BIODIVERSITY OF TRANSYLVANIA PLAIN INFLUENCE BY SLURRY FERTILIZATION AFTER 2 YEARS

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Abstract

Over the years the grasslands biodiversity decrease a lot. Grasslands are the one who are shelter for insects, butterfly, species and so on and this is the reason why maintaining grassland as natural as can it become a target. The purpose of this research is to assess the state of the biodiversity and pastoral value for grasslands from the Transylvanian Plateau area. The analyzed grasslands are placed in the perimeter of Gheorgheni village, from Cluj County. Experience includes 16 experimental variants with organic fertilization with slurry, 4 variants in 4 rehearsals. Each experimental variant is 2 m long X 5 m wide. In most hill meadows the economic efficiency is relatively low, and in order to be increased, it is necessary to apply the whole complex of measures for their improvement, care and exploitation, of which a special role is the application of appropriate treatments that stimulate the development of valuable species.

Keywords: semi-natural grasslands, mineral fertilizers, grassland management

INTRODUCTION

The livestock sector has expanded rapidly in recent decades and demand for livestock products is expected to continue to grow strongly through the middle of this century, driven by population growth, rising affluence and urbanization (FAO, 2009).

Decisive action is required to satisfy this growth in ways that support society's goals for poverty reduction and food security, environmental sustainability and improved human health (FAO, 2009). Grasses are one of the most ubiquitous and important plant groups in the world. The grass family, *Poaceae*, includes an estimated 12,000 species (GPWG 2000; www. grassportal.org), and over one-third of the terrestrial land surface on Earth is comprised of natural occurring, grass dominated ecosystems (e.g., prairie, savanna, steppe, etc.; Coupland, 1979; Anderson, 2006). The economic development of Europe provides advantages to people, but in the same time represents a potential risk too (Cojocariu *et al*., 2010).

MATERIAL AND METHOD

Study site

The analyzed grasslands are located within the perimeter of the village of Gheorgheni, in Cluj County. The experience includes 16 experimental variants with slurry fertilization 4 variants in 4 rehearsals.

Each experimental variant is 2 m long x 5 m wide. The experimental variants are V1-witness, unfertilized, V2-10 kg slurry, V3-20 kg slurry, V4-40 kg slurry. Slurry was pick from a cow farm from the same village and spread manually. The area shows a typical plain until hillside climate and the landscape is undulating. It is characterized by a high variation of land use and topoclimatic conditions in the area and fine-grained mosaic of different land uses, including substantial amounts of semi natural vegetation with 7.2°C average temperature. The vegetation observations were made on 16 plots.

Data analysis

The floristic composition was interpreted using an improved Braun-Blanquet scale with subdivisions (Păcurar and Rotar, 2014). Sward fodder value was calculated based on species quality score on a scale from 1 (poor) to 9 (excellent), after Dierschke and Briemle (2002), as modified by Păcurar and Rotar (2014). Sward fodder value was performed on a scale from 1 (poor sward, quality dominated by toxic species) to 9 (excellent) after Păcurar and Rotar (2014). Data regarding the share of economic groups (*Poaceae, Cyperaceae-Juncaceae, Fabaceae* and other botanical families- OFB), species number were processed by analysis of variance.

RESULTS AND DISCUSSION

The application of the fertilizer with slurry resulted in important changes both at the crop level and at the level of the floral composition.

The determinate type of grassland was *Festuca rupicola-Bromus erectus.* The type of *Festuca rupicola-Bromus erectus* has a pastoral value of 5.04, so this meadow falls in the 6th grade, the grassland category is medium and supports 1.01-1.20 UVM / ha. In the floristic composition, *Poaceae* family have in the witness an average participation of 35%, and once by increasing the dose of slurry fertilization the *Poaceae* increase also their number. In the variant with 40 l/ha slurry (V4) the

number of *Poaceae* increase untill 55%. Regarding *Fabaceae* family it can be noticed that after 2 years of applied fertilizer, the percent of participation decrease. We believe this is due to N-fertilizer. The highest percent is in V2 (variant with 10 l/ha slurry) where the species *Trifolium ochroleucum* have an important influence (figure 1). Plants from other botanical families (OFB) are present with 57% coverage in the witness and decrease until 23% in variant fertilized with 40 l/ha slurry.

The dry matter production for the fertilized fertilizer experience records values between 4.5 t / ha SU in the control variant and 7.05 t / ha SU in the most fertilized variant. Production spores are statistically assured in the fertilized mineral variant with the highest doses and in the fertilized variant with the highest doses, as can be seen in table 1.

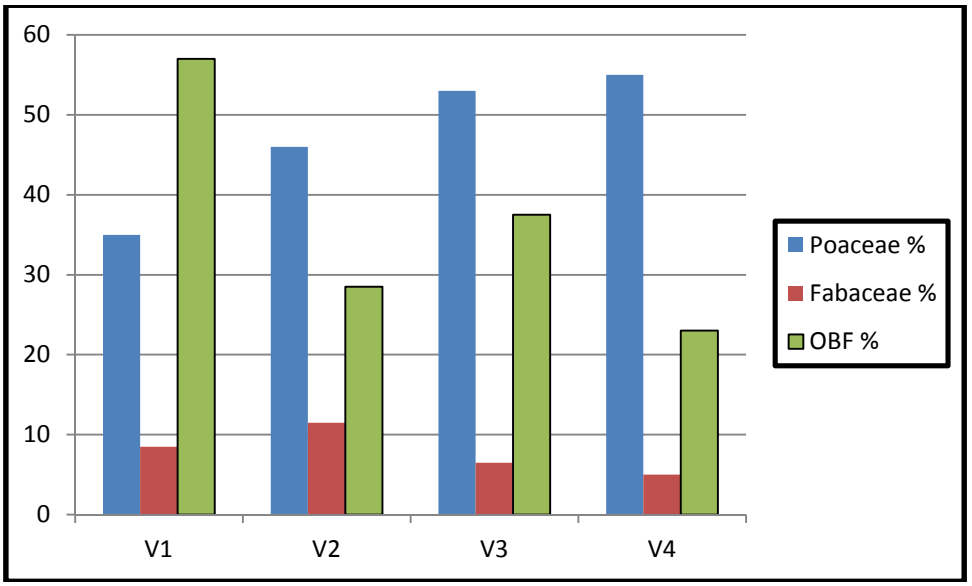

Fig. 1. The floristic composition under slurry fertilization after 2 years

Table 1

Influence of slurry fertilization on dry matter yield after 2 years (t / ha)

Year	Experimental variants	t/ha DM	%	Difference	Significance
2017	V 1 – witness	4.5	100.0	0.00	0
	V 2 – 10 t/ha slurry	4.79	106.4	0.29	-
	V 3 – 20 t/ha slurry	4.85	107.8	0.35	-
	V 4 – 40 t/ha slurry	7.15	158.9	2.65	**
DL(p 5%) – 1.45; DL(p 1%) – 2.08; DL(p 0,1%) – 3.06					

CONCLUSIONS

For an intense management the slurry fertilization have an important role on floristic composition which is noticed until second year. It can be noticed that the production also are significant when apply 40l /ha slurry.

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