

## Cattle Preference for Hay From Round Bales With Different Wrap Types

(K. J. Shinnars et al., University of Wisconsin)  
*The Professional Animal Scientist* 29 (2013): 665-670

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Three different methods of wrapping and storing alfalfa hay in round bales were used to explore possible differences in preferential consumption. Large round bales of alfalfa were stored indoors, outdoors with conventional net wrap or outdoors with a new wrap that incorporates a breathable film. This film is intended to better conserve hay in round bales by shedding precipitation but allowing internal moisture to exit the bale through microscopic pores. Five separate preference trials, each of 18-day duration with six 3-day periods, were conducted using beef cattle.

- In all five preference trials, hay wrapped with breathable film was preferred over net-wrapped hay stored outdoors.

- For instance, in trial 1 hay wrapped with breathable film was preferred over net-wrapped hay stored outdoors in all 18 pairings, and consumption of the film-wrapped hay was significantly greater (78% vs. 28% of total hay offered).

Results suggest that when bales are stored outdoors, cattle will strongly prefer to consume hay from bales wrapped with breathable film compared with net-wrapped bales. Although in two trials, hay wrapped with breathable film was preferred over hay stored indoors. When considered across all trials and pairings, preference of hay from breathable film bales did not differ from that stored indoors.

## Effect of Supplemental Trace-Mineral Source on Bull Semen Quality

(M. P. Rowe et al., University of Arkansas)  
*The Professional Animal Scientist* 30 (2014): 68-73

This study evaluated the effect of trace-mineral supplementation on bull semen quality, as measured by computer-assisted sperm analysis. Angus and Gelbvieh × Angus bulls assigned to inorganic (n = 9) and organic (n = 10) trace-mineral treatments were maintained in drylot pens and fed mixed grass hay.

Three times weekly the bulls were individually fed rations containing either inorganic or a mixture of inorganic and organic Zn, Cu, Co and Mn trace minerals for 123 days. Starting on day 60, semen was collected by electroejaculation weekly for a nine-week period and evaluated by computer-assisted

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sperm analysis for motility parameters within five minutes of collection.

- Bulls supplemented with organic trace minerals had a greater percentage of motile sperm than those supplemented with inorganic trace mineral (65.5% vs. 56.1%, respectively).
- Likewise, percentage of progressive sperm was greater for bulls receiving organic (47.0%) versus only inorganic (38.4%) trace mineral.
- Sperm with rapid motility (path velocity > 50  $\mu\text{m/s}$ ) was also greater for bulls supplemented with organic compared with bulls receiving inorganic trace mineral (62.3% vs. 52.8%, respectively). Sperm motility is the single most important semen quality parameter influencing bull fertility.

Results suggest that organic trace-mineral supplementation may improve bull semen quality. Additional studies are needed to determine whether this improvement in semen quality translates into improved pregnancy rates.

## Effects of Castration Method and Frequency of Intramuscular Injections of Ketoprofen on Behavioral and Physiological Indicators of Pain in Beef Cattle

(D. Moya et al., Lethbridge Research Centre, Lethbridge, Alberta; University of Calgary, Calgary; Animal, Food and Health Sciences, Australian Tropical Sciences and Innovation Precinct, Townsville, Australia)  
<http://www.journalofanimalscience.org/content/early/2014/02/08/jas.2013-7298>

Two experiments were conducted to determine the effect of a single or multiple intramuscular injections of ketoprofen and castration technique on physiological and behavioral indicators of pain in beef calves. A total of 150 bull calves (628 lb body weight) were used in both experiments, each one conducted as a  $3 \times 2$  factorial design, where main factors included castration technique – no castration, surgical or band – and drug administration – physiological solution or intramuscular injection of ketoprofen in the neck of calves. Animals were weighed weekly during the experiment to calculate average daily gain. Behavioral responses indicative of pain and discomfort during the castration procedure were documented using a visual analog score by an experienced observer who was blind to the treatments. Movements of the animals in the chute during castration were quantified using a strain gauge system mounted on the headgate to evaluate the escape response of the cattle. Pens were equipped with an automated feed bunk monitoring system, enabling feed intake and feeding behavior to be continuously monitored for each individual. Thermographic images of the scrotal area were evaluated 24 and 0.5 hours before castration; 0.5, 1, 24, 48 and 270 hours postcastration; and weekly thereafter until the end of the trial. Blood samples were obtained postcastration to evaluate changes in total white blood cell count and neutrophil-to-lymphocyte

ratio. Saliva samples were taken 24 and 0.5 hours before castration; immediately after castration; and 0.5, 1, 2, 5, 24 and 48 hours and then 5, 7 and 14 days after castration to determine cortisol concentration.

- Scrotal temperature, visual analog score, total white blood count, neutrophil-to-lymphocyte ratio, salivary cortisol, mobility and pressure exerted in the chute were greater and average daily gain and feed intake were lower in surgical than in no castration animals within the first week after castration.
- Also, banded calves had a greater scrotal temperature around week 4 after castration and a lower feed intake and average daily gain at weeks 2 and 3 and weeks 6 and 7 after castration, respectively, compared to no castration.
- Treatment with ketoprofen had limited effects on reducing the indicators of pain associated with surgery or banding, suggesting that further studies will be needed to assess the posology of the intramuscular administration of ketoprofen to improve the consistency of its effects as a pain mitigation strategy after castration.

