

# Neospora a ticking time-bomb

**D**airy farmers can lessen their risk of abortion losses in heifers by blood testing young calves and culling those born infected with *Neospora caninum*.

Recent Massey research has shown that infected heifers are up to 24 times more likely to abort, so not rearing these animals and selecting other calves to raise will reduce the level of abortion in the herd. Another option is to identify infected cows and not keep replacements from them.

*Neospora caninum* is the most commonly diagnosed cause of abortion in cattle in New Zealand,

and in 1998 was estimated to cost dairy farmers at least \$24 million/year.

The parasite can infect dogs as well as grazing animals, but abortion is mainly seen in cattle.

Cows become infected after ingesting feed or water contaminated with faeces from an infected dog, but infection in New Zealand is most commonly passed from cow to calf during pregnancy. It can cause extremely damaging "abortion storms", where up to 35 percent of a herd abort over a short time.

It is thought this can occur when a previously uninfected

herd comes in contact with infection – probably from a dog. Once this settles down, affected herds go on to have a lower level of abortion of from three to 10 percent.

## Antibodies

Infected cows produce antibodies which can be measured in the blood for some months. Antibodies provide some protection against future infection, but the parasite is never fully eliminated from the cow and "hibernates" in tissue cysts in the brain and spine.

During times of stress and when the immune system is suppressed, as in pregnancy, the parasite reactivates and spreads through the cow's circulation to the fetus.

Depending on the stage of development of the fetus and the strength of the cow's immune response this may cause the death of the fetus or it may survive the infection but be born infected, carrying the parasite with antibodies in the blood.

In a trial supported by Dairy InSight, the replacement heifers on a 700-cow dairy farm in the central North Island were followed through their first pregnancy to identify abortion and measure *Neospora* infection status. The property had experienced a *Neospora* abortion storm seven years earlier and low-level losses were continuing.

Massey University veterinarians had collected blood from all cattle on the farm, which totalled about 1000 head, every three months since the outbreak began, so it was known which animals were infected. It was also seen that most infected cows gave birth to infected calves.

The heifers were scanned

monthly using ultrasound and blood was collected to measure antibodies against *Neospora*. All except one of the 165 rising two-year-old heifers became pregnant. Eighteen heifers were consistently antibody positive from their first blood sample at three months, and were considered to have been born infected. Of these heifers, 11 or 61 percent went on to abort.

Four of 146 non-infected heifers also aborted, or three percent. Most of the *Neospora*-infected heifers aborted during the fourth and fifth months of pregnancy and only one abortion was observed by the farmer – a set of twins from a non-infected heifer at seven months gestation.

## Decrease

*Neospora*-infected cows are far more likely to abort than non-infected cows in any pregnancy, so the number of infected cows in a herd would decrease over time from culling if it weren't for the addition of infected heifers. An infected cow will abort or produce an infected calf in almost every pregnancy.

Blood sampling the whole herd to identify and cull all infected cows isn't feasible, as antibody levels may drop below detectable levels in many cows.

Calves born infected seem to have high and persistent antibody levels and can easily be identified by blood testing. Not keeping infected heifer replacement calves means farmers will more quickly remove infected animals from their herd and lower the herd's abortion rate.

The mothers of these infected calves would also most likely be infected so not breeding replacements from them in future would also minimise losses. **D**

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