

Choice by cattle between conterminous monocultures of two tropical grasses

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Introduction Botanical composition as well as the availability and quality of forage is a crucial vegetation factor in feeding location choice by grazing animals. In recent years, an experimental design using conterminous monocultures of plants has increased our understanding of the interspecific selection of forage plants by animals because this experimental system allows animals to express unconstrained preference by minimizing physical constraints to selection (Chapman et al. 2007). However, such a methodology has never been used for tropical pasture species. This study investigated preference in cattle grazing conterminous monocultures of two tropical grasses.

Materials and methods The experimental plot comprised two adjacent subplots connected by two alleys and each subplot comprised a central sward area and a surrounding shade tree area (Figure 1). One sward area (0.39 ha) was dominated by centipedegrass (*Eremochloa ophiuroides*) and the other (0.61 ha) by bahiagrass (*Paspalum notatum*). A herd of 28-33 Japanese Black cows grazed the experimental plot monthly between May and October in two years (3-5 days each month; 0900-1600 hours daily). Two observers (one for each sward) recorded the numbers of cows grazing on the respective swards at 3-min intervals.

Results The mean monthly proportion of grazing time spent on centipedegrass decreased from May to June and increased thereafter. Among the vegetation variables examined (sward height, herbage mass, leaf mass, sward bulk density, DMD and CP concentration), only CP concentration was significantly ($P=0.031$) associated with the selectivity between the swards, i.e., cows increasingly selected the centipedegrass sward over the bahiagrass sward as the relative CP concentration of centipedegrass over bahiagrass increased (Figure 2). At the same time, the regression equation showed that cows preferred centipedegrass to bahiagrass even when the two swards provided equal CP concentrations, as the estimated proportion of grazing time on centipedegrass ($y=0.605$ when $x=1$; 95% confidence interval = 0.562-0.648) was higher than the area proportion of the grass (0.39; Figure 1). This result indicated involvement of another (other) factor(s) in the sward choice by animals. The analysis of the residuals, however, revealed that none of the other vegetation variables (sward height, herbage mass, leaf mass, sward bulk density and DMD) were responsible for the preference for centipedegrass.

Discussion The results show CP concentration to be a partial forage factor influencing animals' choice between tropical grasses growing as patches, which agrees in part with the previous finding that the preference of cattle grazing tropical grass swards increased for a specific patch (high, medium, or low availability) as the relative CP concentration and the relative sward bulk density of that patch increased over the alternative (Hirata et al. 2006).

References

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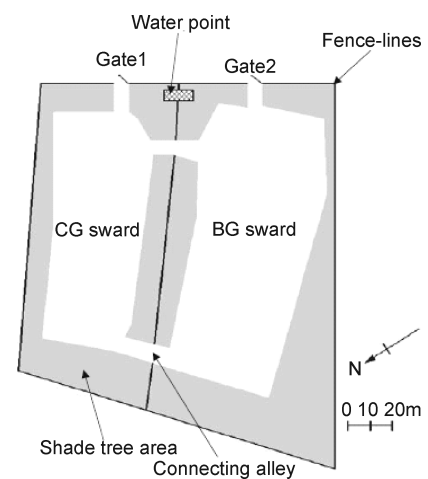


Figure 1 Layout of the experimental plot. The areas of centipedegrass (CG) and bahiagrass (BG) swards are 0.39 and 0.61 ha, respectively.

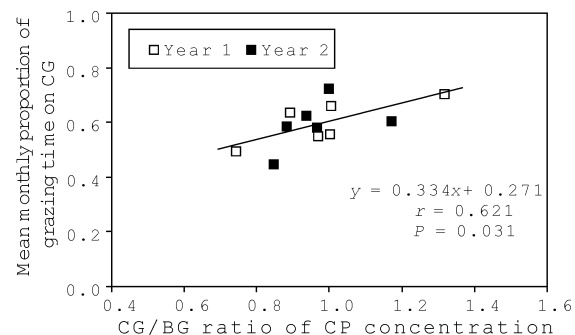


Figure 2 Relationship between mean monthly proportion of time spent grazing centipedegrass (CG) sward by cows and centipedegrass/bahiagrass (CG/BG) ratio of crude protein (CP) concentration.