

EXTENSION

**Utah State  
UNIVERSITY**

Logan, UT 84322-4900

Utah State University, Utah Counties and the U.S. Department of Agriculture Cooperating

# Beef

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## NEW REGULATIONS FOR SHIPPING SAMPLES

The Code of Federal Regulations has changed some requirements for packaging and shipping of hazardous material. Diagnostic specimens, any human or animal material not known or suspected of containing a pathogen, should now be shipped with the triple-packaging system described below. These shipping conditions are defined in all transportation company policies and meet the International Air Transport Association Regulation for Packaging Instruction 650.

The basic triple-packaging system consists of:

- A waterproof primary container. The primary container can be a Vacutainer tube sealed with adhesive tape, screw-capped conical tubes or other plastic screw-cap containers.
- A waterproof secondary container. The waterproof secondary container includes Ziplock plastic bags, conical 50mL test tubes and screw-cap containers.
- Absorbent material. The absorbent material should be placed between the primary and secondary container. The quantity of absorbent material should be sufficient to absorb all liquid contained in the primary container and can consist of items such as paper towels, cotton balls or filter paper.
- A sturdy outer shipping container. The outer shipping container is most often cardboard. Styrofoam containers should be within an outer cardboard box. Plastic bags and paper envelopes are unacceptable outer containers for shipping biological materials.

For shipment of clinical specimens, United Parcel Service, Federal Express, and Airborne Express all provide, free of charge, a plastic outer

pouch labeled "Diagnostic Specimens." Small boxes of properly packaged materials are slipped inside these lab packs so that the plastic pouch is over the secondary container.

When shipping clinical specimens through the United States Postal Service (USPS), in addition to the triple-packaging system, you are required to place a label on the outer package marked "Clinical Specimen-Blood, Urine, Tissue, Etc.," as applicable. The USPS Packaging instruction 6C is available at your local post office for reference.

Bovine Veterinarian, May-June 2003, p. 14

## SHORT-TERM CALF REMOVAL

During the breeding season, short-term removal of calves can help rebreeding rates, says Oklahoma State University cattle specialist Glen Selk. Removal of calves for 48 hours can improve rebreeding rates of moderately conditioned cows by 4 to 8 percent. These improvements are small but economically significant given the low cost of the procedure. Dr. Selk says producers can use short-term calf removal at the first of the breeding season, in the middle, or both depending on availability of labor. Care of calves during the separation period actually is quite simple, he says, typically involving availability of sweet feed and plenty of fresh drinking water. Short-term calf removal probably will not help conception rates in extremely thin cows. Those with body-condition scores of 4 or less may need to have the calves weaned completely prior to rebreeding. On the other hand, Dr. Selk says fatter cows with body-condition scores of 6 or better at calving typically return to estrus early in the breeding season and have high rebreeding rates. Short-term calf removal probably will not provide any significant benefits for those cows.

Drovers, May 2003, p. 16

## EVALUATION OF DROUGHT MANAGEMENT STRATEGIES FOR COW-CALF ENTERPRISES

The objective was to evaluate alternative drought management strategies for their effects on profitability based on early detection of drought. A bio-economic model was parameterized to represent a range-based cow-calf production system in the Northern Great Plains. The base management system was characterized by inputs required to maintain herd size of 511 cows during an average climatic year with a fixed forage base of 4,329 AUM of range forage, plus 629 ton grass and 208 ton alfalfa hay. Treatments were factorially arranged where management (early vs normal) and intensity of drought (moderate, 20% reduction in available forage vs severe, 40% reduction in available forage) were evaluated for effects on system performance. The early management (EM) scenario included detecting drought by July 15 and decreasing the average age at weaning to 90d. The normal management (NM) scenario included no 'early' management changes to emerging drought, but nutritional management was modified as needed to maintain animal performance. A second bio-economic computer model was used to simulate drylot performance for early-weaned calves. Outputs from the two models were combined and treatments were evaluated based on feed costs, average weaning weight, ranch gross margin (gross margin-variable costs, RGM), and cumulative gross margin (ranch gross margin + revenue from drylot calves, CGM). During average climatic conditions CGM under the base management system was \$137,730. During drought CGM was reduced compared to the base system: EM (17.6 and 48.8%) and NM (33.6 and 72.3%) for moderate and severe drought, respectively. For both levels of drought, EM had lower purchased feed costs and higher CGM than NM. Directly feeding EM calves proved more efficient than feeding NM cows to produce milk to maintain calf performance.

Montana State University Extension Service BEEF,  
April 2003, Vol. 8, No. 5, p. 9

## ANGUS COWS DELIVER ENDANGERED BANTENG CLONES

Two banteng clones were born to Iowa-based Angus cows in April in what researchers

believe is a significant step toward developing techniques to increase the genetic population of endangered species. Bantengs are an endangered, wild bovine species.

The Zoological Society of San Diego, Advanced Cell Technology Inc. in Worcester, Mass., and Trans Ova Genetics in Sioux Center, Iowa, collaborated on the project, which used skin cells harvested from a male banteng that died at the San Diego Wild Animal Park in 1980.

"Using frozen skin cells that have been stored in the San Diego Zoo's Frozen Zoo, the bantengs were cloned by transferring the DNA of these cells into empty eggs from ordinary domestic cows," said Robert Lanza, vice president of medical and scientific development for ACT. "By developing this technology it is our hope that we will open the way for a new strategy to help maintain valuable biodiversity."

The banteng calves, delivered via caesarean section at Trans Ova's Genetic Advancement Center, were reported to be active and eating well at press time.

