GEOECOLOGICAL PROBLEMS IN THE NISHAN DISTRICT

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Abstract: *Nishon district, located in Kashkadarya region, is known for its flat terrain, the presence of high groundwater levels, and salinity problems. This article analyzes the geoecological problems of Nishon district, especially the proximity of groundwater to the surface, increased soil salinity, and the impact of these processes on the ecological and agricultural sectors. Comprehensive solutions to the problems are proposed.*

Keywords: *Geoecology, Nishon district, Kashkadarya region, groundwater, soil salinity, ecological problems, agricultural development, irrigation technologies, water resources management.*

Introduction: Nishon district is located in the southern part of Kashkadarya region, which is characterized by its flat terrain and natural resources. One of the main geoecological problems in the district is the high level of groundwater and its impact on ecological and agricultural development. Groundwater plays an important role in irrigation of crops and economic activities in the region, but the high location of these waters leads to soil salinization and other environmental problems.

Main part: The groundwater level in Nishan district is very high. This, in turn, makes it difficult to use water located close to the surface. The high water level leads to soil salinization, which reduces soil fertility. At the same time, the structure and chemical composition of groundwater also affect the agro-ecological environment.

Soil salinization is one of the biggest geo-ecological problems. As a result of the presence of high groundwater in Nishan district, soils are experiencing salinization. Soil salinization is mainly caused by high groundwater levels and improper irrigation management.

The onset of salinization leads to the rise of water to the soil, its evaporation on the soil surface and the accumulation of mineral salts above the ground. This, in turn, changes the physicochemical properties of the soil and reduces its absorption

capacity for plants. The effects of soil salinization not only negatively affect the development of major crops such as cotton and grain, but also reduce biodiversity. Soil salinization, in turn, destroys the structure of the soil, while making it difficult for free water to move through the soil. The deterioration of the soil structure leads to a decrease in the moisture necessary for plants. This situation, in particular, negatively affects the growth of crops and limits the production of agricultural products.

The environmental problems of Nishon district include factors such as soil salinity, high groundwater levels, and soil degradation. The negative impact of these problems on the agricultural sector reduces production efficiency and complicates the cultivation of agricultural products. As a result of ecological changes, productivity decreases, and the ability to effectively use agricultural resources decreases.

To prevent soil salinity and manage groundwater, it is necessary to introduce innovative irrigation technologies. New technologies, such as drip irrigation systems, help save water and increase productivity. Through such technologies, the amount of water entering the soil is precisely controlled, while at the same time reducing the salinization process. It is also necessary to develop modern management systems to save groundwater. This will help to economically manage water resources, optimize irrigation plans, and ensure balanced water distribution.

Soil salinization is the process of increasing the salt content in the soil, which adversely affects plant growth and reduces agricultural productivity. It is most common in arid and semi-arid regions, where evaporation rates are higher than precipitation, causing salts to accumulate on the soil surface.

Causes of soil salinity:

1. Natural causes:

Climate: In hot and dry climates, high evaporation rates cause water to rise from the soil, bringing salts with it.

Base material: Some soils, especially those in coastal or desert areas, may naturally contain high levels of salt.

2. Due to human activities:

Irrigation: Irrigation with saline water causes the gradual accumulation of salts in the soil.

Poor drainage system: Lack of a good drainage system prevents water from flowing through, causing salts to accumulate on the soil surface.

Excessive use of fertilizers: Excessive use of chemical fertilizers can increase soil salinity.

Consequences of soil salinity: Reduced agricultural yields: High salt concentrations reduce the ability of plant roots to absorb water, reducing yields.

Deterioration of soil structure: Salt breaks down the physical structure of the soil, making it difficult for water and air to penetrate the soil.

Reduced biodiversity: Plants and animals that rely on healthy soils can be affected, leading to the decline of local ecosystems.

Better irrigation practices: Using efficient irrigation systems such as drip irrigation and avoiding over-watering can reduce salt accumulation.

Soil improvement: Adding organic materials or gypsum (calcium sulfate) can improve soil structure and reduce the effects of salinity.

Plant selection: Planting salt-tolerant plants can reduce the negative effects of salinity. The negative effects of soil salinization can be reduced and agricultural land can be preserved through careful use of irrigation and the adoption of improved farming practices.

Conclusion: Geoecological problems in Nishon district, especially groundwater and soil salinity issues, negatively affect the agrarian and ecological situation of the district. It is necessary to take comprehensive measures to eliminate these problems. By innovatively introducing irrigation technologies, reducing soil salinity, and managing water resources, it is possible to improve the ecological situation and stabilize agricultural activities in the Nishon district. To

eliminate geoecological problems in the district, it is necessary to introduce modern ecological technologies, strengthen land reclamation measures, and expand environmental protection measures. By implementing these measures, it is possible to improve the ecological situation of the region and increase soil fertility necessary for agriculture.

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