

ECOLOGICAL AND AGRONOMICAL VALUE OF TYPE AGROSTIS STOLONIFERA – FESTUCA VALESIIACA GRASSLANDS

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Abstract

*Grasslands are an essential element of sustainable farming systems with an important role in conservation biodiversity, improving soil fertility, hydrological equilibrium and preventing soil erosion and landslides. Because of this we have studied the influence of ecological and anthropogenic factors on the floristic composition and pastoral value of a grasslands of *Agrostis stolonifera* - *Festuca valesiaca*. The grasslands analyzed are situated in the village area of Chișlaz from Bihor county.*

Keywords: grasslands, conservation, landslides, ecological factors, anthropogenic factors.

INTRODUCTION

In Romania the area of grasslands geographic location its extremely varied depending on the relief forms, the physico-geographic resources, the soil types and the physico-chemical properties of the meadows. In addition to these factors, in the evolution of the vegetation carpet of a meadow there are the anthropic actions that concern the management of applied technological works, respectively maintenance and exploitation works. Participation in a larger percentage of species reveals that they meet optimal conditions development, but in most of the meadows in Bihor County due to the lack of maintenance work, the overpass or the overdue flora composition of the meadows has evolved towards a higher percentage of the species with no fodder value or low fodder value.

MATERIAL AND METHOD

Chișlaz commune is located in the northern part of the Bihor county, bordered in the north-western part of the plain of Marghita glaciers, and in the south part of the hills of Dernei. In this area there are the meadow terrace, the II and III terraces and the slope of Dernei hills, the commune having altitudes between 125-275 m. The territory of the locality is a component of the Barcau river basin, the hilly sector (the limits of the hilly

sector are located along the river Barcau between the localities of Nușfalău upstream and Marghita downstream).

The climate of Chișlaz commune is continental, with Mediterranean influences. The dominant wind direction is from southwest to northeast. The average annual temperature is + 9 ° C and the average annual rainfall is 600 mm. There are two types of soil: - aluviosole is part of the class of protisols, which are soils formed on the parental fluvial material at least 50 cm thick and having a horizon A0 and a horizon C, of a mollic type, vertically, strong, clayey / clayey, gleic, fluvial deposits, a 2 m depth of groundwater and gleiosole is part of the hydrisol class and are formed in permanent excess conditions or temporary moisture. It is defined by the presence of the Gr (reduction) horizon whose limit is located in the first 50 cm, mollic, clayey - lute , on the fluvial deposits, the groundwater at 1 m deep.

Quantitative assessment of the participation of each species in the description of associations was using the the index of abundance – dominance after Braun-Blanquet scale (1928) and adapted by Borza și Boșcaiu (1965) to the features of the vegetation cover in our country (Păcurar and Rotar, 2014).

RESULTS AND DISSCUSIONS

The phytocoenoses of this association are located on the lower fields, with shallow water, during the spring they are subject to periodic floods, but in the summer they become devastating favoring the installation of mesophilic and mesohidrophilic and heliophilic species. The dominant the species is *Agrostis stolonifera* with a participation in vegetative carpet of 14.5%, alongside which species of grasses with high fodder value appear. Fabaceae are represented by *Trifolium repens*, *Trifolium fragiferum*, *Trifolium pratense*, *Trifolium hybridum*, *Lotus corniculatus* with a 10% coverage, and species from other botanical families 36.5%. The specific conditions of this area impart to the association a meso - hygrophilic character which is also reflected in the structure of the floristic composition by the appearance of *Juncus effusus*, *Juncus conglomeratus*, which in some areas replace the dominant species in the vegetation carpet creating new facies.

