RESEARCHES REGARDING THE EVOLUTION OF THE VEGETATION ON OCCASIONALLY USED GRASSLANDS FROM SURDUCULUI HILLS

STUDII PRIVIND EVOLUȚIA VEGETAȚIEI PE PAJIŞTILE OCAZIONAL FOLOSITE DIN ZONA DEALURILOR SURDUCULUI

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Abstract: *The purpose of this work is to determinate the evolution of the vegetation from occasionally used grasslands from Surducului Hills. The study represents a continuation of the previous researches having in view to set how setting a fluctuation or succession of the vegetation is, following a disturbance of the dynamic balance of the grassland due to some internal or external factors. The results obtained indicate that these grasslands are in an intermediary succession stage, the coverage degree of the valuable species from forager point of view (grasses and legumes) being in decrease during 2008-2009 in comparison with 2002. I change, on all four studied grasslands is noticed an increase of the coverage percent of the species from other botanical families, species from other botanical families more or less valuable as forage.*

Rezumat: *Scopul acestei lucrări constă în a determina evoluția vegetației pe pajiştile ocazional folosite din zona Dealurilor Surducului. Studiul reprezintă o continuare a cercetărilor anterioare, în vederea stabilirii măsurii în care se realizează instalarea unei fluctuații sau a unei succesiuni, ca urmare a perturbării echilibrului dinamic al pajiştii datorită unor factori interni sau externi. Rezultatele obținute indică că aceste pajişti se află într-un stadiu intermediar de succesiune, gradul de acoperire cu specii valoroase din punct de vedere furajer (graminee şi leguminoase), fiind în scădere în anii 2008-2009, comparativ cu anul 2002.În schimb, pe toate cele patru pajişti studiate, se observă o creştere a procentului de acoperire cu specii din alte familii botanice, specii mai puțin sau deloc valoroase ca şi furaje.*

Keywords: *occasionally used grasslands, coverage degree, succession, fluctuation*
Cuvinte cheie: *pajişti ocazional folosite, grad de acoperire, succesiune, fluctuație*

INTRODUCTION

Grassland being an ecosystem is characterised through dynamic phenomena. The internal or external factors are leading to a series of continuous changes determining actions and interactions. The result is the change of the report among species and obviously the disappearance of some species and the appearance of others, determining the features of a new biocoenosis.

The changes that take place in a biocoenose can be reversible or irreversible. In the case that a change that takes place in the vegetation of grassland is reversible, we have a fluctuation, and in the case that the change is irreversible being deeper we have a succession (MOISUC, 2002).

MATERIAL AND METHOD

Permanent grasslands analysed in this work are placed in the east side of Timiş County, in the area of Surducului Hills, in the perimeter of Surducu Mic, Fârdea and Hăuzeşti villages.

The studied material is represented by four grassland types placed at different attitudes and exposures as is following:

1. *Festuca pratensis Huds*. grassland - 123 m

2. *Lolium perenne* şi *Trifolium repens* grassland – 198 m
3. *Poa pratensis* grassland – 260 m
4. *Agrostis capillaris* grassland – 290 m

The altitude where are placed the studied grasslands was determined with a GPS receptor Magellan.

As methods of study of the vegetation it was used the quadrate point method that facilitates the calculation of some indexes of the vegetation as is the coverage index.

The research was realised during two years (2008-2009) and the results obtained were compared with the literature from 2002 considered as control (DURĂU, 2006).

RESULTS AND DISCUSSION

The coverage index of grasses during 2008 – 2009 is highly significant lower in comparison with the data registered in 2002. The coverage index of legumes is significantly lower in 2008 in comparison with the data from 2002, respectively distinctively significant lower in 2009.

Regarding the coverage of the grassland no. 1 with species from other botanical families there is noticed that is highly significant greater in both studied years in comparison with 2002 (table 1).

Table 1

The coverage index of grasses, legumes and species from other botanical families from grassland no. 1

Variant	2002 A%	2008 A%	2009 A%
GRASSES			
Coverage	70	51	50
Relative coverage	100	72.86	71.42
Difference	M	-19	-20
Significance	-	ooo	ooo
LSD	LSD 5%=2.42	LSD 1%=4.34	LSD 0,1%=8.12
LEGUMES			
Coverage	8	4	3
Relative coverage	100	50	37.5
Difference	M	-4	-5
Significance	-	o	oo
LSD	LSD 5%=2.26	LSD 1%=4.05	LSD 0,1%=7.59
OTHER BOTANICAL FAMILIES			
Coverage	22	45	47
Relative coverage	100	204.54	213.63
Difference	M	23	25
Significance	-	xxx	xxx
LSD	LSD 5%=2.42	LSD 1%=4.33	LSD 0,1%=8.11

On grassland no. 2 the coverage of the grasses is distinctively significant lower during 2008 and 2009 in comparison with the year 2002. The coverage index of the legumes is distinctively significant lower in 2008 and 2009 in comparison with 2002.

