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The Role of Pasture Forage Crops in Preventing Pasture Ground Degradation

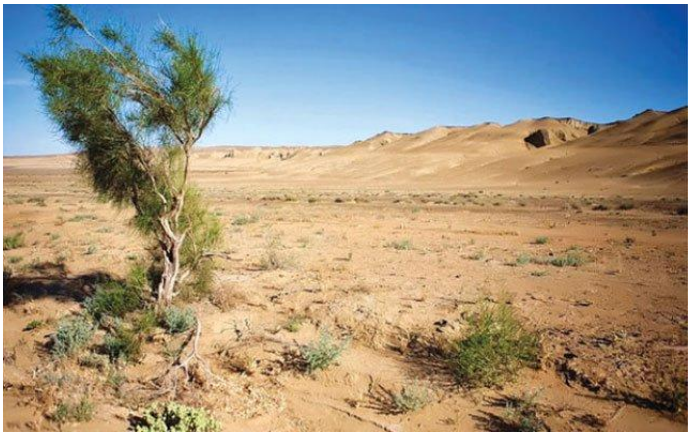
Khakimov Uktam Toshbotirovich, candidate of agricultural sciences. Senior Researcher of the Navoi branch of the Academy of Sciences of the Republic of Uzbekistan
Tel: +998934633532, E-mail: u.t.xakimov0907@mail.ru
Adilov Sobit Uktamovich, research trainee of the Navoi branch of the Academy of Sciences of the Republic of Uzbekistan
Tel: +998934374341, E-mail: sobit.1991@bk.ru

Abstract. This article briefly describes and proposes the implementation of measures to prevent soil degradation, its causes and impact on pastures affected by the crisis in the desert and foothills of the country, an increase in the number of pastures, the creation of special nurseries, the development of new agricultural technologies, ideas and recommendations.

Keywords: Desert, pasture, forage crops, salinization, desertification, flooding, livestock raising, forage farming, izen, teresken, saxaul, care, degradation, erosion, phytomelioration.

The total area of land within the administrative-territorial boundaries of the Republic of Uzbekistan is 44896.9 thousand hectares, 23600.1 thousands hectares or 52.5% of which are pastures and hayfields [1]. In recent years, in addition to the natural impact on livestock, pasture degradation has occurred as a result of overuse of pastures, non-compliance with scientific recommendations and a number of other anthropogenic impacts. 16.4 million hectares out of the 23.6 million hectares of pastures, or 68-70 percent, have degraded, and almost 9.0 million hectares of these pastures have sharply decreased forage resources. Pasture degradation is been observed mainly in Jizzakh, Samarkand, Navoi, Bukhara regions and the Republic of Karakalpakstan. More than 70% of the area, including one-third of it, is severely degraded. The widespread accelerated use of mountain pastures leads to degradation of plants, which, in turn, leads to the rise in rainfall flows, an increase in the frequency of floods and the rapid development of formation processes [2].

Degraded pasture.



Pasture in normal condition.

Unfavorable natural conditions of pastures determine their ameliorative state. Depending on the ameliorative state of the pastures, water and wind erosion, soil displacement, landslides, avalanches, sand migration, salinization and waterlogging of the soil, floods, permanent grazing, vegetation cover and misuse of pastures have a large impact. The reasons for these processes are as follows:

- **Water erosion** is caused by heavy rains in the mountains and hills, rapid melting of snow and glaciers. Water erosion is common in all countries and causes great damage to agricultural lands, pastures and hayfields.

-**Wind erosion.** The wind blowing over the surface of the earth blows off the upper humus and nutrient-rich fertile soil layer. At the same time, the seeds of plants growing in natural pastures are blown away by the wind or exposed to the wind and become unsuitable for germination, damaging leaves and foliage during the growing season, which has a very negative effect on flowering, fertilization and maturation processes. In addition, under the influence of the wind, soil moisture rises rapidly, which leads to a decrease in the total moisture reserves in the soil, which leads to a sharp decrease in the growth, development and productivity of plants.

- Poisoning and waterlogging of the soil occurs as a result of the ingress of groundwater near the surface or rising to the surface. In the adir and lowland regions, the rise of groundwater occurs mainly in swampy areas of the earth's surface, in areas where watertight layers of groundwater are on the surface, in years with a large amount of atmospheric precipitation.

- **Such factors as extremely dry weather of the year** in the hills and plains, long periods with high temperatures (40-45 ° C) and relative humidity (15-25%), aridity, lack of atmospheric precipitation, rapid evaporation of soil moisture adversely affects the development and growth of plants and in some years even plants die in the first days of growth.

- Anthropogenic factors (changes associated with human activities) include: constant overgrazing of livestock on pastures, improper tillage, cutting down trees and shrubs, opening up various deposits, discharging wastewater, unscientific development of new lands, catching floods, snow and sand barriers, demolition of erosion-resistant structures, inappropriate use of chemicals against plant diseases and pests, and so on. Therefore, it is necessary to monitor the state of each pasture, study each pasture separately, evaluate its indicators, determine the ways of effective use and the causes of natural inconveniences, and develop appropriate reclamation measures, which is recommended at the end of the article [3].

The main causes of pasture degradation are land desertification because of natural and climatic factors and human activities, decrease in pasture yields, deterioration in the quality of forage, degradation of vegetation as a consequence of their constant use, and depletion of biodiversity. The results of the study show that the number of species in the vegetation cover of pastures has now sharply decreased [4].

