

Selection indices offer real financial gains

True benefit of breeding values

The top 25% of cows ranked for Better Life Health register a third-lactation somatic cell count that's 75,000 cells/ml lower than herds scoring in the bottom 25% for the breeding value. And there are other benefits to using breeding indices.

text **Inge van Drie**

What is the true benefit of breeding for better health? Dutch breeding organisation CRV asked student Eva Koole to compare the genomic breeding values for Better Life Health and Efficiency of more than 61,000 cows with their actual performance. Her conclusion? The top 25% cows for Efficiency realised a lifetime production that was 13,000kg higher and lactation value increased by 16 points.

With his breeding value of +2,117 for kilogrammes of milk, sire Skalsumer Blitz leaves little room for doubt that his daughters are milk producers. It's a different picture for Ganvo Alexander, however, who registers a breeding value

of -244kg for milk. Most producers won't be surprised to hear that his female progeny produce less milk on average than Blitz's.

The effect of breeding on milk soon becomes obvious in actual practice. But it is more difficult to see this link when comprehensive indices are used.

For example: how much better do daughters of a sire with 300 NVI perform, as opposed to one with 50 NVI? This was the issue CRV was confronted with when using the breeding figures for Better Life Health and Better Life Efficiency (see box). Delta Atlantic, for instance, scores +10% for Better Life Health (BLH). But what does that mean



Sander de Roos: "Using these indicators can make a difference to health and efficiency"

for his progeny, in practice? How do they score compared with Skalsumer Blitz's daughters with -3% for BLH?

"We want producers to understand what these numbers could mean for their herd," says CRV's Sander de Roos. "The question is how much better do cows perform when they have higher Better Life scores."

Data analysis

Eva Koole, a student at Van Hall Larenstein College near Leeuwarden in the Netherlands, tackled this question as part of her dissertation. She was given access to data on more than 61,000 cows belonging to 284 Dutch and Flemish producers, who were participating in the Breeding Data Plus programme. Genomic breeding values were available for all these cows, as well as actual performance relating to milk yield, fertility, udder and hoof health.

For her research Miss Koole initially divided the cows into four groups based



Using efficiency and health indexes makes economic sense

The Better Life indicators – Efficiency and Health – promise efficient and problem-free cows, according to research carried out by Eva Koole.

Better Life Efficiency

As a ‘rule of thumb’ for lifetime production, each 1% improvement of Better Life Efficiency in the herd results in additional lifetime production of 1,500kg.

The best 25% of animals have:

- 13,086kg higher lifetime production
- 2,047kg higher milk production
- an extra 146kg of fat and protein.

on their genomic breeding value for Better Life Efficiency (BLE). The lowest scoring group for BLE registered an average of -4.4%. The best 25% ended up at +4.8% on average. Next she calculated the average actual performance for all four groups, for traits that count towards Better Life Efficiency such as milk yield, longevity and calving interval.

The 25% of cows with the highest BLE score performed better in all areas compare to the 25% of cows with the lowest BLE score. The lowest BLE group for lifetime production scores just above 29,000kg of milk, as opposed to 42,000kg of milk for the highest BLE group – a difference of 13,000kg.

The differences in milk yield are significant as well: the best BLE group produce more than 11,200kg of milk during the third 305-day lactation – that’s 2,000kg more than the lowest

group. And the number of lactation days of the highest scoring cows was significantly higher: 1,333 compared to 1,061, a difference of 272 days.

As far as lactation value is concerned, Miss Koole found a difference of almost 16 points between the highest and lowest groups. So, what does she make of these results? “It makes sense that the group with the highest BLE registers a higher milk yield and improved longevity,” she says. “Production and life span carry a lot of weight in Better Life Efficiency. But, that said, I never expected the differences to be this significant.”

Stronger feet

Calving interval was the only trait where the lower BLE group scored higher. The bottom 25% had a calving interval of 405 days, as opposed to 420 for the top BLE group. Sander de Roos is not surprised: “Producers tend to wait longer before inseminating cows with a higher milk yield. And cows that produce a lot of milk tend to be less fertile.”

Miss Koole used the same method for Better Life Health. She divided the

Eva Koole: “Calving interval is 25 days shorter for cows with top Better Life Health scores”



Better Life Health

Selecting bulls for Better Life Health will result in easy-to-manage cows, particularly in terms of their health and fertility, which will also increase the average age of your herd.

The best 25% of animals have:

- 26-day shorter calving interval
- 39% lower incidence of sub-clinical mastitis
- 23% fewer cases of lameness
- 57% lower incidence of ketosis
- 55% fewer stillborn calves.

cows into four groups again, based on their genomic breeding value for BLH. And she discovered that the actual performance of cows improved as their BLH score increased (see Table 2). “On average, the somatic cell count for the first three lactations was between 35,000 and 75,000 cells/ml lower in the top group. Their incidence of subclinical mastitis was 20% lower than that of the bottom group,” she says.

Miss Koole also found that the incidence of lameness was 15% lower in the top group, and that the number of live-born calves at first calving increased by 10%. “And the calving interval during the first three lactations was 25 days lower in the top BLH group, compared with the bottom,” she adds.

Breeding influence

Finally, Miss Koole also investigated whether there is a correlation between BLE and BLH. Does high efficiency in cows come at the expense of their health? “No, is the emphatic answer. The 25% of cows with the highest score for BLE also registered the highest score for BLH. And the healthiest group of cows also has the highest score for efficiency.”

“These conclusions make sense,” says Mr de Roos. “Healthy cows produce milk more easily and have a longer life. And cows can only produce efficiently when they are healthy.”

He is pleased with the research results. “Every single table demonstrates that you can achieve a great deal through breeding. Based on these figures, we can conclude that there are significant differences within herds with regards to efficiency and health. By making selections based on these indicators, producers can clearly make a difference to cow health and efficiency.” |

