

PALATABILITY OF GRASSES AND GRAZING ON HUNGARIAN GRASSLAND

Z. Barcsák, I. Kertész, L. Szemán

Gödöllő University of Agricultural Sciences /GATE/, Gödöllő, 2103

ABSTRACT

Grasslands provide the most basic and cheapest forage diet for cattle. The palatability studies were carried out on pure and mixed swards sown in 1990 on the GATE experimental farm. The studies involved the following 12 species: *Lolium perenne*, *Trifolium repens*, *Festuca arundinacea*, *Festuca rubra*, *Poa pratensis*, *Festuca pratensis*, *Bromus inermis*, *Phalaris arundinacea*, *Lotus corniculatus*, *Agropyron cristatum*, *Dactylis glomerata* and a mixed sward.

During the study the morning and afternoon grazings were investigated with the involvement of 60 Limousin cattle.

The following observations were made:

1. On the basis of our ethological observations regarding the bite rates the animals found the *Agropyron cristatum*, *Trifolium repens*, *Dactylis glomerata*, *Bromus inermis*, *Poa pratensis* and *Festuca pratensis* to be very palatable in the first part of the five-day observation period. Besides their favourite grass species the animals grazed mixed swards as well.
2. According to our observations the animals did not show preference to *Lolium perenne*, *Festuca arundinacea*, *Phalaris arundinacea* and *Festuca rubra* species.
3. The palatability was found to be affected by the following factors:
 - the general appearance and morphological characteristics of the plants (should not be rough)
 - the dry matter content of the plant should be appropriate
 - the crude fibre content of the plant and the indigestible lignin accumulation
 - the favourable effect of tannic acid content in the plant
4. Besides the large herbage mass produced the grass should also be palatable.

KEYWORDS

Palatability, grassland species, grazing, Limousin cows, bite rate

INTRODUCTION

It is the herbage yield and feed values of the grass species which tend to be taken into consideration in planning the establishment of swards. Studies, however, were also carried out over the last decade to investigate the palatability of different grassland species with the involvement of grazers. Investigations were performed on pure swards and the observations were mainly based on the bite rates or the time spent on the given area. The most important aim of this experiment is to underline the importance of the palatability of grasses besides other factors like herbage yield and feed value in establishing swards, oversowing or improvement of natural grasslands.

The results of the palatability studies carried out on grass species showed that in the case of both cattle and sheep there were species that were best favoured besides the ones towards which an average preference was shown in both early and late developmental stages. Some species were favoured in the early developmental stages rather than their late developmental stages and vice versa, while some were rejected irrespective of the developmental stage.

METHODS

The investigation to study the palatability of the following 12 grassland species were carried out in Gödöllő, 1989 autumn, in brown forest soil in 0.5 ha paddocks per species:

1. *Lolium perenne*

2. *Trifolium repens*
3. *Festuca arundinacea*
4. *Festuca rubra*
5. *Poa pratensis*
6. *Festuca pratensis*
7. *Bromus inermis*
8. *Phalaris arundinacea*
9. *Lotus corniculatus*
10. mixed swards (*Poa pratensis*, *Lolium perenne*, *Lotus corniculatus*)
11. *Agropyron cristatum*
12. *Dactylis glomerata*

In each case in 1991 and 1992 the grazing was carried out by a Limousin herd of 60 animals. Of the cows six were observed on the basis of their ear tag numbers and other easily visible markers. During the grazing the morning and afternoon bite rates were recorded. Grazing rates were also measured over a period of 30 minutes. Calculations were made on the basis of six half-hours grazing time for both the morning and afternoon grazings.

RESULTS AND DISCUSSION

The highest total herbage yields were found to be produced by *Trifolium repens*, *Dactylis glomerata* and *Lotus corniculatus*, while the lowest by *Poa pratensis* and *Phalaris arundinacea*.

The palatability studies involving Limousin cows showed, on the basis of the number of bites during the first hour of grazing, that the highest preference was shown towards the mixed swards (*Festuca pratensis*, *Bromus inermis*, *Trifolium repens*, *Lotus corniculatus*), *Dactylis glomerata*, *Lotus corniculatus*, *Festuca pratensis* and *Trifolium repens* in their respective monocultures. No preference was shown towards *Phalaris arundinacea*, *Festuca rubra* and *Festuca arundinacea*. Based on the results of the two-year study the twelve species were ranked in order of palatability.

