



Ill-thrift: identifying the causes and measuring their effects

This R&D Brief outlines a project to develop better ways of recognising and testing for ill-thrift in stock.

Using on-farm data, 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.

(1) 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 -

- Identify possible causes of ill-thrift.
- 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.
- 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 Meat & Wool 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 75g/hd/day over summer) can be compared to Q-Graze's prediction of what they should be doing (e.g. 100g).

(2) 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.

Miserable or happy? Ill-thrift can be complicated to diagnose.



(3) Pasture quality / parasitism key

The most common reason for stock growing slower than farmer's expectations 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. Fifty percent of the causes were undiagnosed.

In sheep, healthy ewe lambs were growing at 142g/day but those with ill-thrift grew only 46g/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.

(4) 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). 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. Use the Pneumonia Calculator at www.meatandwoolnz.com to calculate your level.

(5) Degree of liveweight gain 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 40g/d in lambs and 0.2kg/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 accurately linked with –

- the level of eggs in a FEC (although LWG will start to be suppressed if above 500 epg in lambs and 300 epg in young bulls).
- the level of copper in liver test.

(6) 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.

More Information & Acknowledgements

Final Report:

Management of the factors leading to ill-thrift in young livestock, 00PR/13 June 2006, 183 pages.

Related Meat & Wool New Zealand resources:

There are two R&D Briefs on trace elements, seven R&D Briefs on fungal toxins and eight R&D Briefs on parasites. For an Index phone 0800 696 328.

For the Wormwise information pack on managing internal parasites, Pasture Quality Workshop information or Q-Graze™ software, phone 0800 696 328 or email Phyllis.Rankin@meatandwoolnz.com

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