
Productivity of “Tifton-9” Bahiagrass at Different Fertilizer Treatments and Cutting Intervals
Stewart et al., 2009, University of Arkansas

A small plot demonstration study was used to determine the dry matter yield of bahiagrass at different fertilizer treatments and harvest intervals. Half of the plots were fertilized using chicken litter and one of four fertilizer treatments supplying 0, 50, 100 and 150 lb N/acre from ammonium nitrate and one of three cutting intervals (2-, 4- and 6-week). The other half received the N treatments without litter.

- Yield was affected by the addition of chicken litter, harvest interval, N rate and the interactions of N rate by harvest interval and chicken litter by harvest interval.
- Cumulative yields increased linearly with increasing rate of N.
- Cumulative yields were greater when litter was added (3,511 vs. 3,016 lb/dry matter/acre).
- Harvest interval cumulative yields were greater for 6- and 4-week maturities than for 2 weeks (3,610, 3,475 and 2,706 lb/DM/acre, respectively).
- However, extending the harvest interval to 6 weeks did not increase yield significantly compared to a 4-week harvest interval.

Performance by Spring- and Fall-Calving Cows Grazing With Full Access, Limited Access or No Access to Wild-Type Endophyte-Infected Fescue – Two-Year Summary
Caldwell et al., 2009, University of Arkansas

Replacing “wild-type” endophyte-infected tall fescue with a nontoxic endophyte-infected fescue has improved cow performance, but producer acceptance has been slow. Our objective was to compare performance by spring- and fall-calving cows grazing either endophyte-infected tall fescue or nontoxic endophyte-infected fescue at different percentages of the total pasture area to determine to what extent having limited access to nontoxic
endophyte-infected fescue will enhance cow/calf performance. Gelbvieh × Angus crossbred cows were stratified by weight and age within calving season and allocated randomly to one of 14 groups representing five treatments: 1) fall-calving cows on 100% endophyte-infected tall fescue; 2) spring-calving cows on 100% endophyte-infected tall fescue; 3) fall-calving cows on 75% endophyte-infected tall fescue and 25% nontoxic endophyte-infected fescue; 4) spring-calving cows on 75% endophyte-infected tall fescue and 25% nontoxic endophyte-infected fescue; and 5) spring-calving cows on 100% nontoxic endophyte-infected fescue.

- Cow body weight at breeding, body weight and body condition scores at the end of breeding, body weight, body condition scores, hair score at weaning and hay offered (lb/d and lb/head) were greater from fall-calving cows vs. spring-calving cows.
- Cow body weight at weaning was greater from fall-calving cows on 75% endophyte-infected tall fescue and 25% nontoxic endophyte-infected fescue and spring-calving cows on 75% endophyte-infected tall fescue and 25% nontoxic endophyte-infected fescue vs. fall-calving on 100% endophyte-infected tall fescue.
- Calving rates were 94, 98, 47, 80 and 87% from fall-calving on 100% endophyte-infected tall fescue, fall-calving cows on 75% endophyte-infected tall fescue and 25% nontoxic endophyte-infected fescue, spring-calving cows on 100% endophyte-infected tall fescue, spring-calving cows on 75% endophyte-infected tall fescue and 25% nontoxic endophyte-infected fescue, and spring-calving cows on 100% nontoxic endophyte-infected fescue, respectively.
- Calf gain, actual weaning weight, ADG, adjusted weaning weight, sale price and calf value were greater from fall-calving cows vs. spring-calving cows.

Therefore, a fall-calving season may be more desirable for cows grazing endophyte-infected tall fescue, resulting in greater body weight and body condition score at critical times and heavier calves at weaning. Limited access to nontoxic endophyte-infected fescue may not improve calf body weight through weaning but may improve cow body condition scores at certain stages of production and may increase calving rates of spring-calving cows.

Impact of a Starch- or Fiber-Based Creep Feed and Preconditioning Diet on Calf Growth Performance and Carcass Characteristics
Gadberry et al., 2009, University of Arkansas

The objective of this study was to examine the effect of creep feed and preconditioning diet energy source on lifetime performance of spring-born calves. One hundred twenty predominately Angus ancestry calves (311 lb average body weight) were assigned to one of six pastures 90 days prior to weaning. Pastures were assigned to one of three creep feed treatments (two pastures per treatment): no creep, corn-based creep feed or soybean hull-based creep feed. Upon weaning, calves were assigned within pasture to either a corn- (six pens) or soybean hull-based (six pens) preconditioning program for 45 days. At the end of the preconditioning phase, calves were sent to Texas Tech University and finished on a common steam-flaked corn diet.

