

# Joint effort to fight disease

It is estimated to cost farmers up to \$88 million a year and now a new joint venture aims to help them manage the costly effects of the animal-wasting Johne's disease.

The Johne's Disease Research Consortium (JDRC) is a combined industry and Government initiative that will unite and accelerate Johne's disease research.

Animal Health Board director and Intervet general manager Andrew MacPherson, who has been appointed as the independent chair of JDRC, said the aim was to develop and use the most efficient and effective tools to reduce the prevalence of Johne's disease on New Zealand farms.

The JDRC brings together Meat & Wool New Zealand, DairyNZ, DEEResearch, Massey University, Livestock Improvement, AgResearch, the University of Otago and the Foundation for Research, Science and Technology.

"This disease has a significant impact on animal health and production," Agriculture Minister Jim Anderton said. "So this consortium is an excellent example of industry and Government collaboration to make some serious gains in combating the production losses caused by Johne's disease."

Over the next five years, the consortium will invest \$2.2 million each year in the project.

The bacterial disease is spread by infected pastures and waterways, and causes an immune reaction that can ultimately kill animals, especially young deer, by impairing the absorption of nutrients.

As well as its impact on animal health, Johne's disease is believed to reduce production by between \$40 million and \$88 million a year.

The four approaches the consortium will use to combat Johne's are improved diagnostics, herd control, vaccination, and finding a gene marker for resistance to the bacteria.

Farmers and vets do not yet have an easy-to-use test for Johne's disease and often verification is only made post-mortem.

Dr MacPherson said current vaccines against Johne's can have side effects and may confuse the picture when it comes to TB testing.

Research will also focus on gene markers.

A gene marker for Johne's disease resistance might be identifiable as not all animals get the disease, even when exposed to the bacteria.

"If the gene does not compromise production traits, selection using the marker could result in resistant stock. Johne's disease markers would be the final long-term solution for farmers."

The Meat Industry Association and Dairy Companies Association of New Zealand are associate participants.

# Next stage for Johne's research

## Consortium to develop technologies

by Jackie Bedford

The newly formed Johne's Disease Research Consortium (JDRC) will build in part on work already done by the deer industry.

The Consortium is a combined industry and Government initiative that aims to help New Zealand farmers manage the effects of Johne's Disease.

A bacterial disease, Johne's is spread by infected pastures and waterways and causes an immune reaction that can ultimately kill animals, especially young deer, by impairing the absorption of nutrients. Johne's Disease is believed to reduce NZ livestock production by between \$40 million to \$88 million a year.

DEEResearch, a joint venture between AgResearch and the deer industry, has committed to contributing \$100,000 a year to the Consortium for the next five years, as part of a total annual Consortium budget of \$2.2 million a year.

Deer Industry New Zealand (DINZ) chief executive Mark O'Connor is representing the deer industry on the Consortium board. The Board met for the first time in December.

The timing of the Consortium establishment has been influenced partly by the time taken to put up a bid to the government's funding agency, the Foundation for Research, Science and Technology (FRST).

Other Consortium members are Meat & Wool New Zealand, DairyNZ, Massey University, Livestock Improvement, AgResearch, the University of Otago and FRST, with the Meat Industry Association and Dairy Companies Association of New Zealand as associates. Animal Health Board director and Intervet general manager Andrew MacPherson has been appointed as the independent chair and Jessie Chan is the Wellington-based manager.

The Consortium's four key approaches will be: improved diagnostics, herd control, vaccination and finding a gene-marker for resistance to the bacteria. Herd control involves giving farmers the management techniques, including identification, selection, isolation and culling management related to Johne's Disease. As yet, farmers and vets do not have an easy-to-use test for Johne's Disease and often verification is only made post-mortem. Current vaccines against Johne's Disease can have side effects and may confuse the picture when it comes to Tb testing.



Part of the team taking on Johne's  
Lindsay Fung, Deer Industry NZ science manager and Jessie Chan, manager of the new Consortium

Research will also focus on gene markers for resistance to the disease – which are viewed as the long-term solution.

The deer industry has made some valuable headway during the past few years, with efforts spearheaded by the Johne's Research Group (JRG), chaired by deer farmer Peter Aitken.

