

Keeping cows healthy to optimise longevity, milk yield and performance

It is hard to imagine a modern agricultural farm without the benefits of technology. It is no longer limited to the equipment used, but rather the data collected with it, which – analysed by modern programs – provides the farm with a wide variety of key figures.

by Dr Kim Schmitz,
GEA Farm Technologies, GmbH.
www.gea.com

It does not matter whether self-learning algorithms, so-called 'artificial intelligence' or conventional software are used – what they all have in common is that they do not need to sleep, they have nothing else to do but keep an eye on the cows 24/7. The bottom line is that almost no data collection is out of the question these days.

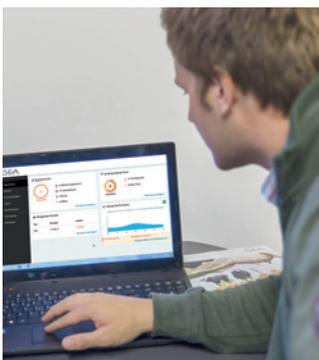
Yet any system can only be as good as it is used by its user.

Support decision-making

For creating a sustainable offering, the relevant information does not only have to be made available, but it should be processed in such a way that it can be used directly to support decision-making – ideally the user ultimately uses it to make his or her own decision.

At the same time there is probably no one solution that fits all. From a general point of view, the European

Everything at a glance, around the clock.



markets, for example, are characterised by a high degree of mechanisation and automation, which can be seen, for example, in the high proportion of investments in automatic milking systems, while farms in Eastern Europe or South America are still largely on the path to increasing efficiency.

In these two regions, conventional milking systems are still predominant and, with comparatively low labour costs, competitiveness or increased efficiency is determined by other measures such as the qualification of the workforce or the optimal use of the capital employed, for example, in milking parlours. With all technological achievements, it must therefore always be considered that their profitable use meets different preconditions on the customer's site.

Housing conditions

In addition to the considerations made in the following, the importance of the general housing conditions should be briefly mentioned as well, such as:

- What is the barn climate, flooring, barn layout?
- Is there any other equipment for cow comfort?
- Is there regular hoof bathing and hoof care in addition to monitoring animal behaviour?

When the question of optimising cow longevity, reproductive performance and milk yield is raised – the focus of optimisation depends largely on the farm conditions.

Heat detection can be seen as a door opener when it comes to heat and health monitoring. Good reproductive performance is both a prerequisite and a result of good health management. Farms that rely on technical support for heat detection rarely want to go back to old working practices once adopted.

The limiting factor for manual heat detection mainly is the required time needed. Usually, the cows do not comply with the employee's schedule – cows in heat like to show themselves in the evening or night hours.

Considering that high-performance cows may show heat signals only for



Straight from the animal to the screen – Access the latest data on your mobile devices.

a shorter period and less intense, a heat monitoring system can help to not miss the heat of those cows. This is also supported by increasingly 'smarter' algorithms, which can be used to identify even small deviations in cow behaviour.

In addition, heat detection systems are also useful when the animals are out in the pasture during the day – the data is transmitted from the animal's sensor to the software at the latest when they return to the barn.

If the animals are grazing for several hours or even all day, it may also be useful to have outdoor antennas or other receiving units transmitting the data real-time during the grazing period for reliably detecting animals in heat.

Exceptions continue to prove the rule – there are still large, professional farms that have opted for a different form of heat detection due to local conditions – for example, classically by means of tail painting. If the cows can be reliably checked several times a day due to fixed milking times, good heat detection can also be done this way.

From an economic point of view heat management via monitoring systems can be profitable as it helps shorten calving intervals, lowering the costs of insemination and veterinary care as well as saving time for manual heat monitoring in the barn.

At the same time, it also requires a rethink in farm management and herd management. This aspect should not be neglected, because a successful use of such systems requires the cooperation, including the necessary knowledge, of all those involved on the farm.

This applies equally to health management on the farm. In addition to heat detection, most systems have more functions that can be used depending on the requirements of the farm.

Health parameters

Via the sensor on the animal, further health parameters can be determined either directly – for example by measuring the body temperature – or indirectly – via the animal's behaviour.

The added value of such further functions consists primarily in the early detection of behaviour or measured values that deviate from the usual behaviour or values of the individual animal and are thus an indicator of a health problem.

Due to the continuous collection and analysis of data, any system used will collect more data than could be gathered manually.

However, the data must now also be converted accurately – i.e., with

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high specificity and sensitivity – into appropriate information or notifications: Is the animal walking less than usual? Does it eat longer? Does it ruminate less? Or is it inactive for a longer period? Has the milk yield changed at the same time? Or is the body temperature even elevated?

Continuous monitoring

The continuous monitoring of the animals allows for action to be taken at an early stage as cows with health issues are usually detected and can be treated early. This not only saves production costs and prevents loss of milk yield, but also benefits the health of the animal in general and thus also contributes to the animal being able to stay in the herd longer.

On many farms that use heat detection systems, insemination is successfully done solely based on the heat detected by the system. In terms of health monitoring, the system does not replace the expertise of the skilled employee or veterinarian.

Both for heat and health management, it can help to ensure that labour resources can be used as efficiently as possible. On large farms, it is therefore especially



Keep feeding under control.

important how reliably the health monitoring system works. The larger the farm, the more animals are potentially on a 'check list' (this not only applies to heat detection, but also to all other health parameters which the system provides information about) – on the one hand, as many animals as possible should currently be checked, and on the other hand, no animals should be displayed that, in retrospect, have mistakenly ended up on this list (false positives).

In addition to using the health

monitoring system to look at individual cows, it also makes sense to analyse animal groups and their behaviour – what is the feeding behaviour of the animals? Are the cows more active or do they ruminate more?

From the data it is possible to find out if there are feeding problems, for example, regarding how often feed is offered or the quality of the ration.

Regardless of whether heat detection, individual or group health monitoring – whether in the traditional way or with the support

of a monitoring system – the various aspects of animal health together contribute to keeping the cow healthy, thus efficient, and thus in the herd for as many lactations as possible. However, even the smartest data analysis cannot yet replace expert examination. Nevertheless, by pre-selecting conspicuous animals, the use of labour on the farm can be optimised.

Support by employees needed

An important prerequisite is that employees support the new way of working that comes with the monitoring system. A system can only be as good as the people that are willing to use it. The economic effect of using a heat and health management system should be analysed for each farm. Cost savings can often be quantified relatively easily.

Inter-calving intervals and insemination success are further examples of positively developing parameters. This also helps to avoid possible milk losses overall. As a result, animals can be kept healthy while in production for longer. In this way, health management ultimately has a positive effect for both humans and animals. ■