

Does Ryegrass Variety Matter in a Beef Stocker Program?

Wayne Wyatt and Andrew Granger, Iberia Research Station and Louisiana Cooperative Extension Service

Findings

- Cool-season individual liveweight gains, average daily gains, and liveweight gains per acre were higher for steers grazing Jackson^{®1} and Marshall^{®1} ryegrass pastures compared to steers grazing Gulf ryegrass pastures.
- Estimated differences in seed costs (\$3.90 more per acre) for Jackson and Marshall ryegrass relative to Gulf ryegrass were justified by an estimated higher return of \$20 to \$28 per acre from the sale of heavier steers.
- Yes, ryegrass variety does matter in a Louisiana beef stocker program.

Introduction

Research conducted by the LSU AgCenter in the 1980s at six research stations located throughout the state and two departments at the main campus clearly revealed a profit potential for stocker beef production in Louisiana. Annual ryegrass has the productivity during the cooler parts of the year (late-fall, winter, and spring) and the nutritional quality necessary for growing beef animals to play a major role in most Louisiana beef stocker programs. Ryegrass variety research is conducted annually by LSU AgCenter forage agronomists at several locations for the purpose of recognizing and reporting on recommended ryegrass varieties, based primarily on yield data. Research conducted in Alabama and elsewhere has compared ryegrass varieties (principally Gulf and Marshall) for animal gain performance on pasture. Dramatic improvements in performance of steers grazing Marshall relative to Gulf ryegrass pastures have been reported. Differences in cool season hardiness and rust resistance do exist among the Gulf,

Jackson, and Marshall ryegrass varieties. Although rust resistance is important in the subtropical environment of south-central Louisiana, the relatively mild winters may make differences in cool season hardiness less important in terms of animal performance. Because of differences in seed costs associated with Gulf, Jackson, and Marshall ryegrass, varietal differences in animal performance can affect profit potential and warrant an evaluation.

Experimental Approach

General design. Four 20-acre pastures (replicates) were each subdivided into six 3.3-acre treatment paddocks (experimental units). Within a pasture, two paddocks (randomly chosen) were planted with Gulf ryegrass, another two were planted with Jackson ryegrass, and the remaining two paddocks were planted with Marshall ryegrass. Three Angus and three Brangus steers were assigned to each paddock. Paddocks were grazed continuously throughout the grazing season. The study was conducted for three grazing seasons (1997-1998, 1998-1999, and 1999-2000)

Pasture management. All pastures annually received a broadcast application of glyphosate (Roundup Ultra[®], 1 quart per acre) in mid-August to early September. Dormant warm season forage was removed by burning in mid-September of each year.

Pastures were lightly disced and seeded with a grain drill (8-inch spacings) in mid- to late September of each year. A 30 pound per acre seeding rate was used for each ryegrass variety. Because of poor stand survival in 1997, all pastures were replanted on October 31.

Pastures were typically broadcast with 2,4-D plus dicamba (Weedmaster[®], 1 quart per acre) in December to control buttercup (*Ranunculus* spp.) and other cool-season broadleaf weeds. Nitrogen fertilizer was applied in late fall (75 pounds of N per acre), winter (75 pounds of N per acre), and in mid-spring (60 pounds of N per acre) of each year.

Animal management. Male calves were weaned in early October each year. Calves were vaccinated against IBR, PI₃, BRSV, BVD, *Clostridia* spp. (8), *Leptospira* spp. (5), *Haemophilus somnus*, Anthrax, and *Pasteurella Haemolytica*. Calves also were

¹ The Wax Company, Inc., generously supplied all ryegrass seed for each planting season. Jackson[®] and Marshall[®] ryegrasses are commercially available varieties marketed by The Wax Company, Inc., Amory, Miss. The mention of brand names is not an endorsement of any product to the exclusion of any other competing health or weed-control products.

dewormed (Safeguard®) and treated for flukes (Curatrim®). Bull calves were knife castrated one week after weaning.

Steer calves were allowed to graze ‘Alicia’ bermudagrass hay meadows (approximately 28 to 42 day regrowth) after weaning. In two of the three years of the study, steers were able to graze hay meadow regrowth into late fall, just before being placed on ryegrass pastures. Because of inadequate forage growth of ryegrass during the early part of the 1998-1999 grazing season, steer calves were given access to good quality hay and hand fed a daily supplement (3 pounds per steer). The supplemental ration contained ground corn (77%), cottonseed meal (17%), salt (2.5%), oyster shell flour (2.5%), and trace minerals (1%). Monensin (Rumensin®) was added to the supplemental ration (200 mg/head/day in a 3-pound supplement) to control coccidiosis.

