

Using late summer/autumn duration controlled grazing of dairy cows to reduce nitrate loss to water

Jay Howes¹, James Hanly¹, Dave Horne¹, Mike Hedley¹

¹*Fertilizer and Lime Research Centre, Institute of Agriculture & Environment, Massey University*

Duration controlled (DC) grazing is a practice that allows cows sufficient time (2 grazings of 4 four hours per day) to consume their feed allowance before they are stood off pasture for the remainder of the day. This shortened grazing period decreases the amount of urine deposited directly on paddocks, which, in turn, lowers the nitrate leaching risk. The first three years of a plot scale study, undertaken at Massey University's No 4 Dairy Farm, showed that compared to standard (ST) grazed plots, year-round DC grazing of plots reduced nitrate leaching by an average of approximately 50%.

Urine returned to pasture in the summer and autumn period has been identified as having a major influence on nitrate leaching risk. Therefore, it is hypothesised that confining DC Grazing to the late summer and autumn period (i.e. three grazings per year) can still appreciably reduce nitrate loss to water (compared to ST grazing), while also reducing the amount of standoff required annually. This hypothesis is being tested using fourteen mole-pipe drainage plots (average of 850 m²/plot), which allows for two treatments (DC and ST), each replicated seven times. The DC plots are grazed for the same length of time as ST plots for most of the year except during the late summer and autumn period when DC grazing is practised.

The results of the first two years of a three-year trial will be presented. The ST plots leached an average of 7.2 nitrate-N/ha/yr in 2014 and 5.7 kg nitrate-N/ha/yr in 2015. Compared to these losses, late summer and autumn DC grazing reduced nitrate-N leaching by 39% and 17%, respectively.