

Effect of cutting interval on yield and quality of three brachiaria hybrids in Thailand

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INTRODUCTION

In field trials in Thailand, Mulato II produced significantly more amounts of green leaf, particularly in the dry season, than other brachiaria grasses (Hare *et al* 2009). Cayman produced more dry matter than Mulato II in one wet season out of three wet seasons, and BRO2/1794 produced similar dry matter yields compared to Mulato II (Pizarro *et al* 2013). The objective of this field study was to determine the effect of varying cutting interval on growth and forage quality of hybrid brachiaria grasses in Thailand on low fertility soils.

MATERIALS AND METHODS

This study was conducted on the Ubon Ratchathani University farm from May 24, 2011 to November 18, 2011, on three year old plots planted in 2009 for seed production studies in 2009 and 2010 (Bouathong *et al.* 2011). The trial was a randomized complete block design, with 3 cultivars (Mulato II, Cayman, BRO2/1794), four cutting intervals (30, 45, 60, 90 days) and four replications. This study commenced on May 24, 2011, with the plots cut 5 cm above ground level and 200 kg/ha NPK (15:15:15) applied. Thereafter, the same amount of fertiliser was applied every 45 days.

RESULTS

Increasing cutting interval significantly increased stem and total dry matter yields and reduced the percentage of leaf, but had no effect on leaf dry matter production (Table 1). Mulato II produced significantly less stem but more leaf dry matter than Cayman and BRO2/1794 (Table 1). BRO2/1794 produced the most stem and the lowest percentage of leaf compared to Mulato II and Cayman.

Table 1. Effect of cutting interval on stem and leaf dry matter production and percentage of leaf of three hybrid brachiaria cultivars

Cultivar	Cutting interval			
	30 days	45 days	60 days	90 days
	Total dry matter (kg/ha)			
Mulato II	11238	13240	12932	18500
Cayman	10840	12824	13944	21197
BRO2/1794	10246	12944	14108	19786
LSD (P<0.05)		1862		
	Stem dry matter (kg/ha)			
Mulato II	2371	3840	4372	8552
Cayman	2954	5048	6227	13441
BRO2/1794	3298	6058	8335	14345
LSD (P<0.05)		1144		
	Leaf dry matter (kg/ha)			
Mulato II	8867	9400	8560	9948
Cayman	7886	7766	7717	7756
BRO2/1794	6948	6886	5773	5441
LSD (P<0.05)		944		
	Leaf (%)			
Mulato II	78.9	71.0	66.2	53.9
Cayman	72.7	60.7	55.5	36.5
BRO2/1794	67.8	53.2	40.9	27.6
LSD (P<0.05)		2.6		

Mulato II produced significantly more leaf dry matter than Cayman at 30, 45 and 90 day cutting intervals and more than BRO2/1794 at all four cutting intervals (Table 1). Mulato II had a greater percentage of leaf than Cayman and BRO2/1794, and Cayman had a greater percentage of leaf than BRO2/1794 at all four cutting intervals (Table 1).

Increasing cutting interval significantly reduced crude protein levels and increased ADF and NDF levels in stems and leaves (Table 2). Cayman and BRO2/1794 had higher stem crude protein levels than Mulato II at 30 and 45 day cutting intervals and both had lower levels than Mulato II at 60 days cutting interval (Table 2). BRO2/1794 had lower leaf crude protein levels than both Cayman and Mulato II at all cutting intervals. Overall, Mulato II had higher leaf ADF and stem and leaf NDF levels than both Cayman and BRO2/1794 at all cutting intervals (Table 2).

Table 2. Effect of cutting interval on mean crude protein (CP), acid detergent fibre (ADF) and neutral detergent fibre (NDF) concentrations in stem and leaf of three hybrid brachiaria cultivars

Cultivar	Cutting interval			
	30 days	45 days	60 days	90 days
	Stem CP (%)			
Mulato II	8.8	4.7	5.4	2.8
Cayman	9.4	5.5	4.8	2.5
BRO2/1794	9.2	5.4	4.7	2.7
LSD (P<0.05)	0.38			
	Leaf CP (%)			
Mulato II	12.6	9.4	9.5	7.1
Cayman	13.2	9.9	8.9	7.2
BRO2/1794	12.2	9.2	8.8	6.7
LSD (P<0.05)	0.37			
	Stem ADF (%)			
Mulato II	34.6	35.1	39.1	44.2
Cayman	34.9	37.3	39.4	43.6
BRO2/1794	33.4	34.4	41.2	44.2
LSD (P<0.05)	0.42			
	Leaf ADF (%)			
Mulato II	27.8	28.7	31.3	31.6
Cayman	26.2	27.4	29.3	30.1
BRO2/1794	26.6	27.3	28.8	29.2
LSD (P<0.05)	0.33			
	Stem NDF (%)			
Mulato II	62.2	68.2	69.0	74.3
Cayman	61.4	65.2	68.3	70.5
BRO2/1794	61.2	65.6	70.9	71.7
LSD (P<0.05)	0.55			
	Leaf NDF (%)			
Mulato II	55.5	59.0	60.8	63.3
Cayman	51.9	55.5	57.4	58.0
BRO2/1794	53.0	57.4	57.0	58.4
LSD (P<0.05)	0.39			

DISCUSSION

At all cutting intervals, Mulato II produced significantly more leaf DM and percentage of green leaf and significantly less stem DM than Cayman and BRO2/1794. It has been production of green leaves by Mulato II that has made it an extremely attractive forage for livestock (Argel *et al.* 2006). An optimum cutting interval based on the data in this study, suggest a compromise between quantity and quality. Even though the 30 day cutting interval produced crude protein levels 3-4 percentage points higher than levels from 45- and 60-day-old forage, dry matter production from 30-day-old forage was over 20% less than production from 45- and 60-day-old forage. A recommended cutting interval will depend on what combination of yield and quality is desired.

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