

# Dry matter production of perennial ryegrass swards following poaching damage on a free-draining brown earth soil



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## Introduction

Pasture utilisation can be maximised by extending the grazing season, following turnout to pasture in early spring (Kennedy et al., 2007). Rainfall can be high at this time of the year and soils wet. Soils damaged by poaching have shown a reduction of up to 40% pasture re-growth in subsequent grazings (Horne, 1987).

## Objectives

To quantify the effects of varying levels of poaching damage on the dry matter (DM) production and tiller density of a perennial ryegrass sward on a free-draining acid brown earth soil.

## Materials and methods

- 24 plots (5 m x 11 m) within a Perennial ryegrass dominated sward were rotationally grazed by dairy cows;
- 45 non-lactating dairy cows walked on the plots for 0, 20, 40 and 120 minutes to achieve the desired levels of damage;
- Herbage mass on each plot was estimated five times after the poaching event;
- Tiller density was assessed on two occasions after the poaching event;
- Hoof depth was measured with a ruler on 20 random hoof marks in each plot;
- Surface roughness was measured using a chain placed on the soil surface following the contours of the soil (Saleh, 1994)
- Four poaching damage **treatments**:

### Control



2.5% chain reduction

### Barely damaged



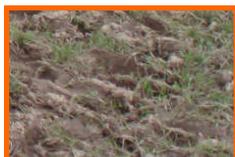
3.2% chain reduction  
3.6 cm hoof prints

### Intermediately damaged



8.4% chain reduction  
4.8 cm hoof prints

### Badly damaged



12.7% chain reduction  
5.8 cm hoof prints

## Results

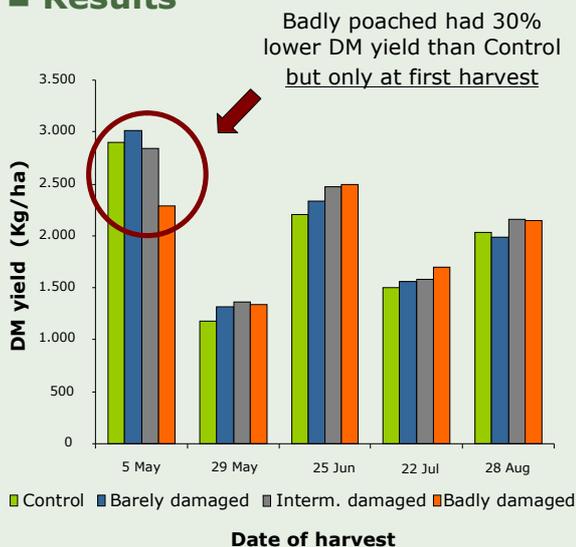


Figure 1. Dry matter (DM) yield of the four treatments Control, Barely damaged, Intermediately damaged and Badly damaged at first five grazings after the poaching event

## Summary

- Badly damaged plots had 30% lower DM yield than Control but only at first harvest
- No differences in tiller density after 60 days

## Conclusion

Poaching badly causes a short term reduction of DM production of Perennial ryegrass swards on a free draining soil

### References:

- Saleh, A. 1994. Measuring and Predicting Ridge-Orientation Effect on Soil Surface Roughness. *Journal of Soil Science Society* 58:1228 - 1230
- Horne, D.J. 1987. Soil water and unsafe grazing days on the Tokomaru silt loam in the winter of 1986 pp. 131 - 133. In G. F. Wilson, (ed.) *Proceedings of the Massey University Dairyfarming Annual Conference* Massey University, Palmerston North, New Zealand
- Kennedy, E., M. O'Donovan, J.P. Murphy, L. Delaby, and F.P. O'Mara. 2007. Effect of Spring Grazing Date and Stocking Rate on Sward Characteristics and Dairy Cow Production During Midlactation. *Journal of Dairy Science* 90:2035 - 2046