Referring to the species from other botanical families there can be noticed a coverage index significantly higher in 2008 and 2009 in comparison with the results obtained in 2002, as in the case of grassland no. 1 (table 2).

Table 2

The coverage index of grasses, legumes and species from other botanical families from grassland no. 2

Variant	2002	2008	2009
	A%	A%	A%
GRASSES			
Coverage	65	60	59
Relative coverage	100	92.30	90.76
Difference	M	-5	-6
Significance	-	oo	oo
LSD	LSD 5%=1.92	LSD 1%=3.43	LSD 0,1%=6.41
LEGUMES			
Coverage	9	4	3
Relative coverage	100	44.44	33.33
Difference	M	-5	-6
Significance	-	oo	oo
LSD	LSD 5%=2.42	LSD 1%=4.33	LSD 0,1%=8.11
OTHER BOTANICAL FAMILIES			
Coverage	26	36	38
Relative coverage	100	138.46	146.15
Difference	M	10	12
Significance	-	xxx	xxx
LSD	LSD 5%=2.09	LSD 1%=3.75	LSD 0,1%=7.03

Analysing the coverage with grasses on grassland no. 3 is evidenced that this is lower in the studied period without being significant. The coverage index of legumes in 2008-2009 is lower then in 2002. Regarding the coverage index with species from other botanical families on grassland no. 3 can be noticed that this is distinctively significant higher in the studied period in comparison with the year 2002 (table 3).

Table 3

The coverage index of grasses, legumes and species from other botanical families from grassland no. 3

Variant	2002	2008	2009
	A%	A%	A%
GRASSES			
Coverage	59	57	57
Relative coverage	100	96.61	96.61
Difference	M	-2	-2
Significance	-	-	-
LSD	LSD 5%=2.42	LSD 1%=4.33	LSD 0,1%=8.11
LEGUMES			
Coverage	6	2	3
Relative coverage	100	33.33	50
Difference	M	-4	-3
Significance	-	oo	oo
LSD	LSD 5%=1.21	LSD 1%=2.16	LSD 0,1%=4.05
OTHER BOTANICAL FAMILIES			
Coverage	35	41	40
Relative coverage	100	117.14	114.28
Difference	M	6	5
Significance	-	xx	xx
LSD	LSD 5%=2.42	LSD 1%=4.33	LSD 0,1%=8.11

In table 4 can be noticed that in 2008 and in 2009 the coverage with grasses is significantly lower in comparison with the data registered in 2002.

On grassland no. 4 the coverage of the legumes is significantly lower in 2008 and 2009 in comparison with 2002. The coverage index of the species from other botanical families in 2008 and 2009 is distinctively higher then in 2002 (table 4).

Table 4

The coverage index of grasses, legumes and species from other botanical families from grassland no. 4

Variant	2002	2008	2009
	A%	A%	A%
GRASSES			
Coverage	40	37	37
Relative coverage	100	92.5	92.5
Difference	M	-3	-3
Significance	-	o	o
LSD	LSD 5%=2.09	LSD 1%=3.75	LSD 0,1%=7.03
LEGUMES			
Coverage	5	2	2
Relative coverage	100	40	40
Difference	M	-3	-3
Significance	-	o	o
LSD	LSD 5%=2.42	LSD 1%=4.33	LSD 0,1%=8.11
OTHER BOTANICAL FAMILIES			
Coverage	55	61	61
Relative coverage	100	110.90	110.90
Difference	M	6	6
Significance	-	xx	xx
LSD	LSD 5%=2.09	LSD 1%=3.75	LSD 0,1%=7.03

CONCLUSIONS

In conclusion, on all those four analysed grasslands can be noticed that these are in an intermediary stage of succession.

The management applied on the first three grasslands was defective during the last four years because they were grazed only occasionally. Grassland no. 4 is an exception because it was mown during the last two years ones and before it was used to be harvested twice.

The species from other botanical families have an increased trend of covering from a year to other, there being noticed a beginning of ruderalization through under exploitation or through the seed bank existent in the cultivated land from vicinity.

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