

MONITORING STREAM SEDIMENT, NITROGEN AND PHOSPHORUS CONCENTRATIONS IN GRAZED HILL COUNTRY IN THE MANAWATU REGION

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Hill country represents approximately 60% of New Zealand's landscape and supports major agricultural industries such as sheep and beef production. With such a large area providing catchments for many of New Zealand's major rivers and water bodies, pastoral hill country plays a vital role in the quality of these water systems which is a critical issue facing New Zealand agriculture. Despite this, information regarding water quality in hill country areas used for sheep and beef production is lacking, particularly in the Manawatu Region. This study monitored nutrient and sediment concentrations in selected streams and a seepage wetland on Massey University's Agricultural Experimental Station at Tuapaka, Palmerston North since April 2013. Data to date indicates that dissolved reactive P (DRP) concentrations are consistently below our limit of laboratory detection (<0.02 mg/L). Nitrate-nitrogen concentrations are also generally low (<0.25 mg NO₃-N/L), with the exception of cases where water sampling coincided with aerial application of urea (2 mg NO₃-N/L) and when cows were grazing in the paddocks where streams were sampled (~1 mg NO₃-N/L) in winter 2013. Total P and N concentrations are generally low (<0.03 mg P/L and <1 mg NO₃-N/L), with the exception of sampling periods when suspended sediment concentrations were elevated (i.e. summer 2014). Mean suspended sediment concentrations were generally low (<20 mg/L).

Monitoring of water entering and leaving a seepage wetland on the experimental station has indicated that nitrate-nitrogen concentrations are generally below our limit of laboratory detection (<0.25 mg NO₃-N/L). However, where nitrate-nitrogen concentrations can be accurately measured, there is a trend for lower nitrate-nitrogen concentrations leaving the wetland compared to concentrations entering the wetland. Further studies on this seepage wetland will focus on understanding and enhancing denitrification processes to attenuate nitrate-nitrogen loads from hill country farms.

Editor's Note: A manuscript has not yet been submitted for this presentation.