



FACT SHEET

JANUARY 2018

ILL-THRIFT—IDENTIFYING THE CAUSES AND MEASURING THEIR EFFECTS

This fact sheet aims to help farmers develop better ways of recognising and testing for ill-thrift in stock. A project was conducted using on-farm data and overseen by a mentor group of vets. It defined the relationship between different ill-thrift factors, e.g. endophyte toxicity, and animal performance. Knowing the exact relationship helps give farmers an indication whether a change of management is required.

WHAT IS ILL-THRIFT?

Ill-thrift is a term used to describe when stock grow at a slower growth rate than expected, given their feed allocation. In this project it is defined as when lambs or young cattle have more than 30% slower growth rates than expected.

THE AIM OF THE PROJECT WAS TO:

1. Identify possible causes of ill-thrift.
2. Find ways to measure the particular effect on growth rate e.g. amount of liveweight gain suppression from eating pasture with high levels of endophyte toxins.
3. Develop a process whereby farmers can identify causes of ill-thrift.

Traditionally, farmers identify if their flock is affected by ill-thrift by:

- Comparing performance from one year to the next, e.g. hogget weight gain in January was 25% behind last year
- Visually notice stock aren't "doing well"
- Use specific tests, e.g. FEC test to identify parasite burden in stock.

NEW METHODS

The project showed that farmers can also use Beef + Lamb New Zealand Q-Graze software (which predicts liveweight gain given pasture intake and quality) to show that stock have ill-thrift. Actual performance (e.g. hoggets growing at 75 g/hd/day over summer) can be compared to Q-Graze's prediction of what they should be doing (e.g. 100 g)).

ILL-THRIFT SEEN IN SHEEP 62% OF TIME

On-farm data showed that, over summer and autumn, ill-thrift occurred 36% of the time in cattle and 62% of the time in sheep.

PASTURE QUALITY/PARASITISM KEY

The most common reason for stock growing slower than farmers expected over summer and autumn was poor pasture quality. However, when pasture quality was taken into consideration, the next biggest cause of ill-thrift was parasitism—around 45% of the time in young sheep.

The project monitored actual growth rates of young cattle mobs in the Waikato and compared them to Q-Graze predictions. It was shown that 36% of the cattle were suffering from ill-thrift. Further analysis indicated that 30% was due to parasites and 20% was linked to fusaria toxicity. 50% of the causes were undiagnosed.

In sheep, healthy ewe lambs were growing at 142 g/day but those with ill-thrift grew only 46 g/day. Over 62% of the flocks monitored through the project had ill-thrift.

Of these, 45% was due to parasitism, 19% due to fusaria toxicity and 36% had undiagnosed causes.

DIAGNOSING THE PROBLEM

Ill-thrift is caused by a number of different factors so it is important that tests can identify a particular cause. The project investigated and validated tests for parasite levels in faeces, rumen fluid and pasture, as well as for two fusaria toxins/nivalenol (NIV) and deoxynivalenol (DON). The following is a summary of tests for diagnosing ill-thrift.

Table A: Summary of tests.

Cause	Test
Poor pasture quality	Pasture sample test for ME, DM content and visual test for dead/aged material are good methods.
Parasitism	Commercial FEC test good for lamb parasite burden, less useful for cattle. Rumen fluid test for parasite challenge requires further research. Pasture larvae tests are inaccurate and not suitable for use.
Endophyte toxin	Urine test for high ergovaline levels validated by project. Not currently commercially available.
Facial eczema	Pasture and/or faecal spore counts, or blood GGT tests are very useful.
Fusaria fungi	NIV and DON levels can be measured to indicate the presence of other, more toxic fungi. These tests are available commercially.
Trace elements	Liver tests useful in many cases.
Pneumonia	Number of lambs identified at works with pleurisy is an indicator of pneumonia.

DEGREE OF LIVEWEIGHT GAIN (LWG) SUPPRESSION LINKED TO ILL-THRIFT

Using the on-farm data, scientists were able to show the relationship between the levels of fungi, spores, larvae, etc, and liveweight gain suppression.

The key links are:

- For fungi: when the NIV and DON levels in pasture are at 0.8 mg/kgDM, then it is likely that the toxic Trichothecenes will be reducing LWG by 40 g/d in lambs and 0.2 kg/day in cattle. Urine patches may have very high levels of fungi (200-times higher than inter-urine patches). However, this hypothesis requires further research.
- 318 pasture samples were collected as part of the project and around 70% of samples were shown to have fungi that produce toxins. However, the presence of toxic fungi does not mean that toxins are being produced, as was shown in further tests where fungi were present and growing, but no toxins could be detected.
- For trace elements: in sheep, predicting LWG suppression is possible using blood tests for Selenium and Cobalt but not for Copper. Not possible in cattle.

The degree of LWG suppression was not able to be related to FEC in lambs, ewes or cattle. Very high FEC (>1,000 epg) is often associated with reduced animal performance, but this is not always the case. The mix of worm species in the infection (contributing to the FEC) is possibly more important than the level of egg output (FEC) in influencing the effect on stock, e.g. some parasite species produce lots of eggs but have low impact on the animal; while others produce few eggs but have high impact. The composition of the infection can be determined by culturing the eggs from the FEC and the species mix is an important diagnostic tool that is now routinely used in addition to the FEC.

Low egg count does not necessarily indicate that parasitism is not impacting on animal performance—high levels of larval intake from grazing contaminated pasture can affect LWG before the worms have developed to the stage of egg-laying adults.

FIXING THE PROBLEM

The good news is that the biggest causes of ill-thrift (parasitism and pasture quality) can be reduced by management (e.g. providing stock with higher quality pasture, management to reduce larval contamination of pastures, worm control). It is best that farmers eliminate these causes first, before tackling the more complex pasture fungi issues.

A mentor group of vets helped guide the project. Results have been passed on to vets and other industry people.

ACKNOWLEDGEMENTS AND MORE INFORMATION

Final Report: Management of the factors leading to ill-thrift in young livestock, OOPR/13 June 2006, 183 pages.

B+LNZ RESOURCES

www.knowledgehub.co.nz

PDF DOWNLOADS

- Pasture Quality Q-Graze manual
- FeedSmart 2 resource book—a feed planning tool
- FeedSmart User Guide
- Wormwise resource book
- Trace element nutrition of sheep fact sheet
- Trace element nutrition of cattle fact sheet
- Endophyte update fact sheet
- Facing up to facial eczema resource book

MOBILE APP

FeedSmart—www.feedsmart.co.nz

EXTERNAL RESOURCES

Wormwise website—www.wormwise.co.nz

This fact sheet was reviewed with help from Amanda Bowie.

Beef and Lamb New Zealand would like to acknowledge Ill thrift project leader Annette Litherland (AgResearch) for her work on the original project conducted in 2006.