

**ON SOIL EROSION ON THE COASTS ALONG THE CANAL
CLASSIFICATION OF LANDSCAPE PLANTS**

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Abstract: This article analyzes the factors affecting the canal area, as well as the main environmental problems that arise and ways to solve them.

Keywords: function, root, anthropogenic, erosion, nature, soil, landscape, design.

Introduction. Natural and climatic factors that affect people's life and work are of great importance (temperature, wind and humidity, drinking water supply, land relief, geological conditions of construction, seismic condition, permafrost, floods, ground subsidence and etc.). Analysis of territory in district planning. Assessment of the territory according to natural conditions. The main objectives of the area analysis are:

Determining its suitability for use in various fields; determination of requirements for urban construction, agriculture and forestry, historical organization of the population's public recreation area.

Main part: Soil erosion is the most common type of degradation. It causes enormous economic and ecological damage, as it can lead to the loss of soil as an irreplaceable component of the biosphere. Under the influence of various improperly organized human activities, the soil layer is eroded. Erosion is a very common and devastating consequence of such soil impacts (Dobrovolsky, 1997). Water erosion is divided into two types according to the nature of washing: surface washing - or surface erosion, and longitudinal - or ravine erosion. Also, depending on the influence of running water, water erosion is divided into erosion that occurs under the influence of surface running water (snow and rainwater) and irrigation erosion that comes to the surface as a result of irrigation water (Bobokho'jaev, Uzokov, 1995). As a result of soil erosion, that is, surface erosion, the upper horizons of the soil are washed away under the influence of water flowing along the slopes. Under the influence of running water, the thickness of the humus layer of the soil decreases, nutrients along with particles of different sizes from its fertile part are washed away and transported to flat areas with a low slope. In the washed-out areas, the yield of crops is sharply reduced, and in the washed-out areas, the plant grows stunted and the crop does not ripen, so the amount of the harvest is relatively small. Longitudinal soil erosion or gully erosion is caused by strong water streams flowing from the slopes, deepening the soil and causing strong erosion. This process takes place in several stages [1]. Initially, small (20-25 cm) pits are formed, and they expand and deepen by 30-50 cm to 1-1.5 m. Later, this process develops further and creates ravines. Longitudinal erosion completely erodes the soil. Areas with such large ravines become completely unsuitable for agriculture.

In general, to date, a number of measures have been developed to eliminate water and wind erosion caused by erosion, washing and erosion under the influence of natural and anthropogenic factors in the territory of Uzbekistan, and positive results are being achieved based on them. It is known that water and wind erosion are among the destructive factors that occur most rapidly on a global scale and often lead to catastrophic consequences. It is due to soil erosion that the main properties of the soil, which determine the level of productivity, are severely damaged (Dobrovolsky, 1997).

Protecting soils from erosion is important in solving problems of land resources protection and rational use. In addition to the washing away of the highly fertile layer of the soil under the influence of erosion, this process has a bad effect on some components of the environment,

especially on water resources, the turbidity of water in water basins, rivers and reservoirs increases sharply, the use of fertilizers for agricultural crops fertilizers and other chemicals are washed away.

In eroded soils, the living conditions of flora and fauna deteriorate sharply. A decrease in the amount of some micronutrients in eroded soils can lead to the development of a number of diseases. Thus, soil erosion protection is an integral part of the problem of environmental protection (Zaslavsky, 1966, 1983). It is known that the occurrence and development of erosion processes are mainly influenced by 2 factors: natural and anthropogenic. Erosion processes have significantly developed as a result of land acquisition and improper use by humans using unnatural methods. Today's erosion is manifested as a result of the combination of the above two factors. The main reason for the development of soil water and wind erosion is climate change, the unevenness of the earth's surface, the improper use of land and water resources by humans, together with natural factors such as geological and geomorphological.

All kinds of plants are the most powerful factor that can resist erosion. The degree of influence of plants depends on their species and the growing conditions of plants: that is, the better the plant develops and the higher the level of soil cover, the more plants can protect the soil from erosion and the role of water distribution increases, as heavy raindrops fall on the plant and then fall to the ground, absorbing into the soil, preventing soil particles from eroding [2]. In this case, a certain amount of precipitation is stored in the above-ground part of the plants, as a result, no flow occurs on the soil surface. According to the observations of scientists, cultivated plants retain up to 11% of the rain from the air, and woody plants retain up to 30%. Plants strengthen soil particles with their roots and create conditions for rainwater to soak into the soil without running off.

Also, the ability of plants to resist erosion processes depends on the development, thickness and growth of their roots. As a result of the rotting of plant roots, their paths are opened, the porosity of the soil increases, and because of this, the water permeability of the soil increases. It is known that if the surface of the earth is well covered with plants, it protects the moisture from evaporation and the soil from drought.

