

Economics of grazing

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Abstract

This study provides insight into the economics of grazing on modern Dutch dairy farms and shows how the yield from grazing can be improved. Model calculations show that grazing is financially attractive if the cows eat sufficient amounts of fresh pasture grass (> 600 kg DM cow⁻¹ yr⁻¹). If the intake of fresh grass is very low, grazing is less profitable than summer feeding. Statistical analysis of the actual financial results of Dutch commercial dairy farms confirmed the positive effect of grazing. The model calculations showed a larger financial benefit of grazing than actually achieved in practice. The differences were examined together with extension services. Feasible possibilities for increasing the benefits of grazing were studied. It was concluded that commercial dairy farms often do not take full advantage of grazing because their operational management is not optimally adapted to grazing and maximum fresh grass intake. Grazing strategies must be implemented consistently for optimal financial benefit. The intake of fresh grass must be high, but at least more than 600 kg DM cow⁻¹ yr⁻¹.

Keywords: economy, grazing, management

Introduction

In northwest Europe, grazing is a matter of public concern (e.g. Van den Pol-van Dasselaar *et al.*, 2008). The main reasons for this are animal welfare, biodiversity and the positive image of grazing. Grazing has both positive and negative effects on the environment, the most obvious being nutrient loss. In general, grazing is economically attractive for farmers. However, an average situation will not be applicable to all farms. Certain conditions may be less favourable for grazing. Van den Pol-van Dasselaar *et al.* (2010) showed for the Netherlands that, for situations with automatic milking systems, large herds and high milk yields per cow, the farmer's income remained the highest for grazing. However, in situations with more than 10 dairy cows ha⁻¹ grazing surface, it was not profitable to practise grazing. There was a strong relationship between intake of grass in pasture, on a typical farm, and the difference in income between grazing and no grazing. The more grass the cows ate in the pasture, the larger the income profit from grazing compared to no-grazing and feeding roughage. However, some time has passed since this study. Since then, (environmental) policy has changed, farms developed and the corresponding increases in scale have continued. Farming systems have become increasingly intensive, and more and more farms have started to use automatic milking systems. This study therefore focuses on the economics of grazing on modern Dutch dairy farms and the possibilities to improve the financial benefits from grazing on these farms.

Materials and methods

Gross margins were used to calculate the economics of grazing in the Netherlands for the near future (2015-2020) using the model DairyWise (Schils *et al.*, 2007). The DairyWise model is an empirical model that simulates technical, environmental and financial processes on a dairy farm. The central component is the FeedSupply model that balances the herd requirements, as generated by the DairyHerd model, and the supply of home-grown feeds, as generated by the crop models for grassland and maize silage. The GrassGrowth model predicts the daily rate of dry matter accumulation of grass, including several feed quality parameters. The final output is a farm plan describing all material and nutrient flows and the consequences on the environment and economy. As part of the calculation, the expected developments and trends with respect to

policy, increasing scale and automation were taken into account. Production intensities ranging from 15,000 to 30,000 kg milk ha⁻¹ and average milk productions of 8,500 kg milk cow⁻¹ yr⁻¹ were used. Herd size varied between 70 and 280 cows. The benefits of grazing were primarily determined by the lower subcontracting costs, higher costs for roughage, lower costs for feed concentrate and lower costs for manure disposal.

Next to modelling, data from real-life farms were used. The method data envelopment analysis (DEA) (Steenefeld *et al.*, 2012) was used for statistical analysis of farm data collected by accounting firms and advisors. The results illustrate the actual financial results of approximately 10% of all Dutch commercial dairy farms in 2011. The study used six data sets of accounting firms and advisors (Countus, DLV, DMS, Flynth, LEI and PPP-Agro Advies).

Results and discussion

The results of the gross margins calculated with DairyWise are summarized in Figure 1. It shows that grazing is financially more attractive than summer feeding if the cows eat sufficient amounts of fresh pasture grass (> 600 kg DM cow⁻¹ yr⁻¹). If the intake of fresh grass is very low, grazing is not advantageous over summer feeding. In practice, the effect should be even more positive than shown in Figure 1, since the majority of the Dutch farmers currently receive a grazing premium of 0.5 euro for each 100 kg milk if they graze their dairy cattle for at least 120 days yr⁻¹ and 6 h d⁻¹. This additional income was not taken into account in Figure 1.

