

The effectiveness of some selected management strategies for reducing nitrogen leaching risk from dairy grazing systems in southern New Zealand

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Monitoring, experimentation and modelling is seeking to define the N leaching risks for 2 dairy farmlet systems that were designed to provide management options for reducing N losses to water, without incurring large reductions in farm profitability. These treatment farmlets of 110 cows were monitored over a 3-year period and are compared against a Control (CON) dairy system where pasture and grazed winter forage crops are the main dietary components during lactation (spring-autumn) and non-lactation (winter), respectively. An Optimised (OPT) farmlet system focussed on reducing N fertiliser inputs and improving winter feeding management practices as key strategies for reducing N losses to water. Using an alternative approach, a Restricted Grazing (RES) farmlet utilised a Herd Shelter for housing cows to reduce urinary N returns to pastures during autumn and winter as the main strategy for reducing N leaching risk. An important factor in the evaluation of N leaching risk associated with each farmlet system was consideration of all hectares used to support milk production. These included pastures grazed by lactating cows, summer and winter forage crop areas, and other support land required for growing young stock and harvesting supplements that were fed to cows. The combined measurement and modelling approach used to assign N leaching risks for each of these areas will be described. A summary of the productive and financial performances of the farmlets will also be reported. We will conclude with a discussion of some of the challenges presented by the increased management complexity encountered when implementing some of the management practices in the OPT and RES farmlets.