Case Study: Handling and Management of Animal Health Products by Idaho Producers and Retailers
(Fife, T. E., et al., University of Idaho)
The Professional Animal Scientist 29 (2013): 313-320

Idaho beef producers and animal health product retailers participated in a study to gather data on the handling and management of animal health products. Data loggers were placed in 176 refrigerators (129 producers’ and 47 retailers’) recording temperatures in 10-min intervals for a minimum of 48 hours. The approximate age, type and location of the producers’ refrigerators were recorded, along with where the products were stored in the refrigerator. An inventory of each producers’ refrigerator was taken, with expired and opened products recorded.

- Almost one-third (31%) of the producers’ refrigerators maintained the recommended temperature range of 35° to 45° F > 95% of the time, and one-third (33.3%) of the producers’ refrigerators maintained the recommended temperature range < 5% of the time.
- Thirty-four percent of the retailers’ refrigerators were within the recommended temperature range > 95% of the time, and 17.0% were in the range < 5% of the time.
- In addition to temperature readings and refrigerator characteristics being documented, surveys of producers and retailers were also conducted. The producer surveys showed 93.8% of producers used the neck area of beef cattle for injections, 87.6% mixed modified-live vaccines as needed and protected them from sunlight, whereas 93.8% kept vaccines in a cooler.
- The retailer surveys showed 44.0% had thermometers to monitor refrigerator temperatures, and 41.0% did not monitor their refrigerators.
- Sixty percent of retailers trained their employees to handle animal health products, and 67.0% trained their employees to answer questions about animal health products.

Effect of Corn- and Soybean Hull-Based Creep Feed and Backgrounding Diets on Lifelong Performance and Carcass Traits of Calves From Pasture and Rangeland Conditions
(Gadberry, M. S., et al., University of Arkansas)
The Professional Animal Scientist 28 (2012): 507-518

Industry perceived lifelong benefits associated with starch-based creep feeding are increased weight gain and improved carcass quality. The objective of the following studies was to investigate the lifelong effect of creep feeding within three separate environments.
These environments included spring calving with bermudagrass pastures, fall calving with ryegrass pastures and fall calving with native range. Creep intake was targeted at 1% body weight, as-fed, beginning 90 d before weaning.

- Creep feeding increased preweaning average daily gain for bermudagrass and native range environments but not in the ryegrass environment.
- Backgrounding diet energy source did not affect backgrounding average daily gain for the bermudagrass or ryegrass environment.
- Creep-fed calves on bermudagrass and native range entered the feedlot at a heavier weight than those not offered creep feed.

Effects of Fescue Toxicosis on Bull Growth, Semen Characteristics and Breeding Soundness Evaluation
(Stowe, H. M., et al., Clemson University, University of Kentucky and University of Tennessee)
http://www.journalofanimalscience.org/content/early2013/06/05/jas.2012-6078

Tall fescue possesses heat, drought and pest resistance conferred to the plant by its mutualistic relationship with the ergot alkaloid producing fungal endophyte, Neotyphodium coenophialum. The objective of this study was to evaluate the impact of ergot alkaloid consumption on growth, scrotal circumference and semen quality. The scrotal circumference measurement and percentage of motile and normal sperm were used to determine if a bull passed the breeding soundness exam requirements. Bulls (n = 14) between 13 and 16 months of age exhibiting ≥ 32 cm scrotal circumference and having passed a breeding soundness exam were assigned to 1 of 2 dietary treatments accounting for body condition scores and body weight. Bulls were fed the treatment diet containing toxic tall fescue seed (E+; 0.8 µg of ergovaline and ergovalanine/g dry matter) or the control diet containing endophyte-free nontoxic tall fescue seed (E–) for 126 days. Blood samples were collected and breeding soundness exam and body condition scores accessed at the start of the test (day 0) and every 21 days to the end of test (day 126). Weights were obtained on day 0 and day 126.

- Serum prolactin concentrations were affected by treatment × day interactions verifying the effectiveness of the E+ diet. Bulls consuming the E+ diet exhibited declining prolactin concentrations from 250 ng/mL on day 0 to 30.6 ng/mL by day 126, whereas bulls receiving the E– ration maintained serum prolactin concentrations greater than or equal to 226.7 ng/mL across the 126-day study.
- Body condition score and body weight were not different between treatments.
- No difference due to treatment was observed for the percentage of bulls passing a standard breeding soundness exam and no treatment effect was observed for any semen characteristic measured by computer-assisted semen analysis.
- The scrotal circumference was negatively affected by treatment × day interaction, with E– bulls exhibiting a larger scrotal circumference at day 126 compared with E+ bulls of 36.7 versus 34.3 cm, respectively.
- Within treatment, E+ bulls exhibited a decrease in scrotal circumference with a day 0 scrotal circumference of 37.3 cm and dropping to 34.3 by day 126.

