

All of the research in this Update was presented at the American Society of Animal Science Southern Section Meeting, February 2-4, 2014.

## What's Inside

Page	Topic
2	• Using Performance Data and Reproductive Measurements to Predict Fertility in Replacement Beef Heifers
	• Stockpiled 'Tifton 85' Bermudagrass for Cow-Calf Production as Influenced by Nitrogen Fertilization. I: Productivity and Nutritive Value
3	• Stockpiled 'Tifton 85' Bermudagrass for Cow-Calf Production as Influenced by Nitrogen Fertilization. II: Cow and Calf Performance
4	• The Grazing of Toxic Tall Fescue Negatively Impacts Bull Fertility

## Effect of Hair Shedding on Performance in Angus, Hereford and Charolais Dams and the Relationship to Surface Temperatures

(S. R. Plank et al., Mississippi State University)

The objectives of this study were to evaluate the effect of hair shedding on birth weight and adjusted 205-day weight in purebred progeny from Angus (n = 430), Hereford (n = 98) and Charolais (n = 167) dams and to determine the relationship with body surface temperatures.

Data were collected every 30 days from March to July from 2008 to 2012. Dams were observed by two technicians for hair shedding and given a visual score of 1 to 5, with a score of 1 indicating completely shed, 2 = 25% shed, 3 = 50% shed, 4 = 75% shed and 5 = no shedding.

The month of first shedding was determined when a female reached an average shedding score of  $\leq 3.25$  for a given month. Performance data included calf body weight and adjusted 205-day weight records collected from the respective breed associations.

Hair samples and thermal images were collected on Angus females in 2008 and 2009 in March, May and

July. A 2-inch by 4-inch hair sample was clipped directly behind the left shoulder below the top line. A thermal image was taken of the sampled area and analyzed for average surface temperature for the shaved and unshaved areas.

- In Hereford cattle, dams with a month of first shedding in March weaned calves 40.5 pounds heavier than dams with a month of first shedding in June.
- In Angus cattle, dams with a month of first shedding in March had calves with birth weight 17 pounds greater than dams with a month of first shedding in June.
- Visual score was significant for average shaved areas in June. For average hair, visual scores were significant in March and June, indicating differences in surface temperature due to hair shedding.

Timing of hair shedding may have an influence on birth and weaning performance of the calf for certain breeds when considered as a trait of the dam.

## Implants for Short-Term Heifer Grazing in Northeast Oklahoma

(Ward et al., Oklahoma State University)

Implant utilization in Oklahoma is below national averages and particularly low in the smaller herds more common in eastern Oklahoma. A project was conducted to demonstrate

the benefits of even short-term opportunities to implant heifers grazing summer native pastures. Crossbred heifers (n = 123) with an average initial body weight of 617 pounds had

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been previously purchased, vaccinated and dewormed. On June 6, 2013, heifers were weighed and received an anthelmintic and a fly tag. Any heifers with horns were dehorned and if they had excessive warts were given a wart vaccine (Colorado Serum, Denver, Colorado).

Heifers were assigned to one of three treatments: nonimplanted (control), implanted with Ralgro® or implanted with Component® TE-G with Tylan®. All heifers grazed a common native pasture of approximately 309 acres. Heifers were weighed off of the study on August 13, 2013, after a 68 day grazing period.

- Heifers on the control, implanted with Component and implanted with Ralgro treatments, had ADG of 1.46, 1.63 and 1.54 pounds per day, respectively.

- Weight gains of heifers on the control, implanted with Component and implanted with Ralgro treatments were 66.4, 110.9 and 104.3 pounds per day, respectively.
- Average daily gains of heifers implanted with Component were greater than for control heifers. This resulted in Component-implanted heifers gaining 11 pounds more than control heifers.
- Average daily gains and weight gains between the two implant treatments were not different.
- Ralgro-implanted heifers' average daily gain and weight gain did not differ from the control.

These results suggest that with limited days on feed, implanting heifers with Component has the potential to increase average daily gains and result in more marketable weight.

