

## FACTSHEET

# A convenience sample of cattle faecal egg count reduction tests in New Zealand 2021-2024

### Introduction

The results of the last comprehensive survey of anthelmintic (drench) resistance in cattle in New Zealand were published in 2006.<sup>1</sup>

Annual reviews of sheep faecal egg count reduction test results have been published by Awanui Veterinary (formerly Gribbles Veterinary Pathology) since 2021,<sup>2,3,4</sup> and sporadically prior to this.<sup>5</sup> The most recent annual reports cover the 2021 to 2024 calendar years; these have provided a comprehensive picture of the deteriorating state of drench efficacy on New Zealand sheep farms.

A similar decline in drench efficacy is likely to be happening in New Zealand cattle worms. Farm systems most at risk are those dominated by cattle under one year of age, and where drench is the main means of controlling gastrointestinal nematodes. Sporadic published reports and anecdotal evidence support this.

Macrocyclic lactone resistant *Ostertagia* were reported by Waghorn et al in 2016,<sup>6</sup> and in 2024 Saurmann et al report a number of farms with triple combination resistant *Cooperia*.<sup>7</sup>

Garth Riddle reports 5 out of 5 intensive bull units tested in Northland showing resistance in *Cooperia* to triple combination drenches.<sup>8</sup>

It is important that a more comprehensive picture of the state of drench resistance on New Zealand cattle farms is obtained, both as a call to action for farmers and their advisors, but also to leverage support to help farmers implement systems that are less reliant on drench.

This is of particular importance to the dairy industry, where understanding and uptake of sustainable worm management messages is believed to be low, and where there will be a requirement to rear larger numbers of non-replacement calves in the future to meet market expectations of animal welfare.

### Materials and methods

In September 2024, Wormwise put out a call to production animal veterinarians, via the New Zealand Veterinary Association's on-line Wormwise discussion forum, for recent faecal egg count reduction test results or post-drench faecal egg count checks from cattle.

Wormwise programme manager Ginny Dodunski also contacted individual veterinarians known to have collected such data in the previous four years.

Results were provided in a variety of formats including laboratory reports, Excel® spreadsheets, and written reports to farmers.

Farm locations were reported by region as per the Beef + Lamb New Zealand regions: <https://beeflambnz.com/sites/default/files/levies/files/BLNZ-Regional-Map.pdf>

A 'test' was defined as any data where both pre and post faecal egg count information was available for an administered drench, and it was clear which active/s and formulation were administered. In all but one case, it was clear that individual faecal egg counts had been used both pre and post treatment.

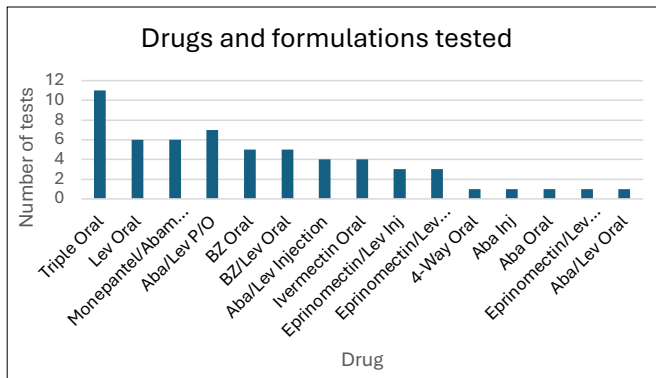
Pre and post treatment larval culture information was available for most of the treatment groups, as detailed below.

No attempt was made to determine the details of the on-farm protocols or calculation methods used; given all tests were under the supervision of veterinarians.

'Resistance' was recorded where treatment failed to reduce the mean pre-treatment egg count by 95% or more. At the genus level, a positive test for 'resistance' was only recorded where larval culture information was available both pre and post treatment, and there were at least 50 eggs per gram (epg) of the genus pre-treatment, and treatment failed to reduce the genus egg count by 95%.

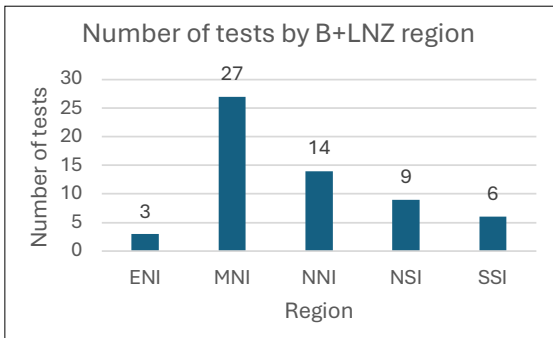
## Results

59 tests were available, from 16 different farms. 15 different drug/active types were tested.



