

Catch crops after winter grazing for production and environmental benefits

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Grazing winter forage crops is an important management strategy for profitable livestock production in many New Zealand regions where there is commonly a pasture feed deficit during this period. However, the high stocking densities that are often associated with these systems can have negative environmental effects, such as nitrogen (N) leaching losses to groundwater. This field study investigated the potential biomass production and reduced risk of N leaching from establishing oats (*Avena sativa*) as a green-chop catch crop after winter-grazed forage kale (*Brassica oleracea* var. *acephala*) in Canterbury, New Zealand. Oat crops were direct-drilled on two sowing dates (early: 1 July 2015 and late: 1 August 2015) and were managed under high (400 kg N/ha) and low (0 kg N/ha) N load conditions, representing urine-patch and inter urine-patch areas. For the early-sown crops yields were 6.1 (low N) and 11.8 t DM/ha (high N) at final harvest (50% ear emergence) on 19 November 2015. For the late-sown crops yields were 6.7 (low N) and 10.1 t DM/ha (high N) at the same development stage (26 November 2015). By establishing oats as a catch crop in winter soil profile mineral-N (0-120 cm depth) was reduced by up to 86% (early) and 80% (late) in the high N (simulated urine-patch) treatments compared with the respective fallow treatment. These results indicated the technical feasibility of direct drilling oats as catch crops immediately after winter forage grazing, with likely production and environmental benefits such as the reduced risk of N leaching losses.