Leptospirosis

Leptospirosis is serious infectious disease of dairy cattle. It is important not only because of its detrimental effects on the health and production of the herd, but also because it is transmissible to humans from cattle. In humans it can cause serious, long-term illness.

A vaccination program can provide long-term immunity in cattle against leptospirosis, thus protecting the herd and humans from the disease.

Cause

Leptospira interrogans serovar pomona and Leptospira interrogans serovar hardjo

Signs of the disease

L. pomona usually affects calves causing fever, depression, acute anaemia, small blood spots on gums, and redwater; in older cows it can cause abortion, and mastitis with reduction in milk yield and milk discolouration.

L. hardjo usually affects pregnant or lactating cows causing fever, a flabby mastitis with severe drop in milk production, milk discolouration and abortion.

Potential economic losses

L. pomona infection:

- can affect most of the calves in a herd, with a death rate of up to 100%
- in calves is now a less common disease, due to temporary immunity gained from drinking colostrum from vaccinated cows
- in older cattle can cause sudden and severe reduction in milk yields
- sometimes causes abortion.

L. hardjo infection:

- affects many cows in a herd
- results in a sharp drop in milk yields for up to 14 days
- results in an increased milk leucocyte count
- may cause abortion in 5-10% of affected cows, 6-12 weeks after infection.

Apart from reduced milk production, abortions and calf deaths economic affects include:

- treatment costs
- employment costs for relief staff when workers become infected
- workers compensation costs
- legal liability for preventable disease contracted by staff at work.

Risks to people

Leptospirosis in humans causes:

- severe flu-like illness usually lasting about one week
- in some cases, a chronic recurring disease
- occasionally severe nervous symptoms.

There is no leptospirosis vaccine for people. The best way to prevent leptospirosis in dairy workers is by vaccinating the herd to eradicate the disease from the cattle. Farmers must take responsibility to prevent infection risks to their workers, family, visitors and themselves.

How the disease spreads

- Infected animals can shed the bacteria in their urine for many months or even years, causing new infections in any susceptible animals
- Humans and cattle can become infected by inhaling fine droplets of urine splashing from infected cows during milking
- The bacteria can penetrate the mouth, nose, eyes or damaged skin
- Most mammals including people, cattle, pigs, sheep and rodents can be infected
- The bacteria can survive for weeks in water, mud and damp soil e.g. around dairies

Prevention and control

A vaccination program can provide long-term immunity in cattle against leptospirosis. Vaccinate all susceptible cattle before infection occurs, so that chronic urinary shedding is prevented.

For herds that already have leptospirosis:

- Vaccination will immunise young uninfected cattle against the organism.
- The older chronic carriers will be gradually culled, leaving only immune cattle.
- Vaccination does not prevent urinary shedding of the organism in previously infected cattle.
- Veterinary treatment is required to cure the disease.

Vaccination program

- Vaccinate all cattle with a combined hardjo and pomona (two-in-one) vaccine.
- The first dose is given at 3 to 6 months of age.
- A second dose should be given 4 to 6 weeks later.
- Calves vaccinated before 6 months of age (to protect against pomona redwater) require revaccinating at 6 months, and again 4 to 6 weeks later, as maternal antibodies may interfere with acquiring long-term immunity before 6 months of age.
- Cattle should be given a booster vaccination every 6-12 months as required.
- 6-monthly vaccination may be warranted, if a farm has a history of leptospiral problems.
- Boosters are best given 2 to 4 weeks before calving or before the wet season.
- Vaccinate all livestock on the property as all stock, including bulls and steers, can be infected and become chronic urinary shedders.
- All new animals brought onto a property should be fully vaccinated before being introduced into the herd.
- It is important to follow the advice given for the specific vaccine being used as recommendations vary for different manufacturers.
- Using a combined leptospirosis-clostridial (seven-in-one) vaccine will improve the efficiency and economy of the vaccination program.

Vaccination costs

The cost to vaccinate a herd can vary significantly. Prices can be affected by:

- number of cattle to be vaccinated - larger herds generally cost less per head
- regional pricing
- prices set by the vaccine supplier
- sale price - buying on special can significantly reduce the overall cost.

It is important to compare the different brands and various retailers to ensure you get the most economical vaccination program.

These costs are based on 2003 prices for a 100-cow herd (100 cows, 3 bulls, 25 heifers and 40 replacement heifer calves) and do not include labour, materials or facility costs:

- $0.70 per dose of a leptospirosis two-in-one vaccine
- 100 cows, 3 bulls, 25 heifers, plus 40 heifer calves (calves require two doses) 208 doses a year @ $0.70 a dose costs $145.60 annually.

Therefore the program would break-even, if the equivalent of one animal (valued at $1000) was saved every seven years by vaccination against leptospirosis.

Using a seven-in-one vaccine (combined leptospirosis and clostridial vaccine) saves time and labour costs, because it requires only one injection instead of two, to protect the herd against the five clostridial diseases and the two types of leptospirosis

- $1 per dose (for 100-cow herd) @ 208 doses a year costs $208 annually.

Therefore the program would break-even, if the equivalent of one animal (valued at $1000) was saved (from the effects of any of the clostridial diseases or leptospirosis) every five years by a seven-in-one vaccination.

Vaccination tips

- Follow the manufacturer's instructions.
- Store and handle vaccines correctly to ensure their effectiveness is not reduced.
- Adhere to safety precautions for workers handling vaccines and associated equipment.
- Ensure safe disposal of used equipment, avoiding environmental contamination.
- Make sure animals are in good health to optimise immunity.
- Vaccination does not provide instant protection - generally full protection doesn't occur until up to four weeks after the initial doses.

Source: Queensland Department of Agriculture, Fisheries and Forestry; 2009