

# PROTECT WHAT MATTERS MOST

## FROM LEPTOSPIROSIS



# ADVANCED PROTECTION

## LEPTO 4-way™

# What is leptospirosis?

**Leptospirosis (lepto) is a zoonotic disease caused by bacteria that are spread from animals to humans. Lepto is contracted most commonly through exposure to the urine of infected animals, either through direct contact or via contaminated water.**

**The bacteria enter through cuts or grazes on our skin, or through the mucous membranes of our eyes, nose and mouth.**

## WHAT IMPACT DOES LEPTOSPIROSIS HAVE?

Acute leptospirosis occurs mainly in calves. Clinical signs may include: fever, anorexia or loss of appetite. Adult cattle often show no clinical signs. If cattle are symptomatic the first signs of illness are: reproductive losses (stillbirth or neonatal death, foetal loss or abortion), sudden decrease in milk production, and jaundice (in severe cases).

The impact leptospirosis can have in humans is devastating, with severe flu symptoms and in some cases debilitating illness requiring hospitalisation. Some may not be able to work for months and, in severe cases, be unable to return to running their farm.

## AM I AT RISK?

Humans catch leptospirosis from infected animal urine. Even a splash or fine spray of urine or indirect contact with urine-contaminated water can spread large numbers of leptospires. Cuts, sores and skin grazes increase the risk of infection, as does licking your lips and eating, smoking or vaping before washing and drying your hands.

**People at higher risk of exposure are those working near the rear of the animal such as:**

- Farmers
  - Vets
  - Vet Technicians, especially those that administer internal teat sealants
  - Stock truck drivers
- 
- Milking is a high risk activity because of the risk of urine splash on the milker
  - Family members, including children, are at risk if they go barefoot or paddle in contaminated water



# Pacifica - NZ's emerging strain

In recent years, there have been cases of leptospirosis in farmers and staff working on vaccinated dairy farms, many of which are thought to be due to a newly discovered strain of leptospirosis within our dairy herds - 'Pacifica' (Figure 1).<sup>2</sup>

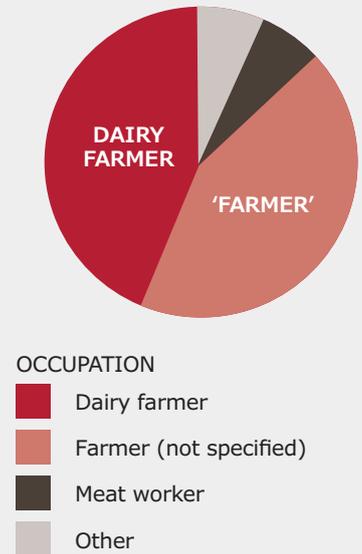
Recent research suggests that Pacifica could be present in three quarters of dairy herds throughout New Zealand.<sup>3</sup>

A large-scale survey of 4000 dairy cows across 200 herds throughout NZ was conducted in 2016.<sup>3</sup> Results found that:

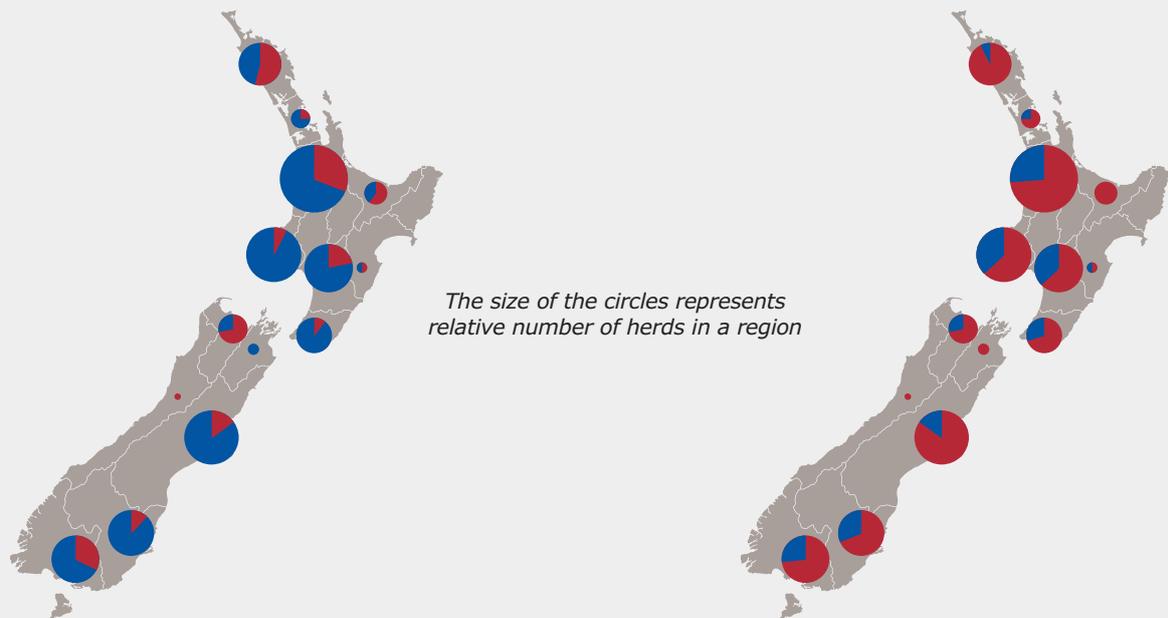
- 27% of herds had at least one cow actively shedding leptospirosis bacteria in the urine (Figure 2, below left).
- 74% of herds had at least one cow displaying antibodies to Pacifica/Tarassovi (Figure 2, below right).