By using the bite rate figures (Table 2) it was calculated that there were an average of 3281 bites during the 2.5-3 hours of the morning grazing. The animals started with a high bite rate in the afternoon grazing, which then substantially decreased in every half an hour and in about three hours with 2436 bites the animals reached satiety. According to our experimental results the grazing rates and bite rates during both the morning and afternoon grazings show a steadily decreasing tendency which can be accounted for by the fact that grazing requires a substantial amount of work and therefore the animals get tired. The bite mass was found to be an average of 9.4 g for the Limousin breed.

The results of palatability studies are worth considering when establishing swards and oversowing and use it as an additional parameter besides the average herbage yield and feed value to decide which species are to be included in the swards.

REFERENCES

- Barcsák, Z. and I. Kertész** 1984. Termesztett gyepnövények termelési vizsgálata és legelési (ízletességi) sorrendjének alakulása. Mg. Tud. napok, Gödöllő, p. 174.
- Barcsák, Z.** 1985. Melyik fű az ízletesebb? Magyar Mezőgazdaság, Budapest, 40/25. p. 18.
- Barcsák, Z., L. Szemán and J. Tasi.** 1986. A műtrágyázás hatása a

gyepek termésére, táplálóanyag tartalmára és ízletességére.
Tudományos Tanácskozás, Gödöllő, pp. 73-74.

Barcsák, Z. and T. Kispál. 1990. Palatability examination of Grasses. Banska Bystrica, European grassland federation, Volume II. pp. 281-285.

Szeman, L. 1990. Domb es hegyvideki gyepek termokepessegenek javitási lehetosegei. Kandidatusi ertekezes, Gödöllő, p. 6-144.

Table 1

The results of palatability studies involving different grassland species with Limousin cows

Grassland species	average number of bites per hour								
	1991			1992			2 years average		
	bites	%	grading	bites	%	grading	bites	%	grading
1. <i>Lolium perenne</i>	43	4.00	10.	38	2.80	12.	41	3.40	12.
2. <i>Trifolium repens</i>	92	8.60	7.	85	6.30	11.	89	7.30	8.
3. <i>Festuca arundinacea</i>	18	1.70	11.	111	8.20	6.	65	5.40	10.
4. <i>Festuca rubra</i>	13	1.20	12.	88	6.50	8-9.	51	4.20	11.
5. <i>Poa pratensis</i>	128	12.00	2.	86	6.30	10.	107	8.80	6.
6. <i>Festuca pratensis</i>	102	9.60	5.	113	8.30	5.	108	8.90	5.
7. <i>Bromus inermis</i>	98	9.20	6.	88	6.50	8-9.	93	7.70	7.
8. <i>Phalaris arundinacea</i>	66	6.20	9.	93	6.90	7.	80	6.60	9.
9. <i>Lotus corniculatus</i>	127	11.90	3.	139	10.30	4.	133	11.00	3.
10. mixed swards	196	18.40	1.	192	14.20	1.	194	16.00	1.
11. <i>Agropyron cristatum</i>	102	9.60	4.	147	10.80	3.	145	11.90	2.
12. <i>Dactylis glomerata</i>	81	7.60	8.	177	13.10	2.	129	10.70	4.
Total	1065	100.00	-	1356	100.00	-	1211	100.00	-

Note:

a) dry plot, the sward is established in 1989

b) grazing took place in May, June and July

Table 2

Grazing rate (number of bites) for Limousin cows in the morning and afternoon grazings as the average of the two years

(Gödöllő, 1991-92 I., II., and III. cuts)

Grazing time	Number of bites					
	morning		afternoon		total	
	bites	%	bites	%	bites	%
	779	23.7	961	39.4	1740	30.4
	949	28.9	734	30.1	1683	29.4
	710	21.6	550	22.6	1260	22.0
	591	18.0	191	7.8	782	13.7
	232	7.1	-	-	232	4.1
	20	0.6	-	-	20	0.3
Total	3281	100.0	2436	100.0	5717	100.0
%	57.4		42.6		100.0	

Note:

a) the grazings were carried out in 12 different sown swards

b) the grazings took place in the morning from 7-10 and in the afternoon from 15-17:30