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REVEGETATION OF RECENT SOIL SLIPS IN MANAWATU

*A THESIS PRESENTED IN PARTIAL FULFILMENT OF THE
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Abstract

Trifolium repens, *Lotus pedunculatus* and *Holcus lanatus* were oversown on two recent soil slip surfaces at AgResearch's Ballantrae pastoral hill-country farm near Woodville. The two slip surfaces were located on (Manamahu steepland soil) sedimentary mudstone. One slip had a north aspect and the other had a south aspect. Both slips were located on a land class 6 with slope 28-33⁰.

The pasture species were oversown during early spring and the percentage seedling emergence and early establishment from viable seeds oversown was analysed at early spring (Day 15), late spring (Day 45), early summer (Day 90), and late summer (Day 120). The slip surfaces showed micro-climatic extremes in terms of both soil moisture and surface temperatures during the summer period. Significant differences ($P < 0.05$) were found in soil moisture between north and south facing slip surfaces. Higher soil moisture and lower soil mean temperature were recorded on the south aspect slip surface.

Significant differences ($P < 0.05$) were found between the three pasture species in terms of seedling emergence and early establishment. Significant differences ($P < 0.05$) were also found with aspect. The south aspect slip surface had a higher percentage of seedling emergence and earlier establishment for all the species. Interaction between species by aspect became significantly different ($P < 0.05$) at Day 90 and Day 120. The main effects of time and species were also significantly different ($P < 0.05$) illustrating seedling emergence and establishment as a race against time.

Trifolium repens was a more successful pasture specie, than *L. pedunculatus* and *H. lanatus* due to its higher consistency on both north and south slip surfaces. *Oversowing T. repens* during early spring is a viable option for rehabilitation of recent soil slips in Manawatu.

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The green Earth is the meadow we graze in. the ground we are shaped from.

The daily bread, that keeps body and soul together.

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