



Greater focus on feed conversion

When it comes to feed conversion efficiency, differences of up to £1.35 in margin over feed per cow per day were found between sires' daughter groups. One specialist predicts that selection based on feed efficiency will be the next phase in cattle breeding.

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Before the introduction of genomic selection, many expensive measurements would have been necessary to estimate reliable breeding values for bulls for feeding efficiency. "That picture is now changing very fast," says CRV breeding specialist Pieter van Goor. He adds that breeding for feed efficiency is set to be the next phase in dairy breeding after production, conformation, longevity and health. The feed conversion rate of dairy cattle is calculated by dividing milk production in kilogrammes of FPCM (milk with a standard percentage of fat and protein) by the feed intake in kilogrammes of dry matter. Statistics on

milk production are widely available, but until recently there were no hard figures for feed intake. Since 2017, CRV has been monitoring the intake of individual cows on the farm owned by the Alders family, based in Overloon in the Netherlands. The breeding organisation also has data from six test farms in the Netherlands and Flanders and, to date, has feed conversion data from 5,600 cows. "We want to increase this figure to at least 10,000 in the next few years and, to achieve this, we are going to install special feeders on a further nine farms, so we can measure the data of 1,500 cows each year," explains CRV's Sander de Roos.

Until now calculating the feed conversion rate was limited to what happened in the cow house and parlour, says Mr van Goor. "But we realise that many cows get a significant proportion of their ration from grazing," he says. "So, together with the researchers involved in the Amazing Grazing project, we are investigating how we can also collect data on the intake of meadow grass." He also assumes that cows that produce efficiently on an indoor ration will also utilise grazing rations efficiently. "But it's vital to verify that assumption in practice."

Heritable trait

In order to breed successfully for a particular trait, variation between animals is important, as is a sufficiently high heritability. The initial results of data measurement on the Alders' unit offer good prospects in that area too. "The differences between individual cows are greater than I expected," says Mr van Goor. "For instance, the least efficient cow produces 1.2 FPCM from a kilogramme of feed dry matter. And the most efficient animal produces 1.9 kilogrammes of milk," he says. The raw data also reveals clear disparities between bulls. "Atlantic's 23 daughters, for example, realise, on average, a feed efficiency of 1.50. Whereas the 11 Snowfever daughters reach 1.63. That adds up to a difference in feed margin of more than £1.35 per cow per day," Mr Van Goor explains.

In this calculation, the milk price is set at 32ppl and the cost price of compound feed and roughage at 24p and 14p per kilogramme of dry matter.

But, of course, breeding is not all about feed conversion. In terms of health, the Atlantics beat the Snowfevers, for example. But the results do show what can be accomplished, according to Mr Van Goor. He emphasises that how feed is utilised is not just determined by the efficiency with which cows convert feed into milk. Feed is also needed during the dry period and to rear young stock. This explains why cow longevity is also a factor. And good health and fertility are important for longevity. The higher the average lifetime production of the cows, the fewer young stock replacements and less feed is needed to produce the same volume of milk. "So, the feed conversion trait will always be balanced against other traits in our breeding programme," he stresses.

Mr Van Goor is often asked about the correlation between body weight and feed conversion efficiency. "A heavier cow needs, on average, more feed for maintenance. But that doesn't mean that breeding on feed conversion will create Holsteins with the build of Jersey cattle. If a cow produces relatively more milk, a higher body weight does not have to compromise the feed conversion rate," he explains.

As the availability of feed intake data generated in practice improves, so does his enthusiasm about the opportunities of breeding based on feed conversion. "Breeding is all about patience and it will be while before we can capitalise on its full potential. As we are at the beginning, the advances are rapid. Producers can see the results in their herds after just one generation." |

Three full sisters: identical weight and feed intake, but considerable differences in production

Three full sisters in the Alders' herd are proof that variations in feed conversion are not necessarily visible from the outside. Linde 1, Linde 2 and Linde 3 (all daughters of Fun P) weigh 596, 605 and 623 kilogrammes respectively. And with a daily intake of 25.4, 25.3 and 25.5 kilogrammes of dry matter, they consume almost identical amounts of feed. However, they have considerable differences

in production. Linde 1 produced on average 36.5kg of FPCM, Linde 2 produced 33.6kg, and Linde 3 yielded 40.9kg. The most efficient of the trio, therefore, produced 1.60kg of FPCM per kilogramme of dry matter, while the least efficient gave 1.3kg of FPCM from one kilogramme of feed. That results in a difference in margin over feed of £2.26 per cow per day.

	body weight	feed intake	production	efficiency
Linde 1	596	25.4	36.5	1.43
Linde 2	605	25.3	33.6	1.32
Linde 3	623	25.5	40.9	1.60

Table 1: Differences in body weight, feed intake, production and efficiency for three full sisters

The conformation differences between Linde 1, 2 and 3 are slight, but the differences in feed conversion are significant