Theoretically, reduced scrotal circumference would negatively impact semen quality, but this was not observed. However, computer-assisted semen analysis and breeding soundness exam evaluation data are consistent with recent reports indicating that bulls grazing E+ tall fescue exhibited only subtle, if any, differences in semen characteristics.
Effect of Summer Forage Species Grazed During Finishing on Animal Performance, Carcass Quality and Meat Quality
(Schmidt, J. R., et al., Clemson University)
http://www.journalofanimalscience.org/content/early2013/07/03/jas.2012-5405

Angus-cross steers (n = 60) were used to assess the effect of forage species [alfalfa (*Medicago sativa* L.), bermudagrass (*Cynodon dactylon*), chicory (*Cichorium intybus* L.), cowpea (*Vigna unguiculata* L.) and pearl millet (*Pennisetum glaucum* (L. R Br.)) in replicated 4.5-acre paddocks for finishing on cattle performance, carcass quality and meat quality in a two-year study. Steers were blocked by body weight and assigned randomly to finishing-forage treatments prior to the start of the experiment.

- Steers grazing alfalfa and chicory had greater average daily gain than those grazing bermudagrass, cowpea and pearl millet, whereas alfalfa produced more gain/acre than chicory, cowpea and pearl millet.
- Days steers spent grazing were longest for pearl millet and shortest for cowpea.
- Steers grazing bermudagrass and cowpea produced heavier hot carcass weights than steers grazing pearl millet.
- Dressing percentage was greatest in steers grazing cowpea, and grazing alfalfa resulted in greater dressing percentages than grazing bermudagrass, chicory and pearl millet.
- Grazing alfalfa and chicory produced carcasses with more fat at the 12th rib than steers grazing warm-season grasses (bermudagrass and pearl millet).
- Marbling scores tended to be higher for cowpea, but carcasses from steers grazing cowpea received higher quality grades than alfalfa and chicory.
- Conjugated linoleic acid, cis-9 trans-11 isomer, concentration was greatest for bermudagrass and pearl millet than alfalfa, chicory and cowpea.
- Grazing legumes (alfalfa and cowpea) resulted in lower Warner-Bratzler shear force values than other forage species.
- Consumers rated steaks from steers finished on alfalfa and cowpea pastures highest and steaks from steers finished on bermudagrass and chicory lowest for overall palatability.
- Consumer preference was highest for steaks from steers finished on alfalfa and least for steaks from steers finished on bermudagrass and chicory.
- Finishing steers on alfalfa and chicory during summer increased steer performance (> 2.2 lb/d).

Finishig on legumes (alfalfa and cowpea) increased dressing percentage, reduced Warner-Bratzler shear force values and increased consumers preference; whereas, finishing on grasses (bermudagrass and pearl millet) enhanced anticarcinogenic fatty acid concentrations.

Heifer Calving Date Positively Influences Calf Weaning Weights Through Six Parturitions
(Cushman, R. A., et al., U.S. Meat Animal Research Center, South Dakota State University, University of Nebraska West Central Research and Extension Center and Northwest Missouri State University)
http://www.journalofanimalscience.org/content/early2013/07/03/jas.2013-6465

Longevity and lifetime productivity are important factors influencing profitability for the cow-calf producer. Heifers that conceive earlier in the breeding season will calve earlier in the calving season and have a longer interval to rebreeding. Calves born earlier in the calving season will also be older and heavier at weaning. Longevity data were collected on 2,195 heifers from producers in South Dakota Integrated Resource Management groups. Longevity and weaning weight data were collected on 16,549 individual heifers at the U.S. Meat Animal Research Center. Data were limited to heifers that conceived during their first breeding season. Heifers were grouped into 21-day calving periods. Heifers were determined to have left the herd when they were diagnosed not pregnant at the end of the breeding season. Heifers that left the herd for reasons other than reproductive failure were censored from the data.

- Heifers that calved with their first calf during the first 21 day period of the calving
season had increased longevity compared to heifers that calved in the second 21-day period, or later.

• Average longevity for South Dakota heifers that calved in the first or later period was 5.1 and 3.9 year, respectively.

• Average longevity for U.S. Meat Animal Research Center heifers that calved in the first, second or third period was 8.2, 7.6 and 7.2 year, respectively.

• Calving period as a heifer influenced unadjusted weaning body weight of the first six calves.

• Estimated postpartum interval to conception as a 2-year-old was greater for females that calved in the first period as heifers, but did not differ between heifer calving periods in subsequent calving seasons.

In summary, heifers that calved early in the calving season with their first calf had increased longevity and kilograms weaned compared to heifers that calved later in the calving season.

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