

Summary of the doctoral dissertation

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Efficiency of the extensive sheep grazing application in terms of mountain grasslands protection

Progressive decline in the population of grazing animals and the discontinuation of use of pastures in Polish mountain areas leads to degradation and gradual deterioration of valuable natural anthropogenic meadowlands and pastures created as a result of intensive systematic pastoral farming.

The objective of the dissertation was to study the preservation possibilities of those collectives and their production potential in the conditions of extensive form of farming, characterised by very low grazing animal population and extremely limited fertilization, which would allow for protection of the larger grassland area with limited animal population.

The efficiency of this variant was examined on the pastoral area with sheep population of $4 \cdot \text{ha}^{-1}$ and the average volume of nitrogen fertilizer used at $21,95 \text{ kg} \cdot \text{ha}^{-1}$. For this purpose, research areas were determined in five hypsometric sections, on which the floristic studies were conducted: species composition was determined using the Braun-Blanquet method and the Klapp method, syntaxonomic location of collectives and biodiversity indicators: number of taxa, Shannon index and Simpson index. Additionally, tests were carried out on the efficiency and quality of the pasture sward: dry matter yield, mineral content and total protein content and the value in use of the pasture sward. In order to determine the difference in the natural and economic value between the extremely extensive pasture farming system and the traditional farming system, the results of studies conducted in the same area in the years 1980-1985 were used- under conditions of high sheep population in the amount of 15-20 per ha^{-1} and nitrogen fertilization in the amount of $73.8 - 80.5 \text{ kg} \cdot \text{ha}^{-1}$.

The analysis of the obtained results showed botanical composition reconstruction of the sward, resulting in the overall increase of the less demanding species and species of smaller economic value in the crop share, and the diversification of the effects of these changes depending on the location of the examined collectives. In the areas located above 800 meters above sea level, distinct decrease in the floral diversity was observed, with a corresponding decrease in the uniformity of species occurrence, associated with the dominance of a small number of species, and the relatively small decrease in the crop yield. In the areas located

below 800 meters above sea level, a slight decrease in the floral diversity coefficient was observed, with a slight corresponding increase in the uniformity of species occurrence, and a significant decrease in both the crop yield and the value in use of pasture sward.

Despite the reconstruction of the sward's floristic composition towards reducing the floral diversity, the extremely extensive farming system examined on the mountain grasslands efficiently prevents the secondary succession process, and the grasslands included still hold high natural and economic potential, which enables to fully restore *Gladiolus* and *Agrostis* communities on their areas with the use of appropriate treatments.

Keywords: mountain grasslands, cessation of use, botanical diversity, value in use