

ECOLOGICAL AND AGRONOMICAL VALUE OF TYPE *FESTUCA RUPICOLA* – *BROMUS ERECTUS* GRASSLANDS

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Abstract

In Romania, Festuca rupicola - Bromus erectus is especially representative in the area nemoral. There were studied two grasslands in the Transylvanian Plain. The aim of this study is to evaluate the pastoral value for Festuca rupicola - Bromus erectus. in the hilly region grasslands. At the same time floristic composition were analyzed and a series of ecological indicators or humidity the soil reaction temperature and the nitrogen Other aspects considered were spectra agronomic and anthropic. The grasslands analyzed are situated in the village area of Gheorgheni from Cluj county.

Keywords: grassland, pasture, meadow, ecological spectrum, agronomic spectrum.

INTRODUCTION

Floristic composition of the pastures is a mirror of the action practical of factors applied stational and the management (maintenance work + module usage). The interaction between the orographic factors, climatic and soil factors caused a great diversity of the types of meadows of our country (PACURAR and ROTAR, 2014). The area occupied by a given phytocoenosis may be higher or lower, depending on the specific expansion the stationary conditions, it is also characterized by certain qualities of productivity, quality and specify the measures to improve reaction. Throughout time, the plant species have adapted to to certain

conditions specific to communities forming the the stationary wearing footprint of ecological factors. In these conditions, some species have developed strongly being represented by a large numbers of individuals. Massive participation of a plant in the floristic composition demonstrates that it is ecologically the optimum. Also this species can be interpreted as a bioindicator for the intensity of ecological factors. The same rationale holds for a type of grassland or crop association, which can be either a bioindicator. Bioindicators are sensitive plant species or communities whose spread is closely linked to a particular environmental factor and

react visible changes in the intensity stakeholder. Species or community can be an effective indicator for ecological factor.

Indicator The species gives us some information about the conditions the stationary, semi-natural grassland management and the anthropogenic influence. Based on analysis of of

spectra environmental, agronomic and can establish the natural ecosystem practical at a time, including how to maintain and use. Further we may develop practical management strategy, which will specify the measures for maintenance and usage of pastures. (PACURAR and ROTAR, 2014).

MATERIAL AND METHOD

The abundance-dominance in is estimated using Braun-Blanquet scale, modified three sub-grades and three sub-intervals, resulting in 17 core values corresponding (Fig. 1). once assessed the abundance-dominance in with a certain note, additional specialist have to estimating the index is around the

central or at the lower end of the range, or higher education. There are experienced specialists who appreciate the abundance-dominance in paying per cent, without taking into account any scale estimation. We believe that for them with three sub-note scale is very useful and reduce subjectivity.

Table 1

Scale assessment of abundance and dominance modified three subnote three sub-intervals of Păcurar and Rotar (2014)

Note	Interval coverage (%)	The central value of 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	15 – 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

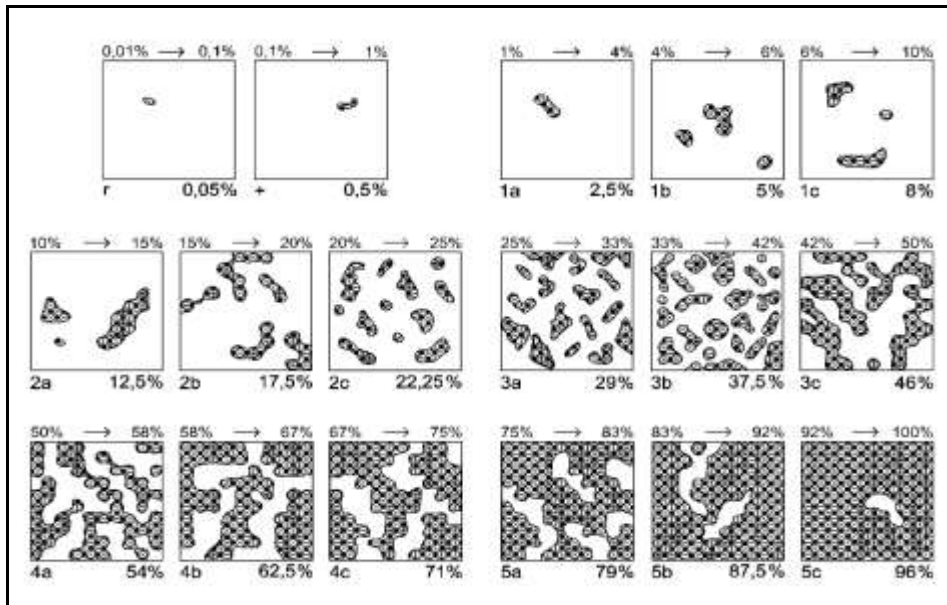


Fig. 1. Scheme appreciation of abundance-dominance after Braun-Blanquet method, using three sub-note

