Animal production from dairy breed steers at extensively managed grasslands in riverside areas

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Abstract

In Denmark, some of the grasslands in marginal areas are abandoned for agricultural use—grasslands that it is of interest to preserve because they have a high actual or potential natural quality when managed with extensive grazing or cutting. A comparison was carried out for three years on sward productivity and weight gain of the steers at two grazing intensities (490 kg ha^{-1} *vs.* 920 kg ha^{-1}) on wet semi-natural grassland. The daily weight gain of steers was on average 667 g at low and 477 g at high grazing intensity. Sward gross yield as dry matter (DM) production was on average 4.1 Mg DM ha^{-1}, with no significant difference found between the two grazing intensities. *In vitro* organic matter digestibility (IVOMD) was respectively 56.4 and 53.0 at high and low grazing intensity. It is concluded that the variation in sward productivity and sward composition between years and grazing intensities was reflected in the production of the steers.

Keywords: Extensive grazing, steers, grazing intensity, sward quality, animal production

Introduction

To make more farmers interested in nature conservation aspects it is important to have information about the productivity of swards and the expected meat production during a grazing season. In nature management beef cattle or sheep are often the preferred grazing animals on the low quality swards. However, in Denmark there is a greater availability of bull calves from dairy breeds and, therefore, it is of interest to know how steers from dairy breeds can be used in nature management. On low-productive wetlands such steers will need two grazing seasons and a finishing period before slaughtering. Here, however, we only focus on first year steers.

Materials and Methods

Grazing was carried out from 1997 onwards in a three-year period with Holstein-Friesian steers, from late May to the beginning of October, and the area for grazing was doubled in mid summer, after half of the paddock was cut for hay in July. Grazing was at either high (4.6 steers (166 kg at the beginning of the grazing season)) or low grazing intensity (2.3 steers (166 kg)), aiming at 6 cm at high intensity measured as compressed sward height (CSH). Six times during the growing season measurements of plant production in enclosed areas were carried out as well as quality of sward cut at 2 cm. Growth of steers was followed through monthly weight recordings. Hald (2000) described the botanical composition of the paddocks, which had not been fertilized since 1989.

Results and Discussion

The actual grazing height (CSH) at respectively high and low grazing intensity was 4.9 cm and 8.2 cm. The DM production of 4.1 Mg per ha did not differ significantly between the two grazing intensities, but in vitro organic matter digestibility (IVOMD) was significantly higher at high than at low grazing intensity (figure 1). The average daily weight gain for steers was significantly higher at low than at high grazing intensity (figure 1), due to more selection of high quality feed at low than high grazing intensity. A reduction in the relative importance of nematode infections at low grazing intensity (Thamsborg, 2000), could also have influenced the live weight. The weight gain per ha was respectively 317 kg and 221 kg at high and low grazing intensity calculated for the total area including the area with a first cut in July. DM production in hay in half of the paddock was 2.6 Mg ha^{-1}. There was a significant lowering of the production through the years of the experiment; both concerning DM production and weight gain of the cattle. Also, the quality of the sward became significantly reduced through the three years. These changes may be explained by the changes in botanical composition, in

general there was a reduction of cultivated grassland species through the experimental period. Some of the natural species have a lower productivity or a lower quality than the sown species. Especially the content of species with a low digestibility such as *Juncus effuses* L., *Juncus conglomerata* L. and *Descampsia caespitosa* (L.) Beauv. increased during the three-year period.

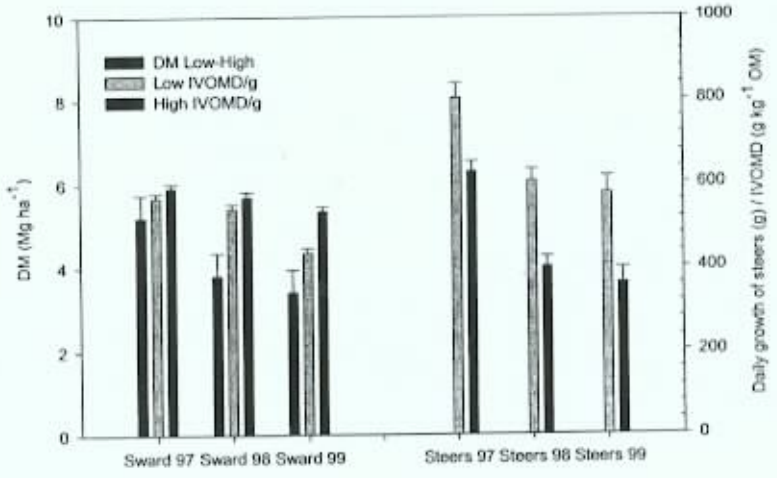

Figure 1. Sward production in Mg DM ha^{-1}, IVOMD in g kg^{-1} OM and daily growth of steers in g at the two grazing intensities shown as average of the grazing season.

Perspectives

Dairy breed steers can be used for nature management. At low stocking rate individual animal gains are highest, but productivity per ha is lower. The proportion of low quality natural species such as J.effuses and D. caespitose influences sward quality.

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References

Hald, A.B. (2000) Species density in the vegetation of low-lying grassland in response to management. Grassland Science in Europe, 5: 65-67.

Thamsborg, S.M. (2000) Uptake of nematode infections in dairy breed steers reared at different stocking rates. Grassland Science in Europe, 5: 561-563.