

Project Title: **Seasonality of helminth infections in horses at pasture under NZ (Manawatu) conditions**

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FINAL REPORT

Lay Summary

Knowledge of the biology of the major roundworm (nematode) parasites of horses under New Zealand conditions is limited. This will impact severely on our ability to continue to successfully control horse parasites if, as has happened with cattle and sheep parasites, resistance to anthelmintic treatments becomes more prevalent.

A study was therefore undertaken to examine natural infections in 12 horses (in 3 groups of 4) of mixed ages - adult mares, yearlings and foals - kept at pasture for just over one year in the lower North Island (Manawatu). The major objective of the proposed research was to build an understanding of how infection patterns in a group of horses varied over the course of one year. To this end, every month, 4 of the horses were treated with anthelmintic and their faeces collected to allow the parasites acquired in the 3 months since they were last treated but now killed and expelled, to be counted and identified. The next month, the next group of horses would be due for treatment and so on.

The horses were treated with 2 doses of abamectin (600micrograms per kilogram - 3 times the normal dose rate), 2 days apart, and 5 daily doses of oxfendazole at the normal dose rate (10 milligrams per kilogram). Preliminary work had shown that this regimen would remove approximately 98% of the resident parasite population.

In addition to establishing the level of parasitism using worm count and faecal egg count data, a number of other parameters were also studied - these included various blood parameters - to examine their suitability as diagnostic markers for parasitism. A study of the ecology of the free-living stages of the parasites' lifecycles was also attempted through studies of pasture larval populations and through plot studies.

One of the most interesting observations to emerge from this study was the marked difference in the levels of parasitism experienced by individual animals. Some animals appeared to be more resistant to parasites in comparison to others that appeared relatively more susceptible. Grazing the same pasture, some animals were allowing only negligible numbers of worms to establish whilst others were harbouring several hundred thousand.

Overall, worms were acquired in all seasons with no tendency evident statistically for more to be acquired at certain times, although this may have been the inevitable consequence of using small numbers of animals per group coupled with marked between-animal variation. Nevertheless, higher proportions of larval stages were present during winter and spring, suggesting that higher proportions of the worms acquired in the autumn and winter periods may have become inhibited in their development.

The 12 study animals were grazed for 14 months in one relatively small paddock and were treated with anthelmintics every 3 months. These conditions would not be much different from those experienced by many horses throughout NZ. Some of the study animals appeared to cope better with the study conditions staying largely free of infection, but others, in particular some of the younger animals, were consistently infected with substantial populations of nematodes. Thus it can be anticipated that individual anthelmintic requirements should also differ.

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