## Using Performance Data and Reproductive Measurements to Predict Fertility in Replacement Beef Heifers

(Studstill et al., University of Georgia, Athens)

This study investigated the effect of reproductive tract and growth characteristics measured 30 to 70 days prior to the breeding season on pregnancy outcome and time to conception in replacement beef heifers. A total of 1,992 heifers (body weight 725 pounds; age 347 days) were delivered for enrollment in the Georgia Heifer Evaluation and Reproductive Development program between 2006 and 2011 at two locations. Variables were chosen to estimate management of heifers prior to entering the program in addition to developmental traits traditionally measured, including reproductive tract score, weight 70 days prior to breeding as a percentage of target weight, hip height 40 to 50 days prior to breeding and average daily gain 40 to 50 days prior to breeding. Cattle entered in the program were of similar age and subjected to comparable nutritional and management protocols.

- The odds of pregnancy increased by 15% for every 1-inch increase in hip height and by 20% for every 30 days increase in heifer age at the start of the breeding period.
- Reproductive tract score and heifer age were not significantly associated with time to conception.
- Hip height was associated with the time to conception after adjusting for location and year of enrollment.
- Variables intended to indicate prior management (average daily gain and weight 70 days prior to breeding as a percentage of target weight) were not found to be associated with pregnancy or time to conception.

The results suggest that factors relating to maturity can be used to select heifers that are more likely to achieve pregnancy and have reduced times to conception.

## Stockpiled 'Tifton 85' Bermudagrass for Cow-Calf Production as Influenced by Nitrogen Fertilization. I: Productivity and Nutritive Value

(Holland et al., Auburn University)

Stockpiling bermudagrass (*Cynodon dactylon*) forage can potentially reduce cost of winter feeding compared with feeding hay and supplement, but forage productivity and quality response to N fertilization is highly variable. For this reason, a late fall/early winter grazing study was conducted to determine effects of rate of N fertilization on productivity, nutritive value and economic feasibility of stockpiled 'Tifton 85' bermudagrass for fall-calving, lactating cows.

Beginning on October 31, 2012, 16 cows (mean initial body weight = 1,365 pounds) and their calves (mean age, 16 days) were assigned randomly to replicate (n = 2) 1.7-acre paddocks (two cow-calf pairs per paddock) of stockpiled 'Tifton 85' bermudagrass pasture that had been cut on August 1 and fertilized with either 56 (56N), 112 (112N) or 168 (168N) kg N/ha; or to replicate (n = 2) 0.9-acre paddocks (two cow-calf pairs per paddock) of dormant summer

pasture with free-choice access to August-cut bermudagrass hay (73% NDF, 34% ADF and 6% ADL) plus 6.0 pounds whole cottonseed daily (HAY). Cows were given access to strips of ungrazed forage by moving polytape every three to four days in order to maintain a forage DM harvest efficiency of approximately 75% as determined by biweekly sampling of pre- and post-graze forage.

- Mean forage mass (6,858 kg DM/ha), forage CP concentration (12.6%), forage IVDMD (60.9%) and grazing d/ha (340) were not different among stockpiled 'Tifton 85' bermudagrass pasture treatments over the 116-day grazing period that ended on February 16, 2013.
- Mean forage concentrations of NDF, ADF and ADL were greater for 56N (69.3, 32.8 and 5.0%, respectively) than 168N (66.3, 31.2 and 4.7%,

respectively) but were not different from 112N (67.4, 32.0 and 4.7%, respectively).

- Mean concentrations of cell wall constituents were greater and IVDMD and concentration of crude protein were less for hay than stockpiled 'Tifton 85' bermudagrass pasture forages.
- Economic analysis revealed that input costs/cow were 48, 43 and 38% greater for HAY than 56N, 112N and 168N, respectively.

Concentrations of crude protein and total digestible nutrients (predicted from concentrations of cell-wall constituents) in stockpiled 'Tifton 85' bermudagrass pasture forages declined only modestly over the course of the experiment, were sufficient for supporting lactating beef cows without supplementation and were consistently greater than those of hay throughout the grazing season.

## Stockpiled 'Tifton 85' Bermudagrass for Cow-Calf Production as Influenced by Nitrogen Fertilization. II: Cow and Calf Performance

(Holland et al., Auburn University)

Stockpiling bermudagrass may be an effective way for cow/calf operations to save on mechanical-harvesting and supplementation costs. However, previous research has demonstrated that the nutritive value of stockpiled bermudagrass alone may be inadequate for sustaining lactating beef cows.

