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FROM THE HISTORY OF THE IRRIGATIONAL DEVELOPMENT OF DJIZAK OASIS

Abstract: In his scientific work (article), the researcher tried to reveal the history of irrigated agriculture of the Jizzakh oasis in his scientific work (article). This scientific article is based on material from archival documents, scientific sources and archaeological data. This work is addressed to a wide range of readers.

Key words: oasis, steppe, soil, reclamation, research, reconstruction, sanitization, develop.

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Introduction

The history of the development of Djizak oasis began in the second half of the 19th century. On “The irrigation project of Djizak steppe” was reported in the newspaper Turkestan news [1, p. 27].

It should be mentioned that among the most remarkable and important projects of the general-governor was the project of irrigation of the Djizak steppe by carrying a canal from the SyrDarya to Muzrabat. Everyone passing through the Djizak steppe remembers this path. The deadness of the equal and dense space of the steppe scorched by the sun makes the heaviest impression. even until recently, the Djizak steppe was in full swing with life. There is no doubt that the traces of the former huge irrigation ditches indicate that existed agriculture with the local fat soil gave a rich harvest with the help of irrigation. This vast steppe was even more suitable for sowing a cotton. When the burnt steppe gets a water, in different places of the erected canals ascends again between Chinaz and Djizak.

We are talking about the ruins of the Mirzaabad palace and other reservoirs or covered tanks resemble a huge hive from a distance. The irrigation project of the Djizak steppe deserves attention because the vast expanse of cultivable land remains completely unproductive around Tashkent city until now.

The first research of the soil reclamation conditions of the Thirsty Steppe was carried out in 1908, including the northern part of the Djizak steppe. The aim of the research was to elucidate the possibility of using the lands of the Thirsty Steppe for irrigated agriculture. N.A. Dimo (1910) gave a description of soils of the Thirsty Steppe and their genesis, salinization, depths and salinity of groundwater [2, pp. 11-12].

M.A. Pankov carried out soil reclamation researches in Thirsty Steppe to justify the project for the reconstruction of irrigation and land reclamation in 1935 (1956,1957,1962) [2, p.14]. He proposed and characterized the general hydrogeological conditions and different hypothesis of the geological past of the thirsty steppe. The events of the system are aimed at optimizing the nature and development of the Djizak steppe in Uzbekistan is a training ground where various problems related to the mutual adaptation of the landscapes of the arid belt and modern technological culture are solved.

Thanks to the efforts of such large scientists as A.G. Babaev, V.V. Bartold, L.S. Berg, I.P. Gerasimov, A.S. Kes, E.M. Muravyov, V.A. Obruchev, B.A. Fedorovich who made great strides for developing the knowledge and science on geography and history of deserts.

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About major problems in an international sphere: One of the large-scaled problems was the development of the desert of Central Asia (more broadly) in entire arid zone of the Earth. Some of the approaches to its solutions can be considered on the example of natural complexes of the Djizak steppe of former Uz-SSR [3, p. 4]. Occupying only 5% of Uzbekistan's land, the newly developed lands of the Djizak city and Thirsty Steppes produced 12% of cotton, 18% of grain and 46% of melons in the Republic of Uzbekistan [3,p.171].

The Djizak steppe is a foothill plain located south of the Southern Thirsty Steppe Canal to the foothills of the Turkestan Range, from Havast (formerly Ursatyevskaya) in the east to the Koytash and Balykli Tau mountains in the west within the mentioned boundaries and it occupies an area of 3.14 thousand km² cube.

The main part of Djizak steppe is waterless. When entering the plain, on the needs of the population, mountain waters are fully spent to small household expenses. The average long-term flow rate is 5.28 cubic meters per second in the Sanzar River, and along the Zamin River is - 2.0 cubic meters per second. The remaining watercourses have insignificant household expenses, but sometimes mudflows reach large sizes by causing damage to the national property.

There are some artificial streams in the steppe: The Iski-Tyuya-Tartar canal, which flows to the Zarafshan River for irrigation of Djizak oasis, and the Southern Thirsty Steppe Canal flows on the northern border [4, pp.12-13]. The basis of the economy of Djizak region is an agriculture with the predominant development of cotton-growing bases and livestock breeding on the basis of grain production in non-irrigated lands. The used arable land is 103.4 thousand hectares including irrigated arable land (mainly cotton farms) - 20.8 thousand hectares and 10.3 thousand hectares are occupied for producing cotton [4, p.18]. The outline of the master plan for irrigation and development of the Djizak steppe is drawn up for the entire irrigation area, including an increase of 149.85 thousand hectares and irrigation is defined 51.4 thousand hectares, total area of growth was 87.0 thousand hectares by 1980 [4, p.25].

The research of these institutions partially related to the territory of Djizak steppe; therefore, many aspects of its soil reclamation conditions remained insufficiently. This gap was significantly filled by detailed researches. Researches were carried out by the Research Institute of Soil Science (Kamilov) 1960-1972 for studying the processes of soil formation and land reclamation conditions of Zamin removal cone, in a result, significant areas of reclamation-heavy salt marshes were identified, and Djizak (Sanzar) cone was carried out by the Sredazhidrovodkhopok Institute (Maslennikov,

1971-1972) where soda-pickled soils were found [5, p.16].

