

Productivity and floristic diversity of a continuous grazing system on short swards in mountainous regions of Austria

Poetsch E.M.¹, R. Resch¹, J. Haeusler¹ and A. Steinwider¹
¹Research and Education Centre for Agriculture, Raumberg-Gumpenstein, Austria



Introduction

Grazing has since ever been a traditional part of grassland and dairy farming in mountainous regions. After a long period of increasing indoor feeding a **recurrence of grazing** stimulated by both cost pressure and rising demands on animal welfare can be noticed. **Continuous grazing on short swards** is seen as an intensive system concerning mechanical and ecological stressing of grassland. **Austrian farmers cast mayor doubts** on a successful implementation of this grazing system.

Material & Methods

- ◆ From 2004 to 2009, experiments with continuous grazing on short swards were conducted at the AREC Raumberg-Gumpenstein, which is located in the Austrian production area “Hochalpen”



- ◆ The field experiment was carried out on two pastures with dairy cows. The size of the grazing area was adjusted depending on the actual yield growth rate

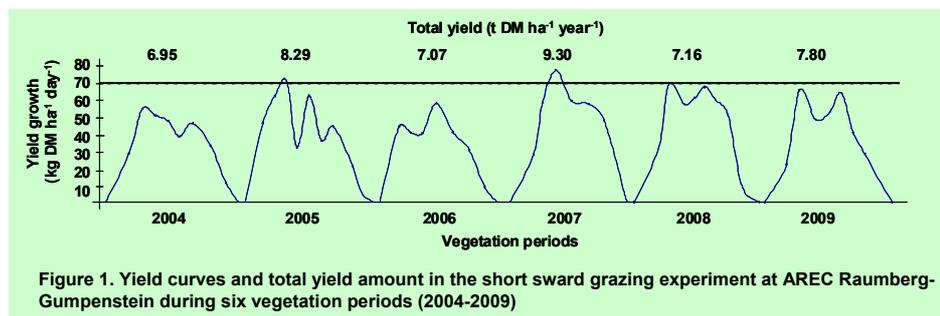
- ◆ Yields were estimated using (i) a plate pasture meter, (ii) a yard stick and (iii) simulated grazing plots



- ◆ Forage was analysed for DOM, energy concentration and crude nutrients, the botanical composition of the pasture was observed by periodically plant surveys

Results

- ▶ The yield growth curves for six vegetation periods presented in Figure 1 originate from the **simulated grazing** plots of the experiment which were cut 7 to 9 times year⁻¹



- ◀ The maximum **daily growth rate** was achieved in 2007 with a maximum of 76 kg DM ha⁻¹ day⁻¹

- ◀ **Total yield** varied between 6.95 and 9.3 t DM ha⁻¹ year⁻¹ which can be called sufficient and a normal oscillation in grassland productivity in mountainous regions of Austria

Table 1. Forage quality of short sward pastures and of simulated grazing areas (average data of 2004-2009)

| | % FM | % DM | % | kg DM ⁻¹ | |
|------------------------------|-------------------|-------------------|-------------------|---------------------|-------------------|
| | DM | Crude protein | Crude fibre | Crude ash | |
| Short sward grazing (n = 80) | 15.6 ^a | 20.8 ^a | 20.4 ^a | 10.5 ^a | |
| Simulated grazing (n = 82) | 14.5 ^b | 22.0 ^b | 19.3 ^b | 11.0 ^a | |
| | | | | dOM | MJ NEL |
| | | | | 74.7 ^a | 6.25 ^a |
| | | | | 75.3 ^a | 6.30 ^a |

- ◀ **Forage quality** of both systems tested in the project was high with a low content of crude fibre indicating an early date of utilisation (Table 1).

- ▶ **Digestibility of organic matter** reached more than 74% resulting in an **energy concentration** of about 6.3 MJ NEL kg DM⁻¹ which is an excellent basis for high milk performance
- ▶ On all tested plots the **projective coverage of the vegetation** has reached the maximum of 100% at the end of the observation period. The **number of different species** ranged between 21 and 26 indicating a significant lower floristic diversity compared with extensively used grassland types in Austria

Conclusions

- The findings of the presented experiment indicate that even under unfavourable climatic conditions in mountainous areas **continuous grazing on short swards can result in high yield amounts and excellent forage quality** without any negative botanical impact on the grassland eco-system.
- The data and results obtained from the simulated grazing system were quite consistent with those of the real grazed areas.