

Successful fertility management in dairy cows

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A satisfactory fertility has a positive influence on suboptimal herd structure, breeding progress and on the income of the dairy cow farmer. Heat detection and the optimal time of insemination considerably affect the fertility performance of a herd. However, heat monitoring and its diagnosis have proven to be a major problem, especially in big herds.

When visiting farms on matters of production related consulting, I am often asked: "Did I inseminate at the right time, is my cow possibly developing a cyst, is there a silent heat or is she pregnant?"

Questions that dairy farmers are constantly asking themselves, especially when it comes to problem cows, after all – time is money. Studies show that 12–25% of cows did not experience a true heat when inseminated. The average of good insemination practices is 20%.

In individual cases this can increase to 60%, for example in problem herds. Extra insemination costs as well as health problems are the result of this. When animals are inseminated outside of an oestrous their uterine lining is not yet prepared to fight germs that might have entered. This can lead to inflammation of the uterus (endometritis).

The sooner you know the answers to these questions the faster you can act or call the veterinarian. For each unnecessary delay where the cow is not yet pregnant one can expect a loss of €4-6 per day.

This means that a prolonged empty time

Cross section of a cow's brain showing the hypophyseal system.



Left, yellow body of a dairy cow and, right, yellow body from the inside.

of over 90 days results in a loss of roughly €80-130 per calf. Who can afford this kind of luxury, especially considering the current low milk prices on the world market?

Getting cows pregnant earlier is therefore definitely a financial benefit – every dairy farmer knows this but they should also know that they can now realise it easily using a new method.

Early ovary check

Fertility problems are accepted as the main cause of premature losses. In any case an early ovary check with conclusive results can reduce the time between calving and helps to save money.

As is generally known, a normal cycle in a cow takes 21 days. It starts with the maturation of the follicles and the production of oestrogen followed by ovulation. A yellow body or corpus luteum then develops where the follicle was and starts producing progesterone, a pregnancy protecting hormone.

In case of a non-pregnancy the yellow body is degraded under the influence of another hormone, prostaglandin (PGF_{2a}), so that a new follicle can mature during the next cycle. The cycle in general is controlled by a superior 'command centre' in the brain, the endocrine hypothalamus hypophyseal system.

This releases hormones which control the ovaries, namely FSH (follicle stimulating hormone) and LH (luteinising hormone). If the insemination was successful the yellow body

remains and hormonally protects the pregnancy.

Hence the yellow body carries out a vital function, whose hormone progesterone plays the main part in fertility. Maturation and degradation of the follicle and yellow body undergo a smooth transition.

Unfortunately these processes do not always work perfectly.

Occasionally ovulation is delayed or the follicle does not 'burst' properly and forms a cyst. The most common type of cyst is the follicle theca cyst, which can appear in various sizes. Even the activity of smaller cysts are sufficient to block a cycle that has already begun and thereby also all other fertility events. With some cows the ovaries have started to regress and show no signs of activity (follicle atresia). Especially in high performance cows weakening yellow bodies with too little progesterone production are the cause of unsuccessful inseminations.

All these happenings in the ovaries

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An example of a follicle theca cyst.



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become transparent and understandable if one uses a reliable milk progesterone assay as an aid.

For consultants, veterinarians and especially for dairy farmers and herd managers Hormonost Milk from Biolab GmbH has been very successful. Three drops of milk from the main or stripping milk are enough to obtain an answer to the previously mentioned questions in a relatively short period of time.

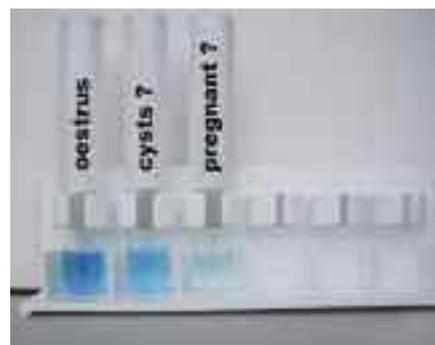
The varying colour intensities in the test tubes make visible what is happening in the ovaries and which structures are currently active.

Thanks to the simple test procedure of

Hormonost Milk, which is now even easier to use with the Microlab Farmertest device, one rapidly develops a feeling for the different events of the cycle in the ovaries.

It quickly becomes apparent how damaging feeding errors are for the cycle. Examples of such errors are ketosis, acidosis (rumen), excess of protein or husbandry errors such as overcrowding, dark and too warm barns with high humidity.

The handy Microlab photometer guides the user through the handling using a text which is shown on the display. This makes the evaluation a lot easier since the result is given in numbers of the progesterone value for example 22.7ng/ml, as an indicator of an active yellow body. This enables objective



Example of colours in the Hormonost Milk progesterone assay.

assessments and an even more accurate evaluation of the events in the ovaries.

The benefits of using the Hormonost milk progesterone assay include:

- Control of fertility prior to insemination – heat check if symptoms of heat are unclear: improved insemination rates and enhanced insemination index to 1.1-1.2 as a result of avoiding wrong inseminations due to presence of a yellow body (luteal phase insemination).
- Observation of early pregnancy: reduced time between calves due to rapid detection of non-pregnancy on day 20/21 post insemination. This can be used for an immediate re-insemination without time loss.

The Hormonost-Microlab Farmertest enables the following additional applications:

- Heat check and more exact pinpointing of insemination date (± 1 day) when using expensive sire or sexed semen.
- Early detection of cysts followed directly by veterinary treatment.
- Detection of yellow body insufficiency, enables on-time veterinary support.
- Competent consulting given to farmers in connection with test run including updates on relevant fertility data. ■

The handy Microlab Farmertest photometer. On the display it is showing 22.7ng/ml (nanograms of progesterone per millilitre) milk, which three weeks after an insemination would indicate a pregnancy.

