

Field Research on Pasture Vegetation in South Uzbekistan (In Kashkadarya Region Parts)

Uktam Khujanazarov¹, Gulrukhsor Ergasheva², Gulbakhor Akbarova³

¹ Doctor of Biological Sciences, Head of the Department of Botany and Ecology, Tashkent State Pedagogical University named after Nizami, Tashkent, Uzbekistan.

² Doctor of Biological Sciences (DSC), Professor of the Department of Biology Teaching Methodology, Tashkent State Pedagogical University named after Nizami, Tashkent, Uzbekistan.

³ Doctor of Philosophy in Biological Sciences (Ph.D.), Associate professor of the Department of Biology Teaching Methodology, Tashkent State Pedagogical University named after Nizami, Tashkent, Uzbekistan.

Abstract: This paper involves the practical use of pastures in Kashkadarya region. Therefore, the data on cartographic and monitoring fodder yield were given. To determine the fodder productivity of the foothill pastures during the year in the spring, it is carried out in the field work through principled methodological schemes: drawing up a pasture card as a standard describing the average productivity indicators of many years; carrying out surface field inspections for control in the most important grazing areas; annual inspections for the use of pastures as fodder and grazing of livestock.

Keywords: Livestock, Pasture, Dominant, Agrophytocenoses, Phytomeliorants, Weeds, Communities, Shrubs.

1. Introduction

Kashkadarya region includes the Karshi depression in southern Uzbekistan, bordered in the north by the mountains of Koratepa, Zirabulok, and Ziyevuddin; in the east – by the foothills of the southwestern part of the Gisar ridge (Kashkadarya Region 1959). As a result of the study, we analyzed the plant species of mountain pastures and determined the current state of pastures in the Kashkadarya Basin (Dias & Barreiros 2018, Lebedev et al. 2018). One of the leading branches of agriculture is animal husbandry, and it is important to conduct a scientific, practical study, assessment of the material source of its development – natural food (source of hay) – pasture types (Galnaityte & Krisciukaitiene 2017). This work was arisen in the process of implementation and the requirements of economic development; subsequently, the requirements of the national economy, and is one of the urgent tasks of modern science and technology [7,8,9,10,11,12,13,14,15,16,17,18,19,20]. The types of pastures – natural territorial complexes with similar climate, soil, productivity (fertility), the time of year, when cattle are grazed and types are determined by the edificatory types of plant families. There is a need to determine their ecological status: structure, composition, productivity (fertility), and degree of damage (degradation, transformation), types of damage factors (damage), and other quantitative and qualitative indicators (Sukhova et al. 2018) [39, 40, 41, 42, 43, 44, and 45]. The foothill pastures of the Kashkadarya Basin are one of the main bases for the development of animal husbandry, in recent years the productivity (fertility) of which is reduced under the influence of metrological factors (Khuzhanazarov 2012, Poškus et al. 2018) [5, 6]. Pasture plants play an important role in the development of animal husbandry. Uzbek scientists carried out the scientific basis and methodology for increasing the productivity of natural forage grasses in the desert conditions of Central Asia through the study of biology and ecology of natural pasture plants. Active research on pasture

improvement in the mountainous and foothill areas of Kashkadarya basin had carried out through the planting of valuable fodder crops [21,22,23,24,215,26,27,28,29,30,31,32,]. Recommendation had also developed to ensure the sustainability and protection of pastures. A list of dominant plants where are grown in Kashkadarya basin has been compiled and data on the scientific basis for the creation of high-yielding agrophytocenoses have been collected, focusing on the biological properties of phytomeliorants and soil factors [33, 34, 35, 36, 37, 38]. However, the uniqueness and richness of the flora of the foothills of Kashkadarya basin, its forage, usefulness, medicinal value, rarity, aesthetics and economic significance are important [2].

