ISSN 3060-4567

SEASONAL CHANGES: DYNAMICS OF GRASSLAND VEGETATION COMPOSITION

Toshqarayeva Durdona Usmon qizi, Ne'matova Dilshoda Shuhrat qizi, Salimova Sarvinoz Shuhrat qizi.

Jizzakh State Pedagogical University

Annotation: *This article examines the long-standing tradition of using natural pastures in Uzbekistan, focusing on the ecological, economic, and agricultural aspects of pasture management. The study explores the botanical and chemical composition of pasture plants, their seasonal changes, and their impact on livestock productivity. Special attention is given to Crotalaria juncea (sun hemp), a fast-growing, nitrogen-fixing plant with potential benefits for pasture enrichment and livestock feed. However, concerns over excessive consumption due to its alkaloid content are highlighted. The research emphasizes the importance of sustainable pasture use, scientific monitoring, and rational livestock feeding strategies to prevent degradation and maintain biodiversity. The findings are based on multi-year field studies in desert, foothill, and mountain pastures, analyzing factors such as vegetation cycles, climate influence, and plant nutritional values. The study underscores the need for an integrated approach to pasture management to enhance livestock productivity while preserving natural ecosystems.*

Keywords: *Natural pastures, Uzbekistan, pasture management, livestock feeding, Crotalaria juncea, sun hemp, nitrogen fixation, biodiversity, botanical composition, ecological sustainability, pasture productivity, animal nutrition, Karakul sheep, arid pastures, sustainable agriculture.*

In Uzbekistan, a long-standing tradition of using natural pastures has been formed, and this process is organized depending on the climatic characteristics of the year, the vegetation period of plants growing on pastures, and the presence of large areas of massifs. If we consider such an approach from the point of view of

ISSN 3060-4567

management, it is considered an economically efficient and expedient system. This procedure is still widely used in karakul farming. However, various forms of management and the distribution of territories between farms and individuals somewhat limit the possibilities of using foothill and mountain pastures compared to desert pastures. Starting from the second half of spring, with a slight increase in external temperatures, in desert pastures, in addition to large and small horned animals belonging to farms, personal livestock of the population living in this area can also use pastures. According to the results of many years of research, the productivity of natural pastures, the botanical and chemical composition of plants, and the biological value of feed have been studied. In particular, it was found that the number of animals grazed per 1 hectare in steppe pastures is 1.5–2 times higher than in foothill and mountain pastures. However, an excess of the number of animals per 1 hectare of pasture leads to a number of negative consequences: the full vegetation period of plants is disrupted, their botanical and chemical composition changes, the mass of feed obtained from the pasture decreases, productivity decreases, and the nutritional value of feed sharply decreases. As a result, the need for animals for feed is not fully satisfied, and the degradation of pastures accelerates.

In this regard, one example of a plant that grows in pastures is Crotalaria juncea (sun hemp or Indian hemp). This plant is mainly found in tropical and subtropical regions, but due to its adaptability, it can also grow in arid pasture conditions. Crotalaria juncea is distinguished by its rapid growth, ability to accumulate nitrogen in the soil, and potential for increasing pasture productivity. Its chemical composition includes leaves and seeds rich in protein, which can be an additional source of food for animals. However, due to the presence of alkaloids, excessive consumption is also likely to have a negative impact on animal health. Therefore, it is important to use such plants wisely in pastures.

There is a risk of a decrease in the live weight of Karakul sheep, a decrease in productivity and quality as a result of improper use of existing pastures. To prevent such situations and maintain the efficiency of current economic activities, it is important to monitor natural pastures. This monitoring should cover the following

ISSN 3060-4567

areas: productivity levels, botanical and chemical composition of plants, nutritional value of feed masses, feed intake and digestion processes, digestive processes in the rumen, and physiological and biochemical changes in blood composition. These factors are interrelated and require complex scientific research.

Although there are various directions of livestock breeding today, the system of pasture use in Karakul farms in Nurabad district of Samarkand region is determined by the year-round grazing of small and large cattle in areas allocated for farmers or dehkan farms. Especially in late autumn, winter and early spring, the shortage of feed masses in pastures is clearly felt. Therefore, it is necessary to conduct comprehensive studies on the proper feeding of livestock, increasing their productivity and reducing the risk of poor-quality food products.

