



## Warm-Season Forage Mixtures for Pasture Establishment

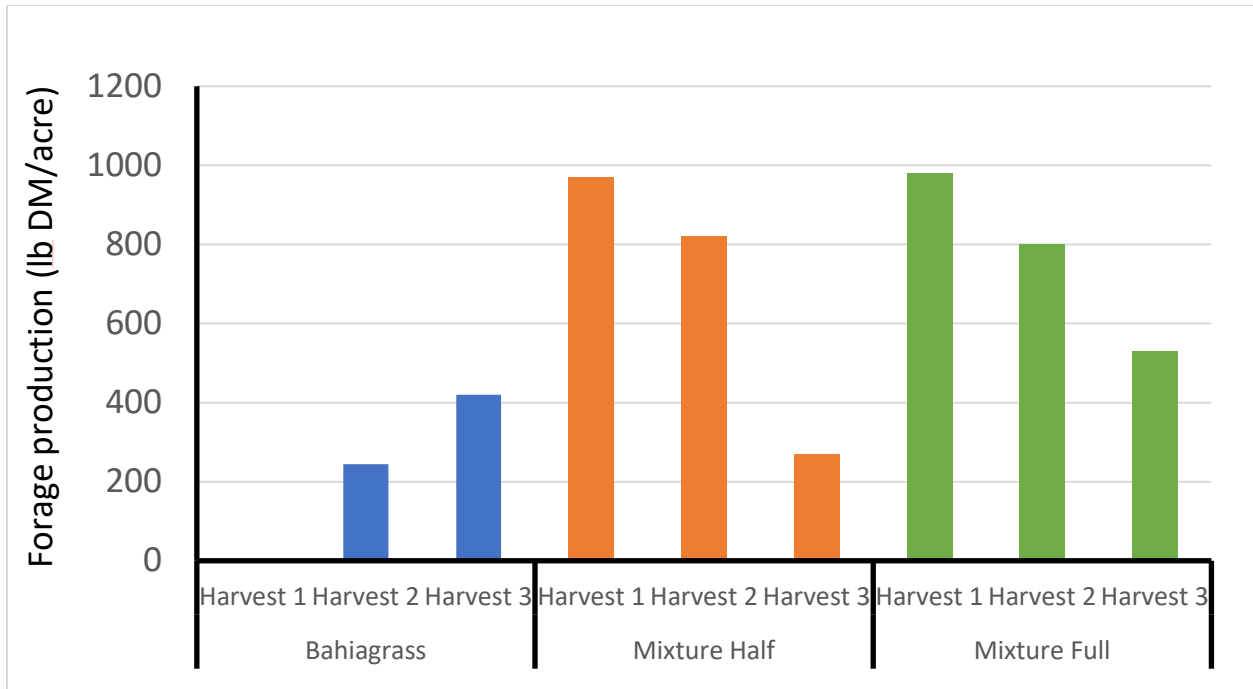
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Warm-season perennial grasses are the most used forage for beef cattle production in Florida. In spite of the superior persistence of warm-season grasses under adverse conditions, improper management may lead to a decrease of the desirable forage species and pasture renovation may be needed. Pasture renovation is one of the most costly activities in beef cattle production and it is estimated that re-establishment of a degraded pasture may cost from \$500 to \$700 per acre. In addition to the considerable expense, the pasture may have to be deferred from grazing for about 6 months. The decrease in grazing area leads to an overall increase in stocking rate, which may result in overgrazing. Some warm-season perennial forage species are notorious for slow establishment, such as bahiagrass and Tifton 85, which may aggravate the overgrazing problems.

Mixing warm-season annual forages with warm-season perennial grasses at establishment is a feasible management practice to decrease the gap between pasture establishment and the first grazing event. However, the effects of mixing forages at establishment on forage production, nutritive value, and the subsequent effects on the warm-season perennial grass establishment is unknown.

Two experiments were conducted recently to test different forage mixtures at establishment in Ona and Gainesville. In experiment 1, a mixture of bahiagrass (25 lb/Acre) and pearl millet was tested. The treatments were bahiagrass alone, bahiagrass + pearl millet half seeding rate (12.5 lb/acre), and bahiagrass + pearl millet full seeding rate (25 lb/acre). The cultivars used were Argentine bahiagrass and Tifleaf 3 pearl millet and the pastures were planted in June 2017. The forage was harvested at 5 inches stubble height on 6, 12, and 18 weeks after seeding, totaling 3 harvests. The pearl millet had fast germination with significant growth shortly after seeding. Pastures seeded with mixtures had 5 times more forage production than bahiagrass alone 6 weeks after seeding, and twice as much 12 weeks after seeding (Figure 1). Forage production was similar among all treatments 18 weeks after seeding, primarily because pearl millet is an annual forage and its life cycle ended by 18 weeks. Overall, bahiagrass alone produced 700 lb DM/acre, bahiagrass + pearl millet half seeding rate produced 2400 lb DM/acre and bahiagrass + pearl millet full seeding rate produced 2000 lb DM/acre. In addition to the greater forage production, the mixtures had superior nutritive values with 18% crude protein and 67% digestibility. However, the bahiagrass + pearl millet full seeding rate decreased bahiagrass ground cover in the subsequent year after establishment. These data imply that mixing bahiagrass and pearl millet at establishment is a feasible management practice to produce forage with superior nutritive value 6 and 12 weeks after establishment; however, pearl millet full seeding rates should be avoided to decrease forage species competition and increase bahiagrass establishment.