Table 1

Scale assessment of abundance and dominance modified three subnote three subintervals of
Păcurar and Rotar (2014)

Note	Interval coverage(%)	The central value of the class (%)	Under note	Under-interval	Central values adjusted sub-interval
5	75-100	87,5	5c	92-100	96
			5b	83-92	87.5
			5a	75-83	79
4	50-75	62,5	4c	67-75	71
			4b	58-67	62.5
			4a	50-58	54
3	25-50	37,5	3c	42-50	46
			3b	33-42	37.5
			3a	25-33	29
2	10-25	17,5	2c	20-25	22.25
			2b	12-20	17.5
			2a	10-15	12.5
1	1-10	5	1c	6-10	8
			1b	4-6	5
			1a	1-4	2.5
+	0,1-1	0,5	-	-	0.5

Table 2

Floristic composition of type of grassland *Agrostis stolonifera* - *Festuca valesiaca* and specific requirement on ecological, agronomic and anthropogenic

Species	%	Ecological indexes					Agronomical indexes					Anthropogenic indexes	
		B	T	U	R	N	C	P	S	VF	SO	H	UR
POACEAE													
<i>Agrostis stolonifera</i>	14.5	H	0	4	0	5	9	9	9	4	n	2-5	3
<i>Festuca valesiaca</i>	9.5	H	7	2	8	2	7	8	8	1	n	2-3	2
<i>Festuca pratensis</i>	6	HT	6	2	0	6	6	4	6	9	n	2-4	2
<i>Dactylis glomerata</i>	6.5	HT	0	5	0	6	8	4	6	9	n	3-4	3
<i>Agropyron repens</i>	5	HT	0	5	0	8	7	5	7	6	n	3-6	3
<i>Poa pratensis</i>	7	H	0	5	0	0	8	8	8	9	n	2-3	2
<i>Lolium perenne</i>	8	H	5	5	0	7	8	8	8	9	n	2-3	2
<i>Cynosurus cristatus</i>	7.5	H	0	5	0	4	7	7	7	7	n	2-3	2
	61												
FABACEAE													
<i>Trifolium repens</i>	2.5	H	0	3.5	0	6	8	8	8	8	n	3-5	3
<i>Trifolium pratense</i>	0.5	HT	0	3	0	6	7	4	4	8	n	3-4	2
<i>Trifolium hybridum</i>	2.5	HE	3	3.5	4	3	5	4	4	4	n	2-3	3

<i>Lotus corniculatus</i>	2.5	HT	0	4	7	4	6	4	4	7	n	2-4	3
<i>Trifolium fragiferum</i>	2.0	TH	3	0	4	4	6	4	4	7	n	2-4	2
	10												
CYPERACEAE- JUNCACEAE													
<i>Juncus effusus</i>	1	H	3	4.5	3	0	8	8	8	8	n	2-3	3
<i>Juncus conglomeratus</i>	1.5	H	3	4.5	3	0	8	8	8	8	n	2-3	3
	2.5												
<i>Achillea millefolium</i>	3.5	H	0	4	0	5	7	4	5	6	n	2-4	3
<i>Plantago lanceolata</i>	2.5	HR	0	0	0	0	7	6	6	6	n	2-4	3
<i>Plantago media</i>	2	HR	0	4	8	3	4	8	8	3	n	2-4	2
<i>Prunella vulgaris</i>	2.5	HS	0	0	4	0	9	8	8	4	n	3-4	2
<i>Crepis biennis</i>	2	HR	5	5	6	5	6	2	2	5	n	3-4	3
<i>Taraxacum officinale</i>	1.5	HR	0	5	0	6	8	7	7	7	n	3-5	3
<i>Ranunculus acer</i>	1.5	GR	0	3.5	0	0	6	4	5	1	n	2-4	2
<i>Gallium debile</i>	1.5	HR	3	4	0	3	5	4	4	2	n	2-3	2
<i>Potentilla anserina</i>	1.5	H	3	4	4	0	5	4	4	0	n	2-3	2
<i>Cirsium vulgare</i>	3.5	TH	3	3	0	2	3	8	3	2	n	2-3	3
<i>Eringium campestre</i>	3.5	TH	7	3	8	2	3	6	3	0	n	2-3	3
<i>Veronica chamaedrys</i>	0.5	CH	0	4	0	6	7	6	6	4	n	2-3	2
<i>Rorippa sylvestris</i>	1.5	H-G	3	4	4	4	5	6	6	0	n	2-3	2
<i>Rumex crispus</i>	2.0	H	3	4	0	2	6	4	4	2	n	2-5	2
<i>Teucrium scordium</i>	0.5	Hs	7	8	8	6	3	4	4	4	n	2-3	2
<i>Mentha longifolia</i>	1.5	HG	3	4.5	0	8	5	8	8	0	n	2-3	3
<i>Potentilla reptans</i>	1.5	H	4	3.5	4	4	5	4	6	0	n	2-3	2
<i>Cichorium intybus</i>	2	TH	0	3	0	2	5	7	7	1	n	3-4	3
<i>Centaurea jacea</i>	1.5	H	0	3	0	0	5	4	4	4	n	3-4	2
	36.5												

