the tasks related to the creation of agroparks and large farms was examined, as well as information was given on the works being carried out on the improvement of the melioration potential, and the improvement of the water supply and melioration condition of the irrigated lands with the implementation of the measures planned for the future, the improvement of the newly irrigated lands as a result of its commissioning, reliable provision of bread and food products to the country's population at the expense of domestic production; Information about the implementation of various projects for the protection of buildings and other infrastructure objects from the harmful effects of floods and floodwaters, and for their more efficient use due to the regulation of water resources of rivers has been mentioned.

Key words: Agriculture; water resources; land reclamation; arable land; groundwater; main canals; collector-drainage network.

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Introduction

The Republic of Azerbaijan is located in a zone with very complex natural and geographical conditions and is a country with ancient irrigation agriculture. As the territory of the country is located in a dry and arid zone, it is impossible to grow agricultural products here without irrigation, reclamation and development of water management. It is difficult to harvest agricultural crops without irrigation in the arable Kura-Araz plain of the area. Despite the fact that the history of irrigation dates back to ancient times, the construction of engineering irrigation systems in this zone

began at the beginning of the 20th century. Research conducted in this zone shows that there is no natural flow of drain water. Therefore, it is very important to build a collector-drainage network along with the irrigation network in this zone.

As a result of the implementation of these measures, the improvement of the water supply and melioration condition of the lands in our republic, the reliable provision of food products to the country's population as a result of the use of newly irrigated lands, the protection of residential areas, agricultural fields, hydrotechnical facilities and other infrastructure facilities from the harmful effects of flood and flood waters, rivers due to regulation of water resources, it will be possible to use them more efficiently.

Research object and methods

As a research object, water physical and chemical properties of irrigated lands of the Republic of Azerbaijan, their modern meliorative condition were studied and analyzed based on literature data. Methodological study of the specified research object is evaluated based on the accepted methods in the study of land reclamation issues. For this, a systematic approach and systematic analysis methods were used in the study of the issues.

Analysis and discussion

In our republic, which is an ancient irrigation farming country, the development of reclamation and water management, which plays an important role in the rise of agriculture, the creation of crop abundance, and the reliable supply of food products for the population, the reforms carried out in this field, large-scale construction works, the creation of a wide reclamation potential and the adoption of prospective programs are part of world politics. It is related to the tireless activity, hard work and visionary policy of Heydar Aliyev, a well-known leader, a wise and visionary politician, the national leader of the Azerbaijani people [1].

This area has been in the spotlight in recent years. Thus, the organization of the normal operation of the reclamation and irrigation systems, the repair and restoration works in the required volumes, the improvement of the water supply and reclamation condition of the irrigated lands, the continuation of the fight against floods and floodwaters and other relevant measures were implemented. So, at the expense of all financial sources, in 2004-2021, construction, reconstruction and restoration of 4.6 thousand kilometers of irrigation canals, 3.4 thousand kilometers of collector-drainage networks, water supply of lands on 483 thousand hectares and 307 thousand hectares of land improvement of the land reclamation was completed, 204,000 hectares of newly irrigated land areas were included in the crop rotation. More than 800 kilometers of existing soil protection dams have been substantially raised and strengthened, 203 kilometers of flood protection measures have been implemented in rivers, 3,061 subartesian wells have been dug and put into use to improve the supply of irrigation water to agricultural fields, as well as to meet the population's need for drinking water. 4 reservoirs with a total water capacity of 456 million cubic meters (Takhtakorpu, Shamkirchay, Tovuzchay, Goytepe) were built, as well as 3 reservoirs with a total water capacity of 15.5 million cubic meters (Pirsaatchay, Zogalavachay, Lavain) were repaired and restored [2].

The construction of the Khanarkh canal included in the "Reconstruction of the Samur-Absheron irrigation system" project in 2006, the restoration of the main intake facility located on the Samur river, the construction of the main water drain near the Samur river, the length of the first 50 kilometers of the Samur-Absheron canal and the length located in this section Reconstruction works of 185.7 kilometers of inter-farm canals were completed in 2007.

The construction of the 3rd part of the Main Mil-Mugan collector, which ensures the discharge of saline groundwater from 500 thousand hectares of irrigated areas of the republic to the Caspian Sea, was completed in 2006 and connected with the Mil-Karabakh collector [3, 4, 5, 6].

