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# Formulation and Development of Mirzachul Landscapes

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**Annotation**: Today, there is a growing interest in the study of oasis landscapes in the country, which accounts for one tenth of the total land area. This article considers the factors of formation of the Mirzachul oasis.
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## 1. Introduction

In Uzbekistan, land and water resources are limited. For this reason, we must effectively use existing land and water resources. Therefore, the organization of work on the definition and evaluation of meliorative condition of geosystems of the oasis is considered as a solution. Assessment of ameliorative status of oasis lands by the amount of salts in the soil, as well as improvement of their reclamation state is one of the important tasks of geography along with such areas as soil science, agrochemistry and agronomy. One of the largest regions of the country specializing in agriculture and food production is the Mirzachul oasis geosystems. This area occupies large areas of marsh and plain geosystems. Such natural conditions determine the specific water-salt regime of soils. Therefore, the most pressing problems of the modern science of the field of science are the separation of geosystems using cost-effective methods, the assessment of landscape-reclamation state, the dynamic change of components based on the principle of paradinical relation.

## 2. Material and Methods

Problems of composition, location, chemical composition of ground waters Kats (1956), N.M. Reshetkina (1957), NN Hodzhiboev (1970), DM Kats, VM Shestakov (1981), NI Sabitova, AA Neskhodimov, P.B. Neumann (1990) et al., Issues related to landscape-reclamation outlined through various factors by A.Z. Genusov et al (1960), T.V. Zvonkova (1965), N.A. Gvozdetsky (1965), P.N. Gulyamov (1966), V.B. Sochawa (1968, 1978), JI. Tursunov (1968), L.I. Mukhina (1969, 1973), K.N. Dyakonov (1973), Ch.N. Tahtamyshev (1973), N.V. Kimberg (1974), J. Krho (1974), A.Yu. Retayum (1975), A.A. Rafikov (1976, 1984), G. Dyne (1980), I.A. Khasanov (1981, 2007), A.N. Hodzhimatov (1996), Sh.S. Zokirov, I.T. Muminov (2000), A.N. Nigmatov (2005), Kh.

Various variants of classification of anthropogenic landscapes, including oasis landscapes, are widely used in scientific literature. F.N. Milkov [6; 11-27] argued that any component of natural landscapes is sufficient to transform anthropogenic landscape.

AA Abdulkasimov [1; By analyzing the Central Asian oasis and their morphological structure, he describes the region's landscape as follows: “The oasis is a zonal type of anthropogenic landscape complex that is widely developed in arid climates, formed by human economic activity. Irrigated farmland that is found and managed by man. ”

F.N. Milkov [5; AN Hodzhimatov ]9; Uzbekistan considers the oasis of the steppe zone as a result of two different systems of quality - nature and society.

Irrigation of lands is carried out in arid climates, ie in deserts, alpine and other arid zones, as well as in some areas where the vegetation period is not sufficiently moist. In dry and hot climates, irrigation alone is the most important and necessary way to increase land productivity and one of the most important prerequisites for crop management.

F.N. Milkov [5; 5-220 pp.] Studied the anthropogenic landscapes and distinguished among them the taxonomic system of the following typological units. 1. The type of anthropogenic urochishe. 2. Anthropogenic place type. 3. Anthropogenic landscape type.4. Class of anthropogenic landscapes. The irrigated oasis landscapes belong to the field type of agricultural (agrolandshaft) landscape class, and the cultivated

cultural landscapes of Mirzachul can also be included in this type. Agricultural landscapes in the region are the most common anthropogenic landscape geocomplexes. Anthropogenic agricultural landscapes are subdivided into fields, gardens, oasis and differ from each other due to their specific microclimate, geoecological conditions and self-management as a result of human use during their economic activities. Within anthropogenic agricultural landscape classification there are four zones: field, garden, oasis and grazing-pasture zonal type [2; 5-25 pp.].