RESULTS AND DISCUSSIONS

In phytocoenosis of the type of greensward *Festuca rupicola* - *Bromus erectus* are present Poaceae 61%, 12.5% and 36.5% Fabaceae plants from other botanical families (AFB). In addition to the dominant the species, *Agrostis stolonifera* noted and as co-dominant species, a 12.5% coverage. Of course Fabaceae the species are present

Trifolium montanum, *Lotus corniculatus*, *Vicia cracca*, *Trifolium panonicum* each with an attendance of 2.5% in vegetation cover (Tab. 1). Among the species from other botanical families, stands out *Filipendula hexapetala* (5%), *Galium verum* (5%) and the remaining of species with a share of between 0,5-2.5%.

Table 2

Floristic composition of the type of grassland *Festuca rupicola* - *Bromus erectus* and specific requirement on ecological, agronomic and anthropogenic (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

Ecological indexes					Agronomical indexes					Anthropogenic indexes			SPECIES	%
B	T	U	R	N	C	P	S	V	S	H	UR			
H	7	3	8	2	7	7	7	4	n	2-3	2	<i>Festuca rupicola</i>	17.50	
HT	5	3	8	3	5	4	4	6	n	2-3	2	<i>Bromus erectus</i>	12.50	
HS	x	6	x	5	9	9	9	7	n	2-5	3	<i>Agrostis stolonifera</i>	12.50	
HT	x	6	x	6	6	4	6	9	n	2-4	2	<i>Festuca pratensis</i>	2.50	
GRs	5	4	7	4	3	6	6	5	n	2-3	2	<i>Brachypodium pinnatum</i>	8.00	
HT	x	5	x	6	8	4	6	9	n	3-4	3	<i>Dactylis glomerata</i>	2.50	
HT	x	x	5	x	7	5	5	4	n	2-4	2	<i>Anthoxanthum odoratum</i>	0.50	
HT	x	5	x	8	7	5	7	6	n	3-6	3	<i>Elymus repens/alongatus</i>	5.00	
-	-	-	-	-	-	-	-	-	-	-	-	POACEAE	61	
-	-	-	-	-	-	-	-	-	-	-	-	CYPERACEAE- JUNCACEAE	0	
HT	x	3	8	2	5	4	4	6	n	2-3	1	<i>Trifolium montanum</i>	2.50	
HT	x	x	x	6	7	4	4	8	n	3-4	2	<i>Trifolium pratense</i>	0.50	
HT	7	3	8	x	6	2	2	8	n	3-4	1	<i>Onobrychis viciifolia</i>	0.50	
HT	x	4	7	4	6	4	4	7	n	2-4	3	<i>Lotus corniculatus</i>	2.50	
HA	x	5	x	6	6	1	2	6	n	3-4	2	<i>Vicia cracca</i>	2.50	
0	0	0	0	0	0	0	0	0	0	0	0	<i>Trifolium panonicum</i>	2.50	
H	5	4	9	3	3	7	-	1	n	2-4	2	<i>Coronilla varia</i>	0.50	
TT	5	4	x	6	6	4	4	7	n	3-4	2	<i>Trifolium campestre</i>	0.50	
ChR s	x	x	x	6	8	8	8	8	n	3-5	3	<i>Trifolium repens</i>	0.50	
-	-	-	-	-	-	-	-	-	-	-	-	FABACEAE	12.5	
ChR s	x	4	x	5	7	4	5	6	n	2-4	3	<i>Achillea millefolium</i>	0.50	
H	7	3	8	3	3	3	3	6	n	2-3	1	<i>Asperula cynanchia</i>	0.50	