Grazing management. Ryegrass pastures were grazed 131 days in 1997-1998 (December 20, 1997, to April 30, 1998), 85 days in 1998-1999 (February 3, 1998, to April 30, 1999), and 129 days in 1999-2000 (December 21, 1999, and April 19, 2000). Paddocks were continuously stocked throughout the grazing season.

Angus and Brangus steers were weighed before placing them on ryegrass pasture. Available forage (data not available) was visually assessed for all paddocks within each 20-acre pasture before the start of the grazing season. Because initial ryegrass yield differed among the four 20-acre pastures, it seemed prudent to match the heavier steers with the more productive 20-acre pastures and the lighter steers with less productive 20-acre pastures (that is, the heaviest 18 Angus and 18 Brangus steers were allotted to the 20-acre pasture with the most available ryegrass, etc.). Within each 20-acre pasture, the 18 Angus and 18 Brangus steers were randomly allotted to the six paddocks. Because of a desire to extend the grazing season as much as possible, large round bales of good quality hay were placed in each treatment paddock and replenished as needed throughout the grazing season. Steers had access to fresh water and mineral supplements throughout the grazing season.

Results and Discussion

Beginning in February of each year, a relative measure of the amount of forage available for grazing was determined three to four times (roughly monthly intervals) until termination of the grazing season. This was done with a rising plate meter (RPM). Ryegrass varieties did differ in terms of mean RPM measurement (Figure 1).

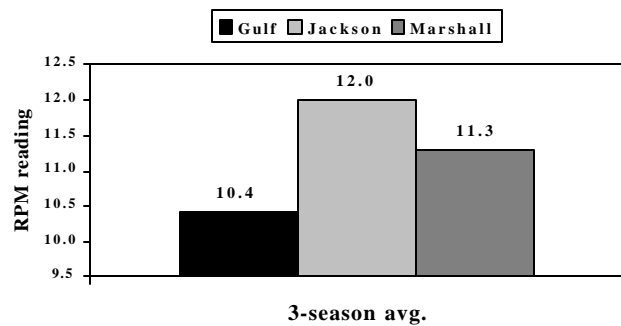


Figure 1. Relative measures (rising plate meter; RPM) of forage available for grazing for Gulf, Jackson, and Marshall ryegrass pastures - three-season average.

The average measurement reading for Jackson and Marshall ryegrass paddocks was higher than that for Gulf ryegrass and indicates that more forage was available for grazing with Jackson and Marshall than for Gulf ryegrass paddocks.

Although initial liveweights of grazing steers were not different among the ryegrass varieties, final weights were different (Figure 2). Mean final weights for steers grazing Jackson and Marshall ryegrass paddocks were heavier than those of steers grazing Gulf ryegrass, and this difference was consistent across years. Final weights were similar for both Jackson and Marshall ryegrass paddocks.

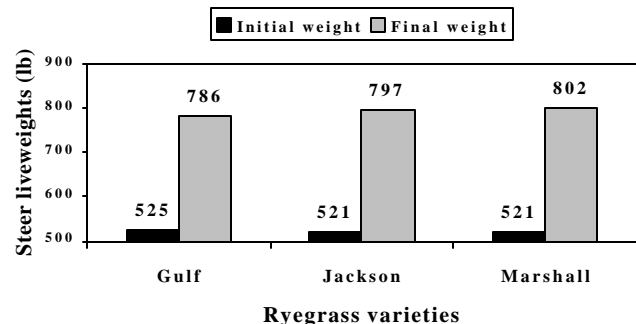


Figure 2. Initial and final weights of steers grazing Gulf, Jackson, and Marshall ryegrass pastures - three-season average.

Overall liveweight gains (3-season average) were 261, 276, and 281 pounds for Gulf, Jackson, and Marshall ryegrass paddocks, respectively (Figure 3). Liveweight gain, average over the three seasons, was 6.5% higher (about 18 pounds heavier) for steers grazing either Jackson or Marshall than for steers grazing Gulf ryegrass paddocks. Liveweight gains were consistently higher in each year of the study for

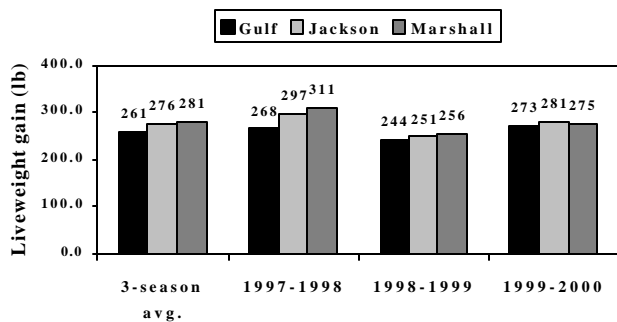


Figure 3. Liveweight gains of steers grazing Gulf, Jackson, and Marshall ryegrass varieties - seasonal and three-season average.

