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The XX International Grassland Congress took place in Ireland and the UK in June-July 2005.

The main congress took place in Dublin from 26 June to 1 July and was followed by post congress satellite workshops in Aberystwyth, Belfast, Cork, Glasgow and Oxford. The meeting was hosted by the Irish Grassland Association and the British Grassland Society.

Proceedings Editor: D. A. McGilloway

Publisher: Wageningen Academic Publishers, The Netherlands

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Herbage quality of dwarf Napier grass under a rotational cattle grazing system two years after establishment

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Keywords: herbage quality, dwarf Napier grass, rotational grazing, beef cattle

Introduction Dwarf Napier grass (*Pennisetum purpureum* Schumach) of a late-heading type (dwarf-late, DL), introduced by the Dairy Promotion Organization, Thailand, has a high over-wintering ability and is suitable for grazing. The objective of this study was to examine the digestibility and crude protein (CP) concentration of DL Napier grass both before and after rotational grazing in relation to the daily liveweight gain of cattle 2 years after establishment in the lowland area of Kyushu, Japan.

Materials and methods Four paddocks of DL Napier grass pasture (20 m × 25 m/paddock) were established by rooted tillers on 6 May, 2002. The DL pasture was rotationally grazed for one week with a 3-week rest period by 3 breeding cattle for 3 cycles from August to December in 2002 and by 2-3 beef cattle (Japanese-Black) for 6 cycles from June to December in 2003. Live weight (LW) of cattle was measured at 1100 h when cattle switched paddocks, and no concentrate or roughage was fed during this rotational grazing. Initial LWs were 451 and 359 kg/head in 2002 and 2003, respectively. *In vitro* dry matter digestibility (IVDMD) and CP concentration were measured in the herbage cut at 10 cm above the ground surface at every cycle in 2002 and at cycles 2, 4 and 6 in 2003, which are designated as period I, II and III, respectively.

Results Concentration of CP and IVDMD are shown for 2003 in Figure 1(A) and (B), respectively. Annual mean CP concentration and IVDMD were 99 g/kg DM and 0.623-0.652, respectively, and they were higher than the averages of tropical grasses (about 93 g/kg DM and 0.54, respectively). Both IVDMD and CP concentration tended to be higher in period II than in periods I and III in 2002, and decreased from period I to period III in 2003. Differences in IVDMD between plant parts were small and CP concentration tended to be lower in the stem than in the leaf blade in both years. Live weight of grazing cattle was at least maintained in 2002 and increased at 0.30-0.48 kg/head/day during periods I and II in 2003.

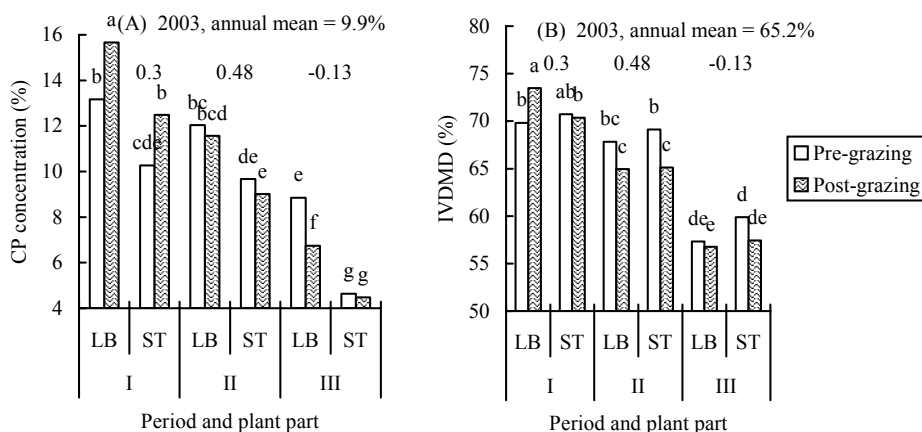


Figure 1 Changes in CP concentration and IVDMD of LB and ST from pre- to post-grazing in 2003. Figures with different letters denote significant difference between periods and plant parts at 5% level. Figures on the column denote the daily gain of grazing cattle (kg/head/day)

Conclusion The results of this study demonstrate that the herbage quality of DL Napier grass can be higher than the average of tropical grasses, and the change in herbage quality almost corresponded with the daily LW gains of grazing beef cattle in Kyushu, Japan.