

Prevalence of liver fluke on the West Coast

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This presentation is part of a larger study investigating the economic cost of liver fluke in dairy cows in New Zealand. The focus of this initial presentation will be on the epidemiology of fluke in dairy cows on the West Coast. It is organised as “take home messages”.

There is a lot of liver fluke on the West Coast

A study of all herds (n=430) supplying Westland Milk Co-op were tested with an IDEXX Bulk Milk Elisa (BME) (IDEXX Fasciolosis Verification, IDEXX Europe BV, Hoofddorp, The Netherlands) which characterises herds into intensities of infection (Nil, Low, Medium, Strong). These equate to liver fluke infection prevalence of 0%, <20%, 20 – 50%, >50% within the sampled herd. Overall, the distribution of herds as analysed in the autumn of 2017 was Nil=31%, Low=11%, Medium=14%, Strong=43%. It was notable that some regions had much higher levels of infection than others.

IDEXX is a repeatable test

In conjunction with the BME test in the autumn 2017, a repeat test was conducted 1 – 2 weeks later in 99 herds. A kappa analysis showed a substantial agreement (kappa=0.7, 95% CI=0.58–0.82) i.e. there is a high level of agreement between the two tests.

West Coast dairy farmers are aware of liver fluke on their farms but may seemingly treat unnecessarily

A short postal survey comprising five closed questions on liver fluke was completed by 161 dairy farmers. This showed that 59% of herds with Nil BME and 86 – 95% of other positive categories were aware of liver fluke. The survey also showed that 33% of herds with a Nil BME still treated cows compared to 82 – 86% of other positive categories. Overall, 94% were treating all cows in the herd rather than being selective in some way.

The level on infection intensity was lower at the beginning of the subsequent lactation than at the end of the current lactation

A BME (n=403) was undertaken near the beginning the subsequent lactation in the spring of 2017. In this test Nil=33%, Low=17%, Medium=24%, Strong=26%. Overall, there was a 23% decrease in the SP percentage calculation of the IDEXX test in the herds tested on both occasions. The net optical density of each sample is calculated using a negative control and this is reported as a percentage of the net positive control to give the SP percentage.

Almost half of the herds had dropped one category, but this was not consistent. Of the Nil herds in autumn 81% were Nil in the spring, for the Low herds 40% were lower in the spring with 15% increased one or more categories, for the Medium herds 62% were lower in the spring with 7% increasing a category, for Strong herds 55% were still Strong.

The results are confounded by factors including some farmers treating cows with anthelmintics, and introduction and removal of cows from the herd. Nevertheless, this indicates that anthelmintic treatment given to many cows during the non-lactating dry period has not had a large impact on the intensity of infection in these herds in the subsequent lactation.

Summary

Liver fluke infection is common in dairy herds on the West Coast of the South Island and is likely to be a production limiting disease in many cases. Studies of liver fluke in Europe using the same IDEXX assay have concluded that the test levels of Medium and Strong are associated with production limiting infections (Vercruyse and Claerebout, 2001). For example, Charlier *et al.* (2008) concluded that as few as 10 flukes in one animal caused hepatic damage that was production limiting. However, many studies do not consider the additive pathological changes in the liver caused by repeated infections over time. In the New Zealand grazing system cows are potentially being infected throughout the year in contrast to Europe where they are housed for extended periods. Indeed, the main infectious period may well be towards the end of lactation given the lag time to build up snail numbers, infect these snails and then allow cercariae to develop and metacercariae to be deposited onto pasture. In Europe many cows would be housed again at the equivalent stage of their lactation. Further studies will investigate the impact of these infections on milk production on these farms.

References

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