With exposed dairy herds in every major dairy farming region in New Zealand, it is likely that these shedding cows were linked to the increase in human leptospirosis cases.<sup>4</sup>

**FIGURE 1: Occupation of Human Pacifica Cases 1999-2017<sup>2</sup>**



**FIGURE 2: Proportion of Dairy Herds Shedding Lepto in Urine (Left) and with Antibodies to Pacifica/Tarassovi (Right)<sup>3</sup>**



- Proportion of herds with at least one cow shedding leptospirosis
- Herds with no cows shedding leptospirosis

- At least one cow with antibodies to Pacifica/Tarassovi
- All cows with no antibodies to Pacifica/Tarassovi

# Protecting against leptospirosis

The emergence of the new strain Pacifica has increased human health risks on dairy farms throughout New Zealand.

**Leptospirosis is difficult to eliminate. Minimisation through a vaccination programme is the best option for managing this increased risk.**



Lepto 4-Way™ is an inactivated cattle vaccine that has been developed to provide an immune response against the emergence of Pacifica, as well as protection against the 3 strains (Hardjo, Pomona & Copenhageni) previously covered by most traditional vaccines.

Lepto 4-Way™ stimulates the immune system of calves and adult cattle to produce antibodies against these strains, stopping their shedding in urine, and reducing the risk of leptospirosis infections in humans.



**HARDJOBOVIS**



**COPENHAGENI**



**POMONA**



**PACIFICA**

## USING LEPTO 4-WAY™

- Shake thoroughly before use and administer 2 ml subcutaneously in the anterior half of the neck.
- A booster dose is required 4-6 weeks after initial vaccination and then annually thereafter.
- To minimise reactions at the injection site always vaccinate in clean and dry conditions, using a clean needle that is regularly replaced (at least every 50 cows).

## STORING & HANDLING LEPTO 4-WAY™

**To avoid degradation of the vaccine, the cold chain must be maintained.**

Lepto 4-Way™ must be stored refrigerated at 2-8°C. It must not be frozen, and should be protected from light (we recommend keeping the vaccine pack in the original carton when not in use). If in doubt, please contact your veterinarian for advice.

In situations where an incomplete vaccine pack is left at the end of administration, it can be kept for up to 30 days, as long as the instructions on the product leaflet are adhered to.

# Herd vaccination

---

**At least 90% of New Zealand dairy farmers vaccinate their stock<sup>5</sup>, mainly to protect themselves and their workers from infection. However vaccinated herds may continue shedding if vaccination isn't carried out regularly or is left too late.**

**Protecting all stock on your farm is key to minimising infection, spread and safety for everyone.**

## VACCINATION OF CALVES

- The aim of vaccinating calves is to protect them before they are exposed to leptospirosis naturally.
- By vaccinating before natural exposure we can not only prevent calves from becoming unwell, but also stop them from shedding the bacteria if they do become exposed.
- The time to start vaccinating your calves will depend on the risk of exposure in your region, and in some cases vaccination will need to start as early as 4 weeks.
- Calves require 2 doses, 4-6 weeks apart. However they may require a further single dose of vaccine to ensure adequate immunity if vaccination starts early, or to align them with the herd.
- For advice based on the lepto risk in your region and when best to vaccinate your calves, speak with your vet.

