



Synergy in Science: Partnering for Solutions

2015 Annual Meeting | Nov. 15-18 | Minneapolis, MN
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Start

**Browse by
Section/Division of
Interest**

View At a Glance

Author Index

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Sessions**

307-38 Shade and Nitrogen Effects on Regrowth Dynamics, Partitioning, and Herbage Production of Jiggs Bermudagrass and Mulato-2 Brachiaria Hybrid.

Poster Number 1007

See more from this Division: [C06 Forage and Grazinglands](#)

See more from this Session: [Forage and Grazinglands: I](#)

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Minneapolis Convention Center, Exhibit Hall BC

Leonardo S. B. Moreno¹, Kenneth J. Boote², Lynn E. Sollenberger¹, Marta Moura Kohmann¹ and Diego N. L. Pequeno³,

(1)Agronomy Department, University of Florida, Gainesville, FL

(2)Agronomy Dept., 3105 McCarty Hall, University of Florida, Gainesville, FL

(3)PO Box 60326, CGIAR (Consultative Group on Intl Agricultural Research), Houston, TX

Poster Presentation

• [Poster ASA 2015 LSBM- Final.pdf](#) (4.7 MB)

Abstract:

Forage plants are subjected to multiple defoliation-regrowth cycles each year, with most leaf area removed at each defoliation event. Grasses have developed mechanisms to regrow following defoliation including relying on reserve compounds or maximizing photosynthetic efficiency of remaining leaf area. Understanding the role of assimilate partitioning in the regrowth process is important to improve physiology-based models, enhance management practices, and identify target traits in breeding programs. The objectives of this study were to quantify the effects of shade and N fertilization on C and N availability for plant growth, composition of stubble following defoliation, and partitioning of assimilates. Treatments were the factorial combinations of two species [Jiggs bermudagrass (*Cynodon dactylon* L. Pers.) and Mulato-2 (*Brachiaria spp.*)], two light levels (full sun and 55% shade) and two N rates (30 or 120 kg ha⁻¹ of N after each harvest), arranged in a randomized complete block design with four replicates. The forages were harvested to a 10-cm stubble every 4 weeks using a sickle-bar mower. Seasonal forage dry matter accumulation of Mulato-2 was greater than Jiggs (8600 vs 6000 kg ha⁻¹). Shaded treatments produced less forage compared with full sun treatments (6600 vs. 8100 kg ha⁻¹ of DM), and high N treatments produced more forage than low N treatments (7800 vs. 6900 kg ha⁻¹ of DM) ($p=0.0112$). Mulato-2 had greater below-ground biomass than Jiggs, and shade reduced root biomass markedly relative to full sun, regardless of species or N rate. Shaded Mulato-2 leaves had greater specific leaf area (SLA), while Jiggs SLA was not affected by light environment. Leaf as a percentage of shoot mass was larger in Mulato-2, plateauing at 60% after 18 d of regrowth. Jiggs had a smaller percent leaf than Mulato-2, and full sun plots reached 35% and shaded plots 25% leaf. The results illustrate differences in growth habit of the different species, and also suggest that differences in partitioning of assimilates can influence potential production.

See more from this Division: [C06 Forage and Grazinglands](#)

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[<< Previous Abstract](#) | [Next Abstract >>](#)

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