(B – Bioform, T- Temperature, U-Humidity, R-Soil Reaction, N-Nutrition, C-Tolerance of mowing, P-Tolerance of grazing, S-Tolerance of crushed, VF-Fodder value, H-Hemerobie, UR-Urbanophile, SO-Sozological category)

From ecological point of view phytocoenosis are a meso – higrophil, micro – mesoterme, euriionic, thermal amphiterols. The association is valued from a pastoral point of view as having a mean fodder

value with a pastoral value of 53 by frequency, with support average grasslands is 0.6 - 0.8 UVM / ha.

From agronomic standpoint phytocenoses is tolerant medium mowing, grazing and crushed. The species with a extremely low forage and damaging the vegetation, damaging animal products and toxic is *Cirsium vulgare*, *Eringium campestre*, *Potentilla anserina*, *Juncus sp.*, *Mentha longifolia*, *Rumex crispus*, *Veronica chamaedrys*, *Potentilla reptans*, etc. (Marușca, 2001, Păcurar., Rotar, 2014, Țucra et al, 1987).

CONCLUSIONS

This phytocenosis is characterized by a very good coverage of the soil 95-100%, the participation of over 60% of the Poaceae and 10% of the Fabaceae, so that these grasslands *Agrostis stolonifera* - *Festuca valesiaca* are productive, averaging 1.5-3.5 t / ha DM with a pastoral value of 45-55, which is the middle quality grasslands. After floristic composition determinations and statistical processing has resulted in a grassland supporting a cargo of animals 0.6-0.8 UVM/ha, with a great diversity of species (32 plant species).

REFERENCES

1. Braun-Blanquet J. Pavillard, J., 1928, Vocabulaire de Sociologie ,ed.3, Impr. Lemaire Ardes
2. Borza, Al., Boșcaiu, N., 1965, Introducere în studiul covorului vegetal, Ed. Acad. R. S. R., București
3. Burescu P., 2003, Flora și vegetația zonelor umede din nord-vestul României, ED. Academiei Române, București
4. Groza, Gh., 2008, Flora și vegetația Munților Piatra Craiului, Ed. Risoprint, Cluj Napoca
5. Moga, I., Schitea, Maria, Mateiaș, C.M., 1996, Plante furajere. Editura CERES, București.
6. Moga, I., Schitea, Maria, 2000, Cultura plantelor furajere pentru sămânță. Editura Ceres, București.
7. Moga, I., Schitea, Maria, 2005, Tehnologii moderne de producere a semințelor la plantele furajere. Editura Ceres, București.
8. Marușca, T., 2001, Elemente de gradientică și ecologie montană, Ed. Universității Transilvania, Brașov;
9. Păcurar, F., Rotar, I., Vidican, R., Vaida, I., Mălinaș, A., Stoian, V., 2016, Ecological and agronomical value of *Festuca rupicola* Heuff. Grasslands
10. Păcurar, F., Rotar, I., 2014, Metode de studiu și interpretare a vegetației pajiștilor, Ed. Risoprint, Cluj Napoca
11. Resmeriță, I., 1970, Flora și vegetația potențialului productive pe Masivul Vlădeasa. Editura Acadmiei RSR, București.
12. Teaci, D., 1980, Bonitatea terenurilor agricole. Editura Ceres, București.

13. Timirgaziu, C., 1984, Influența îngrășămintelor azotate asupra producției și calității amestecului de golomăț (*Dactylis glomerata* L.) și trifoi alb Ladino, în cultură irigată. Analele ICCPT, vol. LI.
14. Țucra, I., Kovacs, A., J., Roșu, c., et.al., 1987, Principalele tipuri de pajiști din R.S.R..