AFGC Proceedings - Paper Guidelines

You are encouraged to submit:

a. **Paper proceedings (5 pages or less, single spaced with text and tables)**

Detailed Guidelines

- Paper length: 5 pages or less.
- Interpretive summary: 1 page or less.
- Font type and size: Times Roman or CG Times font (12 pt).
- Single spaced within tables and Literature Cited section.
- Center the title, authors, abstract heading, and table titles.
- Text heading should begin at the left hand margin, be underlined, and followed by a colon with text immediately following on the same line.
- Indent first line of author footnote, paragraphs, and table footnotes one-half inch.
- Indent all except first line of literature citations one-half inch.
- Use English units in text, tables, and figures.
- Use a zero to the left of decimal points (0.05, not .05) in text, tables, and figures.
- Refer to cited literature by author and year in text (not by numbers).
- Left and right margins should be 1 inch. Top and bottom margins should be 1 inch.
- Author footnote should be inside margins, the same size font as the text, and include all authors listed inside the same footnote (1 footnote, rather than 2 or more) full justify.
- Abstract must be five pages or less, single spaced.
- Tables and Figures should follow the Literature Cited section (not imbedded in text).
- Follow J. Animal Sci. format for tables and figures. Do not capitalize table titles. The top border of tables should be a double underline. Use letters to designate table footnotes. Place figure captions under the figures. Center titles.
- Use slash format for units ie lb/acre throughout
- Put spaces around equal and less than signs throughout text and tables

(EXAMPLE OF PROCEEDING PAPER)

COOL-SEASON MANAGEMENT AFFECTS SUBSEQUENT PERFORMANCE OF TIFTON 85 BERMUDAGRASS

R.A. Reis, Y.C. Newman, L.E. Sollenberger, A. Hernandez Garay, L.M. Premazzi, and D. Urbano[1]

Abstract

Overseeding of cool-season forages into warm-season perennial pastures like Tifton 85 bermudagrass (*Cynodon* spp.) extends the grazing season and provides high quality forage. Field observations in some years have shown Tifton 85 stand reduction and slow spring regrowth following overseeding. This 2-yr experiment compared the effect of cool-season management programs, including overseeding and use of different grazing treatments, on productivity of Tifton 85 the following spring and summer. There were seven treatments; four were bermudagrass overseeded with a cool-season annual forage mixture and grazed differentially, and three were unseeded controls with differences in amount of residual bermudagrass stubble remaining in autumn. Winter and spring grazing management of overseeded pastures did not affect herbage production of cool-season species (~2.5 tons/acre). In Year 1, overseeded pastures produced more bermudagrass the following spring through early summer than did control pastures with a short autumn stubble height, but there was no difference in yield in Year 2. Tall-stubble control pastures had similar bermudagrass yields as overseeded treatments in both years and outyielded the short-stubble controls. Bermudagrass nutritive value was consistently greater for overseeded than control plots. Results from this study show no negative effects of overseeding cool-season forages on subsequent yield of Tifton 85 bermudagrass, but leaving an 8-inch compared to a 2-inch autumn residue in unseeded pastures increased next-season bermudagrass yield.

Introduction: Extending the grazing season is a goal for most forage systems that are based on warm-season perennial grasses. Overseeding warm-season pastures with temperate forages may provide an additional 75 to 150 days of grazing during winter through spring (Fontaneli et al., 2000). This practice improves the seasonal distribution of the forage and increases the crude protein (CP) and digestibility of forage on offer, resulting in higher animal performance (Fales et al., 1996). Tifton 85 bermudagrass is a warm-season grass with robust and rapid stolon growth that has greater yield (26%) and

[1] Researcher, Department of Animal Science, Universidade Estadual Paulista-UNESP/Jaboticabal-SP, Brazil; Postdoctoral Research Associate and Professor, Agronomy Department, University of Florida. Gainesville, FL 32611-0500; Researcher, Colegio de Postgraduados, Montecillo, Texcoco, México CP56230; Researcher, Universidade de Sao Paulo, Piracicaba, Brazil; and Researcher, Instituto Nacional de Investigaciones Agrícolas (INIA) Mérida, Venezuela, respectively.

digestibility (11%) than bermudagrass cv. Coastal (Burton et al., 1993). Like most warm-season grasses it has limited production during October through May. Some studies have reported stand reduction and slow spring regrowth of Tifton 85 pastures that were overseeded with temperate forages and grazed during the cool season (Chamblee and Mueller, 1999). Such response may be due to removal of bermudagrass cover and greater exposure to cold, to competition from cool-season species during bermudagrass regrowth in spring, or to grazing during early bermudagrass growth. This experiment compared the effect of cool-season management programs, including overseeding and use of different grazing pressures, on subsequent yield of Tifton 85 bermudagrass.