In order to transfer water from the 50th kilometer of the Samur-Absheron canal to the Takhtakorpu reservoir, the construction of the 32-kilometer-long Valvalachay-Takhtakorpu canal, which was started in 2008, and the Takhtakorpu reservoir with a total water capacity of 268.4 million cubic meters (with a Hydroelectric Power Station with a total capacity of 25 MW together) and the construction works of Takhtakörpü-Ceyranbatan canal, which is about 108 kilometers long, were completed in 2013.

On November 15, 2014, the opening ceremony was held in the presence of Mr. Ilham Aliyev, the President of the Republic of Azerbaijan. The construction works of 60.5 kilometers long highway canals, which will provide the construction of the Tovuzchay reservoir with a total water capacity of 20 million cubic meters was completed in 2016.

In order to fulfill the tasks given by the President of the Republic of Azerbaijan regarding the development of grain growing, cotton growing, tobacco growing, cocoon growing and other fields in the country, as well as the creation of agroparks and large farms, the Joint Stock Company organizes the normal operation of reclamation and irrigation systems, improves the water supply and reclamation condition of irrigated lands, expands the fields, fighting against floods and floodwaters and other directions, continued its successful activities in 2021, as in previous years [1].

In order to create agroparks, large-scale grain growing, cotton growing and other farms, the works of increasing the pumping capacity of the pumping station of the Shamkir machine channel and installing the 1202 pogonometer sections of the 3775 pogonometer pressure pipeline for the repair and restoration of its first turn have been completed. In order to provide irrigation water to 6,955 hectares (of which 1,582 hectares are newly irrigated areas) of Goranboy region, construction of 15,413 pogonometer long concrete-lined inter-farm distribution canals was carried out in the zone of the second turn of the Shamkir machine canal. Works on the construction of 9,506 square meters of reinforced concrete lined distribution channels and 12,000 square meters of emergency drainage channels with facilities for irrigating 9,461 hectares of new land located on the left bank of the new tributary canal of Araz have been completed. 25,335 pogonometers of closed drains and 108,032 pogonometers of closed drains were built to improve the melioration of 3,500 hectares of winter pasture land in Sabirabad region.

With the completion of irrigation water supply works for 2960 hectares of land belonging to the agricultural park in Yevlakh district, construction of 1 reserve water pool with a volume of 100 cubic meters, installation of mechanical and electrical equipment of the pumping station, external power supply and laying of pipelines with a pressure of 13114 pogonometers were carried out. In order to create an

agropark of 12,300 hectares in Sheki and Oguz regions, joint construction works with 4,820-meter-long closed collector and water coolers were carried out, and 3,860 hectares (of which 560 hectares are new irrigation gas fields) were provided for Aghsu region. 3775 pogonometers of the channel are being reconstructed [2, 3].

Distribution of 4150 pogonometers of reinforced concrete distribution channels to improve the water supply of 1496 hectares of land in Mughanli of Aghstafa region, and I level pumping station, 4006 pogonometers of pressure pipeline, 1617 meters long pipeline to improve the water supply of 865 hectares of Ikinki Shikhli village of Gazakh region. work has been done. In order to improve the water supply of agricultural crops on the Absheron peninsula, 256 pogonometer sections of the Absheron main canal were reconstructed and the construction of the 885 pogonometer closed construction in the Binisi part of the canal was completed. By the Decree of the President of the Republic of Azerbaijan, 3,600 hectares (of which 450 hectares are newly irrigated areas) in 177 settlements of 38 cities and districts of the Republic of Azerbaijan are provided with irrigation water for agricultural fields and yard plots used for cultivation, to improve water supply, and to meet the population's need for drinking water. Project-estimate documents of 20 subartesian wells are prepared and drilling works are being carried out. At the same time, drilling works in the remaining 71 subartesian wells from 2020 were completed and put into operation. Delivery of irrigation water from the Kura river to the land belonging to the agricultural park in the territory of Hajigabul region with a pumping station with a consumption of 3.0 m³/sec.

The results of long-term experiments show that the compaction of the subsurface layer can be eliminated by plowing to a depth of 60 cm and deep-loosening to a depth of 1.0 m. In places where deep plowing and loosening has already been carried out, it is necessary to use crop rotations: here are the main agricultural crops (cotton, cereals) must necessarily be replaced by alfalfa for three years. In order to obtain high yields from loosened soils, it is necessary to apply two-tiered organic and mineral fertilizers (to the arable and sub-arable horizons separately). Such a system of agriculture mixed with cultivated plants creates a powerful highly fertile layer in the soil for three years, the thickness of which reaches 50-60 cm or more [7, 8, 9, 10, 11].