Within the framework of such studies, the study of the botanical and chemical composition of pasture plants by season is of great scientific and practical importance. For this purpose, the use of plants such as Crotalaria juncea (sunflower) is important to improve the nutritional status of pastures. Crotalaria juncea is one of the fast-growing, nitrogen-fixing and soil-fertilizing plants, which can be a source of high-quality fodder for livestock. In addition, this plant enriches the soil composition through biological nitrogen fixation and has a positive effect on the growth of pasture plants.

Given the increasingly deteriorating ecological conditions, creating an effective feeding system in livestock farms, strengthening animal health and producing high-quality food products is one of the urgent issues. Therefore, rational use of pastures and scientific study of their composition are becoming necessary.

Currently, the constant use of one pasture throughout the year and the excessive number of animals kept on it lead to the fact that pasture plants do not have enough time to go through a full vegetation period. This affects the biodiversity of pasture plants, their botanical and chemical composition, animal consumption, and the digestibility of feed from year to year. Therefore, it becomes possible to develop biologically based scientific recommendations based on the study of these issues. Our research began with an analysis of the chemical and botanical composition of pasture

ISSN 3060-4567

plants, their productivity depending on the seasons and climatic conditions, as well as their consumption by animals. The experiments were conducted for at least three years, under different nutritional and climatic conditions, that is, from the second half of February, when the vegetation of plants begins, to December-January, when the winter season begins.

In climatically unfavorable years, pastures in the desert are mainly covered with ephemeral-ephemeroid and salt-loving grasses, while foothill pastures are enriched with more wormwood and semi-shrubs. Under such conditions, the height of the grass-grasses does not exceed 8–10 cm. In moderately unfavorable years, steppe pastures are replenished with grass-grasses other than ephemeral and ephemeroid, improving pasture conditions and increasing productivity. In mountain and foothill pastures, the amount of ephemeral and ephemeroid species increases, and the share of wormwood and semi-shrubs is greater than in unfavorable years, exceeding 8–16 cm in height. In climatically favorable years, ephemeral-ephemeroid species prevail in pastures, wormwood, shrubs, semi-shrubs and other plants develop well. This ensures that grass-grasses are preserved in sufficient quantities until the winter.

In the spring and early summer months, sheep in desert pastures feed mainly on ephemeral-ephemeroids and spike plants, but in the summer and autumn they switch to eating leaves of shrubs and semi-shrubs and other plants. By the end of autumn, they begin to eat salt grasses, because at this time many plants complete their growing season and begin to dry out.

At the same time, among pasture plants, special attention should be paid to species such as Crotalaria juncea (Indian hemp). This plant is useful for desert pastures due to its adaptability, rapid growth, and enrichment of the soil with nitrogen. Its leaves and seeds are rich in protein and can serve as an additional source of feed for animals. However, due to the alkaloids it contains, excessive consumption may harm the health of animals. Therefore, it is necessary to maintain a balance when using such plants in pastures.

ISSN 3060-4567

When taking samples of grasses from areas of natural pastures where animals are constantly grazed and analyzing their botanical composition, it was found that the vegetative development of different plant groups does not occur uniformly depending on the seasons and natural climatic conditions. Significant changes were observed in the ratio of plant groups in mountain and foothill pastures during the vegetation period. The importance of complex flowering plants in the nutritional balance of these pastures was high, accounting for 56.6% in spring, 31% in autumn, and 23.2% in winter.

The group of legumes is the main source of food in the spring, especially in May. However, their share in the total pasture vegetation decreases significantly over the following months. The main reason for this is that legumes begin their vegetation early and quickly end their development period under the influence of warm temperatures and strong winds.

In the autumn and winter seasons, legumes make up the main share in the diet of Karakul sheep, accounting for 61% in autumn and 74% in winter. Complex flowering plants reach 30.7% and 23.2%, respectively. While the spring diet is dominated by complex flowering and apical plants (56.0% and 36.7%, respectively), in the summer diet, solanaceous plants (49%), various grasses (20%) and apical plants (13%) serve as the main source of food. In the autumn, the food composition of sheep consists of associations of shrubs, semi-shrubs and saltbush plants, which mainly include plants such as wormwood, keyreuk, fisheye and dogwood.

The sharply continental climate of Uzbekistan has a significant impact on the vegetation process of pasture plants. In years with favorable climatic conditions, with sufficient solar radiation and humidity, the grasslands of mountain and foothill pastures enter the vegetation process even from February.

