

OCCURRENCE AND DEVELOPMENT OF IRRIGATION SYSTEM

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Annotation. *The article covers the emergence, formation and development of irrigation systems in the Fergana Valley, which is considered one of the Centers of the world peasant civilization.*

The history of the occurrence and development of irrigation and irrigation systems is divided into 3 main stages. The first stage included the period from the Neolithic to the end of the bronze and the beginning of the Iron. During this period, Lemon irrigation was formed in the foothills and in the river banks of the plains. The skills of mastering and using simple methods of water management, such as winding fields with marzas, expelling excess water into lowlands, cleaning networks that have become turbid, have been formed.

The second stage e.o. B from the III century.e. Siege the range until the IV century. This stage is characterized by the restoration of small irrigation systems with a mesh of water collection in the foothills, the transition to the application of artificial irrigation methods, such as the construction of ponds as a pond in the places of pouring shadows.

The third stage began with the restoration of relatively complex irrigation systems in the foothills. Such systems consist of special head structures and a number of trunk channels, and in the upper distribution node, solid adjoins are fixed. The devices for raising water to higher regions have been mastered. Irrigation systems, facilities and methods have been perfected over the centuries, using areals increasingly.

Keywords: *Irrigation, irrigation systems, irrigation, River Birch, Delta, lime, Pliers, distribution node, stage*

Irrigated farming has a multi-thousand-year history. Central Asia, including the Fergana Valley, is considered one of the ancient centers of the civilization of World ingenuity . The emergence and spread of farming coincides with the period of Neolithic (6-3 thousand years before BC). The emergence of farming occurred in two ways. Primitive farming arose as a result of close ties between hunters-fishermen in the northern regions of Central Asia and peasants in the south along the banks of the rocks and Delta of the large plain Rivers passing through the Karakum and Kyzylkum steppes, as well as their extinct tributaries. In the mountainous regions of the south of Central Asia, farming arose on the basis of harvesting wild plants - the most primitive way to find food. Watching the seasonal sequence of the ripening of grain-bearing plants growing wild in the alluvial formations of

the ancient man mountain ranges, gradually transition from random collections of necessary plants to artificial cultivation. The natural and geographical conditions in the foothills of Mountain Ash were favorable for farming. In the foothills mountainous areas, the water-bearing areas formed ports with no large ones. They were easy to process and served as a field for the first peasants.

The results of archaeological research of the science of Uzbekistan indicate that the first peasant farms could be formed in the northern slopes of the Nurota Mountain system facing the Kyzylkum steppes and in the natural ports in the foothills of the north-eastern part of the Fergana Valley .

In the Bronze Age, A Hoe was discovered. The application of the hoe improved the soil, provided for the rapid development of farming. E.o. In the ancient regions of the river basin with water supply for the second millennium BC, small oases are formed around natural harbors. In these oases, the settlements (villages) of ancient peasants and herbivores occur.

According to archaeological data, the emergence and development of herbivorous farming in the Fergana Valley dates back to the end of the Bronze Age. The transition to hoe-based farming made it possible to suppress artificial water in large areas by winding marzas around the Liman fields, managing relatively small mountain areas and drying network water in the River Delta. At the end of the Bronze Age, the primitive peasant began to build the first canals.

The construction of large irrigation canals in Central Asia and the emergence of large adzhilgohs in the zone of their influence, according to archaeological data e.o. It dates back to the VI-IV centuries – the period of the emergence of Slavery Society . During this period, artificial irrigation was strongly developed, especially in the lower reaches of the amudarya, Sirdarya, Zarafshan rivers and Fergana basins.

Written sources and archaeological research indicate that in Central Asia, several types of irrigation are used, depending on the natural conditions. In the mountainous regions, the jagged irrigation, which uses mountain ash water, which is formed from the snowfall, was in practice. For irrigation on the plains used the river, its branches and tributaries. Channels are removed from them, sometimes they are located in the form of a plow, corresponding to the relief. In the regions of the foothills, groundwater is drained out. For this purpose, special structures – coriander, taminlangan underground water collector Galleries with observation wells were built at certain distances.

