Milk production performance based on grazed grassland in Switzerland

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Introduction A common feature of profitable dairy systems is the use of large amounts of low cost feed. One approach to improve the competitive ability of the dairy production therefore is to promote grazing (Dillon *et al*., 1995). A comparison of the actual feeding costs on typical Swiss dairy farms showed that hay and grass silage were four times and concentrates seven times more expensive than grazed grass. A maximum utilisation of grazed grass can be achieved with a seasonal production system, which synchronises the cow's feed requirements with pasture growth. This strategy was implemented and consistently optimised on an experimental farm. The aim was to focus more on the achieving of a high yield per hectare and high feed conversion efficiency rather than high yields per cow.

Materials and methods On a typical site in the Swiss plains the productivity of a dairy production system with maximum proportion of grazing was studied over three years (April 2001 to March 2004). The experimental herd consisted of 14 Red Holstein and 2 Jersey cows with an average live weight of 592 kg/cow. After an average calving date in mid February continuous grazing started at the end of March and lasted until mid November. The experimental land for grazing and winter feed consisted of 6.0 ha grassland, of which 63 % was sown grass legume leys (sown in 2000) and 37 % was permanent grassland (with 33 % *Agrostis stolonifera*). Grass production was measured over the 3-year period, using the method described by Corrall and Fenlon (1978).

Results On average over the three years 14,291 kg ECM/ha were produced which clearly surpassed typical values from conventional Swiss dairy farms. Total grass production was 13.5, 12.0 and 10.9 t DM/ha per year for 2001, 2002 and 2003, respectively (Figure 1). The overall stocking rate on pastures was 2.5 cows/ha during the first two years and 2.0 cow/ha in the extremely dry year 2003. On a dry matter basis, the yearly average ration consisted of 65.7 % grazing, 27.6 % grass silage plus hay and only 6.7 % or 405 kg DM/cow per year concentrates (Table 1).

Table 1 Productivity of the seasonal production system based on grazed grass

Year	2001	2002	2003
overall stocking rate (cows/ha)	2.44	2.48	1.99
grass silage & hay (t DM/ha/yr)	4.4	4.0	3.1
concentrates & potatoes (t DM/cow/yr)	0.42	0.38	0.41
Estimated intake on pasture (t DM/ha/yr)	8.8	9.3	9.2
Performance			
- kg ECM/cow/yr	6'746	6'817	7'826
- kg ECM/ha/yr (incl. conc. & potatoes)	16'461	16'907	15'574
- kg ECM/ha/yr from grassland (excl. conc. & pot.)	14'859	15'451	14'301

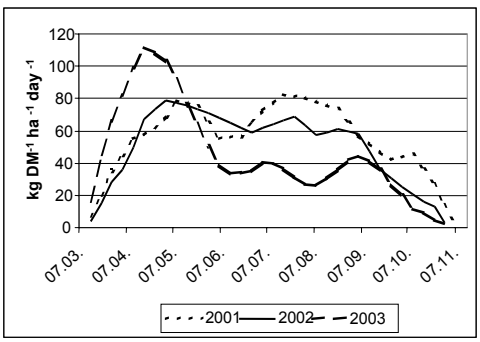

Figure 1 Daily herbage growth rates on the pastures (487 m altitude; 1451, 1289 and 795 mm annual rainfall for 2001, 2002 and 2003, respectively)

Conclusions The full grazing system with seasonal calving end of winter proved to be highly productive under Swiss valley conditions. More than 14'000 kg ECM/ha/yr can be produced on pastures with an annual yield of 12.5 t DM/ha (70 % grazed and 30 % conserved forage).

References

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