Plants with roots that prevent soil erosion, such as willow (*Salix babylonica*), shrubs (sumax), amorpha, hibiscus, water boletus, iris, etc., are recommended around canals and water banks [1]. WILLOW (*Salix*) - a group of trees and shrubs, small shrubs belonging to willows. 300 species are known. The trunks of the trees are thick, the bark is rough, and the leaves are arranged alternately. It is well propagated from cuttings, stems, and cuttings. Species such as white willow, black willow, and willow are widespread in Uzbekistan. White willow (*Salix alba*) honey. 10-15 m. The diameter of the body is up to 1.5, Black willow (*S.excelsa* Gmel.) grows quickly. It is resistant to heat and grows well in salty lands. Cultivated by cuttings and stems. It is widely planted for beautification and household needs. Needle-leaved willow (*S. acutifolia*) grows on riverbanks, small ponds, ditches, and around houses. Resistant to drought and salt water. The branches are thin and thin. Bal. 2-4 m; willow (*S. babylonica*) - honey. It reaches 8-10 m. It is grown as a landscape tree; suvtol is a shrub with thin, long branches, found in groves in desert, hilly, and mountainous areas. Olga willow (*S. olgae* Rgl.) - a large bush, the color of the branches is crimson or yellow; Niedzwiecki willow (*S.niedzwiecku* Goerz.) is a low tree. It grows on the banks of the river. Big bush, honey. 5-6 m. The leaves are long. 12 cm, the stem is light yellow. All kinds of baskets are woven from its branches. It is planted for greening, beautification, creation of surrounding forests, timber and timber. Since ancient times, Willow wood has been used to make building materials, ropes, workbenches, sori, various items, cribs, children's toys, hoe and spade handles.



**1. Air bolotny (Ácorus cálamus)
(Anacardiaceae)**

2. Air bolotny plant

3. Sumax

Height: 60-120 cm Growth rate - forms a dense mountain; the rhizome is strongly branched, up to 3 cm thick, pink-brown; roots are submissive, thick, white. On the banks of water bodies, in open sunny places and in shallow water up to 20 cm. It can grow in places without excess moisture, so it grows up to 60-70 cm in height. Planting depth is 10-30 cm, but tolerates up to 80 cm depth. Cold resistance in winter: high. resistant, takes root well; grows in late spring, so it combines well with early flowering plants after it loses its decorativeness. Care is not complicated; maintenance consists mainly of timely watering (no watering can last up to 3 weeks). One of the main features worthy of attention is that it is appropriate to use it to strengthen the banks of large reservoirs and shallow waters; in large and medium-sized ponds, it looks great together with broad-leaved perennials; Due to the abundance of essential oils, it is used in medicine, cooking, winemaking, brewing, and perfumery. Loss of appetite, gastritis, restlessness, stomach ulcers, stomach diseases, diarrhea, liver diseases, kidney, bladder, physical stress, hysteria, anemia, stomatitis, gynecological diseases, skin and nail diseases, eczema, diathesis, jaundice, is a cure for diseases such as wounds. Origin: Eastern North America. Habitat: along the edges of swamps, on slopes, abandoned fields, along roads, Altitude up to 4-6 (10) m; Life expectancy: short-lived, 15-20 years, soil structure: grows in any soil. Watering: only young plants need watering in the heat, in general, it is drought-resistant, tolerates dry soil and dry air. Cold resistant. Flowering time: June July; Sometimes in mid-September. Features: unusual, resistance to heat, smoke and gas, resistance to urban conditions. Planting type: massive, group, individual planting. It is a very susceptible plant that can be grown in a variety of acidic wet soils rich and dry poor soils.

Amorpha belongs to the leguminous family (Fabaceae) and has 18 types of shrubs. Amorpha is a light-loving but shade-tolerant plant. Despite the fact that it grows in humid places under natural conditions, it is resistant to drought.



Amorphous can be used a lot in landscape design, especially in the southern regions - for group planting, strengthening banks, fences, slopes and ravines (amorphous prevents soil erosion due to the specific properties of the root system). Its main advantages are simplicity and resistance to diseases and pests [3].

4. Hibiscus The most common in room culture. Chinese hibiscus (*Hibiscus rosa-sinensis*) is usually grown in apartments - it can have the appearance of a shrub or small tree from 50 cm to 2 m in height.

In nature, hibiscus is an evergreen shrub or tree that grows up to 4.5 m in height. The bark is brown or black. Hibiscus can attract attention

and surprise not only with flowers, but also with different leaves. There are many different varieties of hibiscus. They can tolerate insufficient light, frost, excessive drying of the soil, excess water during irrigation and feeding. Of course, all this negatively affects the condition and flowering of the plant, but the hibiscus lives.

Origin: North America. Habitat: hills, wetlands, river banks. Life form: shrub. height: the root branches up to 3.0 m. Growth rate: fast growing, soil texture: sandy soils, loam, light soils. Care: Watering: drought tolerant, Feeding: hardly needs feeding, grows even in poor and dry soils. Resistant to winter cold. Characteristics: unusual, resistant to smoke and gas, resistant to urban conditions, resistant to wind. It is a medicinal plant.

These types of plants are durable and stand out because they prevent erosion of the soil around the water. Their strong roots and branching growth are suitable for landscape design solutions along canals.

Conclusion: Plant species have been studied as a biological method to combat climate, natural factors, and sewage pollution, while at the same time, soil erosion occurring on canal slopes.

The recreation of people in the areas along the canal creates the problem of household waste in these areas. In turn, this leads to the pollution of sewage in the canal. As a solution to this problem, plant species were selected and their special characteristics were analyzed. Although modern water treatment technologies are available today, this section focuses on the low cost of water treatment and ease of maintenance. Therefore, unlike modern cleaning equipment, plants do not require separate labor force, territory and funds. They exist naturally in association with water and perform the function of water purification.

Not only water pollution, but also soil erosion does not affect the architectural environment. Therefore, in order to ensure the service of the complex for many years in the comprehensive implementation of the design, there was a need to find natural and reasonable solutions to soil erosion. The above-mentioned plants are also adapted to the climatic conditions of our country, and at the same time reflect the perfect example of landscape design and prevent soil erosion.

Prevention of soil erosion prevents a number of problems, such as water turbidity and change of the topography of the area around the canal.

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