When analysing the financial records of commercial dairy farms, large differences were found between farms regarding efficiency and gross operating profit. On average, grazing resulted in more efficient operational management and a higher gross margin. However, these positive results declined in relation to increasing farm size. In 2011 the transition point was, on average, a farm size of about 90 dairy cows. If grazing was combined with automatic milking, much of the financial advantage of grazing disappeared. In 2011, the majority of dairy farms did not have the option of receiving a grazing premium. Today, however, most dairy companies have implemented the grazing premium. The current grazing premium would have made the transition point move up to a farm size of approximately 130-140 cows. Unfortunately, the actual grass intake on the commercial dairy farms was not known. Therefore, it was not possible to relate the grass intake to the farm income. The category 'grazing farms' included both farms with very low grass intake and farms with full grazing. The results as shown in Figure 1 implicate that knowledge on the actual grass intake would have led to a more detailed insight in the economics of grazing on commercial dairy farms.

In the model calculations, the financial benefits of grazing were larger than those actually achieved in practice in 2011. To understand these differences more clearly, the situation in practice was examined along with the feasible possibilities for increasing the benefits of grazing. This exercise was done together with extension services. It was concluded that farms which graze their livestock do not take full advantage because their operational management is not optimally adapted to grazing and optimal grass intake. The intake of fresh pasture grass by their cattle is inadequate. Dairy farmers can improve the financial yield from grazing with relatively simple measures, like providing less supplementary feed, and by starting the grazing early in the season and ending late in autumn. By using the land parcels closest to the barn for grazing, and growing silage maize further away, or providing access to pasture on the other side of the road, the fresh grass intake can possibly be increased even further. Finally, a grazing strategy must be implemented consistently for optimal financial benefit. To benefit financially, the intake of fresh grass must be sufficient, at least more than 600 kg DM cow⁻¹ yr⁻¹.

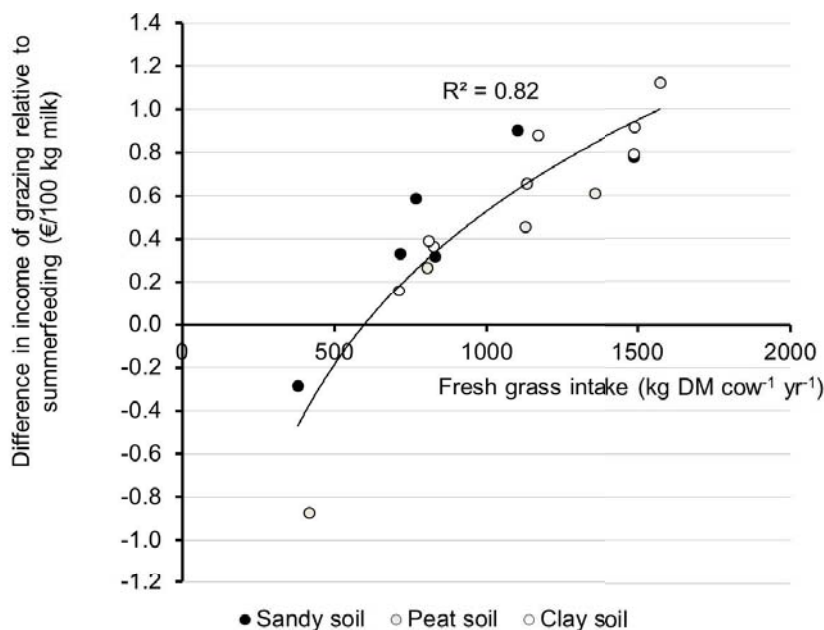


Figure 1. Income with grazing minus income with summer feeding relative to the amount of fresh grass intake in kg dry matter (DM) cow⁻¹ yr⁻¹ for three soil types.

Conclusion

In many cases, grazing offers financial benefits, on larger farms and also on automated farms. However, this does not apply to every dairy farm. When transposing research results into practice, the context of the individual dairy farm must always be taken into account. The current study has provided possibilities for improving the financial yield on farms that choose to graze their cattle. The results show that the fresh grass intake of the cattle is crucial for financially beneficial grazing.

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