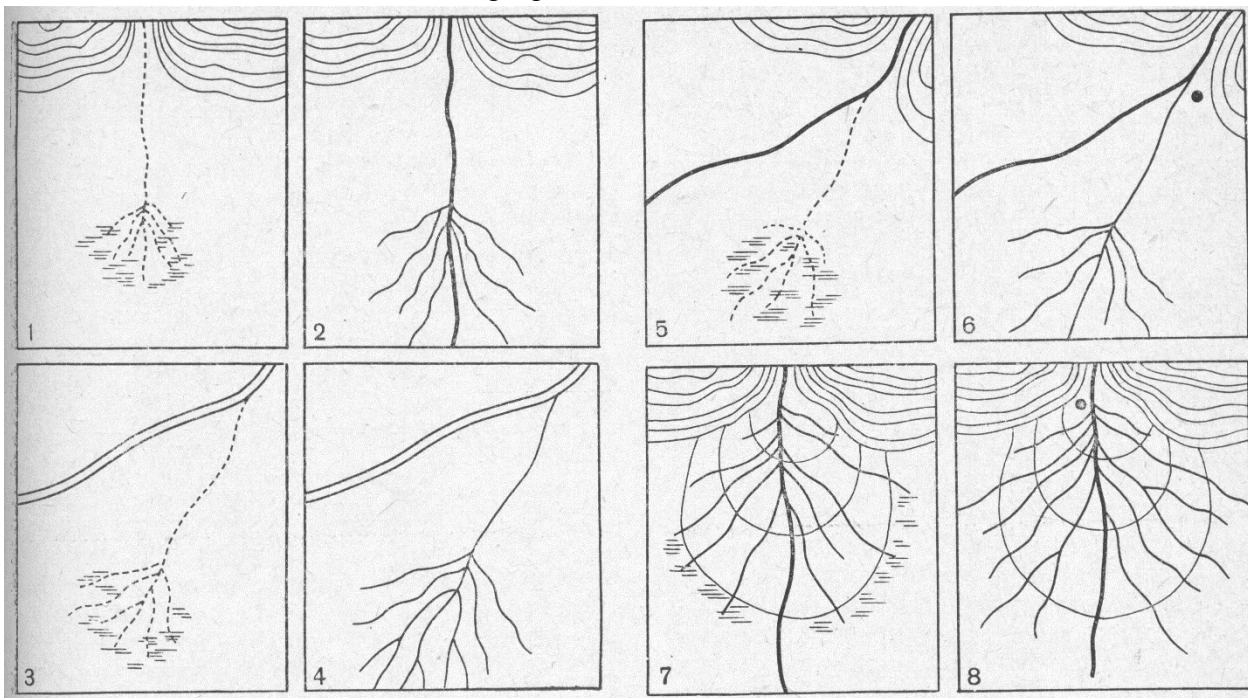
For irrigation, they also used spring and summer flood waters in the River Delta. Those who poured flood waters into natural marshes or surrounded flood waters with marza. This method made it possible to collect a sufficient amount of water for the cultivation of grain-bearing crops, such as millet, barley, sesame and maize. In the foothills, bandaged fields were covered with marzas, where rainwater and spring water coming from the mountains were collected and used for the cultivation of grain crops.

With the help of irrigation canals, artificial irrigation was first developed in the lower reaches of rivers, along the Delta Networks. Because in the networks the water flows slowly, and the ancient peasant communities ruled it (4-th drawing).

Monuments to the end of the Bronze Age of the O'troq peasant culture retail of Fergana Valley, near Tuyachi, Kugay, Eylatan and especially Chust [4, 5 etc.] and Dalvarzin [6, 11-37 b.] and identified in a number of other places. Agricultural settlements of the Bronze Age are located in the

Fergana Valley mainly on the second birch branch of Sirdarya and its tributaries . E.o. The natural conditions of the end of the II millennium and the beginning of the 1 - th Millennium differed little from the present, and at that time farming was based on irrigation. The development of farming in the Fergana Valley began under the influence of the more developed south-western regions of Central Asia . At the location of the Chust are found grains of sickle, grain grinder, keli stalks, as well as soft Willow, millet and millet pea plant [Khudoyberdiev, 1962]. According to the results of the geomorphological study of Andijonsoy and Sharikonsoy in eastern Ferghana, these periods are the channels from the Black Sea

In Fergana, the scheme of the development of artificial irrigation and the probable stages of the history of irrigation are called B.A. Indicated in the works of latinin [3, 9, 10]. It divides 3 main stages ("leap") in the development of irrigation techniques in Central Asia (drawing). The first stage is the siege of the time interval from the Neolithic to the end of the bronze and the beginning of the Iron. During this period, irrigation skill buds appeared, and natural lemon-irrigated dexterity developed. On the way to the plain, The Dry Valleys and the floods of temporary flowing waters were used, as well as the sunken areas of the river cliffs in the foothills. The peasants gradually move from simply winding the fields of the crop with marza to expelling excess water into the lowlands of the army and clearing the old branches that have become turbid. The ancient systems with side channels, according to archaeologists ' assumptions, occurred as a result of the work carried out on the management of flood and gorge Waters [3, 11].