To increase the nutritional value of pastures and increase the productivity of livestock, it is important to study their composition on a scientific basis. In this regard, the use of forage crops such as Crotalaria juncea (sunflower alfalfa) can serve to increase pasture productivity. This plant increases soil fertility through nitrogen fixation and serves as a source of high-quality feed for livestock. Crotalaria juncea,

ISSN 3060-4567

which has a fast growth rate, plays an important role in enriching the nutritional composition of pasture plants, especially in the spring and summer months. Therefore, the introduction of such valuable forage crops in order to effectively use pastures and enrich their nutritional composition is one of the urgent scientific and practical issues.

Climatic conditions, in particular, frosty winters and prolonged cold spring temperatures, make it impossible to create the necessary conditions for the development of many species of pasture plants and delay the beginning of their growing season. Increased summer temperatures and strong sunlight contribute to an increase in the content of nutrients, especially proteins, in plants. However, it should be noted that the composition of the green grass samples taken in March showed indicators very close to those of the winter samples. In April and May, the content of nutrients in the grasses increased significantly, and in June, as many plants completed their growing season, this indicator increased even more. The dry matter of the plants contained 15.8% protein, 3.01% fat, 32.0% fiber and 48.73% nitrogen-free extractives (NFE).

In the summer, as ephemerals and ephemeroids finish their vegetation, sheep switch to eating leaves, soft stems of shrubs and semi-shrubs, and other plant species. At the same time, the number of livestock on pastures exceeds the norm, excessive temperature rise, and strong hot winds change the botanical composition of the summer pasture vegetation cover, which also leads to changes in their chemical composition. In short, the lack of rational and effective use of natural pastures leads to a loss of biodiversity, a sharp change in the botanical and chemical composition of plants, and land degradation. Therefore, improving the condition of pastures and regulating the process of animal feeding are among the urgent tasks of today. Among pasture plants, one can also note such species as Crotalaria juncea (Indian hemp). This plant is adapted to arid conditions, grows quickly, and enriches the soil with nitrogen. It contains protein-rich leaves and is useful as a supplementary feed source for livestock. However, due to its alkaloids, excessive consumption can have negative effects on animal health. Therefore, it is important to ensure a balanced consumption of such plants when using pastures.

ISSN 3060-4567

LIST OF REFERENCES USED

1. Berdikulov Khudoyshukur Keldiyorovich, Negmatova Surayyo Teshaevna, Normat Durdiev Khasanovich, & Artikova Lola Soatovna. (2024). THE SIGNIFICANCE OF BIO-STIMULATORS IN NON-TRADITIONAL CROP GROWING. The Bioscan, 19(Special Issue-1), 356–360.
2. Keldiyorovich, B. K. (2024). THE EFFECT OF STIMULANTS ON CROTALARIA HAY YIELD AND QUALITY INDICATORS. Cotton Science, 4(1).
3. Бердиқулов, Х. К., Ортиқова, Л. С., & Негматова, С. Т. (2024). КРОТАЛАРИЯ КЎК МАССА ҲОСИЛИГА БИОСТИМУЛЯТОРЛАРНИНГ ТАЪСИРИ. Science and innovation, 3(Special Issue 21), 93-97.
4. Keldiyorovich, B. X. (2023). Species of the Genus Crotalaria L. and Their Biological Significance. Web of Agriculture: Journal of Agriculture and Biological Sciences, 1(4), 1-7.
5. Keldiyorovich, B. X., & Khushnazarova, N. D. (2023). BIOGEN STIMULATORS DESCRIPTION AND CLASSIFICATION, TECHNOLOGY.
6. Keldiyorovich, B. K., & Khushnazarova, N. D. BIOLOGY ECOLOGY AND ECONOMIC IMPORTANCE OF CROTALARIA JUNCEA.
7. Keldiyorovich, B. K. (2024). THE EFFECT OF STIMULANTS ON CROTALARIA HAY YIELD AND QUALITY INDICATORS. *Cotton Science*, *4*(1).
8. Бердиқулов, Х. К., Ортиқова, Л. С., & Негматова, С. Т. (2024). КРОТАЛАРИЯ КЎК МАССА ҲОСИЛИГА БИОСТИМУЛЯТОРЛАРНИНГ ТАЪСИРИ. *Science and innovation*, *3*(Special Issue 21), 93-97.
9. Keldiyorovich, B. X. (2023). Species of the Genus Crotalaria L. and Their Biological Significance. *Web of Agriculture: Journal of Agriculture and Biological Sciences*, *1*(4), 1-7.