The practical use of pastures is primarily focused on monitoring fodder yield, that is, cartographic data gives good results. To determine the fodder productivity of the foothill pastures during the year in the spring, it is carried out in the field work through principled methodological schemes: drawing up a pasture card as a standard describing the average productivity indicators of many years; carrying out surface field inspections for control in the most important grazing areas; annual inspections for the use of pastures as fodder and grazing of livestock. The map of foothill pastures of the Kashkadarya basin serves as a standard for monitoring the ecological condition of fodder plants and when to graze livestock. The results of the field research conducted on the inventory of pastures carried out in Chirakchi, Kitab, and Dehkanabad districts show that as a result of monitoring the dynamic state of pasture vegetation, it was found that the pasture areas have expanded over the past 15 years. Pasture areas increased from 1321625 to 1408358 from 1998 to 2017. However, the cultivated pastures occupy the main place in Guzor and Dehkanabad districts. During one year, the area of open land increases by 10,000 hectares due to unplanned grazing of livestock. The following weeds were found to increase in all communities in the Adir region: *Acroptilon repens*, *Verbascum songoricum*, *Cichorium intybus*, *Artemisia scoparia*, *Turgenia latifolia*, *Vexibia pachycarpa*, *Rlantago lanceolata*, *Dodartia orientalis*, *Lactuca scariola*, *Convolvulus arvensis*, *Alhagi pseudalhagi*, *A. sporsifolia*, *Carthamnus oxyacanthus*.

Bushes of more edifying species in the pastures that appeared in many areas (fields, villages, wells, lands near the road) corresponded to the senile-senescence period and formed regressive conditions. Reproduction from seeds was almost never found in them. Such plant communities formed more transformed areas and were shown on the map with conventional symbols. In order to prevent and reduce the breeding process, it is necessary not to increase the number of livestock and to alternate use of pasture land. According to experts, 1 of livestock should be grazed on 4 ha during the year, while currently 4 of livestock are grazed on 1 ha.

2. Methodology

The object of the study consists of plant communities (floristic and phytocenotic composition) in the foothills and mountains of Kashkadarya basin. In other words, Kashkadarya basin is a foothill and mountain pasture with I - weak, II - moderate, III - strong and IV - very strong levels of vegetation. The work reflects the route field research conducted from 2012 to 2019, as well as the materials of expeditions conducted with the researchers of the Institute of Botany. The geobotanical units of plant communities determine the content of natural pastures. For this reason, the classification, structure, composition, geobotanical studies of all-natural pasture vegetation cover is determined. Pasture type is the main unit of the pasture determined by the edificatory (dominant type) type of vegetation cover. This unit is the main pasture unit in the development of agricultural animal husbandry. All research in the study area is based on geobotanical manuals: "Field Botany" (1972); B.A. Bikov's "Methodical development" (1957, 1978); V.B. Sochava's "Geobotanical cartography" (1972); D.D. Vishivkin's "Geobotanical cartography" (1977), G.N. Harin's "Distance methods of studying plants" (1980). Productivity of pasture types was determined by "Guidelines for geobotanical researches of natural forage lands of Uzbekistan" (1980). Geobotanical description of plants according to the method of A.P. Shennikov (1964) was carried out on the structure of the surface phytomass, species composition, and productivity indicators in the degraded areas. Also, an approximate estimate of species abundance was conducted on the Drude scale (Drude, 1913). The condition of pasture digression was analyzed by the method of Chogniy (1977) [2].

The main sources of statistical analysis of the foothill pasture of the Kashkadarya basin are the "Flora of Uzbekistan" and "The determinant of plants in Central Asia". First edition of "Flora of Uzbekistan" in 6

volumes was published in 1941-1961. 3666 of species of vascular plants, belonging to 1153 genera and 125 families were included in this revision. About 500 species of cultivated and introduced species were listed in this edition as well. Since 1969-1991 a large team of former Soviet Union, botanists published the "Conspectus Florae Asiae Mediae" with about 9000 species (in 10 volumes). The area of this revision includes of five republics (Uzbekistan, Turkmenistan, Kazakhstan, Kirgizstan and Tadzhikistan). Starting from 2012, Uzbek botanists are working on new 2 edition of "Flora of Uzbekistan" planned e-flora in the Internet. Still new species are found and described every year at this area. Nowadays there are about 4500 of species naturally growing here. First edition of Red Data Book of Uzbekistan was published in 1984 with 124 species. In 2009, 4 th edition was published with 321 species of vascular plants. Amount of disappeared species increased from 4 to 18 [3].

