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Superficial Improvement of Eroded Summer Pastures In Azerbaijan, Its Impact On Increasing Productivity and Quality of Manufactured Products

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ABSTRACT

The article presents the results of soil-ecological and geobotanical studies of the main types of soils in the Sheki region, describes the natural conditions and diagnostic indicators of soils in vertical zoning from intrazonal landscapes to subalpine meadows.

Key words: humus, particle size distribution, hygroscopic moisture, absorption capacity

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Introduction

In accordance with the natural and geographical conditions of the republic, there are historical traditions of the development of many areas of animal husbandry, especially sheep breeding, using natural resources, summer and winter pastures.

55.1% or 4.77 million hectares of the country's territory are agricultural lands, and 54.3% of agricultural lands are natural pastures. Our country is one of the countries with limited land resources. There are 0.22 hectares of arable land and 0.58 hectares of agricultural land per capita, and the area of pastures and hayfields is 0.26 hectares. From this point of view, increasing the fertility of lands, protection of pastures, preservation and improvement of their geobotanical richness are of special importance in meeting the needs of the population for certain agricultural products.

As it is known, pastures are state-owned lands. However, due to non-timely implementation of necessary measures to restore soil fertility by users of these areas and non-compliance with agro-technical rules in their operation, as well as non-compliance with existing standards and regulations in the field of soil protection in many places, washing of humus and nutrients , soil erosion has occurred.

At the same time, due to the extensive development of animal husbandry since 2000, interest in fodder production has increased, and during 2000-2020, the relevant sown areas have been expanded more than 3.0 times. The increase in the area under forage crops has in some cases necessitated the involvement of pastures and meadows, which has led to a periodic reduction in pastures and meadows.

In addition, global climate change, overgrazing and underutilization of pastures have resulted in the destruction of these lands.

As a special ecosystem, pastures not only play the role of livestock development, but also form the fodder base of many wild animals. In this regard, pastures have an impact on all areas directly related to this ecosystem.

The lack of pastures in the country, as well as industrially produced fodder, makes the issue of meeting the food needs of livestock even more urgent. Along with the production of fodder crops, the sustainable development of livestock depends on the current state of the natural fodder source pastures.

Given the importance of pastures as a natural fodder base, as well as their role in the preservation of the environment, it is important to use them efficiently and to strengthen the restoration and protection of degraded pastures.

Figure.1 The current state of natural fodder pastures

In the "State Program approved by the Order of the President of the Republic of Azerbaijan No. 222 dated May 22, 2004 on efficient use of summer and winter pastures, hayfields and prevention of desertification in the Republic of Azerbaijan" and "On production and processing of agricultural products in the Republic 06 December 2016- In the "Strategic Road Map" approved by the Decree No. 1138 of The republic is working to resolve the issues.

Objectives And Tasks Of The Research

Despite the special importance of pastures in agriculture as well as in the protection of ecosystems, their long-term overloading, unsystematic grazing and lack of improvement measures in the area have resulted in reduced soil fertility, biodiversity and, consequently, erosion.

Overgrazing: For example, while 2.0 million sheep are to be grazed on summer pastures in Shah Dag, the number of sheep grazed there is 4-5 times higher than normal.

Figure.2 Degraded summer meadows in the region

Overgrazing occurs in mountainous areas (summer pastures) and in the middle (winter pastures). In pastures, vegetation is replaced by unpleasant or grazing-resistant species (for example, weeds). The pressure on the environment and pastures is intensifying as a result of the declining practice of relocating animals to winter and pasture, increasing the density of animals in the pastures, especially in areas grazing near rural areas. The harmful effects of overgrazing are well known, especially to "Everyonetragedy "(Hardin, 1968) and the subsequent publication of other publications made it clear to everyone that overgrazing was harmful. On the other hand, remote and unused or abandoned pastures affect soil properties, change the composition of plant species, and thus affect animal species.

Erosion of biodiversity: Overgrazing results in the degradation of the botanical composition of spontaneous plants and soil erosion. Overgrazing not only erodes plant but also animal habitats, thus reducing biodiversity.

Degradation of high-altitude summer pastures leads to a decrease in the number of wild goats, including mountain goats; Overgrazing in the plains has a negative impact on the local flora and fauna of the steppe ecosystem. This is also a key factor in reducing gazelles and indirect striped pigeons.