Prevention of pasture degradation requires the organization of monitoring of pasture degradation in three directions:

The first direction is monitoring pasture productivity. It examines the nutrient content of pasture fodder crops, the rate of their accumulation and their relationship with precipitation.

In 2018, the lowest productivity of pastures was recorded on the territory of the assembly of mahalla citizens “Kadok” in the Nurata region (according to monitoring data from scientists of Research Institute of Karakul and Desert Ecology of UzbekistanBotir Bekjanov and Kh. Khalilov). The reason for this, as can be seen from the table, was the least amount of precipitation in April-May of this year.

Regions	Year	The amount of precipitation		Relative humidity %	Average temperature		Fertility cwt/ha
		April mm	May mm		April	May	
Nurata region (the assembly of mahalla citizens “Kadok”)	2017	17,5	17,6	58	14,1	23,9	3.2
Nurata region (the assembly of mahalla citizens “Kadok”)	2018	9,6	6,9	51	14,9	20,9	2.05
Nurata region (the assembly of mahalla citizens “Kadok”)	2019	34,4	15,4	59	19,8	27,3	5.3
Nurata region (the assembly of mahalla citizens “Kadok”)	2020	34,9	16,1	58	19,8	27,3	4.1

The second direction - Definition of indicators of pasture degradation based on “indicator” vegetation on pastures. For example, an increase in the production of harmala plant in crisis pastures has long been an indicator of the replacement of pastures by pastoralists.

The third direction – Monitoring of the number of plants per hectare gives us accurate information. In this regard, it is important to establish and comply with the norms for livestock grazing per hectare of land.

The daily feed requirement for one head of Karakul sheep should be determined on the basis of data fromResearch Institute of Karakul and Desert Ecology of Uzbekistan

	Spring (I period)	Spring (II period)	Summer	Autumn	winter	Yearly
Feed unit	1,25	1,55	1,1	0,9	1,15	425
Feed weight, kg	3,0	2,1	2,5	2,5	Higher than 3,0	800

Prevention of pasture degradation requires immediate elimination of unfavorable phenomena in pasture management, their rational use, conservation and enrichment of the biodiversity, restoration of the degraded pasture areas using the phytomelioration [5].

35-hectar field for "Nurota" experiment of Research Institute of Karakul and Desert Ecology of Uzbekistan

100-hectar field for "Kizilkum" experiment of the Navoi branch of the Academy of Sciences

The type of plants grown in the pastures and hayfields, and their composition, largely depend on the area on which the pastures are located, climate, soil and hydrogeological conditions, and the purpose of the use (pastures, hayfields, pastures and hayfields).

The country has proposed a number of measures to prevent, improve and maintain pasture dehydration, i.e. biotechnical solutions. These include restrictions on the importation of the cattle into the most vulnerable areas and stoppage of overgrazing, replanting on degraded pastures, and the introduction of new forage crops and new varieties as general erosion control measures.

To prevent degradation of mountain, foothill and hilly pastures, hayfields can been sown with forage crops such as alfalfa, esparus, beta, weeds, sunflowers, wheat, ryegrass and others. Many scientists (such as G. Shteble, Vemer, P. A. Turnas, D. A. Ivanov, T. R. Godlevskaya, I. V. Larin, I. F. Morozov, Z. Sh. Shamsutdinov, R. Chalbash, I. Ibragimov, N.T. Nechaeva, etc.) worked on different climatic soils (annual, biennial, perennial, legumes, cereals, semi-shrubs, shrubs, etc.) for many years. They conducted researches on the value of mixed sowing of various types of pasture grasses separately and mixed. The effectiveness of pastures and hayfields will depend on the correct timing of weed growth.Numerous studies have shown that the period of nutritional value of grasses belonging to the corn family, the period of accumulation and branching, the period of nutrient mixing of legumes and various other herbs corresponds to the

phases of weeding. Plant growth phases depend on climate, soil, hydrogeological and biological characteristics of plants.

The nutritional phase of pasture grasses begins when they are 15-25 cm, and it is possible to harvest for grazing livestock or hay. In pastures that have been used continuously since ancient times, most of the grasses have become obsolete over the years, and on such lands the average grass length is 25-35 cm and livestock can graze. The re-growth period of pasture grasses depends on the biological characteristics of the plants, soil fertility and moisture levels. The second ripening of cereals occurs in 20–25 days. The third and subsequent growth cycles occur in 30-40 days. In general, it is possible to feed livestock by growing grass 2-3 times in the foothills, 3-5 times in the mountains, 1-2 times in the plains and 5-6 times in irrigated pastures, as well as improve pasture reclamation to meet the nutritional needs of livestock.

Therefore, knowledge, monitoring and prevention of factors that lead to the degradation of pastures in the process of use is one of the most actual problems of specialists in this field.

Conclusion

In order to prevent overgrazing on pastures, according to the monitoring results, it is necessary to introduce a system of regular rotational feeding depending on the type of animals;

In order to rehabilitate degraded pastures, it is necessary to organize the sowing of forage crops based on the results and recommendations of scientific research, using the technology of peeling with bintonet clays developed by scientists of the Navoi Department to increase the resistance of seeds to wind and drought;

Tripartite monitoring and research of pastures should been carried out on a regular basis;

Use of pastures in parts based on the findings on pasture productivity;

In this case, we can achieve three different effects:

- Pasture forage crops grow by 20-25 cm;

- Prevention of pasture degradation;

-Various parasitic and other diseases caused by drought in cattle are been naturally neutralized by sunlight;

According to the monitoring results, the structure of pasture plants should been constantly replenished with new species.

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