

## Integrated Farming Topic Sheet no 7 / 2016



### Dairy Pasture Management in Integrated Farming

As a consequence of the globalisation of the milk market and resulting price volatility, the European dairy sector faces enormous challenges. In addition to these economic developments, there are also growing environmental and societal challenges: the preservation of the abiotic resources soil, air and water, and the protection of nature and biodiversity as biotic resources receive growing public attention. Innovative dairy production systems including effective pasture management as characterised in the Integrated Farming (IF) Framework<sup>1</sup> helps dairy farmers to improve the sustainability of their businesses. Whereas grass-based dairy farms in Europe often use indoor feeding systems, grazing during the growing season could help to reduce feeding costs whilst improving animal health and welfare at the same time. As for all production systems, the efficient use of resources such as nutrients, investments and labour is essential. With the objective of further establishing and enhancing pasture-based dairy farming as an efficient and sustainable system of milk production, a group of advisors and scientists is collaborating in the 'Autograssmilk' project in Luxembourg since 2013<sup>2</sup>.

#### **Solving the problem of land fragmentation – maximise available grazing area**

Dairy cows can easily cover distances of about 1 kilometre between milking parlour and pasture. With greater distances, however, the musculoskeletal stress can become problematic. In order to keep distances within the 1 kilometre perimeter, farmers should consider the exchange of land with neighbours or possibilities to exploit additional pasture by providing crossings such as bridges or tunnels for rivers and roads which otherwise function as natural barriers. Depending on the grass yields that can be achieved on a given pasture, an area of around 0.3 to 0.4 hectares is suggested to feed one cow on a pasture-based diet.



A cow tunnel allows the herd to cross the road easily and feed on additional pasture plots. It is suggested that a minimum of 20 ha of additional pasture should be made available to make the tunnel profitable.

(Source: <http://www.ouest-france.fr/saint-brieuc-grace-au-boviduc-les-vaches-vont-aux-champs-toutes-seules-3485768>)

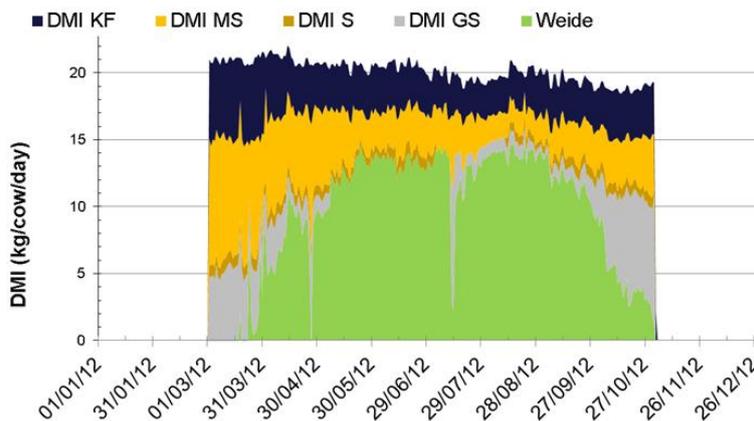
#### **Reduce supplementary feedstuffs in part time grazing systems**

Farms which cannot access additional grazing areas and / or feature high yielding breeds may have to provide indoor feed supplementation. To ensure an appropriate roughage uptake, the provision of supplementary feedstuff has to be aligned with pasture availability. This project shows that with around 0.04 € per kg of dry matter, pastured grass is significantly cheaper than harvested and conserved grass which costs about 0.15 € per kg of dry matter. When changing from the winter indoor diet to the outdoor grazing diet during the growing season, grass silage should be immediately reduced or

<sup>1</sup> <http://sustainable-agriculture.org/integrated-farming/>

<sup>2</sup> <http://www.grengland.lu/>

completely abandoned. As the quality of fresh grass that is taken up by cows is usually higher than the quality of conserved grass, daily milk yield is not likely to drop with this change and in some cases can even increase. Also maize silage that is provided as part of the winter ration can be reduced or stopped according to pasture availability. With regard to the management of grassland quality, such a reduction is vital as it ensures a sufficient grazing intensity which can in turn limit possible grazing residues and thus improves sward quality. In addition, costs for sward maintenance (mulching, over-, or reseeding) can be reduced.