4-drawing. Scheme of development of irrigation system in Fergana Valley

(B.A. B on Latinin.V. From Andrianov, 1969)

1 - the spread of a fading mountain ash or soybeans, with a lemon in the lower part of the plain; 2 - The transformation of a lemon spread into an ancient artificial irrigation system, which gradually became insignificant by means of self - purification and the release of side channels; 3 - the spread

of a lemon in the lower part of the fading network in the spread with lemon at the exit; 6-the transformation of the lemon spread into a trunk-channel elpigichoid irrigation net by cleaning the Uzan and building the main water intake facility; 7-the delta of the flood dumps spreading along the spreading cone at the exit of the mountain range into the Valley; 8-the transformation of the Delta, typical for Fergana, into a large elpigichoid irrigation system as a result of

The second stage is characterized by the transition to the application of artificial irrigation methods, the restoration of small irrigation systems with a mesh of water collection in the foothills, the construction of pools and ponds in the places of pouring shadows. During this period, the water distribution barriers of water management (wooden three legs – sipays, stone slabs, etc.k.), simple methods in the form of head structures were invented. During the swampy lowlands and floods, in addition to the flooded land, began to use relatively high basins. The second stage is in Fergana e.o. From the III - th century b.e. It lasted until the IV century. During this period sinfiy relationships were intensively developed and built in the ancient state – Davan Kingdom .

The third stage began with the restoration of relatively complex carpentry (veerli) systems in the mountainous regions. Elpig systems had special head structures and a number of trunk channels. Such systems require the implementation of a large amount of land work and the constant cleaning of irrigation channels from imports. In the upper distribution node of the irrigation system are located solid settlements, such as Sarigurgan. This period coincides with the beginning of feudalism in Ferghana (b.e.V-VII-centuries). Iron weapons were perfected (heavy iron hoe appeared). The area of irrigated lands sharply increased. The effectiveness of the irrigation effect increases. The construction of water-lifting facilities began .

Russia's policy, which it pursued after the conquest of Central Asia, created conditions for positive changes in a certain sense, even if it was of a colonial nature. In order to master the rich natural resources of Central Asia, including the Fergana Valley and turn this vast territory into a raw material base for the industrial districts of Russia, specialists were involved in studying the nature and economy of the country. In particular, projects were created to reconstruct the existing irrigation network, improve water supply and master new lands.

Mukhandis of Turkistan agricultural department K.The project scheme, which was established in 1897 year under the leadership of Petrov, became one of the first projects for the development of irrigation in the Fergana Valley. . According to this project, irrigation of 170 thousand hectares of land, including Karakalpak steppes, located on the left coast of Sirdarya, is envisaged.

The trunk canal should start near the village of Mirovot, after 10 km it should flow, dividing into the channels of Ulugnor and Balykchi. The ulugnor canal ends with the flow of Kokandansay around the city of Kokand through the altars and furrows in the West, South-West direction. The station Melnikova (now Konibodom sh.) is located in the Western direction of the channel balikchi, through the station of Boz urochish and Urganji along the Karakalpak Steppe.) intended to flow in the direction.

Since the Black Sea water is low, the project aims to build a second main water intake device near the Mingbulak.

The project will be approved by the Technical Committee of the land improvement department and will begin its implementation. But as a result of the fact that the cost increases compared to what is indicated in the estimate, and again for some other reason, things stop.

A. with the development of irrigation works in Fergana Valley in 1909-1912. The Moscow irrigation company under the leadership of Kuznesov was engaged. In the left coastal part of Fergana, a scheme for the development of irrigation was drawn up. Engineer K., who participated in the drawing up of the scheme. In the reference book prepared by Sinyavsky, the possibility of building a large canal that will take water from the Sirdarya was analyzed in every possible way.

According to the project of the Moscow irrigation company, firms Pirson, Sing (1910), Kyurshterner (1911) and Holsman (1912) were obliged to absorb 260 thousand hectares of land on the Left Bank of the Sirdarya, including the Karakalpak Steppe for irrigation .

