

FEATURES

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Reproductive Problems in Dairy Cattle

Reproductive problems in dairy cattle are observed by the dairy farmer as infertility (problem cows that do not become pregnant), abortions and birth of still-born or deformed calves. Non visible reproductive problems such as increase in the calving to first heat interval and inapparent heat cycles are becoming a bigger problem in high producing and seasonal herds.

If the embryo is less than 42 days old and dies, resorption will take place. If this happens, the farmer will not notice anything except a lengthening of the period between heat cycles (a normal heat cycle of a cow is 21 days). Abortion is when the foetus is rejected between 42 and 260 days of pregnancy. The foetus is then much further developed and the farmer will usually see the rejected foetus or the foetal membranes hanging out of the cow. Abortions can be sporadic or can occur as "abortion storms". When calves die after 260 days of pregnancy they are referred to as still-born and are usually associated with dystocias (difficult births).

Practical Approach to Reproductive Problems

In practice, reproductive problems can be divided into two groups, based on when it occurs in the reproductive cycle.

FERTILITY PROBLEMS

Fertility problems are encountered in the time interval between calving and the next pregnancy. These problems are investigated by the veterinarian in the routine monthly examinations after calving or artificial insemination. Fertility performance is measured according to the following criteria:

- Number of days between calving and first heat cycle
- Number of days between calving and first insemination
- Average intervals between heat cycles
- Average number of animals pregnant after first insemination
- Average number of inseminations required per pregnancy

One of the biggest problems influencing fertility performance is uterine infections after calving. More than 90% of dairy cows' uteruses are exposed to infectious organisms in that period when the uterine neck is still open as a result of calving. If the calving was difficult, there will be severe bruising of the uterine wall, which will increase the risk of infection.

A further risk factor for uterine infections is a retained placenta.

Uterine infections manifest as two dif-



ferent disease syndromes and these must be recognised by the farmer as the treatment and risks involved differ.

Endometritis

(chronic uterine infection)
Infection of the superficial layers of the uterine lining with mild tissue involvement. It is recognised by a thick yellow, custard-like discharge with little or no odour. However, in many cases, no external signs or discharge are seen and will only be diagnosed when the veterinarian performs an internal examination.

There are various ways to approach the treatment of endometritis, but the latest treatment regime is based on the activation of a normal heat cycle. A prostaglandin injection is given (if a follicle is detected on the ovary) or another prostaglandin preparation is administered (behind the ear or in the vagina) if no follicle is detected. These treatments are only available from the veterinarian doing your herd examinations.

Metritis

(deep uterine infection)

Metritis is a severe infection that affects all layers of the uterus. It is characterised by a red, watery, stinking discharge from the vagina about two weeks after calving. It usually occurs after abortions that are complicated with a retained placenta. In severe cases, the toxins from the

affected area are absorbed into the bloodstream and the animal shows severe disease symptoms, such as a sharp decrease in milk production, lack of appetite and a high fever. If not treated with antibiotics, the animal can die. Metritis can be prevented with insertion of uterine pessaries after difficult calvings or in cases of retained placenta. Always use gloves to insert uterine pessaries.

REPRODUCTION LOSSES

Reproductive losses are problems encountered from when pregnancy has been confirmed (6–8 weeks after last insemination) until the cow has calved. If problems occur in this period it is important that a thorough investigation of such a problem herd be done.



Photo 1: Financial losses due to reproductive problems involve far more than just the loss of a healthy cow. Many reproductive problems will cause a drop in milk production.

Non Infectious Causes

- Genetic defects can cause losses, but the losses are usually before the preg-

nancy has been confirmed, making this aspect difficult to pinpoint. This is regarded as “normal” but a high percentage of losses can indicate a genetic problem that is, for example, carried by a certain bull.

- Heat stress (experienced by European dairy breeds when the ambient temperature is over 18–20°C). This will have an effect on milk production and fertility. Heat stress will result in signs of heat being suppressed and cows will therefore not be inseminated. It also has a very negative effect on the survival of the embryo after fertilisation. To diminish heat stress, ensure that there is sufficient shade, water and ventilation.
- Certain poisonings can cause abortions, for example, chronic nitrate poisoning, and usually occurs late in the pregnancy. Toxins released by fungi (mycotoxins) that can be present in the feed, can also cause abortions.
- Insemination or rough handling of pregnant cattle can lead to abortions
- Any disease that causes a high fever can cause abortions in late pregnancy. It is usually the tick-borne diseases such as redwater, heartwater and gall sickness that are the culprits. There are certain live vaccines that may not be given during pregnancy.
- Vitamin A deficiency

that can result from feeding hay and pellets, pastures with nitrate fertilisers and winter veld grazing can lead to low conception rates and it is worthwhile to supplement with Vitamin A preparations.

Bacterial Diseases

Brucellosis (Contagious Abortion)

Infection with *Brucella abortus* is still the most important cause of reproduction losses in South Africa. It causes abortions, loss in milk production increased intercalving intervals and reduces the value of the herd. People can become infected with brucellosis by drinking infected milk and by handling infected calves, foetuses or afterbirths.

Brucellosis is introduced to a herd by an infected animal. Millions of *Brucella* bacteria are present in the placental fluids when the infected animal aborts or calves. The calf or aborted foetus and placenta are covered with *Brucella* organisms which infect the environment for months afterwards. In high rainfall areas and irrigated farms, the organisms can survive as long as 8 months in the shade.

Clean herds that become infected by the introduction of an infected animal, initially show abortions at a rate of 30–70% at 5–7 months of pregnancy. Occasionally weak calves are born but die shortly after birth. There is a high incidence of retained placentas, metritis and 20% drop in milk production. Later abortions will only occur in heifers or in new animals introduced into the infected herd. Bulls can become infertile if infected.