DINZ Science Manager Dr Lindsay Fung says there's still a place for the JRG, which is an affiliate of the Deer Farmers' Association (DFA). "It has played an important role for research in the deer area, and the Consortium doesn't take over its particular role. The JRG has been more focused on management and getting information and tools out to farmers. The JRG is a good pathway to get technologies out to farms.

"Research on Johne's Disease in deer in some areas is quite advanced relative to other livestock species and deer themselves may prove to be a useful model due to the severity of their reaction to the disease," he adds.

The distribution of a Manual to farmers in 2007 was the final activity of a three-year JRG project that was financed by \$366,000 from the Sustainable Farming Fund (SFF) and contributions from industry co-funders. The JRG was unsuccessful

in a bid for further SFF funding this year which would have extended the dissemination work to include other livestock species. "It was probably about 12 months too early," comments Tony Pearse, DINZ Producer Manager.

However, another SFF application is now on the drawing board, seeking funding to help set up a specialist network of veterinarians and other expertise to offer support for deer farmers when the agency Johne's Management Limited starts to feed information to them about the status of stock they've sent for slaughter.

Meanwhile, this year the DFA will continue to promote the Johne's Disease status scheme developed by the JRG. "The branch chairs supported this," explains Tony. "It's a simplified version and if people know about it, they can start asking the right questions about Johne's Disease history and testing processes when they're purchasing stock."

Peter Wilson of Massey University is organising a two-day workshop in early March for researchers working on Johne's Disease in deer, in association with Johne Management Limited which is co-ordinating the database of information from processing plants about incidence of the disease in slaughtered stock.

# \$11m to keep up with Johnne's

A joint \$11 million Government-industry venture has been launched to help farmers manage, control or eliminate the costly effects of the animal-wasting Johnne's disease.

The Johnne's disease research consortium (JDRC), announced by Agriculture Minister Jim Anderton, has united DairyNZ, LIC, Meat and Wool New Zealand, DEEResearch, Massey University, AgResearch, the University of Otago and the Foundation for Research, Science and Technology (FRST) in the project.

Its aim is to develop and use the best tools to reduce the prevalence of Johnne's disease in this country. It will be headed by Animal Health Board (AHB) director and Intervet general manager, Andrew MacPherson, who has been appointed as its independent chair.

The disease is caused by *Mycobacterium Avium Paratuberculosis* (MAP), which has been linked by some researchers with Crohn's disease in humans. MAP has been reported in commercial pasteurised milk in the United Kingdom.

Johnne's is estimated to cost farmers up to \$88 million every year in lost production. It is widespread in dairy cattle, goats, deer, alpaca, sheep and beef cattle and is increasing. It is endemic in some regions, such as Taranaki and Waikato.



"This disease has a significant impact on animal health and production," Anderton said.

The consortium was an excellent example of industry and Government collaboration to make serious gains in combating the production losses the disease caused.

The consortium planned to invest \$2.2 million a year in the project over the next five years, Anderton said.

## Four approaches

The four approaches the consortium will use to combat Johnne's disease are improved diagnostics, herd control, vaccination, and

gen to do something about it.

"Herd control involves giving farmers the management techniques, including identification, selection, isolation and culling management related to Johnne's disease."

Current vaccines against Johnne's disease could have side effects and might cause confusion in Tb testing.

Research will also focus on gene markers, such as one for resistance in animals which appear immune to the disease, MacPherson said.

"If the gene does not compromise production traits, selection using the marker could result in resistant stock. Johnne's disease markers would be the final long-

term solution for farmers."

JDRC manager Jessie Chan said tools used for control of Johnne's must be cost-effective and suitable for adoption by the farming sector.

The Meat Industry Association (MIA) and Dairy Companies Association of New Zealand (DCANZ) are associate participants.

Australia, which has relatively little incidence of the problem, is at the forefront of Johnne's disease control internationally. It has had a national control programme since 1996 with a specific plan for sheep since 1998 and for cattle since 2003.

In New Zealand, FRST included the elimination of Johnne's by 2010 in its 2006/07 targets. **D**

“If the gene does not compromise production traits, selection using the marker could result in resistant stock.”

