

# Economic impact of automated feeding systems in dairy farms

Milk producers in many parts of the world are currently facing very low milk prices, which in turn make the implementation of cost optimisation strategies a determining factor to stay in the dairy business and prepare for better margins in the future.

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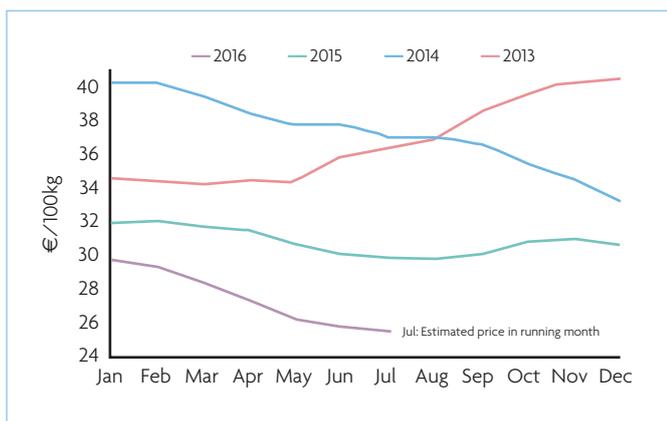
As Fig. 1 shows, the EU milk price has dropped substantially during this year. In June 2016 the price for 100kg of milk was €25.81. That represents an average price reduction of 14% in the EU 28 compared to June 2015.

## Role of feeding management

In June 2015, the European commission published an overview of production costs and gross margin within the EU.

This report shows that around 60% of the total operating costs for European dairy farms are coming from feeding, as well as fuel and labour costs related to feeding activities. Furthermore, the total operating cost increased in the past year, stretching the farms' gross margins even further.

Fig. 1. Milk prices paid to EU producers (weight average).



That is why an optimal feeding program is an important factor in farm profitability. The implementation of feeding strategies that improve animal performance is a key factor in achieving the farm's economic goals.

## Improve animal health

The health status of an animal affects performance in terms of growth, reproduction and milk production, hence affecting farm profitability.

It is important to note that a good and well implemented feeding strategy can avoid nutritional deficiencies, therefore potentially reducing metabolic diseases such as fat cow syndrome or ketosis, just to mention some examples.

Metabolic diseases may also decrease the cow's immune resistance, opening the door to infectious diseases. As for the economic aspect, a well implemented feeding strategy can limit treatment and veterinary costs, as well as production losses.

## Margins and profitability

In the past, researchers have proved that different feeding strategies, such as group feeding or increased feed frequency, have a positive impact on animal health and perfor-

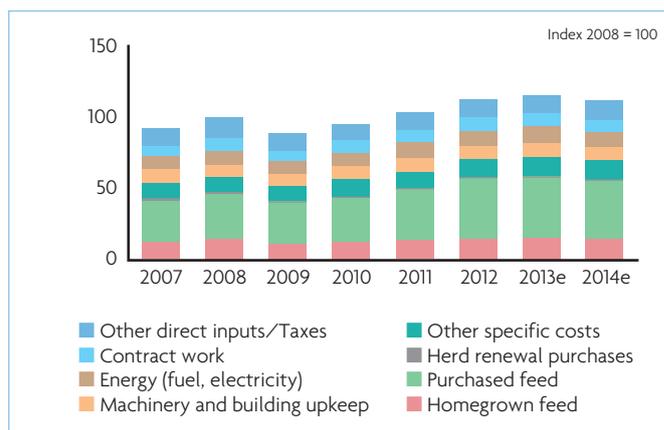


Fig. 2. EU milk operating costs (2007-2014) Source: DG AGRI (EU FADN, Model of allocation of costs for milk, Information from market units) and ESTAT price indices. e: estimate.

mance. However, the implementation of these very effective strategies requires much labour when conventional feeding systems are used.

This is where the use of automatic feeding systems (AFS) allows for the employment of different feeding strategies in a simple and labour-free way. It also improves the general feed efficiency of the farm.

GEA Automatic feeding ensures that farms get the best from their animals as well as optimise their resources. These automatic feeding systems are carefully designed to take into consideration:

- Precision feeding.
- Optimal cow health.
- Comfortable working environment.
- Positive impact on the farmer's cash flow.

## Precision feeding

With precision feeding, the focus is on nutritional group feeding, as well as precision in the weighing, mixing and distribution of the ration. There is also less residual feed.