The objective of this study was to determine lactating-cow production, subsequent reproductive performance and calf performance from stockpiled 'Tifton 85' bermudagrass. On October 31, 2012, 16 cows (mean initial BW = 1,364 pounds) and their calves (mean age, 16 days) were assigned randomly to replicate (n = 2) 1.7-acre paddocks (two cow-calf pairs per paddock) of stockpiled 'Tifton 85' bermudagrass pasture that had been cut on August 1 and fertilized with either 56 (56N), 112 (112N) or 168 (168N) kg N/ha; or to (n = 2) replicate 0.9-acre paddocks (two cow-calf pairs per paddock) of dormant summer pasture with free-choice access to bermudagrass hay (73% NDF, 34% ADF, 6% ADL) plus 2.7 kg whole cottonseed daily (HAY).

Cow body weight and body condition scores were recorded every 21 days along with calf body weight and hip height. Milk production was determined by three weigh-suckle-weigh measurements corresponding to early, peak and mid-lactation. Blood samples were

taken from cows three times corresponding to cow production cycle to evaluate energy status from blood urea nitrogen. In early January, all cows received a CIDR 8 days prior to timed artificial insemination, which was removed after 5 days followed by two injections of PGF2 $\alpha$  8 hours apart, and pregnancy status was determined in mid-April.

- Mean cow body weight (1,323 pounds), body condition score (5.61) and milk production (24.7 pounds per day) were not different among treatments.
- There were no differences in blood urea nitrogen among treatments except at the final blood sampling for which 112N and 168N were greater than HAY and 56N.
- Projected calving interval for cows on HAY (410 days) was greater than for cows on stockpiled 'Tifton 85' bermudagrass pasture (370 days).
- Weight per day of age and calf 205-day adjusted weaning weight were not different among treatments.

These results indicate that all treatments of stockpiled forage without supplementation were sufficient for supporting lactating beef cows without negatively impacting fertility or animal performance.

## The Grazing of Toxic Tall Fescue Negatively Impacts Bull Fertility

(Long et al., Clemson University)

The objective of this study was to evaluate body weight gain, body condition score, semen quality and male fertility for bulls grazing the ergot alkaloid-containing cultivar Kentucky 31 compared to the novel endophyte cultivar lacking ergot alkaloid. Angus bulls ( $n = 10$ ) > 2 years of age were stratified by body weight and body condition score and allotted to graze either KY31 or novel endophyte cultivar lacking ergot alkaloid for 56 days. Bull body weight, body condition score and breeding soundness exams were taken on days 0, 28 and 56.

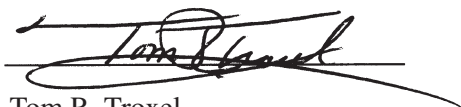
On day 56, bulls with similar and acceptable semen quality from each treatment ( $n = 2$ ) were chosen for extension with a commercial extender (106 motile sperm per mL) and kept at 39°F until used for artificial insemination within 30 hours of collection. Angus crossbred females were stratified by age, body condition score and body weight and allotted to be timed inseminated with Kentucky 31 or novel endophyte cultivar lacking ergot alkaloid ( $n = 40$ ) semen, with each bull being mated to a minimum of 20 cows.

Eight days prior to timed insemination, all cows received CIDRs and maintained for 5 days. The CIDRs were removed, followed by two injections of

PGF2 $\alpha$  8 hours apart, and AI was performed  $72 \pm 2$  hours post-CIDR removal. Ten days following insemination, all females were exposed to natural service for the remainder of the breeding season. Pregnancy was evaluated 30 days post-timed insemination via transrectal ultrasound and 55 days post-removal of the bull via rectal palpation to determine AI and total pregnancy rates, respectively.

- Bull body weight and body condition score were affected by days only.
- Scrotal circumference and semen quality parameters were not affected by treatment or interactions; however, scrotal circumference, motility, progressive motility and morphology tended to increase numerically due to days.
- Timed AI pregnancy rates were lower when using semen from Kentucky 31 bulls compared to novel endophyte cultivar lacking ergot alkaloid (22% versus 47.5%, respectively).
- No difference was observed in total pregnancy rates between groups and averaged 98.6%.

These data indicate that fertility issues may exist with bulls grazing Kentucky 31 independent of standard semen evaluation procedures.



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