

## OPTIMIZATION OF GRAZING CAPACITY IN TEMPORARY PASTURE CROPS, GRAZED WITH SHEEP, IN HILL AREAS

### OPTIMIZAREA CAPACITĂȚII DE PĂȘUNAT A CULTURILOR DE PAJIȘTI TEMPORARE, VALORIFICATE CU OVINELE, ÎN ZONA DE DEAL

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*The researches performed in the Caransebeș hill area made evident the opportunities of the temporary pasture crops consisted of intensive red clover and perennial graminaceous associations. Each type of the associations studied produced the biggest DM yields under conditions of direct grazing with animals, at an animal load of 2 UVM/ha. The most balanced proportion between legume and graminaceous species (52 : 48%) was obtained in the second year of production, in the variant grazed with 2 UVM/ha.*

**Keywords:** temporary pasture, methods of utilization, dry matter, floristic composition

#### Introduction

Temporary pastures are considered to be a very important loop of the forage area structure, in animal farms. In our country, the temporary pastures enter the rotation system of agricultural crops, having importance as forage, and also an ecologic importance, of compatibility between pasture functions and the concept of durable agriculture (ANGHEL, 1984; CAPȘA, 1984; GHEORGHIU, 1986; MOTCĂ et al., 1994; RAZEC et al., 1993; SAUER, 2004).

#### Materials and Methods

The researches were performed during 1996 – 1999 at S.C.D.O.C. Caransebeș, on an albic luvisoil-type soil, pseudogleyied, slightly acid, moderately supplied with phosphorus and potassium. In order to attain the objectives proposed, the experimental device was consisted of a bifactorial-type experience, with the following variants: A – Method of utilization (a<sub>1</sub>= hayfield, a<sub>2</sub>= grazing – 2 UVM/ha, a<sub>3</sub>= grazing – 4 UVM/ha, a<sub>4</sub>= grazing – 6 UVM/ha) and B – Types of

graminaceous and perennial legume associations ( $b_1 = \textit{Trifolium pratense}$  60% + *Festuca pratensis* 40%,  $b_2 = \textit{Trifolium pratense}$  60% + *Lolium perenne* 40%,  $b_3 = \textit{Trifolium pratense}$  60% + *Phleum pratense* 40%). The grazing was performed with sheep belonging to the breed Țurcana, on fixed parcels, delimited with electric fence.

During the vegetation periods, we performed determinations and analyses on dry matter yield, floristic composition and forage quality.

### Results and Discussion

The simple graminaceous and perennial legume associations, destined for temporary pastures, are intensive crops, which require certain crop and utilization technologies. To establish the floristic composition of the simple associations, the most important criterion is represented by species and variety selection.

Table 1  
Productivity of temporary pastures consisted of simple perennial graminaceous and red clover associations  
(Mean of the years of production, 1997 - 1999)

Variant	Herbage t/ha	Dry matter			Significance
		t/ha	Diff t/ha	%	
<i>Trifolium pratense</i> (12 kg/ha) + <i>Festuca pratensis</i> (15 kg/ha)	32,26	6,80	0,04	100,6	
<i>Trifolium pratense</i> (12kg/ha) + <i>Lolium perenne</i> (15 kg/ha)	27,72	5,86	-0,90	86,7	0
<i>Trifolium pratense</i> (12 kg/ha) + <i>Phleum pratense</i> (15 kg/ha)	36,28	7,62	0,86	112,7	*
MEAN	32,08	6,76	-	100	
	DL 5%=0,80	DL1%=1,32		DL0,1%=2,12	

The mean results achieved in the three years of production made evident some differences between the dry matter yields obtained in the three types of associations studied (Table 1). So, the association consisted of *Trifolium pratense* 60% + *Phleum pratense* 40% is on the first position, with a mean yield of 7.62 t/ha DM, 12.7% (significantly) bigger than the mean of all variants. The smallest yield, of only 5.86 t/ha DM, was obtained in the association consisted of *Trifolium pratense* 60% + *Lolium perenne* 40%.

Regarding the method of utilization of the pastures studied, we observed that the intense grazing on perennial graminaceous and red clover associations, with an

animal load bigger than 2 UVM/ha, leads to a permanent DM yield reduction compared with the variant used as hayfield (Table 2). In this viewpoint, the variant with a smaller load, of 2 UVM/ha, produced the biggest yield, being 21.2 % bigger than in the variant used for cutting (as hayfield).