Materials and Methods: The experiment was conducted from October 1998 through July 2000 near Gainesville, FL in a well-established sward of Tifton 85. Soils were Sparr fine sands of pH 6.6. There were seven treatments; four included a mixture of cool-season forages overseeded on 23 Oct. 1998 and 3 Nov. 1999 into bermudagrass, and three were bermudagrass controls with no cool-season forages (unseeded). Overseeded treatments were defined based on grazing height (light grazing ~5-in stubble; heavy grazing ~3-in stubble) during winter (through March) and spring (after March). Treatment combinations were heavy winter + heavy spring, heavy winter + light spring, light winter + heavy spring, and light winter + light spring. The three control treatments were not planted to winter forages and consisted of bermudagrass residue that was a) clipped to 2 inches (short stubble), b) clipped to 2 inches and the plot was passed over with a drill but not seeded (short stubble + drill), and c) not clipped with residue height of 8 inches (tall stubble).

Plot size was 1200 ft^2 and the treatments were arranged in three replicates of a randomized complete block design. The cool-season forage mixture included rye (*Secale cereale* L. cv. Grazemaster), annual ryegrass (*Lolium multiflorum* L. cv. Surrey), crimson clover (*Trifolium incarnatum* L. cv. Flame), and red clover *(T. pratense* L. cv. Cherokee). Plots were overseeded using a drill at planting rates of 50 lb/acre for rye, 13 lb/acre for ryegrass, 8 lb/acre for crimson clover, and 5 lb/acre for red clover. Fertilization management simulated that used by producers in the region. Nitrogen was applied to all seeded plots at 36 lb/acre on 12 Nov. 1998 and K at a rate of 98 lb/acre on 28 Dec. 1998. Subsequent N applications of 36 lb/acre were made to seeded plots following grazing in February and March, and to all plots (including unseeded) following grazing in April and June. An additional application of 98 lb K/acre was made to all plots following the April grazing. Similar fertilization was repeated the second year.

Pastures were sampled on 9 Feb., 29 Mar., 26 Apr., 18 June, and 12 July 1999; and on 29 Feb., 4 Apr., 4 May, 20 June, and 8 Aug. 2000. At each sampling date, pregraze herbage accumulation was measured and botanical composition was determined for four fractions including rye-ryegrass, clovers, bermudagrass, and weeds. After sampling, yearling heifers were used to graze the plots to the target stubble height. Total pregraze herbage (across fractions) was analyzed for CP and in vitro organic matter digestion (IVOMD).

Results and Discussion: Herbage accumulation of cool-season legumes and grasses was not affected by grazing management (Table 1). There were year effects on herbage accumulation of cool-season legumes ($P < 0.01$), with greater accumulation during 2000 than in 1999 (1960 vs. 1030 lb/acre, respectively). The opposite occurred for the cool-season grasses. Higher rainfall in 2000 extended the growing season of legumes into late spring, similar to the response observed by Fontaneli et al. (2000).

The reported stand reduction and slow spring regrowth of Tifton 85 pastures when they were overseeded with temperate forages and grazed during the cool season in North Carolina (Chamblee and Mueller, 1999) were not observed in this study in north-central Florida (Table 2). In fact, first-year Tifton 85 yields were greater following overseeding than when pastures were unseeded and the stubble was short. Across both years, there was a strong trend favoring the overseeded treatments vs. unseeded short stubble (6620 vs. 5600 lb/acre; $P = 0.11$). For unseeded pastures, allowing a taller bermudagrass stubble at the start of the cool season resulted in approximately 1700 lb/acre of additional ($P = 0.05$) spring-early summer Tifton 85 forage compared with the short stubble. In terms of Tifton 85 nutritive value, herbage CP and IVOMD were greater on seeded plots, likely due in part to additional N made available by decaying residues of winter legumes. There were no differences in CP or IVOMD due to grazing treatment among the overseeded treatments.

