

# Characteristics of Tugai Plants of the Southern Aral Region

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**Abstract:** In many respects, it can be recognized that this is due to the natural geographic changes taking place in the Central Asian region in recent years and, as a result of its degradation, causes the formation of various biological, morphological and ecological-physiological signs and characteristics in plants. species growing in natural conditions in the northern regions of our republic.

**Key words:**

In the plants of natural biogeocenoses of the Republic of Karakalpakstan, unique evolutionary-biological and ecological processes occur, associated with environmental changes. In many respects, it can be recognized that this is due to the natural geographic changes taking place in the Central Asian region in recent years and, as a result of its degradation, causes the formation of various biological, morphological and ecological-physiological signs and characteristics in plants. species growing in natural conditions in the northern regions of our republic. Serious attention is paid to eliminating the consequences of the Arolbay tragedy, which is considered a global environmental problem in the region, and ensuring the implementation of comprehensive measures aimed at the socio-economic development of the Arolbay region and improving the ecological state of the region.

In recent years, the area of forests has drastically decreased. There are no more gardens in the vicinity of Nukus, Chortambay-Tokay and Samanbay-Tokay massifs. Of particular concern is the disappearance of plant species characteristic of gardens. Due to changes in the water level in the delta, the area of gardens in the Amudarya valley in the 1960s decreased from 300 thousand hectares to 25 thousand hectares today. The exponential trend shows that the area of orchards along the lower reaches of the Amu Darya is decreasing. In our opinion, this situation is primarily associated with a large anthropogenic load on the ecosystem, as well as the processes of desertification and aridification. The rate of reduction in the areas of orchards is 4 thousand hectares per year (Fig.1)

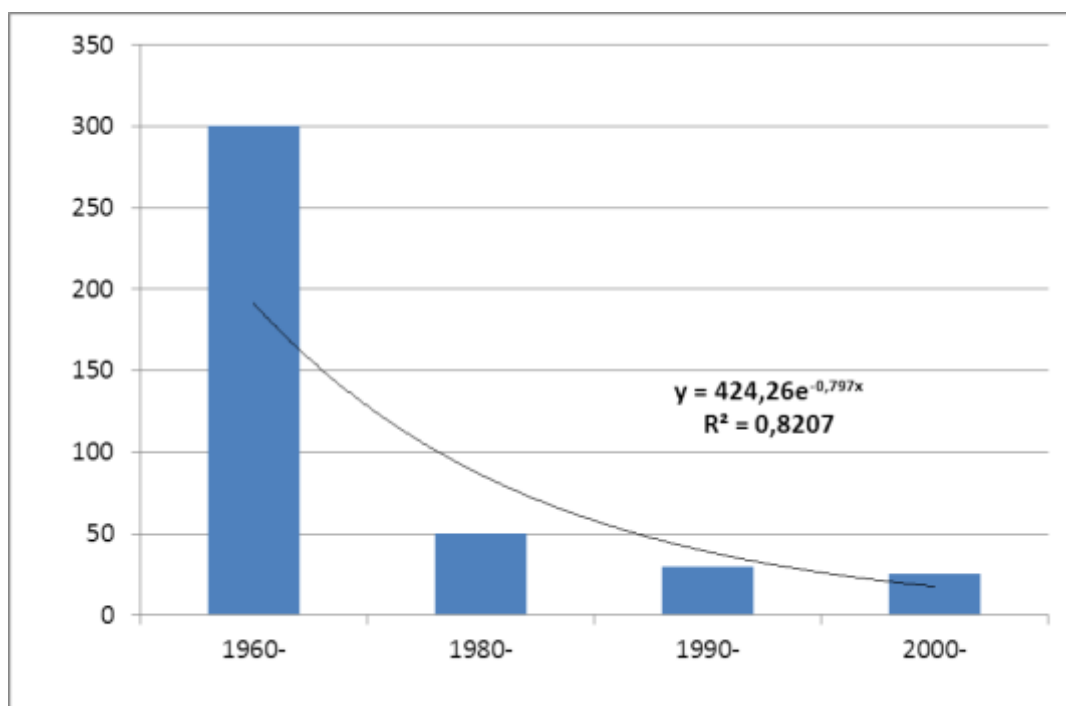


Fig.1. Dynamics of forest vegetation area (Treshkin, 2010)

The vegetation cover of the forest biogeocenosis is mainly composed of brown species (*Populus prinosa* Schrenk., *P. ariana* Dode.), which are dominant and reach a height of 5-10 m, a trunk diameter of 50-60 cm, a life expectancy of 50-70 years. Among the accompanying plants in the gardens were elm (*Eleagnus angustifolia* L.), willow (*Salix songarica* Anders), various species of holly and (*Halimodendron halodendron* (Pall.) Voss). Tree trunks are surrounded by vines - ivy (*Clematis orientalis* L.), Siberian cynanchyma (*Cynanchum sibiricum* L.). The grass cover of the groves was also well developed and consisted of branched grasses: gooseberry (*Alhagi pseudalhagi* (MB.) Desv.), licorice (*Glycyrrhiza glabra* L.), broom species (*Calamagrostis epigeios* (L.) Roth., *C. pseudophragmites* (Hall. f.) Kocl.).

