

Impact Of Rotation Frequency And Weaning Date On Forage Availability, Species Composition, and Digestibility Of Endophyte-Infected Tall Fescue Pastures Overseeded With Crabgrass, Lespedeza, And Red And White Clover

Cooperators: Ken Coffey Wayne Coblenz Tim Smith
 Don Hubbell Mike Looper Mike Popp
 Charles Rosenkrans

Summary: A 3-year study was initiated in April, 2000 to investigate the impact of rotational management (2x monthly vs. 2x weekly) program and weaning date (mid April vs. early June) on production of fall-calving cow-calf pairs grazing *Neotyphodium coenophialum*-infected fescue overseeded with legumes and crabgrass. Secondary objectives of the experiment were to monitor differences in quantity and quality of available forage and to evaluate changes in forage species composition. Pastures were dominated by tall fescue throughout the first three grazing seasons and the proportion of bare ground was greater ($P < 0.05$) in pastures rotated twice weekly vs. those rotated twice monthly. The proportion of legumes was very low in all treatment combinations, but the proportion of crabgrass increased linearly ($P < 0.05$) and quadratically ($P < 0.05$) during the summer and fall samplings throughout the study, regardless of rotation program. Digestibility and mineral concentrations varied minimally due to rotation frequency or weaning date. Therefore, after the third grazing season of the experiment, rotation frequency and/or weaning date has had little impact of forage species composition or forage quality.

Post-Weaning Performance of Fall-Born Steers and Heifers that Grazed Endophyte-Infected Tall Fescue Pastures at Two Rotational Grazing Intensities and Were Weaned on Two Dates

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Summary: A 3-year study was initiated to investigate the impact of rotational management (2x monthly vs. 2x weekly) regime and weaning date (early April vs. early June) on production of fall-calving cow-calf pairs grazing *Neotyphodium* -infected fescue overseeded with legumes and crabgrass. A secondary objective of the study was to evaluate long-term impacts of the above treatments after the calves were weaned and treated similarly. During the first two post-weaning cycles, heifers weaned in early June were heavier ($P < 0.05$) at breeding than those weaned in mid-April. However, a greater proportion of heifers previously managed in a twice-monthly rotation conceived compared with those previously managed in a twice-weekly rotation (18/25 vs. 11/27). A rotational management by weaning date interaction was detected ($P < 0.05$) for steer initial and final feedlot pay weight, feedlot gain, hot carcass weight, and dressing percentage. Generally, steers weaned in mid-April from a twice weekly rotation regime weighed less ($P < 0.05$) at the beginning and end of the feedlot period, had lower ($P < 0.05$) hot carcass weights and lower ($P < 0.05$) dressing percentages than steers from the other treatment combinations. Therefore, rotational management regimes for cow-calf pairs appear to have few long-term implications, whereas fall-born calves weaned at an average of 188 days of age had reduced weaning weights that were, at best, marginally compensated for when compared with calves weaned at an average of 243 days of age.

Using Orchardgrass and Endophyte-Free Fescue Versus Endophyte-Infected Fescue Overseeded on Bermudagrass for Cow Herds: Final Four-Year Summary of Forage Characteristics

Cooperators: Wayne Coblenz Ken Coffey Don Hubbell
 Tim Smith Kenneth Harrison Chuck West
 Mike Popp Mike Looper



Summary: A trial was initiated on January 11, 2000 to 1) evaluate endophyte-free tall fescue (**FF**) or orchardgrass (**OG**) overseeded into dormant common bermudagrass sods for spring-calving cows, and 2) compare these forage systems with mixtures of endophyte-infected tall fescue (**IF**) and bermudagrass that are observed commonly throughout the southern Ozark region. Two management systems were evaluated in an effort to help the OG and FF forages persist; these include rotations to new paddocks twice weekly (**2xW**) or twice monthly (**2xM**). Evaluation date

and the forage system x evaluation date interaction affected ($P < 0.004$) the percentage of the desired cool-season species in each pasture, but the forage system did not ($P = 0.262$). Generally, FF and IF remained stable over the entire study. Pasture systems with either FF-2xW and FF-2xM had similar ($P > 0.1$) percentages of FF on the June 2000 and November 2003 evaluation dates. For both rotation frequencies, the percentage of FF has been greater than 58% on all dates since grazing was initiated. Through June 2002, the 2xW and 2xM rotation systems maintained at least as high a percentage of OG as observed on the initial evaluation date (November 1999); however, the percentage of OG in pastures managed with 2xM fell off sharply ($P < 0.1$) from 34.1 to 14.7% between June and November 2002, and did not improve ($P > 0.1$) by the final (November 2003) evaluation date.