Soil erosion and reduction of soil fertility: Cultivation of soil on the slopes of mountainous areas leads to a decrease in organic matter and nutrients in the soil and severe soil erosion. then) grazing is one of the main reasons for the degradation of pastures and natural landscape, which increases the sensitivity of the soil to erosion.

Soil erosion, in turn, pollutes water by increasing its turbidity and sometimes causes atrophy due to leakage of phosphorus and nitrogen. Etrophication has a negative impact on the biodiversity of the aquatic world and on drinking water sources.

In 2001, 3.6 million hectares of land, or 42% of all land, were affected by varying degrees of erosion: 32% by severe erosion, 36% by moderate erosion, and 32% by light erosion. 49% of the total eroded area is agricultural land and 20% is forest.

Soil salinization and salinization: Salinity and alkalinity (sodium content ≥ 15% and pH ≥ 8.5) Improper irrigation, lack of irrigation irrigation network, excessive use of groundwater and removal of saline seawater in coastal areas cause salinization and alkalinization of soil happens.

Many irrigation and drainage systems built during the Soviet era have collapsed in the last decade due to a lack of funding for maintenance and rehabilitation. This resulted in significant water loss and a shortage of irrigation water, which negatively affected productivity.

Poor irrigation methods have led to the collapse of collector-drainage and irrigation networks, floods and secondary salinization. Of the 1.44 million hectares of irrigated land, 0.61

million hectares (42%) were exposed to varying degrees of salinization. (World Bank, 2007).

Organic matter depletion and CO_2 emission: The conversion of pastures and natural landscaping into arable land for the production of grain and other crops, and soil erosion, result in a reduction in organic matter in the soil. (Look at the above).
Woody plants, which are typical of the steppe landscape, can accumulate a variety of substances, but potentially accumulate and store significant amounts of carbon. The destruction of shrubs and woody plants releases large amounts of CO_2 into the atmosphere
.

For this purpose, it was considered expedient to conduct experiments to study ways to increase the productivity of pastures and improve the quality of fodder by making surface improvements in low-yielding summer pastures in the territory of Guba region.

Methodology of experiments: According to the proposed methodology, the research was conducted in two stages in the region.
-selection of a characteristic area for research.
- soil preparation for the experiment.
The experimental units were installed in 3 repetitions with an area of 50 m2. The total area under the experiment is 800 m2.

Figure.3.The actual state of the collector-drainage network

Times more than crop ecosystems in the same area.Erosion of vegetation and reduction of fodder production potential: Overgrazing, uncontrolled grazing, lack of weed control and conversion of pastures into arable lands are the main factors of plant erosion (degradation). This erosion means a decrease in the proportion of good forage plant species in the pasture, a decrease in the productivity and quality of forage crops, and a decrease in soil vegetation, which makes the soil more susceptible to erosion and thus soil fertility, productivity and forage production in general.

Surface and fundamental improvement of pastures is an important measure in adapting the productivity of natural fodder sources to potential opportunities.

Experiments in the field of pastures in the territory of Gulazi administrative territorial unit of Guba region were carried out according to the following methodology:
1. Tab
ii pasture (Control)
2. Natural pasture + grass tox. sowing (without fertilizer)
3. Natural pasture + grass tox. sowing + N30P30K30
4. Natural pasture + grass tox. sowing + N45P45K40
5. Natural pasture + grass tox. sowing + N60P60K40
6. Natural pasture + N30P30K30
7. Natural pasture + N45P45K40
8. Natural pasture + N60P60K40

Characteristics Of Many Pasture Pasture Pastures:

Medicago - Medicago sativa L- Due to the important forage importance of Medicago, this plant has been cultivated in Azerbaijan since ancient times.

Process legumes are the most productive perennial grasses. Its wet and dry grass mass has a very high feed quality. Due to the nature of weeding in grazing, it is higher than almost all perennials and monocotyledons.

As it is the best pasture plant, the seeds of this plant have been used in improvement experiments.

The experimental area was prepared in the spring of 2021, and the area was divided into spots according to the scheme of experiments to be conducted in the area.

Grass seeds were sown by hand in the experimental field, mineral fertilizers were given to the field according to the options, phenological observations were carried out in the experimental fields.