**Figure 1.** Forage production of bahiagrass alone, bahiagrass + pearl millet half seeding rate (12.5 lb/acre) or bahiagrass + pearl millet full seeding rate (25 lb/acre) planted in Ona, FL.

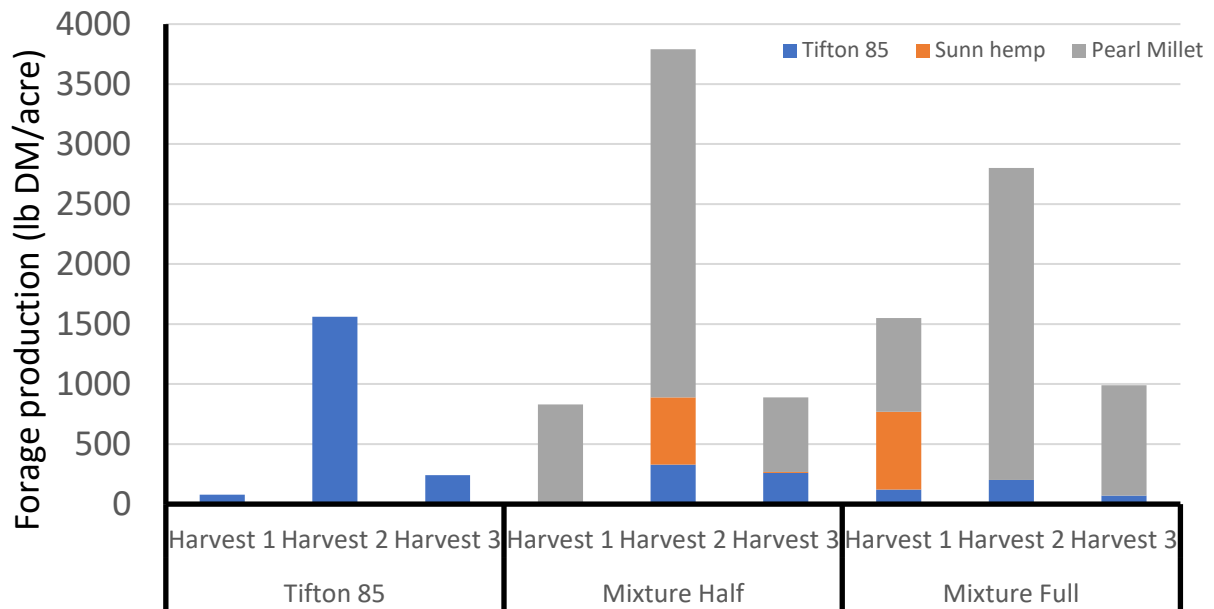


1 week after seeding

18 weeks after seeding

Experiment 2 was conducted in Gainesville, FL and treatments were Tifton 85 alone, Tifton 85 + pearl millet + sunn hemp full seeding rate (12.5 and 12.5 lb/acre), or Tifton 85 + pearl millet + sunn hemp full seeding rate (25 and 25 lb/acre). Tifton 85 was planted with 1200 lb/acre of

vegetative plant material. Plots were planted in July 2017 and harvested 6, 12, and 18 weeks after planting. Tifton 85 + pearl millet + sunn hemp full seeding rate had the greatest forage production 6 weeks after planting (1500 lb DM/acre), while Tifton 85 + pearl millet + sunn hemp half seeding rate had the greatest forage production 12 weeks after planting (3500 lb DM/acre). The mixtures had similar forage production 18 weeks after planting but still greater than Tifton 85 alone. Tifton 85 alone had the least forage production during the trial (Figure 2). In addition, Tifton 85 alone had greater weed infestation than the mixture treatments (35% vs. 5%). The nutritive value of the forage harvested was similar across all treatments with approximately 13% crude protein and 60% digestibility. The Tifton 85 ground cover at the end of the growing season was evaluated and plots planted with Tifton 85 alone had better ground cover (80%) than plots planted with Tifton 85 + pearl millet + sunn hemp half seeding rate (50%), and Tifton 85 + pearl millet + sunn hemp full seeding rate (30%).



**Figure 2.** Herbage accumulation of Tifton 85 alone, Tifton 85 + pearl millet + sunn hemp half seeding rate (12.5 and 12.5 lb/acre) or Tifton 85 + pearl millet + sunn hemp full seeding rate (25 + 25 lb/acre) plots planted in Gainesville, FL.



Tifton 85 alone – 6 weeks after planting



Tifton 85 + pearl millet + sunn hemp half seeding rate – 6 weeks after planting

In summary, mixing a warm-season perennial grass with warm-season annual forages increases forage production during the year of establishment. Warm-season annual forages usually have similar or greater nutritive value than warm-season perennial grasses and should be grazed by cattle with greater nutrient requirements. The mixture can decrease ground cover and establishment of the warm-season perennial grass, therefore, using half of the recommended seeding rate appears to be a good management practice to decrease competition and increase ground cover of the warm-season perennial grass.

If you have any questions about mixing warm-season perennial grass and warm-season annual forages, please contact Joe Vendramini at [jv@ufl.edu](mailto:jv@ufl.edu).