

## TƏBİƏT ELMLƏRİ NATURAL SCIENCES

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### A WAY TO SOLVE THE PROBLEM OF PASTURE DEGRADATION

#### Abstract

The earth is a living organism. Over the past decades, it has been going through difficult trials due to the active development of agriculture. Various types of soil degradation are becoming a serious problem: from salinization to desertification. Many regions in different countries face them. This process is associated with the deterioration of soil quality and a decrease in their fertility. If previously only mechanical load was considered the main cause of soil degradation, now experts note the negative impact. The problem of soil degradation develops due to various factors: Physical factors such as rainfall, runoff, floods, cultivation and mass movements play an important role in the occurrence of various types of soil erosion, especially water and wind (Volkov, 2016: 57-67).

And as a result, they lead to the loss of the fertile top layer, which negatively affects the quality of the soil. Biological factors depend on the activities of people and living organisms, including plants. Mainly they reduce microbial activity of the soil. Some types of protozoa, bacteria and fungi, have a negative impact, which leads to a decrease in crop yields and soil productivity. Also, inappropriate farming practices and other human activities can deplete nutrients in the soil. Overgrazing:

1. Herds require large pastures. Overworking of pastures leads to the loss of the fertile layer, which reduces the soil's ability to filter water and impedes plant growth. The accumulation of animal waste products in fields also leads to soil deterioration and greenhouse gas emissions in the long term (Sulin, 2015: 320).

Use of chemical fertilizers and pesticides:

2. Fertilizers help adjust crop yields, and pesticides help control pests and pathogens, but their excessive use upsets the balance of microorganisms in the soil and stimulates the development of harmful pathogens. As soil deteriorates, the risk of water erosion increases as precipitation washes toxic chemicals out of the soil, carrying them into rivers and lakes. Fertilizers and pesticides lead to the loss of the top fertile layer of the soil (Bogolyubov, 2013: 4-10).

Due to the lack of plant diversity and soil life, the soil becomes loose and turns to dust. Soil degradation is a set of processes that lead to changes in soil functions, quantitative and qualitative deterioration of its properties, gradual deterioration and loss of fertility. The causes of degradation are inefficient use of water for irrigation, leading to soil salinization, overgrazing, reducing and degrading the soil layer (blowing out the humus horizon), unjustified use of chemicals that cause soil and water pollution. The process of desertification in ecological terms is one of the causes of loss of biodiversity, loss of biomass and productivity, and in socio-economic terms, this process is the main cause and mechanism of loss of fertile lands, generates economic and political instability in the affected regions, leads to a drop in incomes and living standards of the population, a decrease in the number of jobs, which, in particular ultimately, this leads to migration of the population.

**Keywords:** *degradation, steppe zone, seed, pastures dryland, climate phytomelioration*

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## Otlaqların deqradasiyası probleminin həlli yolu

### Xülasə

Torpağın deqradasiyası torpağın funksiyalarının dəyişməsinə, xassələrinin kəmiyyət və keyfiyyətə pisləşməsinə, tədricən pisləşməsinə və məhsuldarlığın itirilməsinə səbəb olan proseslərin məcmusudur. Deqradasiyanın səbəbləri suvarma üçün suyun səmərəsiz istifadəsi, torpağın şoranlaşması, mal-qaranın həddindən artıq otarılması, torpaq qatının azalması və deqradasiyası (humus üfününün yuyulması), torpaq və suyun çirklənməsinə səbəb olan kimyəvi maddələrin əsassız istifadəsidir. Ekoloji baxımdan səhrələşmə prosesi biomüxtəlifliyin itirilməsinin, biokütlə və məhsuldarlığın itirilməsinin səbəblərindən biridir və sosial-iqtisadi baxımdan bu proses münbit torpaqların itirilməsinin əsas səbəbi və mexanizmdir, təsirlənmiş bölgələrdə iqtisadi və siyasi qeyri-sabitlik yaradır, tənəzzülə səbəb olur.

*Açar sözlər: deqradasiya, çöl zonası, toxum, otlaq, quru torpaqlar, iqlim fitomeliorasiya*

### Introduction

Pastures are the most common type of agricultural land, they are areas occupied by grassy vegetation (steppes, meadows or grasses under the canopy of the forest) used for grazing domestic animals. The main part of the pastures is located on lands that are unsuitable for agriculture due to their natural or require high costs for land reclamation Pastures are divided into natural (natural) and artificial (seeded). Among the natural ones, there are steppe, mountain, dry, flood, forest, swampy, etc. The best pastures for sheep are considered to be steppe, mountain and dryland. There are two systems of pasture use: fit and run (Dobrovolsky, 1997: 313-321).

The fitting system is used when the pastures are located at a close distance from the barnyard — no more than 2 km. At the same time, the animals are brought to the barnyard for milking and overnight. Their watering, feeding, and sanitary and hygienic care are also organized here (Ogarkov, 2019: 89).