In conclusion, there was no negative effect on subsequent bermudagrass yield of overseeding Tifton 85 pastures with cool-season forages. Instead, there was a strong trend ($P = 0.11$) favoring overseeding when Tifton 85 was clipped to a short stubble before winter. During 2 yr of study, however, there was a consistent negative effect on Tifton 85 production associated with removing all residue to a 2-inch stubble before winter. Allowing an 8-inch vs. a 2-inch stubble in autumn resulted in nearly one ton per acre more bermudagrass forage during the following spring and early summer.

Literature Cited:

Burton, G.W., R.N. Gates, and G.M. Hill. 1993. Registration of 'Tifton 85' bermudagrass. Crop Sci. 33:644-645.

Chamblee, S.D., and J.P. Muller. 1999. Extending the grazing season: growth of annual or perennial grasses or legumes in mixture with hybrid bermudagrass. NC State University Technical Bulletin 315.

Fales, S.L., A.S. Laidlaw, and M.G. Lambert. 1996. Cool-season grass ecosystems. p. 267-296. In Cool-season forage grasses. L.E. Moser et al., ed. American Society of Agronomy. Madison, WI.

Fontaneli, R.S., L.E. Sollenberger, and C.R. Staples. 2000. Seeding date effects on yield and nutritive value of cool-season annual forage mixtures. Soil Crop Sci. Soc. Florida Proc. 59:60-67.

Table 1. Herbage accumulation harvested of seeded cool-season species in response to different winter and spring grazing management treatments.

	Cool-season legumes			Cool-season grasses		
Grazing Treatment	1999	2000	Avg.	1999	2000	Avg.
Winter/Spring grazing (Overseeded):	----------lb/acre ----------					
Heavy-Heavy	1350	2260	1800	4440	2050	3250
Heavy-Light	1180	1660	1420	3900	2140	3020
Light-Heavy	700	2280	1490	4530	2500	3510
Light-Light	880	1660	1270	3880	2650	3270
SE	390	600	360	740	420	430

Table 2. Herbage accumulation of Tifton 85 bermudagrass in response to different winter and spring grazing management treatments.

Treatments	1999	2000	Avg.
	----------lb/acre----------		
Unseeded:			
Tall stubble	6180	8270	7220
Short stubble	4750	6340	5540
Short stubble + drill	4380	6930	5660
Winter/Spring grazing (Overseeded):			
Heavy-Heavy	7090	7970	7530
Heavy-Light	6290	6830	6570
Light-Heavy	6010	5730	5860
Light-Light	6840	6160	6500
SE	630	840	580
Contrast P-value:			
Tall stubble vs. Short Stubble	0.13	0.12	0.05
Tall stubble vs. Overseeded	0.59	0.11	0.36
Short stubble vs. Overseeded	0.02	0.73	0.11
Short stubble + drill vs. Overseeded	< 0.01	0.78	0.15

Table 3. Crude protein and in vitro organic matter digestibility (IVOMD) of pregraze herbage in response to different winter and spring management treatments. Values are averages across two years.

	Crude protein		IVOMD	
Treatments	June	July-Aug	June	July-Aug
	----------% ----------			
Unseeded:				
Tall stubble	13	8	60	52
Short stubble	12	7	59	49
Short stubble + drill	14	7	60	52
Winter/Spring grazing (Overseeded):				
Heavy–Heavy	17	10	63	56
Heavy-Light	17	10	64	55
Light-Heavy	17	11	63	55
Light-Light	16	10	65	56
SE	0.5	0.4	1	1
Contrast P-value:				
Tall stubble vs. Overseeded	< 0.01	< 0.01	< 0.01	0.07
Short stubble vs. Overseeded	< 0.01	< 0.01	< 0.01	< 0.01
Short stubble + drill vs. Overseeded	< 0.01	< 0.01	< 0.01	0.03