Table 2

Influence exerted by the method of utilization of temporary pastures consisted of simple perennial graminaceous and *Trifolium pratense* associations, on the dry matter yield  
(Mean 1977 - 1999)

Method of utilization	t/ha	Diff t/ha	%	Significance
Hayfield	6,83	-	100	
Grazing – 2 UVM/ha	8,28	1,45	121,2	*
Grazing – 4 UVM/ha	6,12	-0,71	89,6	
Grazing – 6 UVM/ha	5,02	-1,81	73,5	0

DL5%=1,33

DL1%=2,01

DL0,1%=3,24

Table 3

Influence exerted by the interaction association type x method of utilization on the dry matter yield (men of the years of production)

Association	Method of utilization	t/ha	Diff t/ha	%
<i>Trifolium pratense</i> + <i>Festuca pratensis</i>	Hayfield	7,10	-	100
	2 UVM/ha	8,29	1,19	116,7
	4 UVM/ha	6,89	-0,21	97,0
	6 UVM/ha	5,73	-1,37	80,7
<i>Trifolium pratense</i> + <i>Lolium perenne</i>	Hayfield	5,95	-	100
	2 UVM/ha	7,55	1,60	126,9
	4 UVM/ha	6,43	0,48	108,1
	6 UVM/ha	5,62	-0,33	94,4
<i>Trifolium pratense</i> + <i>Phleum pratense</i>	Hayfield	7,67	-	100
	2 UVM/ha	8,66	0,99	112,9
	4 UVM/ha	6,87	-0,80	98,5
	6 UVM/ha	5,84	-1,83	76,5

The study of the interaction between the factors studied leads to the conclusion that all three types of association produced bigger DM yields, under conditions of grazing with an animal load of maximum 2 UVM/ha (Table 3). In this grazing variant, the yield growths were, on the average, 12.9 – 26.9 % bigger than in the variant used as hayfield.

From the viewpoint of the evolution of pasture floristic composition, we observed that the initial seeding proportion (60% legume : 40% graminaceous) has suffered essential changes during the years of vegetation (Table 4). So, in the first

year of production, red clover had a mean participation of 86%, and in the third year it decreased to 22%. In the second year, we obtained the most balanced proportion between legume and graminaceous species (52 : 48%). Also, in all types of associations studied, the best proportion between legume and graminaceous species was obtained in the variants grazed with a load of 2 UVM/ha.

Table 4

Evolution of floristic composition of temporary pastures, according to the type of association and method of utilization (1997 - 1999)

Method of utilization	Types of association	Year I		Year II		Year III		Mean	
		G	L	G	L	G	L	G	L
Hayfield	<i>Trifolium pratense</i> + <i>Festuca pratensis</i>	9	91	23	77	67	33	33	67
	<i>Trifolium pratense</i> + <i>Lolium perenne</i>	16	84	35	65	69	31	40	60
	<i>Trifolium pratense</i> + <i>Phleum pratense</i>	19	81	40	60	63	37	41	59
Grazing 2 UVM/ha	<i>Trifolium pratense</i> + <i>Festuca pratensis</i>	11	89	50	50	76	24	46	54
	<i>Trifolium pratense</i> + <i>Lolium perenne</i>	15	85	45	55	73	27	44	56
	<i>Trifolium pratense</i> + <i>Phleum pratense</i>	17	83	42	58	75	25	45	55
Grazing 4 UVM/ha	<i>Trifolium pratense</i> + <i>Festuca pratensis</i>	14	86	66	34	82	18	54	46
	<i>Trifolium pratense</i> + <i>Lolium perenne</i>	15	85	62	38	83	17	53	47
	<i>Trifolium pratense</i> + <i>Phleum pratense</i>	19	81	60	40	85	15	55	45
Grazing 6 UVM/ha	<i>Trifolium pratense</i> + <i>Festuca pratensis</i>	12	88	72	28	88	12	57	43
	<i>Trifolium pratense</i> + <i>Lolium perenne</i>	13	87	68	32	90	10	57	43
	<i>Trifolium pratense</i> + <i>Phleum pratense</i>	12	88	64	36	91	9	56	44
MEAN		14	86	52	48	78	22	48	52

### Conclusions

The utilization for grazing of the temporary pastures consisted of simple red clover and perennial graminaceous associations is superior compared with the utilization as hayfield.

The optimal grazing load is 2 UVM/ha and leads to a yield that is 1.45 t/ha (21.2%) bigger than in the variant used as hayfield.

### References

1. Anghel Gh., 1984 – *Pajiștile intensive* (realizări și perspective). Ed. Ceres, București.
2. Capșa I., 1984 – Cercetări privind productivitatea unor pajiști semămate sub influența diferitelor metode de folosire în bazinul Caransebeș. *Teză de doctorat. I. A. București.*
3. Gheorghiu T., 1986 – Productivitatea unor conveiere de pajiști semămate, exploatate prin pășunat. *Lucr. Șt. SCDCP Brașov, vol. XI, 227 – 234.*
4. Motcă și colab., 1994 – *Pajiștile României. Tipologie și tehnologie*. Ed. Tehnică Agricolă, București.
5. Razec I. și colab., 1993 – Calitatea unor amestecuri simple de graminee și leguminoase perene de pajiști. *Lucr. Șt. USAMV Iași, Seria Agricultură, 40 – 44.*
6. Sauer Maria, 2004 – Cercetări privind influența unor factori tehnologici asupra pajiștilor temporare din zona Caransebeș. *Teză de doctorat. USAMVB Timișoara.*