The distillation system is used if there are pastures on the farm that are 2 km or more away from the barnyard. In this case, the cattle remain in the pasture for the entire pasture period. At the same time, the pasture is equipped with a shelter for overnight animals, milking machines, utility rooms, etc. Otherwise, such a system is called a form of summer camp keeping of livestock.

During the camp, the task is to provide the animals with full-fledged green and concentrated feeds. Green animal feed is fed when pasture productivity is not high enough. It can be either fresh grass or dried grass, in which the dry matter content is higher. Highly productive animals need concentrates to increase the protein and energy value of the diet. Pastures are not only a fodder base for farm animals, but also act as sinks of greenhouse gases (Zalibekov, 2002: 64). Overloading of pastures and their haphazard use leads to increased degradation of vegetation and soil cover. Negative natural factors – meteorological and exogenous – lead to erosion and blowing of the soil and a decrease in their fertility. In the emergence and course of desertification processes, along with human economic activity, natural factors play an important role aridity of the climate, deflation processes, soil salinization, as well as sparse . The degradation of the planet's vast, often vast natural pastures and other rangelands as a result of overuse and misuse, climate change and loss of biodiversity poses a serious threat to the food security of humanity, as well as the well-being or survival of billions of people. Symptoms of this problem include decreased fertility and nutrients in the soil, erosion, salinization, as well as alkalization and compaction of the soil, which prevents plant growth. All this leads to drought, rainfall fluctuations and loss of biodiversity both above and below ground (Bogolyubov, 2013: 4-10).

Desertification is recognized as one of the most serious socio-economic and environmental problems in arid, semi-arid and dry sub-humid areas. The problem is largely due to the conversion

of pastures to arable land and other land-use changes associated with population growth and urban expansion, rapidly increasing demand for food, fiber and fuel, overgrazing. There are several reasons for the degradation of pastures, About half of the cases are overgrazing, when animals eat all vegetation, preventing grass seeds from forming. The opposite situation also leads to degradation - the absence of livestock on pastures. In this case, forage plants are being replaced with non-edible ones. Other common causes of pasture degradation include sand encroachment and lack of water resources.

The tools to counteract degradation are obvious - competent regulation of the grazing regime by the method of rotation by season. In case of intensive use, it is recommended to sow pasture lands with perennial grasses. Science and practice know the measures for the rational use of agricultural land: phytomelioration, agroforestry and adaptive reconstruction of pastures. However, the vegetation of natural pastures of arid zones, like the vegetation of any other zone, has a fundamental property – the ability to constantly renew itself and reproduce phytomass annually, which makes it a source of inexhaustible, renewable biological resource, unlike exhaustible mineral resources. For rational use pastures must comply with the principle of matching their natural capacity to the number of animals grazing on them.

With a decrease, and in some cases in the absence of grazing, against the background of an increase in climate humidity, a complete restoration of indigenous vegetation is observed. Among the measures preventing the degradation of pasture steppe lands and contributing to their restoration, it is necessary to highlight:

- introduction of environmentally sound pasture management while maintaining a load close to optimal;

- prohibition and restriction of early spring grazing in the steppe due to the creation of additional feed stocks;

- termination of simultaneous use of pastures for different types of livestock under extreme loads;

- prohibition of long-term grazing in the same place at maximum loads of sheep and goats;

- selection of optimal livestock loads, taking into account the current state of pastures (stages of pasture digression of grass and soil churning);

- acceleration of grass restoration by sowing grasses, loosening soils in combination with a complete cessation of grazing for the period of resuscitation (1-2 years);

- increasing soil productivity by loosening, mulching, introducing structure-forming agents into the upper layer, as well as sowing of legume-cereal grass mixtures, the root systems of which contribute to the restoration of the soil structure (Volkov, 2016: 57-67).

Measures to regulate the pasture load, prevent the degradation of grass ecosystems and restore their productivity are an important part of the entire package of measures to ecologize the landscapes of the steppe zone.

## Conclusion

Pastoral livestock farming in the desert zone is associated with a high risk, especially in the driest years with low rainfall, which causes low pasture yields in the winter and early spring seasons, when harvested feed runs out prematurely (Poluyektov, 2009: 36). Therefore, the rational use of various types of desert pastures, the organization of rotation of pasture use, compliance with the rules of cattle grazing and especially the introduction of innovative technologies to increase their productivity by sowing plants ensure long-term rational use of pasture cenoses, as well as ensures the conservation of biodiversity. Currently existing methods for restoring natural pastures are based on the use of phyto and agroforestry (Khitrov, 1998: 20-26). The main purpose of the reclamation system is to combat soil erosion and deflation. When developing targeted programs for the restoration and subsequent use of pastures, the assessment of environmental and economic efficiency is carried out using regulatory methods that are not environmental in the truest sense of the word. Essentially, justification for the composition and effectiveness of measures comes down to assessing the market value of individual components of the natural environment without taking into account their role in the functioning of pasture ecosystems. The calculations use the cadastral

value of soils, income from their use and a number of coefficients that take into account the degree of degradation and the duration of the restoration period for pastures.

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