## The Effect of Bermudagrass Hybrid on Forage Characteristics, Animal Performance and Grazing Behavior of Beef Steers

(G. Scaglia and H. T. Boland, Louisiana State University and Mississippi State University)

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Bermudagrass is a major feed source for ruminants across the southeastern United States. In four consecutive years, three different bermudagrass hybrids – Alicia, Jiggs and Tifton-85 – were evaluated under a low stocking rate as forage and hay sources. The nutritive value, *in situ* dry matter digestibility and performance and grazing behavior of beef steers under similar management were evaluated.

- Sampling day had an effect on all forage variables.
- Percentages of crude protein and TDN decreased while concentrations of ADF, NDF, lignin and nonfiber carbohydrates increased as grazing season advanced.
- Alicia had lower nutritive value, showing greater lignin (5.3%) and indigestible fraction (44.9%) compared to Jiggs (4.9% and 35.6%, respectively) and Tifton-85 (4.5% and 40.1%, respectively).
- Tifton-85 contained the lowest concentration of nonfiber carbohydrates (11.8%).
- Steers grazing Jiggs and Tifton-85 had greater average daily gain (1.12 and 1.21 lb, respectively) and body weight gain per acre (252 and 272 lb, respectively) than those on Alicia (0.35 kg and 180 lb/acre, respectively) – results that are probably explained

by the lower nutritive value characteristics of the latter.

- Most grazing behavior variables were affected by the time of day and grazing period.
- Two major grazing events were observed at dawn and dusk. Grazing time (32 minutes) was lowest while standing (140 minutes) and lying (98 minutes) times were greater from 1100 to 1559 hour, probably as an effect of temperature and humidity at that time of day.
- During summer, the temperature humidity index was above 72 (mild heat load) for the entire season and above 79 (severe heat load) during most of the daylight hours from June to August. Heat load likely affected animal performance and grazing behavior; however, some characteristics associated with these bermudagrass hybrids, especially with Alicia, such as its percentages of lignin and indigestible fraction may also partially explain the poor animal performance.

In the conditions of the study, environmental variables (temperature and humidity) as well as the type of bermudagrass hybrid affected animal performance and grazing behavior of recently weaned beef steers.

## A New Application of Pelvis Area Data as Culling Tool to Aid in the Management of Dystocia in Heifers

(D. E. Holm et al., University of Pretoria, South Africa)

<http://www.journalofanimalscience.org/content/early/2014/02/25/jas.2013-6967>

Although fetomaternal disproportion is the major cause of dystocia in heifers, pelvis area is not recommended as a culling tool due to its relatively low importance and genetic correlation with calf birth weight, the most important factor associated with dystocia. The objective of this observational study of 484 limited bred yearling beef heifers was to compare the effects of different methods of adjustment of pelvis area data for

culling to select against dystocia. Multivariable analyses were used to determine predictors of pelvis area, calf birth weight and dystocia. Hypothetical culling rates of 10% and 20% were then applied after ranking heifers by each of the following: unadjusted pelvis area, pelvis area adjusted to 365 days of age by subtracting 0.27 cm<sup>2</sup> per day of age difference between each heifer's age and 365 days, pelvis area:prebreeding

body weight ratio, pelvis area adjusted to the median body weight of the group using the regression coefficient of pelvis area on body weight within age group and pelvis area similarly adjusted to the median lean body weight.

- Dam parity, sire, prebreeding age, prebreeding body weight and prebreeding body condition score were associated with pelvis area, whereas dam parity, sire, own calf birth weight, pelvis area, AI bull and calf gender were associated with calf birth weight.
- Dam parity, calf birth weight and either pelvis area adjusted to the median body weight of the group using the regression coefficient of pelvis area on body weight within age group or pelvis area similarly adjusted to the median lean body weight were the only independent predictors of dystocia.
- Adjusting pelvis area to body weight or lean body weight improved the sensitivity and specificity to predict dystocia.
- After hypothetical culling by pelvis area, retained heifers were heavier and had a higher calving rate and calves tended to be heavier at birth compared to culled heifers, but dystocia rates were not different.
- Culling by the pelvis area adjusted to 365 days of age by subtracting 0.27 cm<sup>2</sup> per day of age difference between each heifer's age and 365 days resulted in similar effects, except that dystocia rate tended to be lower in retained heifers.
- Culling by pelvis area:prebreeding body weight ratio resulted in lower dystocia rate in retained than in culled heifers, but retained heifers had lower prebreeding body weight than culls.
- Culling by pelvis area adjusted to the median body weight of the group using the regression coefficient of pelvis area on body weight within age group and pelvis area similarly adjusted to the median lean body weight resulted in lower proportions with dystocia and a tendency towards higher calving rates in the retained heifers, without affecting the prebreeding body weight or calf body weight.

It is concluded that pelvimetry is a useful culling tool to aid in the management of dystocia in yearling heifers and that adjustment of pelvis area to median body weight or lean body weight within age group improves its accuracy and avoids the undesirable side effects.



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