MLA case study: Johne's disease test

What: **DNA-based diagnostic test for bovine and ovine Johnes disease**

Who: **MDC, University of Sydney and NSW Department of Primary Industries**

Why: **Decrease risk of further disease spread**

Speeding up Johne's disease diagnosis

After more than a decade of research in Australia and overseas, sheep and cattle producers now have a quicker tool to diagnose Johne's disease.

The new DNA-based diagnostic test was developed using MLA Donor Company funding, and cuts waiting time from three months with the previous culture-based test to just one week.

This decreases the risk of further disease spread and reduces stress on affected producers.

The test – known as High Throughput Johne's (HT-J) Assay – was put through its paces after bovine Johne's disease was diagnosed in Queensland in 2012 (following preliminary approval).

After collaboration from researchers and laboratory technicians, the test was then refined before it was approved by the Standing Committee on Animal Health Laboratory Standards in 2013-14.

The test was developed by researchers from the University of Sydney and NSW Department of Primary Industries.

Fast facts:

- New diagnostic test reduces waiting times from three months to one week
- Average economic loss from ovine Johne's Disease has been estimated at $7.68/DSE
- Test should be used in conjunction with remedial management strategies

The project was part of a five-year $6.4 million research program into cattle and sheep Johne's disease by the MDC in partnership with Animal Health Australia.

Most animals become infected with Johne's disease in their first year of life but don't show signs of disease for years. They only shed minuscule amounts of bacteria in their faeces in the early stages of infection, which makes it very hard to detect, but can infect other animals and other properties if sold.

The challenge for researchers was to detect the very small amount of Johne's disease bacteria in faecal samples.

The new test will enable affected producers to more quickly adopt corrective/remedial management strategies, by working with their veterinarian to interpret test results at a herd/flock level, and then properly deal with Johne's disease.

"The more quickly you can get a JD diagnosis, the more quickly you can stop further spread of the disease. It also reduces stress on producers – they no longer have to wait three months to find out if their property is affected or not."

MLA's Animal Health and Biosecurity Project Manager, Dr Johann Schröder

CASE STUDY

Johne's disease test

Costly problem

Because of the slow onset and progression of the disease it is very difficult to accurately measure its cost to producers. One estimate has put the economic loss due to ovine Johne's Disease at an average $7.68/DSE.

Johne's disease is a chronic wasting disease caused by the bacterium *Mycobacterium avium* subsp. *paratuberculosis*, which live in the animal's intestines and interfere with absorption of food.

The strain of the bacterium that mainly affects cattle, goats, deer and camelids is called bovine Johne's disease, while the strain that affects sheep (and can also affect goats) is called ovine Johne's disease. New evidence however suggests that strains will cross-infect in some situations.

Signs to look out for include progressive weight loss, emaciation in older animals despite a good appetite, diarrhoea and bottle jaw.

Producers can prevent and manage Johne's disease by:

- Developing and implementing a farm biosecurity plan
- Only purchasing animals with an animal health statement
- Only introducing low-risk stock onto the property
- Implementing grazing management strategies to prevent the spread of the bacteria
- Weaning early to limit infection of young calves, lambs and kids
- Vaccinating sheep

Further information

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