**3. Results**

The landscapes of the Mirzachul oasis have been formed from the ancient coniferous terraces of the Syrdarya and the cones, formed from the bed of the permanent and temporary streams flowing from the Turkestan and Nurata ridges. One of the factors contributing to the formation of the landscape of the Mirzachul oasis is its relief. The terrain is peculiar, orthographically open to the north and covered with mountain ranges to the south. This orographic structure of the Earth's surface, in turn, plays an important role in the formation of the region's climate. Air masses coming from the north caused the formation of several permanent and temporary streams - rivers and streams in the south. The descent of these rivers and streams formed from ancient times and formed proluvial plains.

The prevailing proluvial plains are geomorphologically complex, and are composed of two different types of reliefs, whose structure is radically different from each other. The first relief form slopes consist of the proluvial plains gradually sloping from the foothill plain to the plain or valley. The second type of relief form is a cone-shaped spread from the top to the periphery, forming a semi-circular sloping and bubble-shaped slope in rivers and streams out of the hills [7; Pp. 10-51].

The cone-shaped plateau is one of the most heavily explored areas of human activity since ancient times. At the same time, they create oasis with rich thermal resources, surface and underground water resources, and favorable socio-economic development of the regions, which are favorable for the future development and based on water potential, which will allow the optimal development of all types of cultural crops.

The oasis of Uzbekistan has been studied in different ways by ancient landscape scientists (A. Abdulkasimov, O. Rahmatullaev, K. Boymirzaev) [2; 5-25 pp.]. The oasis of the territory of the Mirzachul natural geographical area, which we are studying, has also been developed by humans since ancient times, and has created a unique natural anthropogenic geocomplex. The region's landscapes are characterized by the availability of irrigated lands, first of all, irrigated and reclamation networks;

Indigenous peoples have dreamed about irrigation and development of the reserve lands of Mirzachul oasis since ancient times. Farmers in Central Asia have done many activities, trying to bring Syrdarya water to Mirzachul. This is evidenced by the Urunboy-oguz and Bukhara canals, where traces are still preserved. The results of the research allowed us to discover that Abdullahan pays great attention to the irrigation and reclamation of vacant land. Archaeological research shows that a reservoir was built in Beklarsay gorge of Nurata district at the request of Abdullakhan. The technical description of this dam is close to what is currently under construction. Its remains are preserved to our day.

Abdullahan also led the construction of the “Old Tuyatortar” canal to bring some of the Zarafshan River flow into the Sangzor River, which would then supply this water to the southwest part of the Mirzachul (Jizzakh cone zone). In addition, wells were erected along the caravan routes that crossed Mirzachul during Khan.

By the middle of the first quarter of the 20th century, the area of irrigated land in Mirzachul was only 34,000 hectares. Since the 20th century, the scale of irrigation in Mirzachul has expanded. Irrigation rates began to increase, especially since 1939. Even during World War II, it was expanded, without interruption. Farkhad hydroelectric power station will be constructed and at the same time will solve the problem of energy supply, and will provide water to a stable dam for irrigation of Mirzachul. Later, the Kayrakkum reservoir was built. All this served as the basis for the water supply of Mirzachul.

Along with the construction and improvement of the irrigation network, efforts were made to include new land into agricultural turnover. As a result, by 1956, the area of the old irrigated main channel Kirov was irrigated by 206,000 hectares. Thus, for 40 years 172 thousand hectares of irrigated land were developed in Mirzachul.

In August 1956, the government decided to irrigate 300,000 hectares of irrigated land and carry out reclamation works in the old irrigated area in Mirzachul. 200,000 hectares of them are in the Mirzachul part of Uzbekistan. The old irrigated area of the Mirzachul area is mainly confined to the alluvial deposits. Its lithological structure and hydrogeological conditions are favorable for assimilation and reclamation, as its natural drainage is generally better than the newly developed part, which is characterized by a lack of good drainage, which is of a proluvial origin. Accordingly, the newly developed lands appear to be more difficult to develop.

