

Mulato II (*Brachiaria sp.*)¹

J. Vendramini, B. Sellers, L.E. Sollenberger, and M. Silveira²

Introduction

Brachiariagrasses, including Mulato II, are tropical warm-season forages native to Africa (Kenya, Ethiopia, Uganda, Tanzania, Zimbabwe, Rwanda, and Burundi). Brachiariagrasses were first introduced in tropical Australia in the early 1960s and subsequently in tropical South America in the early 1970s (Parsons 1972; Sendulsky 1978).

Brachiariagrasses are the most widely grown forages in tropical South America, occupying over 80 million hectares (Boddey et al. 2004). They are extensively used as pasture grasses, but *Brachiaria* species are not commonly used for harvested forage. Exceptions include creeping signalgrass (*Brachiaria humidicola*) and a few other species that are used for hay (Boonman 1993; Stur et al. 1996). The growing interest in brachiariagrasses has prompted an urgent need to develop new cultivars with outstanding agronomic characteristics, greater range of adaptation, greater biomass production and nutritional quality, and resistance to *Rhizoctonia* (a disease-causing fungus) and spittle bug species.

Mulato II is the result of three generations of crosses and screening conducted by the International Center for Tropical Agriculture (CIAT) in Colombia, including original crosses between *Brachiaria ruziziensis* R. Germ. & Evrard clone 44-6 (sexual tetraploid) x *Brachiaria decumbens* Stapf cv. Basilisk (apomictic tetraploid). Sexual progenies of this first cross were exposed to open pollination to generate a second generation of hybrids. From the second generation of hybrids, a sexual genotype was selected for its superior agronomic characteristics and was again crossed, producing Mulato II. Subsequent progenies of this clone confirmed their apomictic reproduction, and results with molecular markers (microsatellites) showed that Mulato II has alleles that are present in the sexual mother *B. ruziziensis*, in *B. decumbens* cv. Basilisk, and in other *B. brizantha* accessions, including cv. Marandu.

Morphology

Mulato II is a semi-erect perennial apomictic grass that can grow up to 9 ft tall. It is established by seed, although it could be propagated vegetatively with stem segments, if necessary. It produces

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2. J. Vendramini, assistant professor, Agronomy Department, Range Cattle Research and Education Center (REC)-Ona; B. Sellers, assistant professor, Agronomy Department, Range Cattle REC-Ona; L.E. Sollenberger, professor, Agronomy Department; M. Silveira, assistant professor, Soil and Water Science, Range Cattle REC-Ona; Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL 32611-0540.

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vigorous cylindrical stems (some with a semi-prostrate habit) capable of rooting at the nodes when they soil. They have lanceolate and highly pubescent leaves of 15 to 25 inches in length and 1 to 1.5 inches width (Guiot and Melendez 2003).

Region of Adaptation and Growing Season in Florida

Mulato II is adapted to many soil types ranging from sands to clays; however, it does not tolerate poorly drained soils. Even short periods of standing water may reduce stands considerably. The tropical origin of the *Brachiarias* limits their productivity and persistence in latitudes above 28° (north of Interstate 4). In South Florida, Mulato and Mulato II grow well from spring (May) to fall (late October). They are sensitive to cold weather, and above-ground forage browns quickly after a frost.

Establishment

Summer is the best time to establish Mulato II in Florida because of the greater probability of adequate temperature and moisture conditions. Spring planting may be used, but there is greater risk of dry conditions and stand failure. Commercial seed has good vigor, and when placed in a moist, firm seedbed, it germinates in 5 to 10 days. Seeds should be broadcast at 10 lbs/A and covered with 1/2 inch of soil. A cultipacker-type seeder or drill can be used for more precise seed placement. Using a rolling device after seeding is recommended to assure adequate seed-soil contact and better soil moisture retention.

Fertilization

Before establishing any crop, soil testing is strongly recommended. Although UF/IFAS does not have a specific recommendation for Mulato II fertilization, the stargrass recommendation can be used. Target soil pH should be between 5.5 to 6.0. For new plantings, apply 30 lbs/A N, all of the P_2O_5 , and half of the K_2O recommended on your soil test report after germination. Apply additional N fertilization and remaining K_2O according to the target production. For established stands, apply 50 lbs/A N and recommended P_2O_5 and K_2O in the spring. Greater N rates may be applied if greater forage production is desired. It is not recommended

to apply more than 100 lbs/A N in one single application because of increased chances of N lost by leaching and/or volatilization.

