

STUDY OF SOIL DEGRADATION IN ZONDOR DISTRICT, BUKHARA REGION, BASED ON WORLD EXPERIENCE*Kurbanov B. N.**Freelance Researcher, Bukhara State University*

Abstract: The article attempts to substantiate the factors affecting soil productivity in the Jondor district of Bukhara region, based on scientific and theoretical analyses and foreign experiences, "soil degradation".

Keywords: Soil degradation, soil, water, erosion, desertification, soil pollution, waterlogging.

In the Jondor district of the Bukhara region, the properties and characteristics of soils have been changing, breaking away from natural climatic conditions. In the Jondor district, soil degradation has not been studied sufficiently over the past 50 years, and no clear proposals and recommendations have been put forward in this regard in the agricultural system. Soil degradation is a set of processes that lead to a change in the function of soils, a deterioration in the quantitative and qualitative indicators of their properties, and a decrease in productivity, that is, under the influence of natural and anthropogenic factors, the violation of the stable properties of soils in the ecological system, a decrease in their value from an economic point of view, and a decrease in efficiency. "Soil degradation is one of the most important environmental problems of the 21st century. Its importance is emphasized, its impact on biomass productivity, its actual and potential impact on water and air quality, and greenhouse gas emissions into the atmosphere. Soil and water source pollution is associated with soil degradation. At the same time, today, soil degradation in the Bukhara region directly and indirectly affects climate change. Under aerobic conditions, soil organic matter mineralization (CO₂) and under anaerobic (CH₄) conditions leads to direct excess gas emissions. Soil degradation also increases N₂O emissions and indirectly, in accordance with soil degradation, its impact on reducing biomass efficiency increases.

As a result of irrational land use, humanity has lost from 1.5 billion to 2 billion hectares of fertile land during the historical period of development, that is, more than the entire arable land. Currently, there are several types of degradation:

- Desertification;
- Salinization;
- Erosion;
- Soil pollution;
- Waterlogging;

• Land exhaustion as a result of long-term use. Today, as a result of soil degradation, an average of 8-10 million hectares of land has left the world agricultural cycle per year, and even 15-20

million hectares of productive land have been lost. And they are turning into deserts. In general, a decrease in soil fertility is currently observed on 30-50 percent of the entire Earth's surface. According to some scientists, due to such degradation, the soil cover of our planet may be completely destroyed after 100 years. Also, according to the UN, direct losses due to soil degradation amount to more than 40 billion dollars per year.

One of the factors that causes the process of soil degradation is water erosion. This leads to the destruction and destruction of the soil by water flows. American scientists estimate that only cultivated land loses 24 billion tons of fertile soil layer per year. This is equivalent to the destruction of wheat fields in the south-east of Australia. In addition, more than half of all losses fall on India (6 billion tons), China (3.3 billion tons), the United States (3 billion tons) and the CIS (3 billion tons). Erosion can occur under the influence of wind, water, temperature, geological, anthropogenic and other factors. In developing tropical countries, 11 million hectares of forests are cut down annually, as a result of which the fertile soil layer is degraded.

In the first decade of the 21st century, the production of mini tractors was widely launched in the United States, because in the past, especially in corn fields, due to the use of powerful, heavy tractors, many areas were eroded, and large areas turned into deserts. As a result, millions of tons of topsoil rose in the form of a black cloud of dust, which led to a decrease in productivity. As a result of improper livestock farming, many fertile lands are also degraded, that is, they lead to an acceleration of the erosion process. In terms of types of degradation, water erosion accounts for the largest area in all regions. Central America and Africa are characterized by the fact that highly and extremely highly degraded lands account for the largest areas. In terms of the impact of degradation factors, land degradation is occurring in Asia and South America due to deforestation, in Africa and Australia due to livestock grazing, and in North and Central America and Europe due to inefficient land use.

Irrigation erosion is caused by a number of factors, including the slope of the cultivated land, the mechanical composition of the soil, its tendency to leach, the amount of humus in it, the grain size of the soil, the amount of water applied to the land, its speed, and so on.

Soil erosion is increasing rapidly under human influence. Every year, 75 billion tons of soil are blown away and washed away from land (the most widely used agricultural areas) by wind or water erosion (Myers, 1993). In Europe, the rate of soil formation is 1/t/ha/year, while the rate of soil erosion is 17/t/ha/year. 46% of European soils are subject to erosion, 20-40 times more soil than is naturally regenerated is blown away by very strong dust winds at an rate of 20-40 t/ha. According to G.V. Dobrovolsky (1999), over the past 20 years, the amount of degraded soils has increased by 1.6 times. The results of studies in 1967-1971; 1981-1985; 1986-1990; and 1995 show a sharp decrease in the humus content in arable soils. Under the influence of these processes, the humus content in soils has decreased by almost 30% in the last 100 years, and the food security of countries is in a deplorable state. The problem of soil protection in Europe was highlighted in a resolution of the European Union in 1972. This program considers that "soil has a value that serves humanity and its condition is rapidly deteriorating," therefore, the issue of protecting soil from various disasters, erosion, pollution, urbanization is considered. This document was signed by the European Union on May 30, 1972. It took into account the fact that European lands are undergoing degradation, especially the protection of agricultural lands and forests. When using soil (urban planning, construction, agriculture, tourism),

people should consider not only modern economic requirements, but also the scientific and cultural significance of soil for landscapes and plants, as well as for humanity. The program includes 12 areas.

1. Soil is a valuable gift to humanity. It provides a basis for plants, animals and people to live on the earth.
2. Soil is a finite resource, its condition deteriorates rapidly.
3. Humanity uses soil for agricultural, industrial and other purposes. When developing any territory, it is necessary to take into account not only the needs of today, but also the future.
4. Farmers and foresters should use methods that preserve soil quality.
5. Soil should be protected from erosion.
6. Soil should be protected from pollution.
7. Any urban development should be carried out with minimal negative impact on the surrounding area.
8. Any construction and renovation work should be carried out taking into account the harmful impact on the surrounding land and ways to eliminate it.
9. Soil resources should be inventoried.
10. It is necessary to expand scientific research and development in soil protection and effective use.
11. Soil conservation should be implemented at all stages of educational programs, and public attention should be drawn to it.
12. Governments and management bodies should plan and manage the effective use of soils. The completed form of this document was signed in Brussels on March 15, 2010, during the discussion of the European Soil Protection Law.

In general, soil degradation is a problem worldwide. Currently, many studies are being conducted in our country to prevent the problem of soil degradation and eliminate its negative consequences. Such studies include: erosion protection measures, prevention of salinization and planting salt-tolerant crops, planting saxauls around the Aral Sea, the use of biometrics to increase the amount of humus in the soil, agro-ameliorative measures against desertification and drought, and soil compaction, etc.