## 4. Discussions

Great organizational work on development of Mirzachul reserve lands was carried out by the republics of interest. By the end of 1975, 300,000 hectares of irrigated land were developed in Mirzachul, where highly mechanized state farms were established, with more than 60 settlements.

Experiments on development of reserve lands in Mirzachul are well illustrated in the works of VV Poslavskaya (1969), EI Ozersky (1967, 1971, 1973), VA Dukhovny (1973), NR Khamraev (1973) and others. These experiments are important and contribute to the dissemination of other irrigation facilities. The experiments have been used effectively in designing the Karshi and Jizzakh deserts and have been used for the construction of irrigation and land reclamation systems and land development [4; 6-10 pp.].

Irrigation, combined with the development of vegetation, leads to a decrease in the climate of the oasis, its continentality and dryness as compared to the surrounding desert areas. Intensive evaporation increases the absolute and relative humidity of the oasis, while the abundance of tree and shrub vegetation greatly reduces the wind speed. Due to the fact that most of the heat in the oasis is absorbed by moisture evaporation, the temperature throughout the growing season is slightly lower than the desert, which can reach up to 30C. In this connection, there is a temperature inversion on oasis, which occurs around the day in intensive irrigated areas.

Irrigation in the oasis has led to the formation of anthropogenic alluvium, which is practically new in nature, and soil scientists agree to call it an agro-irrigational layer. This layer has been caused by drowning of water in the fields as a result of irrigation for several years. According to A.Abdulkasimov, the age of the oasis can be determined by the thickness of the agro-irrigational belts [3; 36-39 b.; 10; Pp. 7-9].

As a result of irrigation in the Mirzachul oasis the following types of soil have been formed: 1) sandy and loamy soils along canals and canals mixed with irrigated bedrock; 2) ordinary soil irrigated from ancient times; 3) ordinary oasis; 4) ancient irrigated grassland oasis; 5) oasis and oasis; 6) wetlands of the oasis; 7) oasis and wetlands; 8) secondary saline soils.

The main constituents of the oasis are agricultural landscapes. An important role in the formation of agrarian landscapes in the Mirzachul area is the role of the Sangzor, Zominsuv rivers and seasonal fresh water discharge from the mountains. In order to assimilate the ancient desert part of Mirzachul and expand the irrigated area, the ancient alpine terraces of the Syrdarya River in the north and northeast of the river were first developed.

After the 50s of the 20th century, the development of lands was continued to the north-west in order to expand cotton fields. The South Mirzachul canal was put into operation and the anthropogenic hydrographic network, equipped with its network and several irrigation and hydrotechnical facilities, was put into operation. Residential areas, roads, transport and communication systems have been created.

The increase in irrigation facilities in all irrigated areas of Mirzachul caused changes in the composition and scale of the oasis landscapes. These changes, in turn, have had a significant impact on the landscape and environmental conditions of the desert. In irrigated areas natural plants, activity of microorganisms in soil, morphological, physical, chemical and biological properties of soils have changed, and most importantly natural conditions of oasis landscapes.

Effective use of oasis lands depends primarily on the reclamation of soils. Most of the irrigated lands in Mirzachul area are saline to varying degrees. This, in turn, is directly related to the various components of the terrain - the landscape, surface and groundwater movement, climate, soil composition and condition of irrigation facilities, irrigation culture and several other anthropogenic factors. Currently, the scientific organizations of the Republic and regions are studying and analyzing the land reclamation status of Mirzachul oasis, groundwater level, salinity level, soil valuation, land cadastre.

## 5. Conclusion

Our research on the landscape of the Mirzachul oasis focuses on the assessment and mapping of the observed changes in the landscape components of the region. Research of anthropogenic landscapes and their constituent oasis, their medium and large scale mapping, classification, the history of their formation, and their dynamic development are of great scientific and practical importance. The adaptation of agricultural crops to the landscape types in the region's landscapes will help increase the productivity of landscapes positively addressing environmental and ecological problems [8; 49-52; 10; 7-9].

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