Phenological observations of pasture plants in experimental areas Series № Experiments Phases of plant development

Beginning of vegetation Branching or branching Buds or spikes

1 Natural pasture (Control)27.03 21.04 10.05.

2. Natural pasture + grass tox. sowing (without fertilizer) 13.03 26.04 18.05

3. Natural pasture + grass tox. sowing + N30P30K30 17.04 21.04 16.05

4. Natural pasture + grass tox. sowing + N45P45K40 20.04 26.04 16.05

5.Natural pasture + grass tox. sowing + N60P60K40 19.04 25.04 15.05

6.Natural pasture + N30P30K30 18.03 24.03 17.05

7.Natural pasture + N45P45K40 17.04 26.04 18.05

8.Natural pasture + N60P60K4017.02 24.03 18.00

The period from the beginning of vegetation to budding in plants was 58-63 days, 63 days in black grass, 58 days in meadow grass and 52 days in shepherd's hump.

When paying attention to the growth of plants, it is clear that the natural pasture area (Control) has an average height of 25 cm in the variant, 28 cm in the second variant, 38 cm in the third variant, while the fifth Natural pasture + grass is full. In the variant of sowing + N60P60K40 these indicators are 47; 44; It was equal to 42 centimeters.

Height dynamics of pasture plants in experimental areas

Row № Options with average cm per run

1 Natural pasture (Control) 25

2. Natural pasture + grass tox. sowing (without fertilizer) 28

3. Natural pasture + grass tox. sowing + N30P30K30 38

4. Natural pasture + grass tox. sowing + N45P45K40 40

5. Natural pasture + grass tox. sowing + N60P60K40 47

6. Natural pasture + N30P30K30 44

7. Natural pasture + N45P45K40 42

8. Natural pasture + N60P60K40 41

As can be seen from the table, the height of the pasture plants fluctuated between 38-47 cm in the variants sprinkled with a mixture of grass seeds.

Results of experiments and discussions: It is clear from the table that in 2021, during the mowing of natural pastures (Control), the average green mass yield was 26.6 cents / ha, or 6.8 cents / ha of dry grass. In the 2nd variant there are 30.6 sen / ha or 7.8 sen / ha of dry grass, in the third variant there are 37.8 sen / ha or 9.6 sen / ha of dry grass, in the fifth Natural pasture + grass tox. In sowing + N60P60K40, these figures resulted in the production of dry grass at 39.9 b sen / ha or 10.0 sen / ha. Plant productivity indicators in experimental fields (2021)

Queue

№ si Options Green mass Dry grass

1. Natural pasture area (Control) 26.6 6.8

2. Natural pasture + grass tox. (Without fertilizer) 30,6 7,8

3. Natural pasture + grass tox. + N30P30K30 37.8 9.6

4. Natural pasture + grass tox. + N45P45K40 38.6 9.7

5. Natural pasture + grass tox. + N60P60K40 39.9 10.0

6 Natural pasture + N30P30K30 31.9 8.1

7 Natural pasture + N45P45K40 33.8 8.2

8 Natural pasture + N60P60K40

33.5 8.4

It is clear from the table that according to the average result, if the productivity in the natural pasture area (Control) was 26.6 cents / ha of green mass or 6.8 cents / ha of dry grass, Natural pasture + grass tox. In the experimental variant of sowing + N60P60K40, the green mass yield was 13.3 cents / ha more than the control, and the dry grass yield was 3.2 cents / ha more.

Even

In case of production of green mass or 6.8 cents / ha of dry grass on average from 26.6 cents / ha during mowing from natural pasture area (Control), An average of 30.6 quintals of green mass or 7.8 quintals of dry grass per hectare was produced in the variant of grass seed sowing (without fertilizer), compared to the control variant, in the variant of grass seed sowing + N60P60K40 this indicator averaged 39.9 centners / ha of green mass. or more than 15.0%, resulting in the production of 10.0 quintals of dry or 14.7% more dry grass.

Experimental field studies to improve pastures have shown that the fodder produced in each of the tested variants; green mass and dry grass supply and their nutritional value were higher than control. This and diAccording to the indicators, the sowing of grass seeds + N60P60K40 was superior to other options and was considered economically viable.

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