



UDC 58

## HALOPHITIZATION OF VEGETATION AND THE DEVELOPMENT OF DESERTIFICATION IN KARAKALPAKSTAN

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### ANNOTATION

*The article discusses the features of halophytization of vegetation and the development of desertification processes in Karakalpakstan. Great remoteness from the oceans, high temperatures, prolonged droughts and saline lands are the main reasons for the high aridity of the region and intensive halophytization of vegetation.*

**KEY WORDS:** *flora, salinization, drought, process, desertification, halophytization.*

Salinization is a widespread phenomenon. It is known that the predominant number of representatives of the flora of the globe develops in conditions of high salt content, since 25% of the earth's surface is saline to one degree or another, and two-thirds of it is covered by the waters of the World Ocean, where the salt content reaches 3-4%. Thus, a significant part of the world's flora species carry out their development cycle in the presence of a high salt content. As a result, the knowledge of the mechanism of action of salts and the adaptive reactions of plants is not only theoretical, but also of great practical importance.

Every year the problem of development and use of saline lands becomes more and more important. Soil salinization processes are becoming widespread in the countries of Central Asia. About 60 percent of irrigated land in Uzbekistan is saline. All irrigated lands of Karakalpakstan are saline to some extent.

The natural conditions of Karakalpakstan are determined by the geographical position on the modern and ancient deltas of the Amudarya River, in the center of the Eurasian continent, at a distance from the oceans - the main sources of moisture, at the junction of the North Turanian and South Turanian deserts.

The lower reaches and young deltas of the Amu Darya are represented by alluvial plains and lacustrine depressions that have formed in the last 10-15 thousand years. The following geomorphological regions are distinguished here: the modern Amudarya delta; the Akchadarya delta plain of the Amudarya; low mountains Sultanuizdag with adjacent sandy plateau; Assakeaudan - Sarykamysht delta plain, formed after the outburst of Lake Khorezm.

The emergence of a new third desert - Aralkum, in the former water area of the Aral Sea between Kyzylkum and Karakum, whose landscapes and soils are characterized by a high content of water-soluble salts and serve as a source of salts and dust distributed through the atmosphere. A sandy-saline desert formed here.

The Republic of Karakalpakstan is characterized by natural conditions conducive to intensive salt accumulation - a sharply continental climate, intense insolation, increased dryness of the air, and a small amount of precipitation. Great remoteness from the oceans, high temperatures, prolonged droughts and saline lands are the main reasons for the high aridity of the region and intensive halophytization of vegetation.



The modern vegetation cover of Karakalpakstan is largely a reflection of geomorphological conditions.

Psammophilic vegetation is confined to eolian landforms, halophilic vegetation - to various solonchak depressions. The tugai type of vegetation prevails in the floodplain and delta of the Amudarya. Coastal and swamp types of vegetation are confined to lakes.

At present, all irrigated lands located in the delta and lower reaches of the Amudarya are moderately and strongly saline. Almost all meadow and tugai ecosystems are deserted to some extent.

The economic use of the Amudarya delta should be carried out with priority consideration of natural factors that determine the development of degradation processes, such as desertification processes, since the temporal and spatial variability of natural characteristics increases the rate of destruction of natural ecosystems and slows down the rate of restoration of disturbed ecosystems. Fluctuations in the river flow of the Amudarya are also one of the main factors in the development of desertification in the floodplain.

In the arid zone, where saline soils are widespread, plant development often takes place under the influence of mineralized soil solutions. Ecologically different species can take part in the formation of desert communities, which react differently to an excess of salts in soils. The growth and development of weakly salt-tolerant species is inhibited in this case. Species that formed under conditions of increased mineralization of the soil solution quickly adapt to highly saline habitats. Halophytes better endure significant soil salinity with a gradual increase in the mineralization of the soil solution, as they grow and develop, which is observed under natural growth conditions.

Under a certain influence of increased mineralization of the substrate in areas where saline soils are distributed, representatives of different families may find themselves. The ability to accumulate salt is characteristic of halophytes of various forms of growth - trees, shrubs, semi-shrubs, grasses with a pronounced succulent structure. Among them, widespread representatives of the Chenopodiaceae family dominate in Karakalpakstan.

The results of the study showed that during the period of low water in the delta and lower reaches of the Amudarya, the most profound changes occur in natural complexes, which leads to disruption of the natural

course of dynamic transformations in ecosystems in which:

- ubiquitous halophytization of vegetation at various serial stages, which often leads to the disappearance of characteristic floristic differences between different communities and types of vegetation;

- disappearance of typical tugai tree and shrub communities;

- the emergence of various variants of semi-degraded grass communities that were not previously widespread;

- accelerated irreversible transformation of typical tugai and meadow communities into solonchak vegetation;

- significant loss of species diversity in tugai, meadow and desert communities compared to typical ones.

At the same time, the current level of economic management does not allow to completely exclude these territories from economic circulation, therefore it is necessary to conduct systematic and complete studies of successional changes in such ecosystems in order to develop measures for their rational use and timely prediction of the consequences of anthropogenic impacts, which, of course, will contribute to sustainable development. development in the Amudarya delta.

When carrying out monitoring observations and methodological approaches to organizing scientific research on desertification problems, special attention should be paid to the mechanisms of dynamics and functioning of the biotic components of the landscape (soils, vegetation) that most quickly respond to anthropogenic influence and the development of desertification processes.

As key sites for monitoring observations, it is necessary to select various terrestrial and aquatic ecosystems of the Southern Aral Sea region (meadow, tugai, coastal water, desert and solonchak), which most fully reflect the specifics of the natural conditions of this region, which will allow developing a regional strategy for carrying out the necessary environmental measures, taking into account the specifics various ecosystems, the degree of their disturbance and susceptibility to desertification processes.

Particular attention should be paid to the specifics of desertification of floodplain ecosystems, where many factors are actively superimposed on each other: flow regulation and changes in the water regime of the



Amudarya River, development of irrigated agriculture, degradation of floodplain ecosystems and their succession towards halophytization, and increased soil salinization. In fact, the entire set of negative factors that cause desertification, which are inherent in the entire territory of the South Prearalie, is concentrated in this territory.

Thus, henceforth, when studying the desertification of terrestrial ecosystems of a given territory, it is also very important to develop practical recommendations for their solution. Also, it is necessary to have a comprehensive and accurate predictive assessment of the consequences of the proposed plans for environmental protection measures.

## LITERATURE

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