

Breeding to produce more milk from the same amount of feed

# Improving feed efficiency

Selecting sires using a breeding value for improved feed efficiency – based on real data – is now possible. And it's good for cows, the environment and the businesses' bottom lines.

text **Alice Booij**

All pig and poultry producers know their feed efficiency. It is vital to the success of their herd or flock. But dairy producers who know their exact feed efficiency are few and far between.

That said, this parameter is becoming increasingly important to dairy businesses. Tight margins and fluctuating milk prices mean that producers are focusing on managing their herds more efficiently. And an increased focus on the environment also plays a role here. "Improving feed efficiency corresponds with the trend of corporate social responsibility. Cows with better efficiency emit fewer greenhouse gases," says researcher at the Dutch Wageningen University Roel Veerkamp.

The introduction of genomic selection has helped to demonstrate the differences in feed efficiency between cows, according to Dr Veerkamp's colleague Yvette de Haas. "Twenty years ago, we wanted to select sires with better feed efficiency. But to make a reliable prediction for each bull, we needed 100 different daughters on 100 different dairy units. With genomic selection, measuring of differences in feed efficiency is now much easier."

## Real figures

The differences between cows in feed efficiency are significant, according to the Dutch CRV's breed specialist Pieter van Goor. He bases this statement on,

among other things, data on feed intake collected on many dairy units. "But we have mainly worked on instict up until now. Now we can look at feed efficiency with real figures."

There are feed efficiency benefits to be gained through breeding. "Cost savings of up to 1.8ppl of milk are possible by milking more efficient cows, which is a significant cost saving for producers."

To help producers to breed more efficient cows, CRV launched the Better Life Efficiency index a few years ago. The most important components of this key figure are milk production, longevity and, indirectly, the recently launched characteristic 'saved feed for maintenance'. The latter characteristic indicates the amount of feed that a cow does not allocate and use for milk production, but for maintenance. In other words: the total feed intake minus the feed intake that a cow uses for milk production.

Feed efficiency is measured as the kilogrammes of milk produced from one kilogramme of dry matter,

## Recording differences in feed intake

To breed for feed efficiency, CRV collects figures on the feed intake of cows. The Alders family from Overloon in the Netherlands is the first dairy unit where the feed intake of the cows is accurately recorded under practical circumstances. When entering the unit, the blue feed

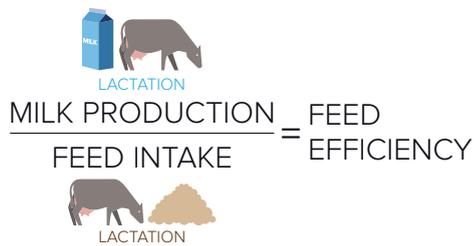
bins immediately stand out. Of these containers, 20 are arranged along the feed fence. Enough for a test group of 42 cows, according to Willem Alders. "It is the intention that all our 240 dairy cows will be in this test group for a few months of their lactation," he says.

All feed eaten by the cows is weighed in the bins and so the herds provides reliable data about their feed intake. This, combined with the daily weighing of the cows and the information about their milk production, ensures that there is clarity about the feed efficiency per cow.

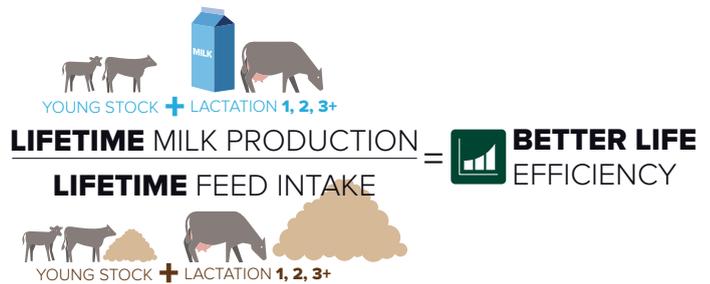
- 1 Twice a day, after milking, the animals go on the scale. This monitors cow weight as her lactation progresses.
- 2 Measuring water intake was relatively easy to add to the test design. Little is known about the variation in water intake between cows.
- 3 The quantity of forage is weighed in the feed troughs. This accurately measures how much cows eat per session and per day.



## TRADITIONAL VIEW ON EFFICIENCY



## CRV VIEW ON EFFICIENCY



calculated during each lactation. CRV's measurement focuses on feed efficiency during the entire life of a cow by taking into account longevity in the Better Life Efficiency. That's because milking older cows contributes to efficient production. A rule of thumb is that with a BLE score

of 10%, cows will produce 10% more milk from the same amount of feed in their lives, compared to cows with a BLE score of 0%.

Table 1 shows a number of sire examples. Anreli, for instance, scores above average for both Inet (milk production), feed for

maintenance, and longevity. With a BLE score of 17%, he is one of the best sires ranked on that parameter.

### Feed efficiency

Rocky, however, scores less well here. Although he scores well for longevity, his daughters score below average for Inet and require almost 1.8kg more feed per day for maintenance than the Anreli daughters.

His BLE score is just 2%. Anreli's daughters will, therefore, not only achieve higher production and a higher life span, but also achieve better feed efficiency throughout their lives. |

Table 1: Scores for Inet, saved feed for maintenance, and longevity for bulls

name bull	Inet (euro)	saved feed for maintenance		
		(kg DM/cow/day)	longevity (days)	BLE (%)
Anreli	448	0.48	684	17
Audible	379	0.64	417	15
Stellando	254	0.39	488	11
Atlantic	98	-0.61	446	3
Rocky	140	-1.31	525	2

Willem was able to immediately establish that the difference in feed intake is considerable, based on the first figures. "It varies from 45kg of a young calved heifer to 75kg in an older cow."

He fills the bins, using a self-propelled feed mixer, with a ration comprising

grass, maize, wheat, yeast concentrate, soy hulls, and a concentrate-mineral mixture. Cows in the test group are between 90 and 150 days into their lactation. "They stay there for about two months. That is long enough to make a reliable estimate of the feed intake during

the entire lactation. Then we swap to other cows in the herd." The cows' water intake is also monitored.

CRV began collecting data on commercial dairy farms in July 2017. The aim is to have 10 herds, during the next two years, where this accurate data is collected.

