

# **WINTERING CATTLE IN HILL COUNTRY: MONITORING THE IMPACTS ON THE SOIL RESOURCE**

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Cold and wet conditions in winter and spring are a challenge to winter management of beef cattle in hill country. In these landscapes, cattle are generally at liberty to roam across large paddocks when soils are wet. While the effect of treading damage by cattle on hill country soils and pasture has been studied at the small scale, there have been relatively few attempts to quantify the extent of soil and pasture damage at the paddock scale or to relate the extent of this damage to cattle movement and behaviour. In turn, cattle traffic patterns may be explained by reference to differences in micro-climate in hill country. A major research initiative has been established at Massey University's Tuapaka farm to the study effects of wintering cattle on soils, pasture and water quality.

Typical hill country paddocks are large and are comprised of a complex range of slopes, soil types and micro-climates. This scale and complexity makes it difficult to measure, monitor and record these variables, particularly with regard to their effect on cattle movement and the extent of treading damage. At Tuapaka, remote sensing technologies are being employed to provide spatial and temporal information to assist in the definition and characterisation of the variables associated with soil damage by cattle grazing in hill country. These include tracking cattle movement with GPS collars and the mapping of damaged areas using GPS units. Furthermore, LIDAR data for the study site has been procured. Information from these sources may be integrated to give a detailed picture of soil treading damage at the paddock and farm scale. Results for the first two years of the trial will be reported.

**Editor's Note:** An extended manuscript has not yet been submitted for this presentation.