NEW ZEALAND'S LEADING LEPTO VACCINE RANGE

Technical Detailer for Veterinarians

zoetis

LEPTOSPIROSIS IN NEW ZEALAND

Leptospirosis continues to be an important disease of livestock and our most important zoonosis[1]. Despite widespread vaccination of dairy herds, there are still around 100 reported human cases a year, and it is estimated that the numbers of unreported or undiagnosed cases are actually 40 – 50 times higher[2]. Meat workers, farmers and other occupations involving animal contact represent the bulk of the infections.

The continued high levels of human infection are likely due to incorrect vaccination programmes, stock movement without vaccination, and sheep and beef farms acting as reservoirs. Leptospirosis is tough to eliminate therefore a robust vaccination programme is essential to break the cycle of infection. Exposure is minimized using a comprehensive rodent control programme, practicing good personal hygiene and wearing appropriate protective clothing.

Virtually 100% of sheep and beef farms and 70% of deer farms have been shown to be infected. 10-20% of sheep and beef cattle are shedding leptospires at any one time[3].

The main lepto serovars infecting livestock in NZ are *L. hardjo* and *L. pomona*. In NZ serovars Tarrasovi, Hardjobovis, Pomona and Ballum are currently those most commonly identified with disease in humans whilst Hardjobovis and Pomona are most significant in livestock[4].

Veterinarians have a major role to play in the education and implementation of correct leptospirosis control and vaccination programmes with their farmers.

PREVENTION OF LEPTOSPIROSIS BY VACCINATION

PREVENT RENAL COLONISATION

The prevention of chronic renal colonisation and subsequent shedding is the key to controlling leptospirosis by vaccination. Vaccination of an infected animal will not eliminate the carrier status so it is important calves are vaccinated before they are exposed to leptospirosis.

Ultravac® 7in1 and Leptoshield® vaccines are proven to prevent renal colonisation and urinary shedding of leptospires.

IN UTERO PROTECTION

Leptospiral infection can result in infertility, abortion, stillbirth or the birth of apparently normal calves. Calves which survive in utero infection may have renal colonisation and may be a source of infection for months if not years.

Ultravac 7in1 and Leptoshield vaccines are proven to prevent reproductive tract colonisation and shedding, infertility and foetal infection with *L.hardjo.*

ANNUAL REVACCINATION

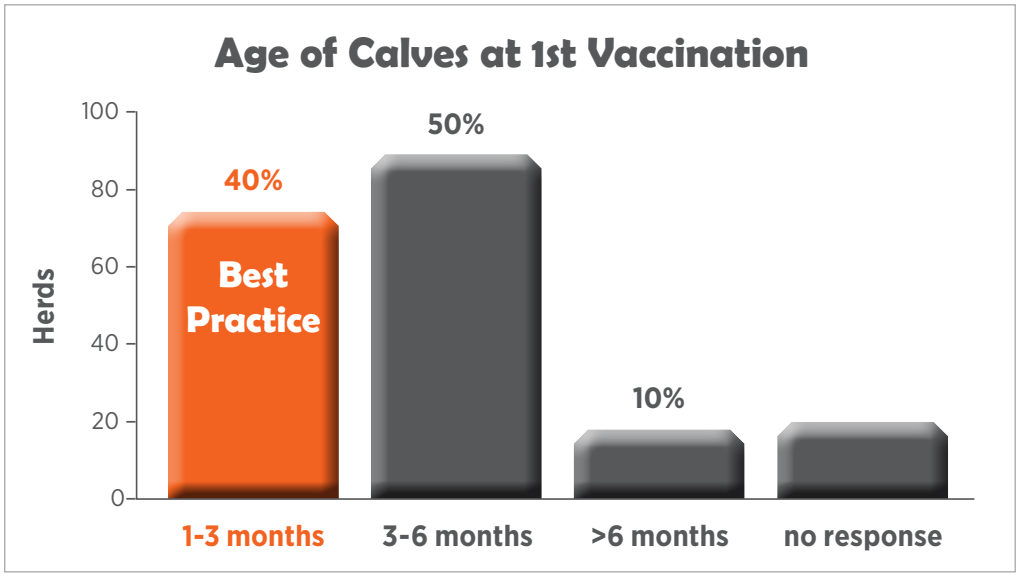
Maintain the herd's immunity by annual revaccination and ensure any animals sent away for grazing are up to date with vaccinations. Likewise any animals arriving at the property need to be vaccinated.