Prof. I.G. The projects of Alexandrov, which he founded in 1912-1918 years, are distinguished by the fact that he takes into account the Real opportunities for the development of irrigation. Prof. for the first time, he scientifically grounded the possibilities of building a trunk canal to master the vast expanses of empty lands and improve the water supply of the Kokand Oasis. I.G. Alexandrov's calculations and proposals were high in due time, but there were no opportunities to develop irrigations during the period of the kalonial system.

Since 1929 y Sirdarya Basin, including in the Fergana Valley with the creation of irrigation projects Sirdazvodkhoz (later the Institute "Sredazgiprovodxlopok") sirdarya byuro was engaged. In 1930 year the Fergana land irrigation project will be put forward under the scheme Rizenkampf. To draw up this scheme, no special studies were conducted, so the author's abstract became more predictable.

Fergana land irrigation project will be given to American engineers for advice. American consultants focus the main attention on the waters of sizot. They considered that part of its deficit could be replenished on account of the withdrawal of water from the Sirdarya. But the scheme was not sufficiently developed, in which low-water districts such as Zone relief and Soh-Isfara irrigation system were not taken into account .

In 1935, excellent projects on the regulation of the use of Water Resources in Soh-Isfara irrigation systems, improvement of water supply and development of new lands were developed.

1939 year of the Institute" Sredazgiprovodhlopok " I.A team of projectors led by Lebedov developed a practical project of the construction of the great Fergana canal (CC). As a general international construction of the greater Fergana canal (CC) began on August 1, 1939 year and was completed for 45 days. In February-March 1942 year, the Soh-Shahimardon canal was built, the length of which was 55,5 km.

After the Soh river flows out of the stream, it is divided into a large number of branches, varying in size and limb, from the flat-surface gravel rock with a length of 12 km and a width of 1,5-2,0 km. Kayir, which is composed of centuries-old sand and gravel deposits, is easily washed by river waters, and every year with flood waters, sand-gravel Oaks of a volume of up to 60 thousand m³ are brought to these places. This creates complex and difficult conditions for obtaining water for the population.

98-th large-small canal-aryklar-received water from the Soh River. Water extraction is carried out by the construction of various water extraction facilities to a river-side or random network. These structures are usually built of stone-topping veneers, which are very quickly broken. With an increase in the natural flow in the river, the head of the ditches breaks, and the water goes to the next ditches a lot and also breaks them. As a result, the Arks remained without water, they had no control and pressed the fields of crops on the lower lands, and sometimes, even the city of Kokand. And when the water discharge devices endured the water pressure, the water would pass through a large number of channels and break the ditches in the sheep section of the stream, or the change of the flow conditions would fill the head of the ditches with the citation.

For the people, the discharge and management of water in Sarikurgan was a great disaster. In the most ardent Pallas of irrigation, the ditches lay without water for 10-15 days, and the entire population came out to restore water production. In the summer months, an average of 100500500 people and 500-600 cart were always busy in these jobs. And when the river network is far from the place of water intake, the main part of the canals, a few km in the heavy gravel rocks of the rock-the lab is hand-dug. The weight of the bitter, sad fate of the blonde was also expressed in the naming of the people who worked here. If in other places they were called " hashish "or" digger", then in Yellowstone they were interpreted as " payi-swollen " (payshkan). The meaning is "tired, swollen legs". In sokh, the functional leg was not exhausted, did not get water without embellishment.

Stone, cobwebs and wood were used in water extraction and protection works. 30-40 thousand m3 of stone-weaving is used every year for water extraction devices and protective works. This work was done without a specific system, and for this reason, such a large amount of work has benefited for a year to come. There is no trace left of the devices after the powerful floods.

In the spring, when the river flows 8-10 m3/sec, the water is sharply lacking. The presence of a large number of parallel small ditches in the cone spread made the situation more complicated, a large amount of water from them was absorbed into the ground. For example, water was given only from June, to the fields located below the current track SK. Until then, the crop was not watered at all. Such a situation has caused a peculiar drying system of the floors. The trenches dug a trenchline at the top of the system, so as not to extract the sizot waters, but to extract water from the population itself in the lower reaches. The trenches did not go beyond the cultural zone and eventually became a watering hole in the system. In the period of novegetation and floodplain, the trenches are directed to the lowlands that surround the Soh system from all sides. Lakes and swamps were formed in those places. The process of salinity was strong.

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