It affects animals by thickening the intestinal wall, which blocks absorption of food. Animals eat but cannot absorb nutrients, which results in wasting and finally death. Diarrhoea and bottle jaw are also common signs of Johnne's in cattle. It is believed to be spread by infected pastures and waterways and can kill animals, especially young deer.

finding a gene-marker for resistance to the bacteria. Farmers and vets do not yet have an easy-to-use test for Johnne's disease and often verify the disease only at the post-mortem stage.

MacPherson said there were challenges to developing diagnostic tools but if farmers could detect the disease, especially at sub-clinical levels, they could be-

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# Heat turned higher under \$40m disease

**MALCOLM MOUNTFORT**

DAIRY, cattle and deer farmers are being urged to talk soon to their vets about checking their herds for Johne's disease. This 'silent thief' – it shows few signs in early stages – annually steals \$40-\$88 million of farm production.

So says the Johne's Disease Research Consortium (JDRC), an industry/Government initiative expected to accelerate research into the disease.

JDRC chairman Andrew MacPherson says some strains of Johne's have long incubation periods and may be incubating long before stock show clinical signs.

"Engage a vet with an interest in Johne's – there is a group of vets around like this – and get them involved if you are worried about the

disease."

MacPherson says signs in dairy are chronic non-responsive scours and loss of weight.

"There is an array of diagnostic tools and farmer and vet must decide what one to use. A vet is ideally placed to understand what is happening on a client's farm; you can have that conversation about Johne's with your vet when he is visiting."

MacPherson says the group aims to develop and use the most efficient and effective tools to reduce the prevalence of the disease on New Zealand farms.

Participants are Meat & Wool NZ, DairyNZ, DEERe-search, Massey University,

Livestock Improvement, AgResearch, the University of Otago and the Foundation for Research, Science and Technology (FRST). The consortium will spend \$2.2 million during each of the next five years.

Agriculture Minister Jim Anderton describes as "significant" the impact of the disease on both animal health and production, "so this consortium is an excellent example of industry and government collaboration to make some serious gains in combating the production losses."

The bacterial disease spreads via infected pastures and waterways, causing an immune reaction that can kill animals, especially young

deer, by impairing the absorption of nutrients.

The consortium will tackle the disease by improved diagnostics, herd control, vaccination and finding a gene-marker for resistance to the bacteria.

Says MacPherson, "Herd control involves giving farmers management techniques – identification, selection, isolation and culling – for Johne's." He says current vaccines can have side-effects and may confuse the picture when it comes to Tb testing.

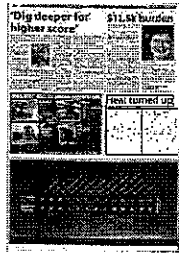
Research will also focus on gene-markers. A gene-marker for Johne's disease resistance might be identifiable – not all animals get the disease even when exposed to the bacteria.

"If the gene does not compromise production traits, selection using the marker

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Andrew MacPherson



# Heat turned up

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could result in resistant stock. Johne's disease markers would be the final long-term solution for farmers. "

JDRC manager Jessie Chan says the goal is control of the disease: "The tools must be cost-effective and suitable for adoption by the farming sector."

In cattle, the main symptoms of Johne's disease are diarrhoea and wasting. Most cases are seen in animals aged two to six years. Initial symptoms can be subtle – weight loss, decreased milk production or roughening of the hair coat. Signs are rarely evident until two or more years after the initial infection, which usually occurs shortly after birth.

Animals are most susceptible in their first year. Stress can turn a subclinical case into a clinical, for example, stress

on heifers associated with calving.

Infected sheep may show signs of ill-thrift. Wool break and poor fleece condition may be noted also. Weight loss in animals with a good appetite may be the only indication because diarrhoea is not a common sign in sheep, unlike in cattle. The signs of Johne's disease can be confused with the clinical indications or expressions of other wasting conditions. The wasting always leads to death.

Clinical signs in deer range from slowing of weight gain to weight loss, emaciation and death. Johne's disease in deer expresses itself in two main ways: sporadic cases in mixed age deer; and outbreaks in weaners and yearlings, occasionally severe, affecting 20-25% of young animals.