HRs	7	4	x	3	4	2	2	4	n	2-3	1	<i>Filipendula hexapetala</i>	5.00
HR	x	x	x	x	7	6	6	6	n	2-4	3	<i>Plantago lanceolata</i>	2.50
HR	x	4	8	3	4	8	8	5	n	2-4	2	<i>Plantago media</i>	2.50
HRs	x	x	x	2	4	4	4	4	n	2-3	2	<i>Campanula rotundifolia</i>	0.50
HRs	6	4	8	4	5	3	3	4	n	2-3	2	<i>Salvia pratensis</i>	2.50
HT	x	5	x	5	8	4	4	4	n	3-5	3	<i>Cerastium holosteoides</i>	0.50
HRs	x	x	x	x	5	4	4	4	n	3-4	2	<i>Centaurea jacea</i>	2.50
HRs	5	5	6	5	6	2	2	4	n	3-4	3	<i>Crepis biennis</i>	2.50
GA	6	x	7	x	4	4	4	5	n	3-6	3	<i>Convolvulus arvensis</i>	0.50
GRs	5	6	7	x	5	9	3	1	n	2-3	1	<i>Colchium autumnale</i>	0.50
HRs	6	4	6	6	4	2	2	4	n	2-4	1	<i>Centaurea nigrescens</i>	2.50
HS	7	8	8	6	3	4	4	4	4	2-3	2	<i>Teucrium scordium</i>	0.50
HRs	5	4	7	6	6	2	2	5	n	3-4	2	<i>Tragopogon pratensis</i>	0.50
HRs	5	4	7	6	6	9	4	1	n	2-3	2	<i>Senecio jacobaea L.</i>	0.50
H	7	3	8	3	-	-	-	4	n	3-4	2	<i>Scabiosa ochroleuca</i>	0.50
HS	x	4	4	x	4	5	5	1	n	2-4	2	<i>Stellaria graminea</i>	0.50
HT	5	4	7	3	5	4	4	4	n	2-3	2	<i>Galium verum</i>	5.00
HS	x	x	4	x	9	8	8	4	n	3-4	2	<i>Prunella vulgaris</i>	0.50
HT	5	4	2	2	7	4	4	2	n	2-5	2	<i>Rumex acetosella</i>	2.50
HRs	6	4	x	4	4	2	4	4	n	2-3	1	<i>Betonica officinalis</i>	2.50
-	-	-	-	-	-	-	-	-	-	-	-	AFB	36.5

From ecological point of view (ecological the spectrum) phytocoenosis are of a meso-xerofilă (Up = 4.12), neutrophil (Rp = 7.29) and oligomezotrophic (Np = 3.88). Grassland ecological character of the type *Festuca rupicola* - *Bromus erectus* is very similar to that of type of grassland *Festuca rupicola* - *Botriochloa ischaemum* (PACURAR et al 2016)

From agronomic standpoint (agronomic the spectrum) phytocenoses is tolerant medium mowing (Cp = 5.93), grazing (Pp = 5.17) and crushed (Sp = 5.37). The spectrum of agronomic phytocoenosis is very similar to that of type of grassland Heuff *Festuca rupicola*. (PACURAR et al., 2016). Fodder value of (VFP = 5.30) type falls within was class V, class and supports average grassland is 0.61 -

0.80 UVM / ha. From agronomic point of view the type in phytocenoses four species are present toxic *Coronilla varia*, *Colchium autumnal*, *Senecio jacobaea*, *Stellaria graminea* coverage cumulative 2%. Animal products is damaging species *Rumex acetosella* coverage of 2.5%. The

species with a extremely low forage and damaging the vegetation missing. Phytocoenosis ballast comprises 13 species, with an aggregate coverage of 47.5%. The species have an average participation of 17%, the best feed of just 1.5% and the excellent fodder of 5%.

Table 3

The spectrum of ecological and agronomic type grassland
Festuca rupicola - *Bromus erectus*

Ecological spectrum	Ecological indices										VIMnp
	1	2	3	4	5	6	7	8	9	x	VIMp
Unp	0	0	6	15	5	3	0	1	0	9	4.30
Up	0	0	34	36	13	15.5	0	0.5	0	8.5	4.12
Rnp	0	1	0	2	1	2	7	9	1	16	6.83
Rp	0	2.5	0	1	0.5	5	17.5	39.5	0.5	41	7.29
Nnp	0	5	7	4	4	10	0	1	0	8	4.35
Np	0	23.5	26.5	15.5	16	13	0	5	0	8	3.88
Spectrum agronomic	Agronom indices										VIMnp
	1	2	3	4	5	6	7	8	9	x	VIMp
Cnp	0	0	4	8	6	8	7	3	2	0	5.61
Cp	0	0	9.5	14.5	25.5	12	29	3.5	13	0	5.93
Pnp	1	6	2	16	3	2	2	3	3	0	4.61
Pp	2.5	13.5	3	36.5	6	10.5	18	3.5	13.5	0	5.17
Snp	0	6	3	15	3	4	2	3	1	0	4.51
Sp	0	13.5	3.5	34	1.5	15.5	22.5	3.5	12.5	0	5.37
VFnp	4	1	0	13	6	7	3	3	2	0	4.95
VFp	2	2.5	0	33.5	21.5	26	15.5	1.5	5	0	5.30

Legend

U	humidity	C	tolerance of mowing	VF	fodder value
R	soil reaction	P	tolerance of grazing	np	the unweighted (depending on the number of species)
N	nutrition	S	tolerance of crushed	p	the weighted (depending on species coverage)

CONCLUSIONS

After the study conducted has been identified the type of grassland *Festuca rupicola* - *Bromus erectus* specific nemoral floor, undergrowth forests of oak and mixed oak (TUCRA et al., 1987). After floristic composition determinations

and statistical processing in Microsoft Excel on that basis has resulted in a grassland with a medium wurze, supporting a cargo of animals 0.61-0.80 UVM / ha, with a great diversity of species, namely a total of 39 plant species.

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