Composition (kg dry matter per cow per day) of a feed ration during the grazing period with fresh grass uptake during grazing (green), grass silage (grey), maize silage (yellow) and concentrated feed (blue).

### Short grazing in a rotational system

In order to reduce the workload in pasture systems whilst maintaining high pasture quality, the short grazing system (intensive permanent grazing) can be adapted to a rotational system with a reduced number of larger paddocks, i.e. 7 to 10 paddocks with 0.15 to 0.25 hectares per cow, and a slower rotation (5-7 days).

This approach can help to simplify the rotation and reduce necessary infrastructure such as livestock trails, drinking troughs and fences to the minimum. The sward should be kept short with a pre-grazing target height of about 7cm which is equivalent to 1,000-1,500 kg dry matter/ha. The post-grazing target height would then be approximately 3.5cm.

As the young pasture is very tasty, this approach can allow a high daily uptake whilst unused pasture residues can be reduced to almost nil. Such a system can also lead to a dense sward, to less damage due to poaching and to the stimulation of white clover as natural source of nitrogen for the sward. All in all, this is a simple approach which can deliver high pasture quality and can help cope with the unpredictability of seasonal grass growth in 'maximum grazing systems'.

For dairy farmers working with milking robots, however, a grazing system with daily rotation and a higher number of pasture plots seems more suitable. As cows should be able to independently reach the milking robot at any given time, a system of multiple plots is necessary to make 'cow traffic' work and ensure higher milking frequencies. In such a system, cows should have access to a new plot after each milking.

### Fertilisation: At the right time, according to the demand

In a pasture system that is managed according to the holistic concept of Integrated Farming, fertilisation has to be thoroughly calculated and planned. As the grass does not

grow constantly throughout the growing season, mineral fertilisers should only be applied according to the results of soil testing and – particularly with regard to nitrogen – when the nutrients can be used most efficiently by the sward. Excrements of dairy cows as well as natural nitrogen fixation by legumes such as white clover equally have to be taken into account when nutrient balances are set up and fertilisation measures are planned.

### **Adaptation of milk production to pasture growth**

If the available grazing platform is not completely needed to feed the dairy cows of a given farm, the amount of grass used can be increased by synchronising the calving period of the herd with grass growth in spring. When this is achieved, most or all cows are in early lactation – with the highest feed demand – in times of maximum grass growth. Some supplementary feedstuffs may then be needed during autumn to compensate for reduced grass growth and to avoid the risk of lower milk yields.

#### **Dairy farm Thiry, Schouweiler, Luxembourg – an ‘Autograssmilk’ pilot farm:**

***“That is why I am so fond of Integrated Farming as a management concept ...”***

The Thiry Farm in Schouweiler, Luxembourg, is located south of the capital, manages 62 ha permanent grassland, 40 ha cultivated land, and keeps a herd of 65 Simmental dairy cows which are milked by a milking robot. The cows at Thiry’s farm have always been pasturing. For the farmer, grazing is very efficient to produce milk as feed costs are lower and the health of the herd seems to be better. In order to reduce the work load, the Thiry farm invested in a milking robot in 2011. For the family, there was no doubt that – in combination with the milking robot – the dairy cows should still have the possibility to graze.



Together with the FILL advisory team, Claude Thiry thus adapted and optimised his grazing system to integrate and make full use of the benefits of the milking robot: supplementary feedstuff could thus be reduced step by step. Today, the cows obtain more than 80% of the total roughage ration out in the pasture during the main grazing season. Without reducing the intensity and share of grazing, the farmer plans to increase the number of cows to 75 in the future. In order to reach this goal and meet the requirements of the increased herd size, further optimisation will be necessary: This will include the installation of further livestock trails and setting up a rotational grazing system. Claude Thiry is convinced that a holistic approach is needed for the management of arable land and pasture as well as livestock management. ***“That is why I am so particularly fond of Integrated Farming as a management concept. IF equally looks at details in arable and livestock farming and at the interconnectedness of all individual aspects – thus ensuring optimum results for all dimensions of sustainable development.”***



New livestock trail (2015)