Lev = Levamisole      Inj = Injection  
 Aba = Abamectin      4-way = Monepantel, Abamectin,  
 P/O = Pour-on      Levamisole & Benzimidazole  
 BZ= Benzimidazole

Farms were located in the following regions:



One farm (in the SSI group) was a beef breeding enterprise and all of the remainder were dairy support or intensive young beef operations.

55 tests had information from both pre and post treatment larval cultures, 4 either had no or incomplete larval culture information.

Resistance in any genus, as defined by a less than 95% reduction in undifferentiated egg count, was present in 41 tests (69%) and 13 (81%) of farms.

At the genus level, resistance was diagnosed in Cooperia in 33 tests (56%) and in Ostertagia in 20 tests (34%).

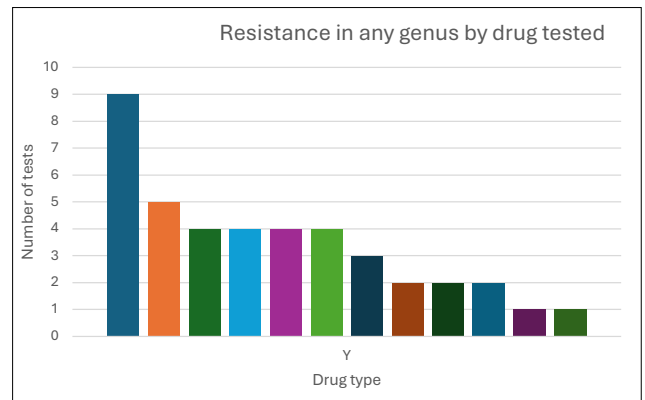
However, Ostertagia was frequently not present at numbers required to meet the 50epg threshold:

Resistance confirmed Ostertagia	Number of tests
Y	21
NA	19
N	1
<b>Total</b>	<b>41</b>

NA = Insufficient number of larvae counted or no culture data

## Resistance by drug

### Undifferentiated resistance



Legend for Resistance in any genus by drug tested:  
 Triple Oral, Lev Oral, Monepantel/Abamectin, BZ Oral, Aba/Lev P/O, Eprinomectin/Lev P/O, Ivermectin Oral, BZ/Lev Oral, Eprinomectin/Lev Inj, Aba/Lev Injection, Monepantel/Abamectin, Aba Oral

### Oral triple combinations

9 of 11 tests showed undifferentiated resistance. 5 tests showed resistant Ostertagia and 6 tests showed resistant Cooperia. 2 of the farms had resistance in both species.

### Macrocyclic lactone/Levamisole combinations

19 tests included combinations of a macrocyclic lactone (ML) drug, and levamisole, as below:

Drugs and formulation	Number of tests
Aba/Lev Injection	4
Aba/Lev Oral	1
Aba/Lev P/O	7
Eprinomectin/Lev Inj	3
Eprinomectin/Lev Oral	1
Eprinomectin/Lev P/O	3
<b>Total</b>	<b>19</b>

Resistance to this combination was common in Cooperia, for both abamectin and eprinomectin. 4 abamectin/levamisole tests showed resistance in Ostertagia, for both injection and pour-on.

Drug	Number of tests	Number Resistant Cooperia	Number Resistant Ostertagia
Abamectin/Levamisole	12	7	4
Eprinomectin/Levamisole	7	5	

Of the 7 tests of eprinomectin/levamisole, 5 had insufficient Ostertagia larvae present to calculate reductions.

## Resistance by worm genus

### Resistance in *Ostertagia*

Of the tests which showed resistance in *Ostertagia*, the following prevalence was found within each drug/formulation category:

Drug	Number tests resistant <i>Ostertagia</i>	Total tests of drug	%
Aba Oral	1	1	100%
Aba/Lev Injection	2	4	50%
Aba/Lev P/O	1	7	14%
BZ Oral	3	5	60%
BZ/Lev Oral	1	5	20%
Ivermectin Oral	3	4	75%
Lev Oral	4	6	67%
Monepantel/Abamectin	1	4	25%
Triple Oral	5	11	45%

### Resistance in *Cooperia*

Resistance in *Cooperia* was found in most of the drug/formulation categories tested. Of particular note was the finding that 4 out of 6 tests of oral levamisole returned resistance in *Cooperia*.

Other notable results for commonly used combination drenches include:

- 2 of 5 tests (40%) of a BZ/levamisole combination
- 12 of 19 tests (63%) of an ML/levamisole combination
- 6 of 11 tests (55%) of a triple combination.

Exceptions (where no resistance was seen in *Cooperia*) were:

- 4-way oral combination (1 test)
- Abamectin injection (1 test)
- Abamectin/levamisole oral (1 test)
- Monepantel/abamectin (6 tests)

## Discussion

While this data is limited in quantity and by potential collection biases, it nonetheless reflects current anecdotal reports from farmers and veterinarians that worms surviving drench treatments in cattle is a common occurrence.

