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Awanui FECRTs performed on cattle 2023-2024

IN RECENT YEARS there has been growing concern about the development of anthelmintic resistance in cattle nematodes in New Zealand. A number of studies have documented the occurrence of dual and more recently triple resistance to combination drenches containing levamisole, macrocyclic lactones and/or benzimidazoles in *Cooperia* and *Ostertagia* (Waghorn et al. 2016, Leathwick et al 2016, Sauermann et al 2024).

At Awanui Veterinary laboratories (formerly Gribbles Veterinary), faecal egg count reduction tests (FECRT) are performed much less frequently on cattle than sheep. However, to add to the current body of knowledge on anthelmintic resistance in this species, provided here is a summary of cattle FECRTs performed at Awanui Veterinary between January 2023 and August 2024.

The data is restricted to cases where both pre and post-treatment FECs and larval cultures were performed at the laboratory. FEC were performed using a modified McMaster method to a sensitivity of 25 epg with resistance defined as a ≤ 95% reduction in FEC. Unless otherwise specified, only tests with an average pretreatment FEC of 25 epg at the genera level are included in the data presented. Further details of test methods can be found in a VetScript article by McKenna (2018).

In total, full FECRTs were available from 16 farms. Fifteen farms were located in the North Island including four in Coromandel, three in Northland, two in South Waikato and Taupo, and one each in Franklin, Bay of Plenty, Wairoa, and Manawatu. One farm was in North Canterbury. Six FECRT involved dairy replacement heifers and nine were on beef/bull beef operations (production type unavailable for one submission). A range of different drenches were tested and between 10 and 15 animals were included in each treatment group except for one FECRT where eight animals were in each treatment group. Post treatment samples were collected at between 11 and 14 days post-drenching.

Similar to other studies, low egg counts were an issue for *Ostertagia* with 13 out of 45 tests for this genus failing to meet the inclusion criteria of 25 epg group average pre-treatment FEC. Six out of 45 tests performed on *Cooperia* also failed

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to meet this inclusion criteria. *Trichostrongylus* was present in FECRTs on seven farms with three out of 15 tests not meeting the inclusion criteria. *Chabertia/Oesophagostonum* was also present on one farm but failed to meet the inclusion criteria for the FECRTs run on that farm.

The results for the tests that met the inclusion criteria are presented in Table 1. Dual resistance in *Ostertagia* was detected on one occasion for a levamisole-eprinomectin pour-on (FECR: 0%) involving a bull-beef operation. Triple resistance in *Ostertagia* was detected on two occasions to an oral levamisole-abamectin-oxfendazole drench (FECR: 46% and 87%). One farm was a bull-beef operation and one farm involved dairy replacement heifers respectively.

Dual and triple resistance were detected most commonly in *Cooperia*. Resistance to levamisole-eprinomectin pour-on and levamisole-abamectin pour-on was detected on six occasions with the FECR ranging from 0 to 91%. Three were farms with dairy replacement heifers and two results were for beef operations. Resistance was also detected to injectable levamisole-eprinomectin (n=4, FECR: 0-78%, 2 x dairy heifer, 2 x beef) and oral levamisole-eprinomectin, levamisole-abamectin and levamisole-oxfendazole combinations (n=3, FECR: 0-81%, 2 x dairy heifer, 1 x beef). Triple resistance was detected on one occasion to levamisole-eprinomectin-oxfendazole combination (FECR: 95%, beef) and on five tests to a levamisole-abamectin-oxfendazole combination drench (FECR: 0-84%, 2 x dairy, 3 x beef).

Trichostrongylus was resistant on one occasion to a levamisole-eprinomectin pour-on (FECR: 65%, beef).

The FECRTs reported here are limited in number and are likely to be heavily biased towards the detection of anthelmintic resistance as suspected drench failure on farm may have been a trigger for the investigations in many instances. The data therefore is unlikely to be representative of the prevalence of anthelmintic resistance in New Zealand cattle. However, similar to other published studies, these results provide further concern about the long-term viability of current parasite management practices on New Zealand farms that rely heavily on anthelmintics. The data also highlights the need for wider surveillance and regular reporting of FECRT using standardised methods so the true extent of anthelmintic resistance can be assessed and monitored. Awanui remains committed to providing regular summaries of FECRTs performed through our laboratories on sheep and cattle. It is hoped that this will provide useful information to veterinarians and their clients in addressing parasite control on farm.

References:

McKenna, PB. Update on the prevalence of anthelmintic resistance. *VetScript*, 2018, 31: 46–47.

Leathwick, DM, et al. The efficacy and plasma profiles of abamectin plus levamisole combination anthelmintics administered as oral and pour-on formulations to cattle. *Veterinary Parasitology*, 2016, 227:85-92.

Sauermann, C, et al. Simultaneous resistance to multiple anthelmintic classes in nematode parasites of cattle in New Zealand. *Veterinary Parasitology*, 2024, 325:110079.

Waghorn, T, et al. Confirmation of ivermectin resistance in *Ostertagia* ostertagi in cattle in New Zealand. *Veterinary Parasitology*, 2016, 229:139-143.

Table 1: Anthelmintic resistance identified in cattle nematodes by fully differentiated faecal egg count reduction tests (FECRT) undertaken at Awanui Veterinary between January 2023 and September 2024 (n = 16 farms). Number resistant are given per total tests run for each drench combination. Only FECRTs with a pre-treatment FEC of 25 epg per genera are reported. Resistance was set at ≤ 95% reduction in FEC.

	LEV/EPR	LEV/EPR	LEV/EPR	LEV/ ABA	LEV/ ABA	LEV/ OXF	LEV/ ALB	ABA/ MON	LEV/ EPR/ OXF	LEV/ ABA/ OXF
	Inject	Oral	Pour-on	Oral	Pour-on	Oral	Oral	Oral	Oral	Oral
Ostertagia	0/4	0/2	1/4	0/2	0/2*	0/2	-	0/7	0/1	2/7
Cooperia	4/4	1/3	3/5	1/2	3/5	1/2	0/1	0/7	1/1	5/9
Trichostrongylus	0/1	1/2	-	-	0/3	0/1	0/1	0/1	-	0/2

LEV: Levamisole, EPR: Eprinomectin, ABA: Abamectin, OXF: Oxfendazole, ALB: Albendazole, MON: Monepantel

** One FECRT failed to yield sufficient epg but indicated possible resistance:* Ostertagia *epg pre-tx = 21, post-tx = 10*