Weed Control

As with any forage species, proper fertility and grazing management are very important for weed control. Because Mulato II is a bunch grass, weed management may be more challenging than for bahiagrass and bermudagrass. As a result, soil fertility and grazing management are very important components of an integrated weed control approach.

Herbicides may be applied to Mulato II only after at least two true tillers have formed after planting seed. Available herbicides include 2,4-D, WeedMaster (2,4-D + dicamba), Forefront, Milestone, Pasturegard, Remedy, and Cleanwave. These herbicides may be applied at labeled application rates specific to the weed species present in the pasture. However, there may be some damage from triclopyr-containing herbicides (Pasturegard, Remedy) if applied under hot, humid environmental conditions when Mulato is rapidly growing. Cimarron Plus, Cimarron X-tra, and Impose have not been investigated for their tolerance on Mulato.

Utilization

Mulato II has been primarily used for grazing beef cattle in South Florida. The vigorous and prostrate-type growth during the summer makes rotational grazing recommended for Mulato II pastures. Rotational grazing facilitates the adjustment of optimum stocking rate and control of grazing stubble height. The target stubble height for grazing Mulato II should be 6-10 inches. With respect to nutritive value, Mulato II generally has CP of 11-16% and TDN of 55-60%.

Research was conducted at the Range Cattle Research and Education Center to evaluate the performance of yearling heifers grazing Mulato and bahiagrass from June to September 2007 at different stocking rates, 1.6, 3.2, and 4.8 heifers/A (Table 1). Mulato pastures received 140 lbs nitrogen/A split in three applications. Results showed that the highest stocking rate pastures (4.8 heifer/A) were overgrazed, resulting in a decrease in Mulato stand and greater

area occupied by common bermudagrass, bahiagrass, and broadleaf weeds. Heifers grazing at the 1.6 and 3.2 stocking rates exhibited similar average daily gains; however, the 3.2 heifers/A rate resulted in the greatest animal gain per acre. In addition, heifers grazing Mulato at 3.2 heifers/A had greater average daily gain and gain per acre than heifers grazing bahiagrass at the same stocking rates.

In Marianna, FL, a research project was conducted to compare the performance of beef heifers grazing Mulato II, pearl millet, and sorghum-sudan and verify the potential of using Mulato II as a warm-season annual forage. The forage characteristics (production and nutritive value) were similar, resulting in similar animal performance among the forage species. Mulato II established later than pearl millet and sorghum-sudan; however, it had an extended growing season.

Although Mulato II has not typically been used as a conserved forage by producers, its vigorous growth and superior nutritive value compared to bahiagrass make it a very attractive option for hay and haylage. Research conducted in Ona, FL, compared forage production and nutritive value of ten different species and cultivars of warm-season grasses. Mulato II had similar production to bermudagrass, stargrass, and limpograss, but Mulato II and Tifton 85 had the greatest forage digestibility (67%).

Summary

Advantages of Mulato II

- 1) Vigorous growth and superior nutritive value compared to bahiagrass
- 2) Established by seed
- 3) Rapid establishment
- 4) Can be utilized for pasture, hay, or haylage

Disadvantages of Mulato II

- 1) Does not tolerate poorly drained soils
- 2) Forage browns following frost and plant survival may be reduced by extended periods of temperatures below 32 F

- 3) Shorter growing season than limpograss, bahiagrass, or bermudagrass

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Table 1. Performance of heifers grazing Mulato and bahiagrass pastures at three stocking rates

Stocking rate	Average daily gain		Gain per acre (112d)	
	Mulato	Bahia	Mulato	Bahia
	lb/d		lbs	
1.6 heifers/A	1.34Aa	0.81Ba	608Ab	407Ac
3.2 heifers/A	1.32Aa	0.99Ba	1196Aa	916Ba
4.8 heifers/A	0.48Ab	0.48Ab	656Ab	674Ab
Average	1.04A	0.76B	820A	665B
Forage species means followed by the same uppercase letter are not different from each other ($P > 0.05$).				
Stocking rate means followed by the same lowercase letter are not different ($P > 0.05$).				