- Creep-fed calves gained 0.6 lb/day more body weight, prior to weaning, compared to no creep calves, which resulted in soybean hull-based creep-fed and corn-based creep-fed calves having greater body weights at weaning.
- This body weight advantage carried over into feedlot entry but diminished by the end of finishing.
- Source of energy (corn-based vs. soybean-based) had no effect on calf body weight gain or carcass characteristics.
- Calves preconditioned on corn gained more body weight and were 42 lb heavier when finished compared to soybean hull.
- Quality grade was not affected by preconditioning energy source.
Reducing the length of the calving season can be the first step toward improved beef production efficiency. The objectives of this demonstration were to reduce the length of the calving season and to document the production and economic impact when converting a long calving season (> 200 days) to a short calving season (< 90 days). A three-part plan was developed for six cow-calf herds to reduce the length of the calving season.

• The average number of years to reach the cooperator’s desired cowherd calving season was 3.8 ± 0.75 year.

• The percentage of cows calving during the desired calving season was higher for the final year compared to the benchmark year (92.0 ± 11.66% vs. 46.3 ± 14.01%, respectively).

• The mature cow calving percentage did not change from the benchmark year to the final year (89.2 ± 6.05% and 87.2 ± 9.47%, respectively).

• The average length of the calving season decreased from 273.3 ± 84.88 days in the benchmark year to 85.2 ± 4.75 days in the final year.

• Due to the limited number of farms and large variability, there were no differences for herd breakeven, specified costs/animal unit and income over specified cost/animal unit from the benchmark year to the final year; however, herd breakeven decreased 30%, specified costs/animal unit decreased 40% and income over specified cost/animal unit increased 100%.

Thus, shortening the calving season is perhaps one of the most important and cost-effective practices that can be implemented by a producer.

Effectiveness of Zinc, Administered Intranasally or Orally to Newly Received Stocker Cattle, Against Bovine Respiratory Disease and Effects on Growth Performance
Guernsey et al., 2009, University of Arkansas

Male beef calves (n = 88) were purchased from regional auction barns and delivered as a single group. Upon arrival, cattle were assigned to eight pens. Pens were assigned randomly to one of three treatments; two pens received 3 mL of a nasal spray solution (10.8 mg Zn/mL) into each nostril using a single-use nasal atomizer; three pens received 40 mL of an oral drench (16.25 mg Zn/mL), and three pens received no Zn at processing (negative control). Appropriate treatments were administered at processing on day 0 of the 43-day study. After treatment, cattle were processed and housed so they did not have fence line contact with any other pens. Cattle were observed daily for clinical signs of bovine respiratory disease, and rectal temperatures were recorded. Nasal membranes of four randomly selected calves/pen were swabbed prior to any treatment on day 0 and then post-treatment on days 1, 2, 4 and 7.

• Calves treated with intranasal Zn at processing had lower average daily gain for the first 28 days as compared to controls or oral Zn.

• Final body weight and morbidity rate did not differ among treatments.

• Bacterial culture swabs were affected by treatment; fewer *Escherichia coli*, *alpha-Streptococcus* spp. and *Staphylococcus* spp. colonies were cultured from cattle receiving the intranasal Zn.

• Bacterial cultures indicated decreased numbers of bacterial microbes in the nasal passages after treatment with intranasal Zn. Neither Zn treatment benefitted overall morbidity or performance of stressed cattle.
Evaluation of Potassium Lactate Incorporated Gelatin Coating as an Antimicrobial Intervention on Microbial Properties of Beef Steaks

Pohlman et al., 2009, University of Arkansas

The objective of this study was to assess the efficacy of a potassium lactate incorporated gelatin coating system to minimize the presence of pathogenic bacteria in beef steaks. Inoculated steaks from biceps femoris (n = 75; Escherichia coli and Salmonella typhimurium (10^7 CFU/g) were dipped in gelatin with 0%, 1.5% (gelatin + 1.5% potassium lactate) and 3% (gelatin + 3% potassium lactate) or 3% potassium lactate solutions (n = 5/treatment) for 1 minute. Then the treated and untreated inoculated control steaks were packaged and displayed under simulated retail conditions and sampled on day 0, 1, 2, 3 and 7 for Escherichia coli, Salmonella typhimurium, coliform and aerobic plate count.

- All treatments reduced the counts for all the bacteria tested compared to control steaks on days 0 through 7 of display.
- The performance of potassium lactate incorporated gelatin coatings was superior to the other treatments in reducing coliform and Escherichia coli counts on day 1, 2 and 3.
- All treatments with gelatin coating reduced coliform, Escherichia coli and aerobic plate counts compared to other treatments on days 3 and 7 of display.
- The gelatin containing 1.5% potassium lactate treatment recorded the largest reduction for Salmonella typhimurium on day 0; however, the steaks treated with gelatin + 3% potassium lactate had the lowest Salmonella typhimurium counts on day 2 compared to all the other treatments.

The results indicate that the gelatin coating system with or without incorporation of potassium lactate may improve product safety and extend product shelf life efficiently.

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