3. Results

The structure (relief) of the land surface in the mountain is complex, and many factors affect to the distribution of shrub and trees. Above sea level, mountain slopes, geology, erosion rate, mechanical composition of the soil, humidity and temperature indicators form communities of different densities under the influence of the external environment. Therefore, in the studied area, trees and shrubs are more common as a unit, a complex. *Acer pubescens*, *Amygdalus bucharica*, *A.spinosissima*, *Berberis oblongo*, *Crataegus pontica*, *C.turkestanica*, *Cerasus erythrocarpa*, *Ephedra equisetina* and *E.intermedia* are widespread in mountain ranges. It is necessary to strengthen protection measures of mountain pastures and to mark the current state of pastures every year. In this process, we should confirm the ecological education among the people who live near the mountain and foothills; to protect of medicinal and endemic plant communities is essential, which medicinal plants such as *cadonopsis*, *zizifora*, *ferula* and others are material for pharmacy industry. Among the leading families in the floristic spectrum where we studied in the mountains and foothills, we can count such plant families: Asteraceae - 92 species, Fabaceae - 71 species, Poaceae - 45, Lamiaceae - 35, Brassicaceae - 35, Rosaceae - 33, Apiaceae - 32, Liliaceae - 31, Boraginaceae - 25. They are not only leaders in plant communities, but also play an important role in building association, which some of them are used as fodder reserves [4].

The following plant species were studied for the improvement of foothill pastures: 6 species of shrubs, 2 species of semi-shrubs and 1 grass. From the bushes - *Haloxylon aphyllum*, *Haloxylon persicum*, *Salsola richteri* Karel. and *Salsola rigida* Pall., *A. turanica* from young bushes, *astragalus* (*Astragalus filicaulis*) from herbaceous plants. In natural conditions, these plants grow slowly, in culture, the vegetative period is shortened, the formation of underground organs is accelerated, and fruiting begins early. Planting of phytomeliorants begins in early spring, the average daily temperature should be around 5°C. When the surface layer of the soil is at a temperature of 10-15°C, it starts to sprout for 10 days. After sprouts appear, their underground organs also actively develop. In three months, the height of different types of phytomelionates in the above-ground part reaches 33-48 cm, and in the spring it reaches 84 cm. In this growth, the roots deepen to 130-180 cm. As the root system deepens, their tolerance to dry and hot temperatures increases. With the arrival of summer, underground growth slows down, and summer-autumn deep rooting is 0.50-0.92 cm/day. In the white saxavull, this indicator is -0.34 cm/day. At the end of the first year, the total root depth reaches 212-265 cm. Planting these crops in unfavorable weather conditions does not give good results. Grass plants planted in foothills cannot survive these periods. It is not recommended to plant seeds in early spring when the depth of soil moisture is below 60 cm. Germination is satisfactory if the soil has a depth of moisture in the range of 60-100 cm. For planting, the soil should be plowed to a depth of 18-20 cm. Row width should be 10 m. Planting is carried out in early spring when the average temperature is 5°C. The norm of planting bushes and large grasses is 5-10 kg/ha, for young bushes -0.5 kg/ha. The seeds of bushes are planted at a depth of -1-2 cm, for young bushes they are planted at a depth of -0.5 cm. Three-year agrophytocenoses provide significant fodder mass. The productivity of black saxaul is 10.5 t/ha, white saxaul - 6.4, black cherkez - 6.9, Richter cherkez - 11.7 t/ha. Productivity of agrophytocenoses is 1.5-3 times higher than that of natural pastures. In the future, the indicator will increase by 3-5 times [1; -227 c.].

4. Conclusion

Strengthening the legal basis of forest protection in the mountain and sub-mountain pastures of Kashkadarya, development of beneficial socio-economic forestry, expansion of the share of the private sector in forestry are considered indicators that will be given special attention and implemented today, and require the development of a plan of measures in time. In addition, the development of ecological optimization measures on indicators such as preventing the reduction of mountain forests, regulating the livestock feeding system, and regulating irrigation and dry farming plays an important role in improving the efficiency of pasture restoration.

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