Biases include the possibility that the farmers who undertook tests did so because they had already seen visible signs of a problem, and that veterinarians did not report tests where drench efficacy was high. That said, conversations with the three veterinarians who submitted the most tests, indicated that the majority of their farms tested because they knew it was good

practice to do so, rather than as a response to poor performance or clinical disease.

Of particular concern is the high rate of resistance seen in *Cooperia* to some of the most commonly used combination drench products – overall, 63% of tests showed *Cooperia* resistant to a Macrocylic lactone/levamisole combination and 55% of tests showed *Cooperia* resistant to a triple combination.

That 4 of 6 tests of levamisole found resistant *Cooperia* is a clear indication that this mainstay of *Cooperia* control is under threat.

Of equal, or perhaps greater, concern is the relatively common finding of *Ostertagia* resistant to a range of drugs, combinations and formulations. Reliance on the potency of several actives (as in triple combinations) or purportedly more effective formulations (as in injectable), is not, according to this data, a guarantee of efficacy against *Ostertagia* anymore.

*Ostertagia* can cause severe clinical disease and even death in calves and adult cattle. There is a real risk of R2 dairy heifers returning to their home farms from grazing carrying *Ostertagia* that cannot be treated when the stress of first lactation and introduction to the milking herd compromise their immunity. This risk is also present for R2 and older cattle coming out of droughts or other situations of underfeeding. The industry has largely ‘forgotten’ the damage that clinical *Ostertagiasis* can do to adult cattle, but we may be soon to be reminded.

The one case of *Ostertagia* surviving monepantel/abamectin was investigated and the finding could not be repeated<sup>9</sup>. There are reports of similar situations in lambs where this combination appears to be ineffective when given to animals that have accumulated a large burden of worms resistant to other combination drenches. When these have been further investigated in healthy animals on the same farm, the monepantel/abamectin has been found to be effective. It would seem unlikely that genuine resistance to monepantel/abamectin has developed on New Zealand cattle farms yet, given its very limited use in these systems. However regular use of this combination without substantial management change on farms with high levels of pre-existing resistance could quickly lead to failure.

These data suggest that the risk to New Zealand cattle farms from *Cooperia*, and more worryingly, *Ostertagia*, that cannot be controlled by any currently available drenches is real, and imminent. It is imperative that the cattle industries, their advisors and suppliers, work together to enable more farmers to implement systems that are less reliant of regular drench, than is currently the case.

## For further information

Factsheet: Wormwise for dairy: <https://beeflambnz.com/knowledge-hub/PDF/wormwise-dairy.pdf>

Factsheet: Wormwise for dairy heifers: <https://beeflambnz.com/knowledge-hub/PDF/wormwise-dairy-heifers.pdf>

Beef + Lamb New Zealand Wormwise hub: <https://beeflambnz.com/wormwise>

## Acknowledgements

Thank you to the veterinarians who provided data for this survey, and to Beef + Lamb New Zealand, as the sole funder of Wormwise.

## References

1. Waghorn TS, Leathwick DM, Rhodes AP, Jackson R, Pomroy WE, West DM, Moffat JR; Prevalence of anthelmintic resistance on 62 beef cattle farms in the North Island of New Zealand. *N. Z. Vet. J.* 54 (2006), 278-282.
2. Ridd SF; Update on the prevalence of anthelmintic resistance 2021-2022. <https://www.awanuvets.co.nz/update-on-the-prevalence-of-anthelmintic-resistance-2021-2022/>
3. Riddy SF; Anthelmintic resistance update 2022-2023. <https://www.awanuvets.co.nz/anthelminthic-resistance-update/>
4. Riddy SF; Ovine drench resistance update 2024. <https://www.awanuvets.co.nz/drench-resistance-update-2024/>
5. McKenna P; Update on anthelmintic resistance. *VetScript* 44-45 June 2018
6. Waghorn TS, Miller CM, Leathwick DM; Confirmation of ivermectin resistance in *Ostertagia ostertagi* in cattle in New Zealand. *Veterinary Parasitology* 229 (2016) 139-143
7. Sauermann C, Waghorn T, Miller C, Leathwick D; Simultaneous resistance to multiple anthelmintic classes in nematode parasites of cattle in New Zealand. *Veterinary Parasitology* 2024 Jan; 325:110079. doi: 10.1016/j.vetpar.2023.110079. Epub 2023 Nov 19
8. Riddle G; Managing cattle triple drench failure in Northland. *Proceedings of the Sheep & Beef Cattle Veterinarians and the Deer Veterinarians Conference NZVA* 61-63.
9. Colin McKay, Elanco New Zealand, pers. comm.

---

Factsheets are made possible by sheep and beef farmer investment in the industry. Beef + Lamb New Zealand is not liable for any damage suffered as a result of reliance on the information contained in this document. Any reproduction is welcome provided you acknowledge Beef + Lamb New Zealand as the source.