Materials and methods

The soil and land reclamation researches were conducted by the Soil Institute named after V.V. Dokuchaev for developing of the Djizak steppe, where solonchic soils had been discovered in recent years, special measures are required for the reclamation as well as for soda-saline soils, (Pankova, Ignatieva, Abaturova, 1973). Unlike the chute irrigation system widely used during the development of the Thirsty Steppe in Djizak and farm canals and district irrigation systems were designed with buried gravity pipes in most of the irrigated areas. Despite the additional difficulties in carrying out these irrigation works, it increased the utilization rate of irrigation systems significantly and created better conditions for complex mechanization, reduced the cost of construction, and allowed better operation of an efficient automation of the water distribution [6, pp. 354-355].

A highly effective engineering idea was to prevent and eliminate secondary salinization and loss of agricultural land by creating mainly horizontal drainage in Djizak steppe and also to create a systematic vertical drainage where conditions allowed.

The complexity of the development of the Djizak steppe is an active inclusion of land masses in agricultural production of raw cotton and it required not only high-quality engineering work to create irrigation systems but to take the conditions of cultivation of crops, agronomic, land reclamation and irrigation measures into account.

They consisted of strict observance of the regime and norms of irrigation while minimizing the filtration of water from irrigators and the introduction of cotton crop rotation, timely and high-quality agricultural machinery aimed at weakening the rising currents of ground water-chills, early spring harrowing and timely loosening of soils during irrigation during the period vegetation as well as the implementation of a wide range of other activities.

The presence of significant slopes in a large dissection of the foothills and low thickness of the fine-grained part of the soil suggests the need to combat with the erosion of irrigation as well as the choice of the most suitable directions for irrigation of land masses and ensures the uniform distribution of water used in irrigated areas and eliminates soil erosion [5, pp. 101-102].

Serious problems of the virgin and fallow lands of the Djizak steppe was the solution of tasks that were related to the social sphere. The experience in the development of the Thirsty Steppe shows that it was important not only to carry out activities to irrigate the new tracts but to develop a road construction and provide electricity and cultural services for the

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population of new places of the residence. Moreover, these works needed to be included in the amount of provided costs in the plans of the project for the development of new lands.

Nevertheless, the main task of conquering the Djizak steppe was the irrigation of its massifs. The main thing was to supply water to the steppe from the Syr Darya River. It was required the construction of a cascade of powerful pumping stations. The availability of cheap electricity and high-performance pumping equipment, powerful construction equipment allowed us to begin to perform this complex irrigation and land reclamation task.

In the current time, water is already being drawn from the Syr Darya through the derivation channel of the Farhad hydroelectric power station and the southern thirsty-steppe channel. In accordance with the project, an irrigation network created a high efficient act by flowing water through 0.96 between-farm channels, and 0.94-0.96 inter-farm channels. Inter-farm canals with a length of more than 240 kilometers are laid with concrete impervious lining. The system of inter-farm irrigation canals is created not only in the form of open channels with concrete cladding but it is also created with prefabricated reinforced concrete trays and asbestos-cement pipelines. But in general, the main method of watering in the Djizak steppe is superficial: with water supply from district distributors to irrigation furrows with the help of flexible nylon hoses.

A lot of extensive works are underway on the planning of land masses, which allows the use of high-performance irrigation equipment and provides furrows with a length of up to 400 meters.

In general, it is planned to be carried out the entire developed and irrigated land area. A lot of work is being done on drainage of irrigated territory in Djizak steppe. They are being carried out by using closed tubular drains with filtering dust. It is planned to extend the horizontal drainage length up to 4,360 kilometers. Since the territory of the Djizak steppe is

distinguished by favorable hydrogeological conditions, a system of vertical permanent and linear (intercepting) drainage wells is created for pumping groundwater. The village farms and boning dams are being built in order to protect the land and the irrigation system from mudflows.

It is planned to manage the irrigation system of the Djizak steppe centrally and automatically, therefore, all structures are equipped with the latest technology with automation and telemechanism.

Conclusion

As an experience of land reclamation obtained during the development of the southern part of the SMC (Southern Mirzachul Canal) zone can be largely transferred to the land of the northern part of the Djizak steppe. The accumulated experience in the development of the land in the central massif of the SMC zone can be used in the development and land reclamation of the undivided part of the Lomakinsky plateau, etc. The available materials allow us to estimate the land fund of the Djizak steppe in the following ways: more than 50% of the area is represented by highly fertile salinization or partially slightly saline, these soils are developed in the upper and partially middle parts of the foothill plain.

With an irrigation of a large area of land that is not saline in the natural condition, the groundwater level rises above a critical depth and there may be a risk of secondary salinization. Therefore, a systematic drainage should be built in advance in these lands and the parameters should be determined on the basis of natural researches.

The question should be carefully and comprehensively considered how the continuous irrigation development of the lands of the Djizak steppe is located below lands of the SMC zone.

Will the South Canal play the role of a hydraulic barrier and prevent flooding or will the reclamation situation become even more complicated in the southern part of the SMC zone.

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