Using Orchardgrass and Endophyte-Free Fescue Versus Endophyte-Infected Fescue Overseeded on Bermudagrass for Cow Herds: Final Four-Year Summary of Cattle Performance

Cooperators: Wayne Coblenz Ken Coffey Don Hubbell
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Summary: Actual weaning weight, adjusted 205-d weaning weight, total gain from birth to weaning, and average daily gain from birth to weaning were greater ($P \leq 0.083$) for calves on non-toxic forages (FF or

OG) than for those on IF pastures. Calves raised on OG-2xW, OG-2xM, and FF-2xM exhibited a 47 to 59-lb advantage in actual weaning weight over those on IF pastures. It is not clear why calves raised on FF-2xW pastures exhibited only a 21-lb numerical advantage. Cows grazing OG and FF pastures exhibited higher ($P \leq 0.035$) bodyweights and body condition scores (BCS) at calving, breeding, and weaning than cows grazing IF pastures; however, BCS for cows grazing IF pastures remained within an acceptable range (6.1 to 6.7). Cow-calf performance was improved marginally by including non-toxic, perennial cool-season grasses in bermudagrass pastures, but establishment costs and additional management requirements, relative to those necessary for mixtures of IF and bermudagrass, may limit the acceptability of this approach. This trial concluded in January 2004.

Using Orchardgrass and Endophyte-Free Fescue Versus Endophyte-Infected Fescue Overseeded on Bermudagrass for Cow Herds: Post-Weaning Animal Performance.

Cooperators:	Wayne Coblenz	Ken Coffey	Don Hubbell
	Tim Smith	Kenneth Harrison	Chuck West
	Mike Popp	Mike Looper	



Summary: A trial was initiated on January 11, 2000 to 1) evaluate endophyte-free tall fescue (FF) or orchard-grass(OG) overseeded into dormant common bermudagrass sods for spring-calving cows, and 2) compare these forage systems with mixtures of endophyte-infected tall fescue (IF) and bermudagrass that are observed commonly throughout the southern Ozark region. A secondary objective of the study was to evaluate the impact of previous forage and management on stress during the weaning process and subsequent gains once calves are managed on a similar environment. Steer calves were retained at the Batesville station and grazed wheat forage until early spring, then were shipped to a commercial feedlot facility and finished on a high-concentrate diet. Steers from the last year of the study are near slaughter currently. Heifer calves were

shipped to the University of Arkansas Southeast Research and Extension Center at Monticello (SEREC) and grazed winter annual forages throughout the winter and early spring. Heifers were mated artificially at SEREC, then transported back to Batesville. Heifers were monitored through their first calf. Numerous blood measurements were evaluated and are pending final compilation and statistical analyses.

Growth-Performance Of Heifers Grazing Wheat And Ryegrass Pastures Sod-Seeded Into Bermudagrass With Different Tillage Intensities And Seeding Dates

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Summary: A total of 120 Gelbvieh x Angus crossbred heifers (552 ± 2.5 lb initial BW) from the spring-calving cow herd at the Batesville station were shipped to SEREC and allocated randomly to pastures of common bermudagrass overseeded with wheat and ryegrass for a 3-yr study beginning in December 2001. The objective was to compare the effect of seeding dates and tillage intensities on heifer growth performance. A secondary objective was to evaluate the impact of previous forage treatment at Batesville on subsequent heifer growth and development. Half of the pastures were seeded during the first week of September (**EARLY**) and half were seeded in mid-October (**LATE**). Within each seeding date, half of the pastures were disked once (**1x**) and the other half were disked twice (**2x**) before seeding. Grazing began Dec. 20, 2001 on each pasture for year 1, Nov. 20, 2002 on all EARLY pastures and Dec. 5, 2002 on all LATE pastures in year 2, and Dec. 12, 2003 on all EARLY pastures and Jan. 8, 2004 on all LATE pastures in year 3. Grazing continued through May 11, 2002 in year 1, April 25, 2003 in year 2, and May 10, 2004 in year 3. Initial and average forage mass was greater ($P < 0.05$) from EARLY than from LATE seeded pasture. Three-year average BW and gain did not differ ($P > 0.10$) between seeding dates or tillage intensity, but winter animal gains varied with respect to treatment across years. Based on 3 years of grazing animal performance data, producers in southern Arkansas may have considerable flexibility in their decisions concerning when to seed annual forages and to what level they till their sod.

In Situ And In Vitro Studies

Cooperators: Ken Coffey Wayne Coblenz Charles Rosenkrans
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Summary: Forage fertility and management studies often produce large quantities of samples, making it impossible to evaluate these in vivo. Evaluation of these samples in vitro or in situ can provide much-needed basic information about digestibility or digestion kinetics. Numerous studies of these types have been conducted and are planned in the future. In vitro and in situ experiments require rumen fistulated cattle. Over the past eight years, these fistulated cattle have originated from calves produced at the Batesville station. In every instance, the smallest steers having the worst appearance and lowest projected value were chosen. The steers were then used for approximately two years, then harvested and sold through the abattoir. Use of these types of animals has greatly increased our understanding of forage quality and utilization. All in situ studies have been conducted at the Forage Research Unit in Fayetteville.