



Breeding efficient and healthy cows

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1 Introduction

Sustainability is increasingly important in the dairy sector. Genetic improvement plays a major role in sustainable food production. Developments in the area of food production are going very rapidly and continued acceptance of the society is extremely important. Cow health is increasingly important in dairy herds since the number of cows per herd is growing rapidly worldwide.

These factors underline the importance of a sustainable dairy chain. In that perspective, CRV developed a vision on sustainability called “We stand at the beginning of the food chain”, (<http://www.crv4all.com/about-us/what-is-sustainability/>). Together with the dairy chain CRV aims to improve feed efficiency, to breed cows with a lower carbon footprint, more healthy and with a higher productive lifetime. Briefly: lifetime efficiency.

These changes ask for another view on animal breeding and for adequate practical tools that conveniently combine existing breeding values. Therefore, CRV has developed Better Life Efficiency and Better Life Health, two breeding indicators that help the farmer to select bulls to breed more sustainable cows.

2 Better Life Efficiency

Better Life Efficiency is an indicator for the efficiency of the dairy cow to convert feed into milk during her lifetime. The energy intake during the whole lifetime of a cow is taken into account, from her birthday to her last productive day. This includes energy intake for rearing, maintenance, milk production, pregnancy etc. Breeding values included in Better Life Efficiency are: milk production, persistency, rate of maturity, longevity, calving interval and body weight. Better Life Efficiency indicates the percentage that daughters of a bull are more or less efficient than the average Dutch dairy cow. Better Life Efficiency of most CRV bulls on the bull chart is between 0 and 10%.

What is the economic importance of Better Life Efficiency? An average Dutch dairy cow produces about 30,000 kg of milk during her lifetime. For this production the cow needs a certain amount of feed. If she could have produced more milk out of this feed (this is what Better Life Efficiency indicates) then she could have realized a higher lifetime milk production from the same amount of feed. Daughters of a bull with Better Life Efficiency of 5% produce 2.5% more milk per kg of feed intake. This means 750 kg of milk extra for a cow with a lifetime milk production of 30,000 kg. This means € 225 extra milk revenues during the lifetime of a cow assuming a milk price of € 0.30 per kg of milk. For a farm with 100 dairy cows this results in an extra farm income of € 22.500 during the lifetime of the cow.

3 Better Life Health

Better Life Health is an indicator for the health of daughters of a bull. Better Life Health includes breeding values for udder health, claw health, calving ease, maternal calving ease, liveability and daughter fertility. Better Life Health of most bulls on the CRV bull chart also range between 0 and 10%.

What is the economic importance of Better Life Health? An average Dutch dairy cow scores 76% health for the 5 traits included in Better Life Health (average health level of the population for these traits). Daughters of a bull with 5% Better life Health are on average 2.5% more healthy for these traits. This is $2.5\% * 76\% = 1.9\%$ per trait on the absolute scale. If we assume that the costs per case per trait are € 200, revenues for daughters of a bull with 5% Better Life Health is $1.9\% * 5 \text{ traits} * € 200$ is € 19 per cow per year, this is for 3.5 lactations € 67 extra revenues during the lifetime of the cow.

4 Use in practice

Better Life Efficiency and Better Life Health were introduced by CRV in December 2013 for Holstein bulls and in 2014 for Fleckvieh and Jersey bulls. Dairy farmers recognize the importance of the issues efficiency and health for the dairy chain. They are enthusiastic about the availability of the Better Life Efficiency and Better Life Health values for CRV bulls. Because these values summarize the bulls capacity for important traits in one figure, these traits enable farmers to make their bull choice in an easy way.

The correlation between Better Life Efficiency and Better Life Health is 0.30. This means that bulls with more efficient daughters also have more healthy daughters and vice versa. Better Life Health and Better Life Efficiency are both included in the CRV breeding goal and will be taken into account in the CRV breeding program.

The traits have both the preposition Better Life. Better Life stands for a better life for the farmer regarding labour requirement and economy of the herd. And Better Life for the cow because they are more healthy and have better longevity.