

Effects of Tasco in Alleviation of Heat Stress in Beef Cattle

(Williams et al., University of Missouri and Oklahoma State University)

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A study was conducted to evaluate the influence of *Ascophyllum nodosum* (Tasco) on rectal temperature, respiration rates and in situ NDF disappearance in cattle exposed to elevated ambient temperature. Twenty-four Angus crossbred steers (average BW = 663 lb) were randomly assigned to treatments using a 2 × 2 factorial arrangement: 1% Tasco vs. no Tasco and thermoneutral vs. heat load conditions. In period 1 (10 days), steers were acclimated to chambers at thermoneutral (53°F) conditions. Subsequently, for periods 2 and 3, heat load conditions were maintained at a daytime high of 97°F and a nighttime low of 66 and 88°F, respectively. For period 4, temperature conditions were reversed and period 2 heat load conditions were imposed.

- In periods 2 and 4, Tasco lowered dry matter intake.

- In period 2, the no Tasco steers had greater differences between maximum and minimum rectal temperatures than steers in the Tasco treatment; this difference occurred between days 4 and 8 for the heat load conditions group.
- In periods 2 and 3, the maximum and minimum differences in respiration rate values were greater under heat load conditions for the Tasco vs. no Tasco treatment.
- In period 4, the maximum respiration rate response to heat load conditions tended to be greater under heat load conditions for the no Tasco vs. Tasco treatment.

In conclusion, Tasco appeared to reduce rectal temperature for three to four days.

Utilization of Cottonseed Products in Bull Development Programs

(Vann et al., Mississippi State University)

The objective of this study was to examine effects on reproductive performance of inclusion of three cottonseed products in a maintenance ration for mature beef bulls. Ejaculate quality characteristics were evaluated to ascertain any influence of limited cottonseed feeding on semen quality (motility and morphology). Spring-born Angus crossbred bull calves (> 18 mo, n = 84) were

randomly assigned to one of four treatment groups: control (no cottonseed feeding, diet was a corn gluten:soyhull (50:50) blended ration) vs. either pelleted cottonseed, cottonseed cake or whole fuzzy cottonseed. Animals were fed these diets according to treatment groups at a rate of 5.0 lb per head per day for 168 days with free access to bermudagrass hay throughout the

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study. Blood samples for plasma gossypol determination and BW were obtained on days 0, 14, 28, 42, 56, 84, 112, 140 and 168. Breeding soundness exams (which included scrotal circumference, testis length, width and depth and electro-ejaculation for assessment of semen quality) were completed on day 0, 84 and 168.

- Scrotal circumference, sperm motility, ejaculate volume and total sperm concentration increased from days 0 to 168, but secondary sperm abnormalities decreased.
- There was a day x treatment interaction for total gossypol concentrations, body weight, average daily gain and total testes volume. Total gossypol

concentrations peaked at day 56 of the feeding trial, remained stable from day 84 to day 168 and by day 14 after removal from feed were back to similar concentrations at day 14 of the feeding period.

- Overall ADG was greatest for bulls in the control and pelleted cottonseed groups (1.10 and 1.20 lb, respectively), followed by the cottonseed cake group (0.97 lb) and then the whole seed group (0.80 lb).

Bulls consuming cottonseed products derived primarily from upland cotton varieties and fed at a rate of 5.0 lb per head per day had acceptable BW, ADG and semen quality.

The Value of Reproductive Tract Scoring as a Predictor of Fertility and Production Outcomes in Beef Heifers

(Parsons et al., Kansas State University)

In this study, 272 beef heifers were studied from just before their first breeding season through their second breeding season and until just after they had weaned their first calves. Reproductive tract scoring by rectal palpation was performed on the group of heifers one day before the onset of their first breeding season. Scores ranged from 1 = immature to 5 = good tone and follicles or corpus luteum present.

- After adjustment for weight and age, reproductive tract scoring was positively associated with pregnancy rate, calf weaning weight and pregnancy rate to the subsequent breeding season.

- Reproductive tract scoring was negatively associated with days to calving. In other words, the heifers with a more mature reproductive tract score (towards 5) had fewer days to calving because they conceived earlier.

It was concluded that reproductive tract scoring is a predictor of heifer fertility, compares well with other traits used as a predictor of production outcomes and is likely to be a good predictor of lifetime production of the cow.

Impact of Water Troughs on Cattle Use of Riparian Zones in the Georgia Piedmont, USA

(Franklin et al., University of Georgia)

Cattle use of riparian areas may lead to stream water contamination with nutrients, pathogens and sediments. Providing alternative water away from the stream may reduce the amount of time cattle spend near streams and therefore reduce contamination. We conducted this study to 1) evaluate the effect of providing water troughs outside of the riparian zones on the amount of time cattle spend in riparian zones and 2) evaluate if environmental factors such as temperature and humidity affect the impact of water trough availability on the amount of time cattle spend within riparian and nonriparian locations. Global Positioning System collars were used to document cow locations every 5 minutes in two mixed tall fescue/common bermudagrass pastures of the Georgia Piedmont, USA.

