

Effect of intensity of grassland management on chemical composition and content of structural saccharides in forage

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Introduction Forage quality has a crucial effect on animal performance and on grassland management. This paper contributed information on the effects of different methods of grassland utilisation in the Czech Republic.

Material and methods The experiment examined four methods of utilisation: intensive (4 cuts/ year – first on 15 May, followed by cuts at 45d intervals), middle intensive (3 cuts/ year – first on 30 May followed by cuts at 60d intervals), low intensive (2 cuts/ year – first on 15 June with a further cut after 90d), extensive (2 cuts/ year – first on 30 June with a further cut after 90 days). Each method of utilisation was divided with four levels of fertiliser (without fertiliser, P₃₀K₆₀, N₉₀P₃₀K₆₀, N₁₈₀P₃₀K₆₀). There were four replicates of each treatment. The FIBERTEC 2023 FIBERCAP FOSS TECATOR was used to analyse a structural fibre. The dominant species in the permanent sward were *Dactylis glomerata*, *Poa pratensis*, *Lolium perenne*, *Trifolium repens* and *Taraxacum*.

Results Average values for contents of crude protein and fibre are given in Table 1. The content of crude protein fell with reduced intensity of utilisation and cutting frequency in line with the results of Gaisler & Fiala (2003). Averaged across fertiliser treatments the content of crude fibre increased from 223 to 306 g/kg DM as intensity of utilisation fell in line with results of Pozdíšek *et al.*(2003) for different species of grass and red clover. With intensive utilisation the neutral detergent fibre (NDF) content averaged 486 g/kg DM compared with 598 g/kg DM for extensive utilisation, whilst the respective figures for ADF were 304 and 368 g/kg DM. The significance of differences between treatments is indicated in Table 2. This stresses the large impact of method of utilisation and the substantial effect of fertiliser on crude protein content.

Table 1 Mean values of crude protein and fibre for the different treatments (g/kg DM)

Var.	1A	1B	1C	1D	2A	2B	2C	2D	3A	3B	3C	3D	4A	4B	4C	4D
CP	168	164	183	199	150	153	161	182	116	113	131	127	102	113	122	126
CF	221	226	224	221	241	245	243	241	277	305	292	308	308	292	305	318
NDF	485	476	488	495	509	516	524	513	566	572	558	602	594	566	606	627
ADF	297	290	321	307	322	317	323	314	356	363	349	355	377	365	356	376

Legend: 1 - Intensive 3 - Low intensive A – zero fertiliser C – N₉₀PK fertiliser
 2 - Middle intensive 4 - Extensive B – PK fertiliser D – N₁₈₀PK fertiliser

Table 2 Dual-factorial variance of treatments in relation to crude protein and fibre ($\alpha=0,01$; F-values)

	d.f.	CP	CF	NDF	ADF
Utilisation	3	221.30 ⁺⁺	190.23 ⁺⁺	207.28 ⁺⁺	102.18 ⁺⁺
Fertiliser	3	32.16 ⁺⁺	2.08 ⁻	10.15 ⁻	0.46 ⁻
Residuum		67.21	135.96	207.09	144.74

Conclusions These results confirm the large impact of method of utilisation (cutting frequency) on the contents of crude protein and fibre in grassland forage. Fertiliser application increased crude protein content.

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