PASTURE DYNAMICS UNDER CATTLE TREADING

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ABSTRACT

Treading damage by cattle in wet winters is an important limitation for all-grass wintering systems in New Zealand. This study evaluated the impact of cattle treading in winter on pasture plants in both hill country and flat dairy pasture over three trials.

On hill country pasture, one severe treading treatment in winter resulted in losses in herbage accumulation rate of 9 kg (or 25%) DM ha^{-1} day^{-1} on tracks and 6 kg (or 26%) DM ha^{-1} day^{-1} on slopes compared to relatively untrodden treatments over a 9 month (Aug 98 to April 99) period. In repeatedly trodden treatments at heavy stocking rates, the loss in herbage accumulation rate averaged 19 kg (or 54%) DM ha^{-1} day^{-1} in tracks but found no loss on slopes compared to lightly grazed treatments over the same period. Treading seriously reduced pasture cover and changed species that contributed cover.

In flat dairy pastures, the loss of herbage accumulation rate was 29 kg (or 36%) DM ha^{-1} day^{-1} in highly damaged areas, and 5 kg (or 7%) DM ha^{-1} day^{-1} in low- to medium-damaged areas compared to untrodden areas during the 7 weeks regrowth after treading. This loss in herbage accumulation rate was associated with an initial 66% reduction in grass tiller density in high-damaged areas. Treading also reduced leaf area index. Post-treading pasture cover was only 43% in high-damaged areas compared to 80% in untrodden areas. Compared to other grass species, perennial ryegrass was least affected by treading. Losses in herbage mass and tiller density as a result of treading recovered, or tended to recover, by the end of the 7-week regrowth period.

In a second experiment on dairy pasture, treading in winter, again, greatly reduced residual herbage mass and tiller population density. Losses in both residual herbage mass and tiller density recovered by the end of the 7-week regrowth period. Differences in pasture height before treading did not effect pasture growth but, relative to the tall canopy height, the short canopy height enhanced tillering of ryegrass during the recovery period. The effect of treading on the weight of ryegrass tillers was small. An important aspect of treading was its role in increasing tiller appearance rate of ryegrass and encouraging faster growth of these newly developed tillers. Ryegrass-dominant pastures recovering from treading damage are reliant on the emergence and growth of new tillers.

Keywords: Treading, herbage accumulation rates, tiller density, tiller weight, leaf area index, grazing management, tiller appearance rate, cattle, sheep.

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