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Rotational Grazing System for Beef Cows on Dwarf Elephantgrass Pasture for Two Years after Establishment

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Abstract. An intensive rotational grazing system for dwarf and late heading (DL) elephant grass (*Pennisetum purpureum* Schumach) pasture was examined in a summer period for two years following establishment. Four 0.05 of DL elephant grass pastures (20×25 m) were established on May 2003. They were rotationally grazed for 1 week, followed by a 3-week rest period by three breeding or raising beef cattle for three and six cycles during the first and second years of establishment respectively. Before grazing, the plant height, leaf area index and the ratio of leaf blade to stem were at the highest, while tiller number increased and herbage mass tended to increase, except for the first grazing cycle both two years and for one paddock in the second year. Herbage consumption, the rate of herbage consumption and dry matter intake tended to decrease in three paddocks from the first to the third cycle in the first year, but increase as grazing occurred in the second year. Dry matter intake averaged 10.2-14.5 and 15.4–23.2 g DM/kg/live weight (LW)/day over the four paddocks in the first and second year, respectively, and average daily gains were 0.09 and 0.35 kg/head/day in the first and second year respectively. The carrying capacities were estimated at 1,016 and 208 cow-days (CD)/ha (annual total 1,224 CD/ha) in the first year and 1,355 and 207 CD/ha (annual total 1,562 CD/ha) in the second year. Thus, DL elephant grass pasture can expand the grazing period for beef cows for the following two-year establishment.

Key Words: dwarf elephant grass, herbage mass, plant characters, rotational grazing

Introduction

Rotational grazing is a method of intensive grazing management that allows livestock a continuous opportunity to consume fresh forage at an active growth stage. The grazing system and associated management practices can substantially influence the grazing patterns and the use of a pasture (Chacon et al., 1978). The selection of defoliated herbage is probably the most important effects of grazing animals on pasture, with consequences such as reduction in leaf area combined with that in carbohydrate storage, tiller development, leaf and stem growth (Chaparro et al., 1996; Sollenberger and Burns, 2001).

Beef calf breeders are eager to obtain a stable source of self-supplying food that protects against cattle disease, which will probably come from imported herbage. From the previous research, it was known that dwarf elephant grass (*Pennisetum purpureum* Schumach) of the late-heading type (DL) has a higher percentage of leaf blades than the other normal and dwarf varieties (Mukhtar, 2006). DL elephant grass is also the most suitable for grazing use among examined elephant grass varieties because it is shorter and has a higher percentage of leaf blades than the other varieties (Mukhtar and Ishii, 2007).

In a preliminary study, it was found that 0.05 ha of DL elephant grass pasture had the capacity to graze three beef cows for a week, with approximately a one-month rest period, without concentrated feeding in the hot summer season, in the following 2 years of establishment (Mukhtar, 2007). However, to enhance our understanding of rotational grazing on DL elephant grass pasture, it is important to identify such variables as herbage consumption, carrying capacity and sward management techniques to increase the live