Ultravac 7in1 and Leptoshield vaccines have a 12 month revaccination interval.

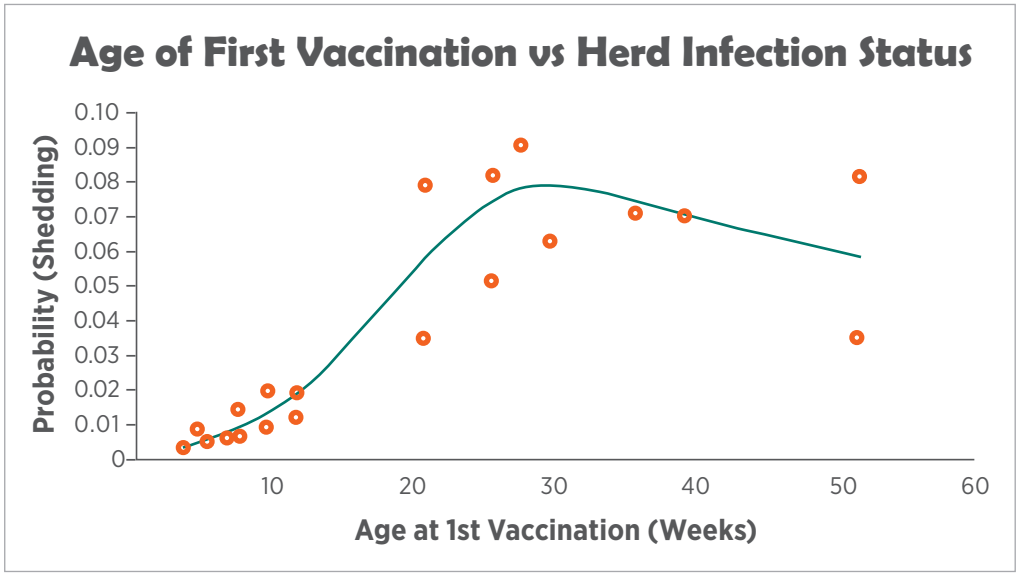
EARLY VACCINATION OF CALVES IS VITAL

The risk of potential MDA (Maternally Derived Antibody) interference with vaccination must be balanced against the risk of infection for the unprotected calf. The age of vaccination of the calf mob must be aimed to protect the majority of the animals with the least risk of MDA interference.

Findings from the FLAG study (2016) suggest that only 40% of New Zealand farmers are vaccinating during the time of best practice[4].



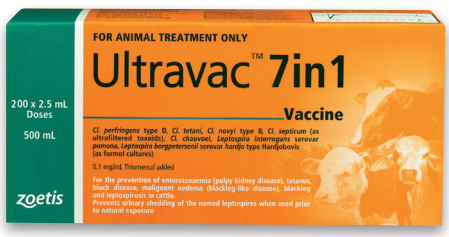
A Massey University (2011) pilot study[5,6] showed an increased risk of leptospiruric animals in the herd with increasing age at first vaccination.



Ultravac 7in1 and Leptoshield vaccines can all be used in calves from 4 weeks of age.

ZOETIS' LEPTOSPIROSIS VACCINES

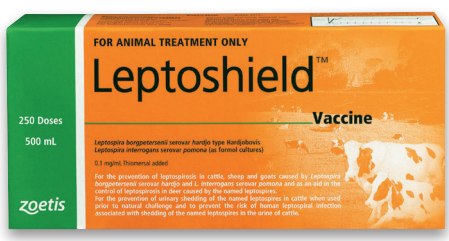
- Recommended for prevention of renal colonisation and urinary shedding and to prevent the risk of human leptospiral infection
- Ability to vaccinate from 4 weeks
- 30 day broached vial claim for repeat use



