

Pasture yield and sward intake by suckler cows in the extended grazing season

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Introduction

Recent advancements in grazing management have shown opportunities to extend the grazing season in late autumn (Hennessy *et al.* 2006). The increase in the grazing season length will have profound effect on the overall system through reducing the quantity of slurry to be stored, reduction in the quantities of silage and hay required for winter feeding and reductions in the energy associated with sward harvesting and conservation. Also, in Central Europe the extending of grazing season has become highly desirable in the recent years (Opitz v. Boberfeld *et al.* 2006; Skladanka *et al.* 2010), because it can reduce the cost of cattle keeping.

The aim of this study was to evaluate the influence of late autumn and early winter grazing of suckler cows on pasture yield, residual mass, sward utilization rate and sward intake.

Methods

The experiment was established in August 2010 on semi-natural lowland pastures at the Brody Experimental Station of PULS (52°26'N; 16°18'E; 92.0 m a.s.l.; long-term average annual rainfall 601 mm, and average air temperature 8.3°C) located on mineral soil, fertilized at the level of 50 kg/ha N, 40 kg/ha P₂O₅ and 60 kg/ha K₂O applied in spring. In 2010, 2011 and 2012, three paddocks each 1200 m² were prepared for rotational grazing of suckler cows. The fenced experimental area (3600 m²) was pre-utilized each year by grazing of suckler cows during one week at the beginning of August. According to previous experiences, this method was found to be the best for stabilization of the botanical composition of winter pasture (Golińska and Goliński 2005). After that, the sward was allowed to re-grow until autumn/winter period. The 5 experimental cows were Angus and Angus × Limousine hybrids with body weight ranging from 460 to 520 kg and were grazing the sward of each paddock in the last weeks of October, November and December. In 2010, from the beginning of December until the first days of January, severe winter conditions occurred with about 20 cm snow cover. This was the reason that in 2010, the last grazing was carried out in the third week of January. Forage from the pasture was the only feed the cows received. During the day, the animals were on the pasture, and during the night – in the barn where fresh water and barley straw was offered.

Table 1. Pasture sward yield, residual mass and sward utilization rate in the extended grazing season. LSD at $P < 0.05$

Year	Date of grazing	Before grazing (t/ha DM)	Residual mass (t/ha DM)	Sward utilization rate (%)
2010	October	2.010	0.377	81.2
	November	1.926	0.401	79.2
	January	1.750	0.386	77.9
	LSD	0.115	ns	-
2011	October	2.806	0.736	73.8
	November	3.479	1.201	65.5
	December	2.750	0.884	67.9
	LSD	0.438	0.186	-
2012	October	2.268	0.481	78.8
	November	1.752	0.583	66.7
	December	1.702	0.478	71.9
	LSD	0.301	ns	-

Before grazing of each paddock, in ten randomly selected plots (1m × 2m), sward yield (measured on the total area of 20 m²) were determined. After grazing of each paddock, the residual mass yield, sward utilization rate as well as sward intake per cow were evaluated. Tests of the main effects were performed by F-test. Means were separated by LSD and were declared different at $P < 0.05$. Generally, years were considered separately in the statistical model due to the great importance of weather conditions during late autumn and early winter.

Results

The dry matter yield of pasture before grazing showed significant variations between grazing periods in the years of investigations. The highest sward yield at the beginning of the grazing was recorded in November 2011 (Table 1), which can be attributed to very good weather conditions for the vegetation. Sward utilization rate of the pasture, which in rotational management is largely determined by the target residual DM to be left at the end of the grazing period relative to the forage mass at the beginning of the grazing period, throughout the trial was significantly greater in 2010 (79.5%) than in 2012 (72.5) and 2011 (69.0%). The highest utilization rate was observed in

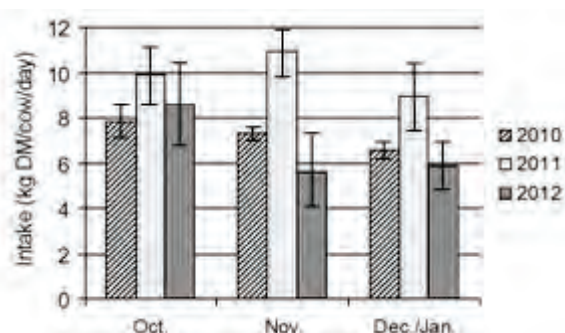


Figure 1. Sward intake by suckler cows in the extended grazing season.

October 2010 (81.2%) and the lowest – in November 2011 (65.5%). Climatic conditions of Central Europe fluctuate much more than of the Atlantic climate. This is reflected also in annual fluctuations of the yield of the pasture sward and its utilization rate. In general, the yield of sward before grazing was better in 2011 than in 2010 and 2012. A delayed utilization of herbage mass is generally connected with a decrease in forage quality due to the advanced stage of maturity (Opitz v. Boberfeld *et al.*, 2006).

The sward intake was highly influenced by weather conditions in the experimental years. Good availability of the pasture sward in November 2011 connected with high yield and favourable weather conditions were the reasons for the highest sward intake by suckler cows in this grazing period (Fig. 1). In January 2011, the sward intake was 17.4% lower in comparison with November 2011. In 2010, the sward intake decreased during the extended grazing season from 7.8 to 6.5 kg DM per cow and day. The lowest sward intake was recorded in November 2012 at the level of 5.6 kg DM/cow/day. Skládanka (2010) reported that, under climatic conditions of the Czech Republic, the grazing period can be extended to the beginning of where,

depending on weather conditions in individual December. The same situation occurred in West Poland years, the extending of grazing season until the end of year is possible. In some cases, the lasting snow layer limited the utilization of the autumn regrowth as winter pasture for suckler cows.

Conclusion

In the western part of Poland the extending of grazing season in a pasture feeding of suckler cows is possible until December. The effects of extended grazing season on decrease of sward yield and sward intake, particularly by grazing in early winter, should be taken into consideration.

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