

Labour shortage drives the need for cow resilience to optimise performance

Milking cows is not as appealing as it used to be. As a result, highly skilled labour is more difficult to come by for dairy farms. Still the number of cows on dairy farms is increasing. So, caring for cow health, well-being and optimal performance in a profitable way is becoming more challenging.

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However, something the dairy sector is not short of, is the courage to adopt new technologies and this has really been to their advantage when tackling labour issues. But there is another way of approaching the issue of labour and that is to breed and manage 'easy-care' cows.

Cows that are easy to care for and manage can cut right down on input costs, such as labour, medical and vet bills, whilst at the same time maintain high well-being and productivity more consistently. This is where resilience in cows matters.

Geneticists are starting to take resilience seriously and so are nutritionists. After all, cows are what they eat. Feeding for resilience can make a difference to the amount of care a cow requires, as well as to the consistency and longevity of her performance.

Digital cow care

Dairy farmers have one of the highest rates of tech adoption. This is partly because there are some amazing new technologies out there that help farmers monitor their cows. Clever and innovative ways of applying imaging with computer vision, artificial intelligence and sensors, to collecting data from individual cows, can help to monitor large numbers of cows. The data can be used to detect health problems quickly, whether cows are on heat or have started calving so action can be taken in a timely manner. These new technologies are improving the way labour is utilised on a day to day

basis and allows dairy farms to get the work done with fewer high-skilled labourers.

They can save costs on labour, but also on feed, as tighter monitoring of cows can lead to less wastage. Other benefits from the application of these technologies is that cows are less stressed as a result of fewer interactions with humans and sensors are less biased in their observations than humans.

Easy-care cows

Replacing hard to come by labour with digital technologies and assistants is one way to stay on top of cow performance and health in a profitable way. However, if the data alerts to problems with cows, appropriate action still needs to be taken, which again means labour time.

The other alternative is to keep cows that are easier to manage and have fewer problems. But how can we select for cows that are easier to manage? This is a question that research groups in Wageningen and in Australia are currently investigating. The good news is that they have concluded that it is possible. Key to this was finding a way to measure resilience in cows.

Resilience as a key trait

Resilience was defined by the Wageningen research group as 'the capacity of the animal to be minimally affected by disturbances/challenges or to rapidly return to the state it was in before exposure to a disturbance'. This again is determined by the adaptive capacity of the cow.

The adaptive capacity is the mechanism of the animal that empowers it to cope with internal or external disturbances, stressors or with changes in the environment. Studies showed that variance in daily milk production is heritable and can be used to breed for resilient cows.

More resilient cows have a lower variance (lower fluctuations) in milk production over time (Fig. 1). Therefore, resilience can be measured based on deviations of expected

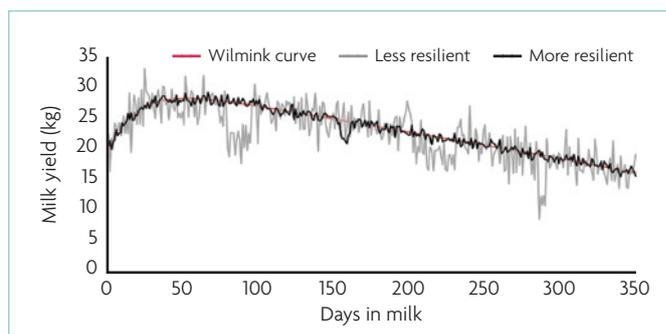


Fig. 1. Repeated measurements of milk yield on an individual level of two dairy cows with the same underlying Wilmink curve (in red) but differing in resilience.

production and observed production over a time period.

Technological advances facilitate the increase in the number of observations that can be made on individual animals to more accurately estimate deviations and consequently genetic parameters.

Routine data collection from automatic milking systems (AMS) and automatic feeding systems (AFS) are the most well-known and well-developed examples.

Animal breeders expect more rapid progress with measurements from wearable sensors, which are already being used for monitoring animal behaviour, physiological changes and detecting health and disease status.

Sensors have been helpful to measure average eating time and ear temperature in the transition period before calving. The data derived from this suggests that it could be used as indicators for resilience in cows during the transition period and to predict problems during early lactation.

Feeding for resilience

Finding additional ways of improving the adaptive capacity of cows, for example by nutritional means, could speed up the process of reaching the goal for resilience in cows. New nutritional concepts, such as gut agility activators, are designed to support the adaptive capacity and hence resilience of the cow by nutritional means. They help the

cow to adapt to nutritional challenges by minimising stress reactions such as oxidative stress and reduced feed intake, that would otherwise impact performance, health and well-being of the cow.

Heat stress, transition period, energy deficiency and mycotoxins are known factors which normally lead to increased oxidative stress and/or a reduction in feed intake.

Feeding a gut agility activator to cows facing those type of challenges has been shown to maintain high milk component yields and low somatic cell counts, indicating that the cows were able to cope better with the stressors and were more resilient.

Keeping agile

Darwin's principle – 'it is not the strongest that survive but the ones most adaptable to change' – has more relevance today. The safest bet to keep you and your cows in the game in the face of unpredictability is to support and manage the adaptive capacity of you and your cows. In other words, agility or the ability to adapt to challenges and change is key to long term success.

Staying open to continuous learning and new technologies will help to keep you agile. Rethinking how we breed and feed cows to foster resilience will keep cows agile – and there are already great technologies out there that can help monitor the progress we make. ■