Combination leptospirosis and 5 in 1 clostridial vaccine for cattle and sheep

L. pomona, L. hardjobovis, Cl. perfringens type D, Cl. tetani, Cl. novyi type B, Cl. septicum, Cl. chauvoei

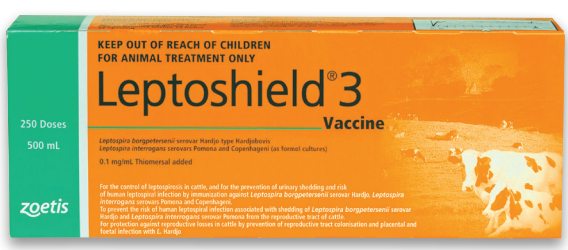
Dose: cattle: 2.5mL, sheep: 1.5mL



Bivalent leptospirosis vaccine for cattle, sheep, goats and deer

L. pomona, L. hardjobovis

Dose: cattle, deer, goats: 2mL, sheep: 1.5mL



Trivalent leptospirosis vaccine for cattle

L. pomona, L. hardjobovis, L.copenhageni

Dose: 2mL

New Zealand's leading evidence based leptospirosis vaccines

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DURATION OF IMMUNITY AFFORDED BY SPIROVACTM, A L. borgpetersenii SEROVAR Hardjo (TYPE hardjo- bovis)NACTIVATED VACCINE BY CHALLENGE IN CATTLE World Buiatrics Congress, Nice, France 2006.

EFFICACY OF A SINGLE BOOSTER DOSE OF SPIROVAC™, A L. borgpetersenii SEROVAR Hardjo (TYPE hardjo-bovis) INACTIVATED VACCINE BY CHALLENGE IN CATTLE World Buiatrics Congress, Nice, France 2006.

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LEPTOSPIROSIS VACCINATION

The ideal conditions for survival and transmission of leptospires are warm and wet climatic conditions. Annual revaccination can be timed to be just prior to this period of greatest risk. This will vary by region in NZ and by season, but annual revaccination in late summer/early autumn is generally recommended.

CALVES

Vaccinate early from 4 – 6 weeks of age before the calf has a chance to become infected.

YEARLINGS

Need to be vaccinated at the same time as the breeding herd to maintain protection from their calf vaccinations.

BREEDING COWS

Annual revaccination aims to protect the cow from infertility and abortion related to leptospirosis, and protect her unborn calf from becoming infected in utero. Newborn calves will also be protected via maternal antibodies.

BULLS AND ANY OTHER BOUGHT IN STOCK

Must be sourced from herds that have an up to date vaccination programme.

VACCINATION SCHEDULE - CATTLE

SPRING CALVING HERDS

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
CALVES							**BIRTH**					
								VACC 1 FROM 4 WEEKS OF AGE				
									VACC 2 4— 6 WEEKS LATER#			
R1		**AUTUMN BOOSTER***										
R2+		**ANNUAL DRY OFF/ AUTUMN BOOSTER**										

AUTUMN CALVING HERDS

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
CALVES			**BIRTH**									
				VACC 1 FROM 4 WEEKS OF AGE								
					VACC 2 4— 6 WEEKS LATER#							
R1		**AUTUMN BOOSTER**										
R2+		**ANNUAL DRY OFF/ AUTUMN BOOSTER**										

*Spring born calves require an autumn booster to align them with the herd and avoid long re-vaccination intervals.

#Any calves receiving their second vaccine before 12 weeks of age will require a third vaccination around 6 months of age to manage the potential risk of MDA interference.

R2+ includes mixed aged cows.

DRY STOCK LEPTOSPIROSIS VACCINATION

Leptospirosis research and disease control has predominately focused on dairy cattle, however, leptospirosis affects all major livestock species, can cause production losses and pose a serious risk to human health. Having a robust vaccination programme in place is imperative for minimising infection risks. Ultravac® 7in1 and Leptoshield® are two leptospirosis vaccines approved for use in sheep and cattle. Using Ultravac 7in1 provides protection against two strains of leptospirosis and the 5 main clostridial diseases in one simple shot.

SHEEP

In sheep, leptospirosis can cause abortions in ewes and kidney damage (redwater) and death in lambs. Recent studies through Massey University have found that 97% of sheep farms have evidence of infection[3]. It is also estimated that 10 - 20% of sheep in New Zealand are shedding leptospires at any time.

Leptospirosis in sheep causes production losses such as:

- Increased fetal loss[6]
- Sickness and death in lamb flocks[7]
- Decreased weight gain[8]

BEEF

In New Zealand, approximately 10% of beef cattle are vaccinated. Beef farmers are exposed to many of the same on farm risks as dairy farmers and should have an effective vaccination programme in place to minimise the risk of infection[9].

Leptospirosis found in beef cattle can cause:

- Reproductive losses
- Illness and death

DEER

Leptospirosis is estimated to be present in 77% of New Zealand's deer herds. Deer are primary hosts for *L.Hardjo* and secondary hosts for *L.Pomona*. Approximately 9% of farmed deer are vaccinated[10].