Retaining walls 1863 pogonometers long were built in the rivers passing through the territory of Balaken, Gakh, Sheki, Gabala Guba, Khachmaz, Aghjabedi and Lankaran regions of the republic for strengthening the banks and eliminating the emergency situation in the rivers due to flood and flood conditions.

Improvement of water supply to crops in Tovuz, Aghstafa, Gazakh, Oguz, Zardab and Saatli districts, provision of water to livestock complex in Shamakhi district, protection of border posts in the territories of Gakh and Gusar districts and the territory of Viravul village of Lankaran from floods and flood waters of the Viravulchay river is ensured. the preparation of project documents for the work has been completed.

At the same time, in accordance with the implementation of the projects included in the "Measure Plan for 2020-2022 on ensuring the efficient use of water resources" approved by the relevant Decree of the President of the Republic of Azerbaijan, the length of 29.5 kilometers, with a consumption of 12 kbm/sec, the Kyzylarkh Canal, 22.4 kilometers long, with a consumption of 20.2 kbm/sec, and the length of the Tartar Left Bank, for providing irrigation water to 29,660 hectares of land in Tarter, Goranboy, Yevlakh and Barda regions. Work on the technical and economic justification of the reconstruction of the Xanarkh canals with a length of

12.6 kilometers and a consumption of 10 kbm/sec, and the Upper Zeykhur canal with a length of 42 kilometers and a consumption of 4.5 kbm/sec, which provides irrigation water for 6091 hectares of cultivated land in Gusar region, has been carried out [2, 3, 4].

Thanks to the projects implemented by the society in 2021, the water supply of 9.5 thousand hectares of land and the reclamation condition of 3.5 thousand hectares of land were improved, and 2.1 thousand hectares of new land was provided with irrigation water. Management and affiliation of the Commission established by the Decree of the President of the Republic of Azerbaijan dated April 15, 2020 "On measures related to ensuring the efficient use of water resources" with the aim of ensuring the efficient use of water resources in the country, improving the management of water management and coordinating activities in this area with the participation of institutions, in the conditions of last year's severe drought and water shortage, appropriate preventive measures were taken to ensure the supply of drinking and communal water to the population, water supply to agricultural fields, and electricity production, working regimes for water reservoirs and main canals were prepared in an efficient manner and proper distribution of water, efficient and economical use of water was ensured [4, 5, 6].

As is known, the yield on irrigated lands is higher than on non-irrigated ones. In light of this, one of the main conditions for creating food abundance is to increase the area of irrigated farmland. To do this, reservoirs should be created and irrigation channels should be built taking into account the relief conditions and water resources of the country. The creation of such a system will increase yields on non-irrigated areas, while at the same time restoring the fertility of these soils [10, 11, 12].

In order to improve the water supply and melioration condition of the irrigated lands, 58.0 million cubic meters (14,200 kilometers of irrigation, 1,900 kilometers of collector-drainage network) of irrigation and collector-drainage networks were desilted, 53 kilometer part was covered with concrete, 5250 hydrotechnical devices, 6100 subartesian wells, 330 pumping stations were fundamentally and currently repaired. 16.3 million cubic meters of sewerage works were carried out in river channels, 6.5 thousand cubic meters of rock-stone and fashin, 2.1 thousand cubic meters of gabion dams were installed, and 25.7 thousand cubic meters of repair works were performed on stone-concrete dams.

Reinforcement works were carried out on the 107.9-kilometer section of the earth protection dams built along the Kura, Araz and mountain rivers that meet them, and embankment works with 44,130 cubic meters of stone and concrete products were carried out.

As a result of the measures taken, the irrigated land areas were mainly supplied with irrigation water. All agricultural plants in the republic were irrigated 3 times on average in the area of 1 million 443 thousand hectares. At present, the Society is continuing to implement relevant measures in order to further improve the water supply and melioration condition of agricultural fields. For the purpose of accurate accounting of water resources, 18 modern water measuring devices were installed in the main irrigation canals, and at the same time, an automated control system (SCADA) was installed in 694 subartesian wells. At present, work is being done in the direction of creating a centralized electronic accounting system for the Society, an electronic database of reclamation and water management facilities, a single electronic accounting database for human resources, financial and accounting, and organizing electronic document circulation [1, 6].