Jackson and Marshall than for Gulf ryegrass paddocks. There was no difference in the three-season average of liveweight gains between steers grazing Jackson and Marshall ryegrass paddocks.

Average daily gains (ADG), averaged over the three seasons, of steers grazing Jackson and Marshall ryegrass paddocks were 6% higher (.15 pounds per day difference) than those of steers grazing Gulf ryegrass paddocks (Figure 4). Average daily gains of steers grazing Jackson and Marshall ryegrass paddocks were similar (2.50 and 2.54 pounds, respectively). Ryegrass variety effects on ADG were not consistent across grazing seasons, and those differences were highest in 1997-1998 and lowest in the droughty 1999-2000 season.

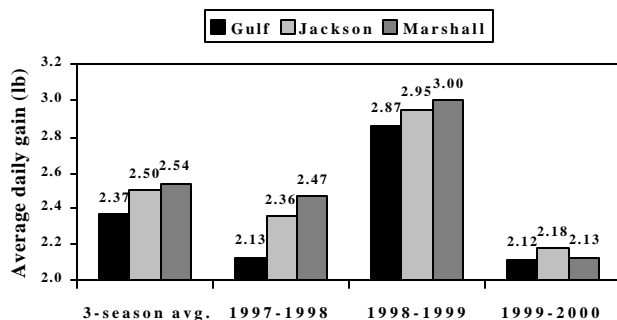


Figure 4. Average daily gains of steers grazing Gulf, Jackson, and Marshall ryegrass varieties - seasonal and three-season average.

Liveweight gains per acre, averaged across three grazing seasons, were 6.5% higher (a 31-pound per acre difference) for steers grazing Jackson and Marshall ryegrass paddocks (502 and 510 pounds per acre, respectively) than for steers grazing Gulf ryegrass paddocks (475 pounds per acre) (Figure 5). Liveweight gains per acre, averaged across three grazing seasons, were similar for steers grazing Jackson and Marshall ryegrass paddocks. Liveweight

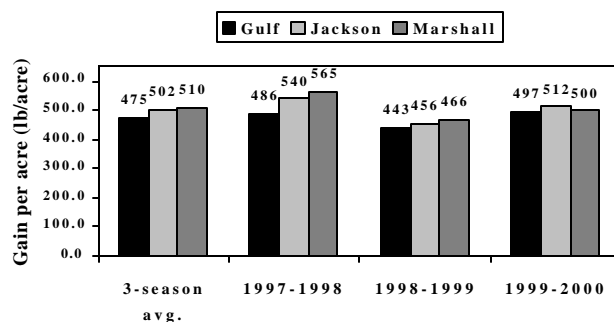


Figure 5. Pasture gains per acre for steers grazing Gulf, Jackson, and Marshall ryegrass pastures - seasonal and three-season average.

gain per acre differences among the ryegrass varieties were not consistent across grazing seasons. Similar to that of ADG, the greatest range in varietal difference (565 to 486 pounds per acre for Marshall and Gulf, respectively) was in 1997-1998 season. Varietal difference in liveweight gains per acre was the least in the droughty 1999-2000 season.

Conclusions. More dramatic differences in terms of ryegrass variety effects on animal performance have been reported by Alabama researchers. While certainly not achieved in the 1998-1999 grazing season, an objective of the winter-spring beef stocker program at the Iberia Research Station was to extend the grazing period that steers are maintained on ryegrass pastures. Also, 1999 and 2000 have been particularly dry years and may have affected steer performance on the different ryegrass varieties; however, steers gained relatively well (approximately 260 to 280 pounds total gain) when averaged across all three grazing seasons. The 25 to 35 extra pounds gained per acre by steers grazing Jackson and Marshall ryegrass paddocks, compared to steers grazing Gulf ryegrass paddocks, was significant. Assuming seed prices are about \$.25 for Gulf ryegrass and \$.38 for Jackson and Marshall ryegrass, the difference in seed cost, at a seeding rate of 30 pounds per acre, is \$3.90. Assuming a conservative sale price of \$.80 per pound for 700-800 cattle, the net profit per acre with Jackson and Marshall ryegrass was \$20 to \$28 compared to cattle grazing Gulf ryegrass paddocks. On an individual steer basis, gross sale price for steers grazing Gulf, Jackson, and Marshall ryegrass paddocks during the late fall, winter, and spring season would be about \$629, \$638, and \$641, respectively. Choice of ryegrass variety in a stocker program can have an economic impact for beef producers.