

Performance of rotational grazing of *Urochloa hybrid cv Cayman* in the Caribbean region of Costa Rica

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Introduction

- » In Costa Rica pasture-based grass is the basis for both dairy and beef production. Many pastures are dominated by *Ischaemum ciliare* ("Retana"), of poor nutritional quality and permanently grazed with low stocking rates (one animal per ha).
- » Rotational grazing (like Voisin-style rational grazing) improves forage utilization and promotes nutrient cycling to maintain primary productivity through short grazing periods with high stocking rates.
- » To assess the potential of combining improved grasses with rotational grazing and compare biomass yield, botanical composition and liveweight gain of cattle for different climatic seasons, a trial with *Urochloa* (also known as *Brachiaria*) hybrid cv. Cayman was implemented from October 2014 to December 2018.

Study site and methods

- » INTA research station "Los Diamantes", Guápiles, Limón Province, Costa Rica.
- » Annual precipitation: 4000–4500 mm.
- » Four climatic seasons: dry (15 Feb–14 May), rainy (15 May–31 Aug), less rainy (1 Sep–15 Oct) and intermediate (16 Oct–14 Feb).
- » Pasture of 4.35 ha with *Urochloa hybrid cv. CIAT BR02/1752 Cayman*[®] (Semillas Papalotla), divided into 21 paddocks, resulting in a weighted average of 2.4 grazing days per paddock with 46 days of pasture regrowth.
- » Five groups (four Brahman, one Brahman x Simbrah cross) of 10–15 animals each were used with an initial average weight of 358 kg.
- » Estimation of forage availability determination of botanical composition.



Results

- » Botanical composition did not differ between the different seasons.
- » Between years significant differences were found for Cayman, *I. ciliare* and broadleaf species.
- » Cayman yield differed significantly between years. Dry matter production increased during the first three years (Table 1).
- » Liveweight gain is highest in the dry season.
- » The (rainy) season with highest biomass production shows a significantly lower liveweight gain in comparison to the dry season (Table 2).

Table 1. Pasture botanical composition, yield of Cayman under rational Voisin grazing

Botanical composition (%)	2015	2016	2017	2018
<i>U. hybrid cv Caymán</i>	90.1 a	90.8 a	86.9 ab	78.3 b
<i>I. ciliare</i>	4.2 a	5.3 a	7.7 a	15.9 b
Other grasses	0.8 a	0.2 a	0.3 a	0.7 a
Legumes	1.5 a	3.1 a	3.3 a	3.2 a
Other broadleaf species	0.2 a	0.1 a	0.4 a	1.1 b
Cyperaceae	2.7 a	1.2 a	1.4 a	0.84 a
Yield (Mg DM/ha) (42 days)	3.8 a	5.8 b	6.7 b	6.5 b

Means with a common letter in the same row are not significantly different ($p > 0.05$).

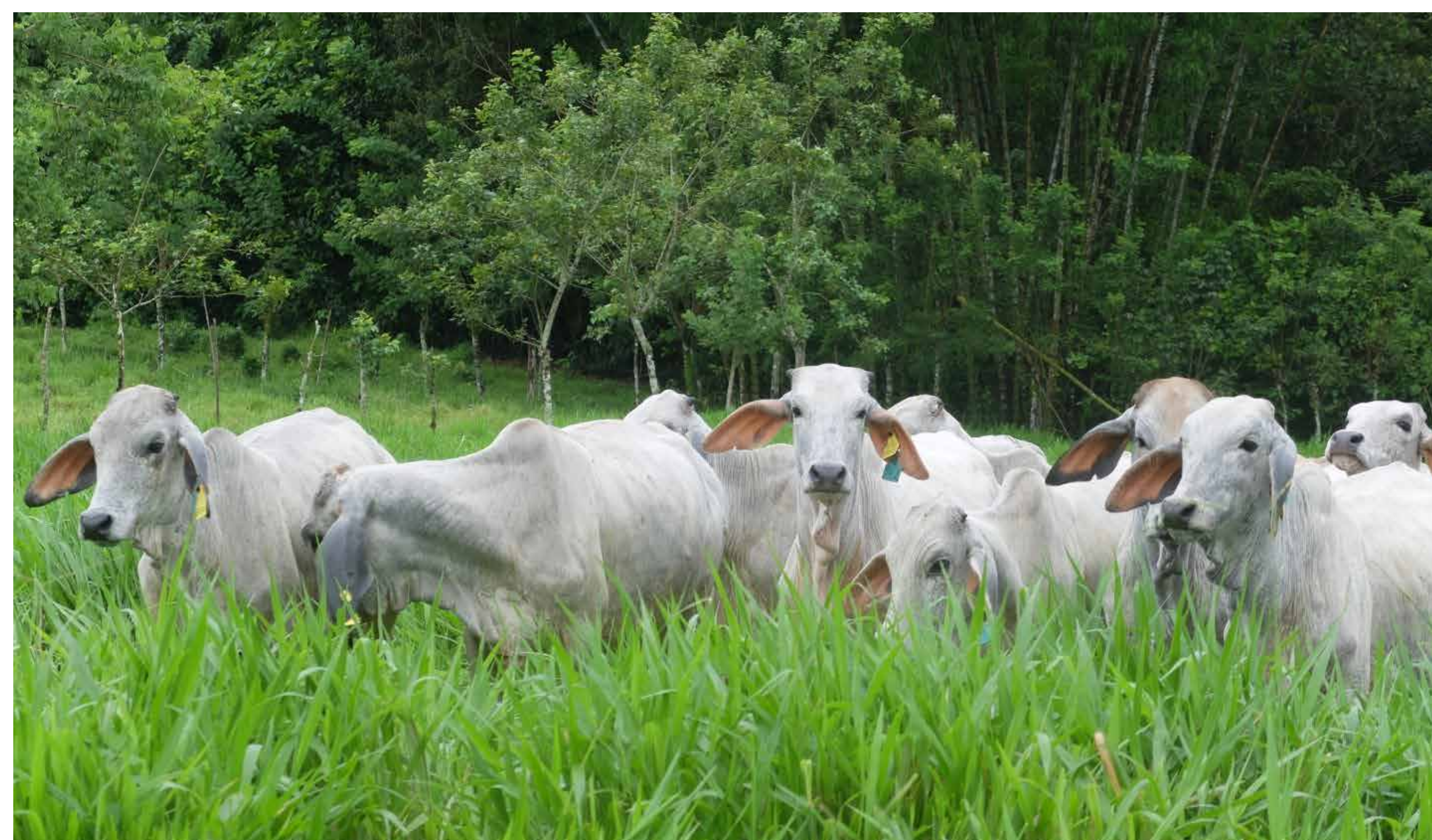


Table 2. Effect of season on yield of *U. hybrid cv Cayman* and liveweight gain

Season	Yield Cayman (Mg DM/ha)	Liveweight gain (g/animal/day)
Dry (15 Feb–14 May)	5.9 ab	0.83 a
Rainy (15 May–31 Aug)	6.6 a	0.61 b
Less Rainy (1 Sep–15 Oct)	5.7 ab	0.55 b
Intermediate (16 Oct–14 Feb)	4.2 b	0.39 c

Means with a common letter in the same row are not significantly different ($p > 0.05$).

Conclusions

- » Variations in liveweight gain respond both to the effect of climate on the animals and biomass availability.
- » The three rainy seasons showed lower liveweight gain than the dry season. Potential of improved pastures may therefore be underestimated.
- » Adapting grazing conditions leading to increased animal welfare can increase performance, especially in critical weather conditions such as high humidity and excess rainfall.

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