Research in deer has showed positive financial returns to vaccination in heavily infected herds, such as:

- Higher weaning percentages in vaccinated vs. non-vaccinated adult hinds
- Higher growth rates in vaccinated vs. non-vaccinated weaners[10]



VACCINATION SCHEDULE - SHEEP

ALSO APPLICABLE TO GOATS & KIDS

Primary Course—From 4 weeks of age. Two injections, 4 – 6 weeks apart.
Single annual booster vaccination—recommended late summer/autumn (ewes pre-tup).

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
SHEEP PREVIOUSLY VACCINATED		**AUTUMN BOOSTER** RECOMMENDED LATE SUMMER/AUTUMN										
UNKNOWN VACCINATION HISTORY	**2 DOSES 4 – 6 WEEKS APART** RECOMMENDED LATE SUMMER/AUTUMN											
LAMBS		**AUTUMN BOOSTER** RECOMMENDED LATE SUMMER/AUTUMN							**2 DOSES 4 – 6 WEEKS APART** AT WEANING			
PRE-LAMB ALTERNATIVE PRE-LAMB EWE BOOSTER OPTION		LAMBS **2ND DOSE** 4 – 6 WEEKS LATER					HOGGETS & EWES **ANNUAL PRE-LAMB BOOSTER**				LAMBS **1ST DOSE** AT WEANING	

VACCINATION SCHEDULE - DEER

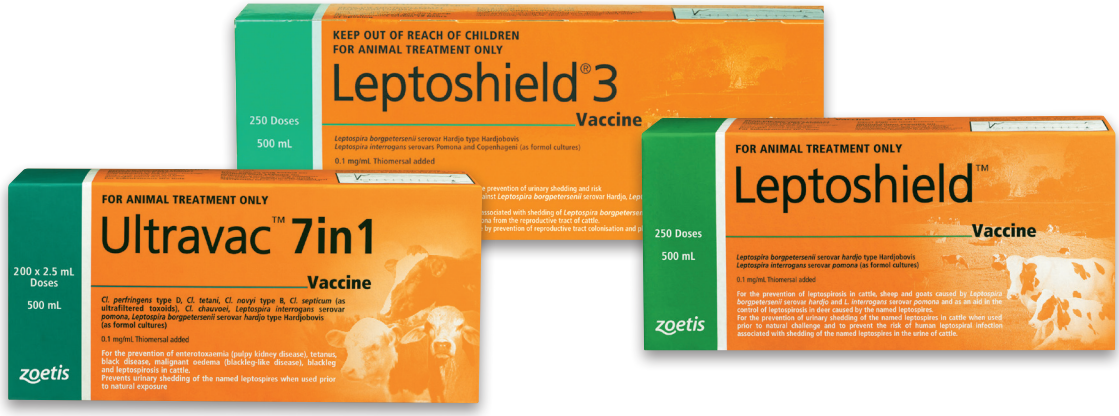
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
HINDS & STAGS		**AUTUMN BOOSTER** RECOMMENDED LATE SUMMER/AUTUMN										
FAWNS		**2 DOSES 4 – 6 WEEKS APART** FROM WEANING										

SPECIES DOSAGE GUIDE

	CATTLE	SHEEP	DEER	GOATS
Ultravac 7in1	2.5 mL	1.5 mL		
Leptoshield	2.0 mL	1.5 mL	2.0 mL	2.0 mL
Leptoshield 3	2.0 mL			

CORRECT VACCINE HANDLING AND STORAGE IS IMPERATIVE

Inadequate vaccine handling can not only reduce vaccine efficacy, but also cause direct harm to animals or people.



When handling livestock vaccines, Zoetis recommends veterinarians and farmers:

1. Read and follow vaccine label directions.
2. Regularly check vaccine handling procedures.
3. Keep vaccines at 2-8°C unless otherwise stated.
4. Maintain hygienic vaccination equipment and vaccine packs.
5. Plan vaccinations in advance to avoid vaccine expiring, missing animal life stages/classes and clashes with other activities (e.g. more than two Gram negative vaccines concurrently).
6. Avoid vaccinating stressed or unwell animals.
7. Dispose of needles and vaccine packaging responsibly.

Vaccines should be handled aseptically with clean hands and contact with unsterile surfaces must be avoided. Use a new needle and draw off tube at the start of each vaccination event and never straighten or reuse a damaged needle. Zoetis recommends that the needle is changed every 10-20 animals, or sooner if it is contaminated, bent, burred or blunted.

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