Construction of distribution canals for supplying water from the new branch of the Araz River to newly irrigated lands, reconstruction of the Gazanarkh canal to improve the water supply of farmlands in Agsu region, water supply to the farmlands of Khanliq, Kemarli, Aslanbeyli, Gaimagli and Ikini Shikhli villages of Gazakh region. restoration of pumping stations and underground irrigation networks (on the Second Shikhli farm), increasing the pumping capacity of the pumping station of the Shamkir machine channel and repair and restoration of its turn I, design and construction of inter-farm distribution channels in the zone of the second turn of the Shamkir machine channel are planned. Also, carrying out amelioration measures in the winter pastures located in Sabirabad and Salyan regions, improving the supply of irrigation water to agricultural fields (in Hajigabul region), designing and digging subartesian wells in order to improve water supply in the regions, fighting against the harmful effects of flood and flood dangerous rivers, and eliminating the emergency situation. measures, preparation of technical and economic justifications and project documents of Hekarichay and Bargushadchay reservoirs, repair and maintenance of Sugovushan (with a 5.2-kilometer main canal), Khachinchay (with a 7-kilometer canal), Ashagi Kondalanchay, Kondalanchay-1 and Kondalanchay-2 reservoirs. restoration, preparation of the feasibility study and project documents for the restoration and development of the melioration and water management complex in the liberated territories of Agdam, Fuzuli and Jabrayil regions, reconstruction of the Tartarchay Left Bank canal, Maiden Castle water Various measures are being taken by preparing the technical and economic justification of the construction of the main canal from the warehouse and project documents [1, 3].

Results

With the implementation of these measures, the improvement of the water supply and melioration of irrigated lands, the reliable supply of bread and food products to the population of the country due to internal production as a result of the use of newly irrigated lands, the harmful effects of flood and flood waters of residential areas, agricultural fields, hydrotechnical facilities and other infrastructure facilities. there will be ample opportunities to protect them from their effects, to use them more efficiently due to the regulation of water resources of rivers.

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М.Г. Мустафасєв, А.І. Гаджієв, А.Х. Гасанова
ПОТЕНЦІЙНИЙ ШЛЯХ РОЗВИТКУ МЕЛІОРАЦІЇ ТА ВОДОГОСПОДАРСТВА
АЗЕРБАЙДЖАНУ

Анотація. У статті розглянуто шляхи вдосконалення сільського господарства Азербайджанської Республіки, підвищення врожайності сільськогосподарських культур, вирішення проблеми надійного постачання населення продуктами харчування, забезпечення ефективного використання водних ресурсів країни, удосконалення управління водного господарства тощо. Проаналізовано шляхи розвитку меліорації та водного господарства країни за підсумками багаторічних даних та науково-дослідних робіт, реформи, що проводяться в цій галузі, капітальні будівельні роботи, перспективи розвитку зернових, бавовництва, тютюнництва, коконівництва та інших галузей, а також нові відомості про проведені меліоративні заходи в результаті виконання завдань щодо створення агропарків та великих фермерських господарств. Також надано інформацію про роботи з покращення меліоративного потенціалу земель, поліпшення водозабезпеченості та меліоративного стану зрошуваних земель з виконанням заходів, запланованих на перспективу, надійне забезпечення населення країни хлібом і продуктами харчування за рахунок власного виробництва в результаті введення в користування нових зрошуваних земель, населених пунктів. Наведено інформацію про реалізацію різноманітних проєктів із захисту будівель та інших об'єктів інфраструктури від шкідливої дії паводків та паводкових вод, їх більш ефективного використання за рахунок регулювання водних ресурсів річок.

Ключові слова: сільське господарство; водні ресурси; меліорація; рілля; підземні води; магістральні канали; колекторно-дренажна мережа.

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Мустафаєв Мустафа Гілман огли

доктор сільськогосподарських наук, Міністерство науки та освіти Азербайджанської Республіки, Інститут ґрунтознавства та агрохімії

Адреса робоча: AZ1073 Азербайджан, м. Баку, вул. М. Рагіма, 5

ORCID ID: <https://orcid.org/0000-0003-2071-3078> **e-mail:** meliorasiya58@mail.ru

Гаджієв А.І.

кандидат сільськогосподарських наук, доцент, Азербайджанський архітектурно-будівельний університет

Адреса робоча: AZ1073 Азербайджан, м. Баку, вул. Айна Султанова, 11

e-mail: aslan.haciyev@gmail.com

Гасанова А.Х.

докторант, асистент, Азербайджанський архітектурно-будівельний університет

Адреса робоча: AZ1073 Азербайджан, м. Баку, вул. Айна Султанова, 11

e-mail: arzu.rzayeva.1980@mail.ru