## HERD VACCINATION

- Following an initial course of vaccinations (2 doses), protection is maintained in the herd through an annual booster at 12 month intervals.
- When introducing new stock of unknown vaccination status, it is important to ensure they are vaccinated twice, 4-6 weeks apart, and then annually in line with the rest of the herd.

### **WILL I NEED TO BOOST MY HERD AND HEIFERS WITH LEPTO 4-WAY™?**

If this is the first year you are using Lepto 4-Way™, you will need a booster dose in your herd and heifers.

Lepto 4-Way™ is expected to provide immunity against Pacifica - a newly emerging lepto strain that has never been available in cattle vaccines.

Although herds have previously been protected from the other strains in the vaccine, the component which provides immunity against Pacifica hasn't been encountered before.

Because Lepto 4-Way™ does not contain live bacteria, cattle require a second/booster dose to ensure higher levels of antibodies for longer. Once the initial course (2 vaccines) is given, these high levels of antibodies are maintained by an annual booster.

# 7 steps to reduce your risk

Simple strategies you can use to form a leptospirosis action plan for your farm.



## 1. VACCINATION

A robust vaccination plan will provide the most advanced protection. Your vet can advise on how to implement this on your farm.



## 2. HYGIENE AND PERSONAL CARE

Avoiding contact with urine is vital. Always wear PPE and avoid eating and drinking, smoking or vaping in the milking shed. PPE should be worn when hosing down and assisting with calvings, as well as when handling afterbirth, aborted foetuses, kidneys and bladders.



## 3. STAFF AND VISITOR TRAINING

Ensure all staff and visitors (including family) are given a robust induction on leptospirosis risk factors and how to minimise them. Visible signage around the milking shed and property can act as a reminder and ensure preventative steps are consistently implemented.



## 4. EFFLUENT AND WATERWAY

Lepto bacteria from infected urine can last for up to 6 months in wet conditions. Fencing off effluent ponds and waterways as well as strict control surrounding effluent spreading is paramount.



## 5. RODENT CONTROL

Rodent urine can be a source of leptospirosis, so control is vital and its ongoing implementation is key. Keep records of bait stations and maintain them regularly. It is also important to ensure potential food sources such as calf meal and silage are rodent proof.



## 6. INTRODUCING NEW STOCK

It is essential to ensure all new stock are fully vaccinated prior to entry on to the farm.



## 7. OTHER STOCK

If there are sheep, pigs or deer on farm, it is important they are fully vaccinated to prevent them becoming infected with leptospirosis, which could spread to your herd. Your vet can best advise on how to implement vaccination programmes for other species and different classes of stock.

# References

---

1. Prinsen G, Baker M, Benschop J, Collins-Emerson J, Douwes J, Fayaz A, Littlejohn S, Nisa S, Quin T, Yeung P. "We don't really do doctors." messages from people diagnosed with occupational leptospirosis for medical professionals on infection, hospitalisation, and long-term effects. <https://doi.org/10.1016/j.heliyon.2023.e19303>
2. Nisa S, Wilkinson DA, Angelin-Bonnet O, Paine S, Cullen K, Wight J, Baker MG, Benschop J. Diverse epidemiology of *Leptospira* serovars notified in New Zealand, 1999-2017. *Pathogens*. 2020 Oct 14;9(10):841. doi: 10.3390/pathogens9100841. PMID: 33066613; PMCID: PMC7602385.
3. Yupiana Y. Leptospirosis in dairy herds: a thesis presented in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Massey University, School of Veterinary Science, Massey University, Palmerston North, New Zealand.
4. Yupiana Y, Vallee E, Wilson P, Collins-Emerson J, Weston J, Benschop J, Heuer C. Emerging *Leptospira* strain poses public health risk for dairy farmers in New Zealand. *Preventive Veterinary Medicine*, Volume 170, 2019, 104727, ISSN 0167-5877, <https://doi.org/10.1016/j.prevetmed.2019.104727>.
5. New Zealand Veterinary Association. 2019. *Leptosure: Leptospirosis in New Zealand*. 28th November 2023. (<https://nzva.org.nz/resource/general/specific/leptosure/>)

# ADVANCED PROTECTION

## LEPTO 4-WAY™

Ask your vet for Lepto 4-Way™ | [Lepto.co.nz](https://lepto.co.nz)