- When the Temperature and Humidity Index ranged between 62 and 72, providing cattle with water troughs outside of riparian zones tended to decrease time cattle spent in riparian zones by 63% (52 minutes per day).
- When the Temperature and Humidity Index ranged between 72 and 84, non-riparian water availability did not have a significant impact on the amount of time cattle spent in the riparian zone or in riparian shade.

These results suggest that water troughs placed away from unfenced streams may improve water quality by reducing the amount of time cattle spend in riparian zones when environmental conditions as evaluated by the Temperature and Humidity Index are not stressful.

Performance of Growing Cattle Grazing Stockpiled Jesup Tall Fescue With Varying Endophyte Status

(Drewnoski et al., North Carolina State University)

The objective of this study was to evaluate the performance of growing cattle when intensively grazing stockpiled endophyte-infected, endophyte-free and nontoxic endophyte-infected tall fescue during the winter. The experiment was conducted over five consecutive winters. In each year, plots were harvested for hay in August, fertilized in September and forage was allowed to accumulate until grazing was initiated in early December. Each year, 48 Angus-cross cattle (four per plot) were given a daily allotment of forage, under strip-grazing management, with a target residual height of 2 inches. The grazing periods for determination of pasture average daily gain were 86 days (year 1), 70 days (year 2), 86 days (year 3), 72 days (year 4) and 56 days (year 5).

- Pasture average daily gains of cattle did not differ among treatments and were 1.11, 1.3 and 1.2 pounds per day for endophyte-infected, endophyte-free and nontoxic endophyte-infected tall fescue, respectively.
- As the stands aged, endophyte-free had a greater invasion of other plant species, which increased the crude protein content of the sward.

- Forage disappearance (dry matter basis) did not differ among treatments and was 10.4, 10.4 and 11.0 pounds per animal daily for endophyte-infected, endophyte-free and nontoxic endophyte-infected tall fescue, respectively.
- Body weight gain per acre was greater for endophyte-infected (229 lb) than for endophyte-free (196 lb) or nontoxic endophyte-infected tall fescue (203 lb).
- In most years, animal grazing days on endophyte-infected were greater than those on endophyte-free or nontoxic endophyte-infected tall fescue. However, in year 5, animal grazing days did not differ among treatments.

The use of stockpiled endophyte-infected tall fescue as a source of low-cost winter feed is a viable option for producers, whereas grazing of nontoxic endophyte-infected tall fescue may be more beneficial during the spring and fall, when more severe negative effects of ergot alkaloids have been observed.

National Beef Quality Audit–2005: Survey of Targeted Cattle and Carcass Characteristics Related to Quality, Quantity and Value of Fed Steers and Heifers

(Garcia et al., Texas A&M University, Colorado State University, West Texas A&M University and Oklahoma State University)

The National Beef Quality Audit–2005 assessed the current status of quality and consistency of U.S. fed steers and heifers.

- Hide colors or breed type were black (56.3%), red (18.6%), Holstein (7.9%), gray (6.0%), yellow (4.9%), brown (3.0%), white (2.3%) and brindle (1.0%).
- Identification method and frequency were lot visual tags (63.2%), individual visual tags (38.7%), metal-clip tags (11.8%), electronic tags (3.5%), bar-coded tags (0.3%), by other means (2.5%) and without identification (9.7%).
- Brand frequencies were no (61.3%), 1 (35.1%) and 2 or more (3.6%), and brands were located on the butt (26.5%), side (7.4%) and shoulder (1.2%).
- There were 22.3% of cattle without horns, and the majority of those with horns (52.2%) were between 1 and 5 inches in length.
- Percentages of animals with mud or manure on specific body locations were none (25.8%), legs (61.4%), belly (55.9%), side (22.6%) and top-line (10.0%).
- Most carcasses (64.8%) were not bruised, 25.8% had one bruise and 9.4% had multiple bruises. Bruise location and incidence were round (10.6%), loin (32.6%), rib (19.5%), chuck (27.0%) and brisket, flank and plate (10.3%).
- Condemnation item and incidence were livers (24.7%), lungs (11.5%), tripe (11.6%), heads (6.0%), tongues (9.7%) and carcasses (0.0%).

- Carcass evaluation revealed these traits and frequencies: steer (63.7%), heifer (36.2%), bullock (0.05%) and cow (0.04%) sex classes; dark-cutters (1.9%); A (97.1%), B (1.7%) and C or older (1.2%) overall maturities; and native (90.9%), dairy-type (8.3%) and *Bos indicus* (0.8%) estimated breed types.
- Mean USDA yield grade (YG) traits were USDA YG (2.9), HCW (794 lb), adjusted fat thickness (0.51 inch) and KPH (2.3%).
- The USDA YG were YG 1 (16.5%), YG 2 (36.3%), YG 3 (33.1%), YG 4 (11.8%) and YG 5 (2.3%).
- Marbling score distribution was Slightly Abundant or greater (2.7%), Moderate (4.3%), Modest (14.4%), Small (34.5%), Slight (41.2%) and Traces or less (2.9%).

This information helps the beef industry measure progress and provides a benchmark for future educational and research activities.



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