With the change in the water runoff of the Amu Darya, the area of gardens and the following tree and plant massifs were eroded: poplar species (*Populus prinosa* Schrenk; *P. ariana* Dode), linden (*Eleagnus angustifolia* L.), willow species (*Salix songarica* Anders; *S. Wilhelmsiana* MB.), and by the 1970s, only 30,000 hectares of forests in the Lower Amudarya delta remained, that is, the forest area decreased by almost 90% over 60 years (Baksiev et al. 1996). In the Amudarya lowland and on the left bank of the delta, entire massifs dried up.

The pasture area of licorice (*Glycyrrhiza glabra* L.) has also drastically reduced. If before 1969 there were more than 18 thousand hectares of natural licorice meadows in the Amudarya lowland, then by 1974 there were only 3 thousand hectares of fertile licorice meadows. As a result of a progressive change in vegetation dynamics, the groves were covered with various types of grasses and sedges, while 2 types of sedges were common: (*Tamarix ramosissima* Ledeb.) and (*Tamarix hispida* Willd.). With an increase in soil salinity, halophilic plant species also entered: (*Halostachys belangeriana* (Moq.) Botsch), (*Karelinia caspica* (Pall.) Less), (*Aeluropus litoralis* (Gouan.) Parl.), (*Salsolanitria* Pall.), (*Halocnemum strobilaceum* (Pall.) MB.).

The reed beds in the kolobs have also changed, including about 40 lakes in the Amudarya delta, and most of the kolobs have dried up. This situation led to the death of hydro- and hygrophytes. In particular, the growing areas of reeds (*Phragmites australis* Trin., *Ph. isiacus* (Delile) Kunth.) and sedges (*Typha laxsmannii* Lepech., *T. palliada* Pobed.) have greatly decreased.

Until 1960, reed beds covered more than 600 thousand hectares of vegetation in the Amudarya delta. Studies conducted in the 1970s in all the Amu Darya lowlands showed that the total area of reed fields did not exceed 70,000 ha (Kabulov, 1978). The biomorphological parameters of these plants have also changed - they have become short and coarse. The growth of biomorphic forms of reed growing in the soil was recorded.

During the period of research conducted in 1970-80, the following plants disappeared from the flora of the Amudarya lowland: (*Aldrovanda vesiculosa* L.), (*Sagittaria trifolia* L.); disappearing - (*Nuphar lutea* (L.) Smith.), (*Nymphaea candida* J. Presl), (*Salvinia natans* (L.) All.), (*Equisetum ramosissimum* Desf.), (*Thelypteris palustris* Schott.). In 1980-90, as a result of the ongoing anthropogenic impact on the vegetation along the lower reaches of the Amu Darya, a large area of forest vegetation was completely destroyed. As of 1984, out of 300,000 hectares of orchards, up to 50,000 hectares have survived.

By the 1990 y, the natural formation of young groves on the banks of the river had ceased. According to studies conducted during these years, there were very few areas of the primary formation with shrubs and woody plants. The species composition of the first plants sprouting in gardens has also declined significantly. Early ripe and common plants of hemp (*Apocynum scabrum* Russan.), licorice (*Glycyrrhiza glabra* L.), sedum (*Halimodendron halodendron* (Pall.) Voss.), wolfberry (*Lycium ruthenicum* Murr.) were not found. Willow (*Salix songarica* Anders.) and (*Zygophyllum oxyanum* (Boriss.)) plants are very rare. swamp species (*Salsola paulsenii* Litv. . rare. The main forest plant tamarix (*Tamarix ramosissima* Ledeb.) turned out to be more resistant to poplar (*Populus ariana* Dode.).

Thus, with the change in the hydro regime of the Amudarya and the lowering of the Aral Sea level, the grove phytocenoses of the Amudarya delta also changed. The cessation of seasonal floods, a decrease in the level of groundwater, an increase in the level of their mineralization, and soil salinization caused erosion of orchards: drought- and salt-resistant phytocenoses began to appear in their growing areas.

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