Eradication of brucellosis is difficult once the herd is infected, and can only be accomplished with vaccination and culling of infected animals. If blood tests show that the herd is clean, the farmer must ensure that he only purchases clean animals.

There are currently 2 vaccines available, RB 51 (Schering Plough) and Brucella S19 (OBP). The S19 vaccine can only be used before 9 months of age, as it will interfere with blood tests if cows are vaccinated at a later stage. RB 51 can, on the other hand, be used at any age. As with any products, ensure that the label is read before administering the vaccine. Consult your veterinarian especially regarding vaccination of adult animals.

Leptospirosis

Leptospirosis is a bacterial disease that is caused by many different strains of this organism. Different disease syndromes will result depending on which strain is present.

Leptospira pomona, of which pigs are the primary carrier, can cause abortion storms in cattle. Other strains, of which cattle are not the primary carriers, can cause severe disease syndromes when cattle are infected for the first time. Symptoms are fever, a drop in milk production and the milk becomes thick and red in colour due to blood. The udder feels softer than normal. Leptospirosis infection can be confirmed with blood tests about two weeks after abortions have taken place. Vaccines effective against *Leptospira* strains are available.

If cattle become infected with *Leptospira hardjo*, of which they are the primary carriers,

the disease syndrome is not so severe, but the long term effects are more serious. Symptoms are abortions, still-born calves, premature calving or birth of weak calves. All infected cows become carriers of the disease and the disease is thus spread by the purchasing of carrier animals. The main problem is that normal blood tests are not accurate in identifying carrier animals, and the vaccines available do not prevent the carrier state.

Viral Diseases

Infectious Bovine Rhinotracheitis

Infectious bovine rhinotracheitis (IBR) virus is widespread in South Africa. IBR usually affects the respiratory system of young cattle, but can also affect the reproductive system. It causes an infectious pustular vulvovaginitis in cows and heifers, as well as sheath infections in bulls.

The virus can infect the foetus, and causes abortion storms in herds that have not been vaccinated. Mummification of foetuses can also occur. To confirm the cause of abortions, the virus can be isolated from the aborted foetuses, microscopic examination of the foetal organs and blood tests from cows that have aborted can be done. The blood tests can be repeated two weeks later. Vaccination of heifers must preferably be done before the breeding season and be repeated before each successive breeding season to prevent abortions.

Bovine Viral Diarrhoea (BVD)

This virus is also fairly widespread in South Africa, and

can be present on a farm and not cause any problems. The virus can infect the pregnant cow and affects the foetus in various ways. The effect on the foetus depends on the stage of pregnancy that the foetus becomes infected. Infection of the foetus at an early stage can result in a normal calf; however, it will be permanently infected with the virus. Foetuses that are infected in mid or late pregnancy can abort or can be deformed.



Photo 2: BVD infection of the foetus can cause births of deformed calves

Reproduction losses as a result of BVD can be prevented by vaccination. However, calves that are permanently infected are a continual source of infection. If it has been confirmed that BVD is the cause of abortions, the herd must be tested, the permanently infected animals identified and culled.

A combination IBR/BVD vaccine, which will protect against formation of permanently infected animals, is available. Do not use live IBR or BVD vaccines in pregnant animals. Vaccination programmes for IBR/BVD are very complicated so farmers must contact their veterinarian in this regard.

Venereal Diseases

The term venereal refers to diseases transmitted by mating. Bulls are of importance in this regard as one infected bull can infect large numbers of cows. Two of the most important venereal diseases are trichomoniasis and vibriosis.

Bulls are the carriers of *Trichomonas*, which is then transmitted to cows during mating. Trichomoniasis can be eliminated from a herd by artificial insemination with semen from approved bull stations. If bulls are used for breeding, they must be tested to ensure that they are free of venereal disease.

Campylobacter or vibriosis causes irregular heat cycles, reduced conceptions and sporadic abortions at 4–7 months. Vaccination reduces the effects of infection. In clean herds, select only clean

bulls or use only clean semen for AI purposes.

Other causes

The diseases and conditions already discussed are the most common causes of reproductive problems, but there are others not so commonly encountered that would need a veterinarian's diagnosis.

Investigation of Reproduction Losses

In any dairy herd, reproduction losses will be encountered, but this is only considered to be a problem when it exceeds a certain level, for example, more than 2% abortions after pregnancy has been confirmed, 5% retained placentas and 10% endometritis cases.

The fact that there is a problem must first be established because investigating and rectifying the problem can cost thousands of rand. This is done by doing an analysis of the herd records.

The next step is to make a list of all the possible causes of the reproduction losses, so that during the investigation they can be eliminated one by one. The veterinarian will need a detailed history of the herd, such as brucellosis status of herd, any signs of disease that may have been noticed, the number of animals affected, the stages of abortions, whether the farmer uses bulls or AI, vaccination programmes, new animals that have been introduced to the herd.

If abortions occur or stillborn, weak or deformed calves are born during the investigation, post mortems will provide valuable information. The farmer must keep aborted foetuses or stillborn calves as well as the afterbirth and call the vet, or take to the vet or laboratory as soon as possible. Do not freeze the foetus or calf. It is important to wear gloves when handling aborted or stillborn calves.

Such post mortems can give very valuable information about the cause of the problem and samples can be taken for microbiology and microscopic examination.

Blood samples from cows that have aborted can be helpful for diagnosis of brucellosis, leptospirosis and BVD. If venereal diseases are suspected, sheath washes must be done on the bulls.

Although it is difficult to diagnose the less common causes of reproductive losses, a thorough investigation over a long period of time is worthwhile due to the economic advantage in reaching a diagnosis.

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Photos courtesy of Schering Plough Animal Health