

# Waikato research reveals benefits of using catch crops

Using a catch crop can reduce a farm's nutrient footprint and increase homegrown feed yield. DairyNZ developer Maitland Manning outlines the latest research findings from Canterbury and Waikato.



Feeding crops in autumn and winter increases the risk of nitrate (N) leached from farms. That's because N deposited in cows' urine at this time of year has no opportunity to be taken up by a growing plant.

The Forages for Reduced Nitrate Leaching (FRNL) research programme has shown how this problem can be addressed with catch crops in Canterbury (as reported in *Inside Dairy* November 2016).

Now the Waikato FRNL research has shown that, at Scott Farm, N leaching from autumn-grazed fodder beet crops can also be reduced by using a catch crop. For this trial, the effectiveness of two catch crops (Italian ryegrass and oats) were compared when following the fodder beet crop.

In the Waikato, growing Italian ryegrass or returning the paddock to permanent pasture are standard approaches after harvesting maize or other autumn feed crops.

- By August, oats reduced the amount of soil mineral N at depth (30cm to 90cm) where leaching occurs by up to 47 percent, compared to the fallow and Italian ryegrass treatments.
- Oats were faster than Italian ryegrass at establishing and accumulating biomass (8.2 to 13.1 tonne DM/ha versus (2.5 to 3.3 tonne DM/ha) over the winter/spring period.
- Oats in general took up more N than Italian ryegrass (particularly by the June and July samplings) because of the oats greater biomass.
- Oats didn't require grazing during winter, unlike Italian ryegrass which has to be grazed to maintain its quality (which adds additional urine N into the system).

An observed benefit of oats during the Waikato trial was its ability to handle cold and wet conditions. Rainfall in Waikato during the winter and spring 2017 trial period was notably higher than longer-term averages, however the oats still put on good biomass.

An oat catch crop in Waikato gives farmers several options. It can be grazed in spring, cut as green chop or whole crop silage, or held for grain. To maximise biomass and feed quality while reducing N leaching, it is recommended to cut as a green chop.

## Waikato FRNL trial

Catch crops reduced deep soil N (30cm to 90cm) by 22% (Italian ryegrass) and 47% (oats). Most of that reduction can be explained by plant uptake.



The FRNL small plot field study in Waikato indicated that oats take up more N than Italian ryegrass does following an autumn-grazed crop.

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