AFS allows you to feed your herd in several groups according to animal nutritional needs.

There are several grouping strategies such as age, reproductive status, lactation phase or dry period.

Creating different groups in a herd offers a good opportunity to make

different rations for each group without having additional work. Nutritional grouping decreases feeding cost and improves productivity and herd health.

In 2016, Cabrera and Kalantari published 'Economics of production efficiency: Nutritional grouping of the lactating cow'.

This study evaluated the impact of nutritional grouping in different scenarios. The results show that even in the worst economic conditions, grouping cows increased income over feed cost (IOFC) compared to the base scenario.

## Weighing and mixing

One of the keys to avoiding metabolic disease is the ability to weigh, mix and distribute accurately.

When the animals receive their mixed ration according to their nutritional needs, it minimises the risk of metabolic disorders related to feeding.

At the same time, the use of expensive feed types, such as concentrate, is optimised, distributing them only to cows who need them. This, in turn, will optimise feed cost.

An automatic feeding system consists of a precise weighing machine that will not have the same variation as between people.

Continued on page 21

Continued from page 19

To have a homogeneously mixed ration is important for the health of cows. With AFS, the operations are controlled by the system, which is easy to program. This ensures a consistent ration all day long.

A homogeneous and balanced mix is a determining factor for a stable pH in the rumen. This keeps the cow healthy.

Less residual feed has a direct impact on feed costs.

Residual feed in conventional feeding system represents approximately 5% of the total ration. With AFS, the residual feed can go as low as 1% of the total ration.

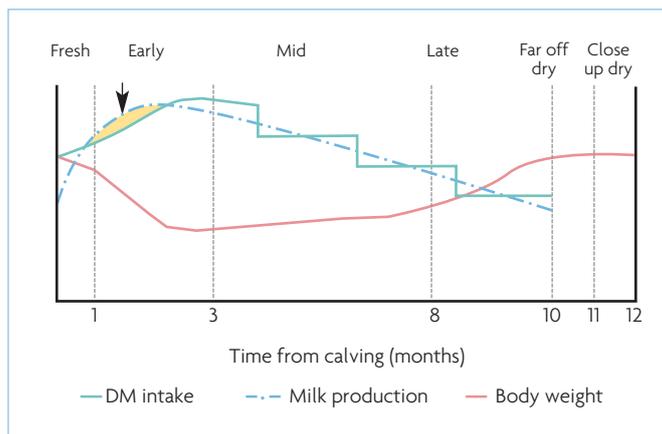
This feature improves the feed performance and the farm's profitability.

### Conditions for cow health

The ideal pH in the rumen is around 5.5-6.0 and frequent feeding promotes a stable pH in the rumen.

Ruminal micro-organisms do not adapt well to changes in the pH level and an efficient way to maintain the pH in the rumen is to provide feed all day long.

Cows have a tendency to sort against low particles, eating therefore an unbalanced diet that will



**Fig. 3. AFS allows you to feed your herd in several groups according to animal nutritional needs.**

negatively influence the rumen pH. Several papers show that increasing the frequency of feeding will reduce the variation of pH throughout the day.

Also, delivering fresh feed all day long is an important factor to stimulate cows to eat more. Thus, increased frequency of feed delivery can greatly influence feeding behaviour patterns and affect cow health and productivity.

Another positive effect from frequent feeding is that it gives lower

ranked (timid) cows better access to feed and therefore better performance.

### Comfortable environment

Modern management software for AFS, such as GEA's Wireless Interface Control (WIC), records all the feeding activities. The system tracks the storage and group consumption as well.

During every step, the system

makes sure that the animal group receives the ration as programmed. This provides farmers all the information they need to track their performance and make decisions to improve their system. Feeding with a conventional system accounts for approximately 25% of the total working time requirements on a farm.

A study conducted by Grothmann et al. on 18 farms in Switzerland, Germany, Denmark and the Netherlands showed that farms with an average size of 120 animals can save up to 112.15MPmin per day when using an automated feeding system compared to conventional feeding systems. This means a significant reduction in labour time and therefore costs. In the same study, farmers declared that they gained great flexibility in their working hours while getting more accurate herd feeding.

### Impact on your cash flow

Finally, although the initial investment for automated feeding systems can be considered high; AFS has a high return on the investment (as little as a year longer than a conventional system), thanks to the savings as well as improved animal performance. ■