Veterinary Practice News, May 2003, p. 30

## BIOMARKERS SET TO TEST LIVE CATTLE FOR MAD COW DISEASE

The first tests for mad cow disease in live cattle could potentially be on the market within 18 months under a licensing agreement.

Under current rules, farmers who suspect one of their cows is suffering from BSE must have the animal slaughtered to enable it to be tested. But UK-based firm Proteome Sciences says it has signed an agreement licensing US veterinary giant IDEXX Laboratories to develop and produce tests which could render slaughter unnecessary.

Proteome has developed a range of "biomarkers" which, it says, can detect BSE and equivalent diseases in other live animals such as scrapie in sheep.

Proteome, which last December licensed a similar biomarker to detect strokes in humans, saw its shares leap 11% to their highest point for two years after it announced the deal. While no specific amount is being quoted under the terms of the agreement, the deal will yield "significant double digit" royalties to Proteome.

Proteome will also be in line for substantial milestone payments as IDEXX, the world's largest

veterinary diagnostics company, reaches certain points in its own tests on the biomarkers during 2003 and 2004.

Ian Pike, business development manager at Proteome, said, "If everything went according to plan it's potentially possible that something could be on the market in 18 months."

He added that the company had its "ears to the ground" and believed that the tests would be the first of its kind to become available.

The market for post-mortem BSE testing in cattle inside the EU is currently worth about 105 million euros (£72.6 million) but Proteome believes the market could grow to as much as 450 million euros (£311.2 million) with live testing.

AABP Newsletter, May 2003, pp. 2-3

**EFFECT OF KETOPROFEN, LIDOCAINE LOCAL ANESTHESIA, AND COMBINED XYLAZINE AND LIDOCAINE CAUDAL EPIDURAL ANESTHESIA DURING CASTRATION OF BEEF CATTLE ON STRESS RESPONSES, IMMUNITY, GROWTH, AND BEHAVIOR**

To determine the effects of burdizzo castration alone or in combination with ketoprofen (K), local anesthesia (LA), or caudal epidural anesthesia (EPI) on plasma cortisol, acute-phase proteins, interferon-production, growth, and behavior of beef cattle, 50 Holstein x Friesian bulls (13 mo old,  $307 \pm 5.3$  kg) were assigned to (n=10/treatment): 1) control (handled; C); 2) burdizzo castration (B); 3) B following K (3mg/kg of Bwi.v.; BK); 4) B following LA (8 mL into each testis and 3 mL s.c. along the line where the jaws of the burdizzo were applied with 2% lidocaine HCl; BLA); and 5) B following EPI (0.05 mg/kg of BW of xylazine HCl and 0.4 mg/kg of BW of lidocaine HCl as caudal epidural; BEPI). The area under the cortisol curve against time was lower in BK than in B, BLA, or BEPI animals. On d 1 after treatment, plasma haptoglobin concentrations were higher in B, BLA, and BEPI than in BK animals. On d 3, haptoglobin and plasma fibrinogen concentrations were higher in all castration groups than in C. On d 7, haptoglobin and firbrinogen concentrations remained higher in BLA than in B and C animals. On d 1, concancavalin A-induced interferon-production was lower in B, BLA, and BEPI than in C, but there was no difference between BK and C

animals. From d-1 to 35, ADG was lower in B, BLA, and BEPI animals, but not in BK compared with C animals. Overall, there was a higher incidence of combined abnormal postures in B than in C, BK and BEPI animals. Although the use of K and EPI decreased these postures compared with B alone or B with LA, there was no difference between the K and EPI treatment. In conclusion, burdizzo castration increased plasma cortisol and acute-phase proteins, and suppressed immune function and growth rates. Local anesthesia prolonged the increase in acute-phase proteins. Ketoprofen was more effective than LA or EPI in decreasing cortisol and partially reversed the reduction in ADG following castration. The use of K or EPI was more effective than LA in decreasing pain-associated behavioral responses observed during the first 6 h after treatment. Systemic analgesia with ketoprofen, a nonsteroidal anti-inflammatory drug, was more effective in reducing inflammatory responses associated with castration than LA or EPI.

S. Ting, B. Earley, J. Hughes, and M. Crowe  
Journal of Animal Science, Vol. 81, No. 1289-1293

**AN ESTIMATED PREVALENCE OF JOHNE'S DISEASE IN A SUBPOPULATION OF ALABAMA BEEF CATTLE**

The objective of this study was to estimate the overall prevalence of animals that were infected with *Mycobacterium avium* ssp. *Paratuberculosis* in a subpopulation of Alabama beef cattle. This was determined using a commercial enzyme-linked immunosorbent assay (ELISA) for the detection of *M. avium* ssp. *paratuberculosis*-specific antibodies in serum. Serum was collected from 79 herds that were participating in the Alabama Brucellosis Certification program. A total of 2,073 beef cattle were randomly tested by selecting 30 animals per herd in herds greater than 30 and selecting all animals in herds 30 and less for testing. It has been estimated that the commercial ELISA test used has a 60% sensitivity and a 97% specificity. Of the 79 herds tested, 29 herds were seronegative, 24 herds had 1 or 2 positive animals, and 26 herds had 3 or more seropositive animals. The average number of infected animals per positive herd was 3.3. In addition, a calculated minimum of 53.5% of the herds were identified as Johne's positive herds with a 95% confidence level. Of the total number of

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5600 Old Main Hill  
Logan UT 84322-5600

animals tested, 8.0% (166/2,073) of them were positive by the ELISA. After adjustments for test sensitivity and specificity and the proportion of animals sampled per herd, the true prevalence was calculated to be 8.75%. These data suggest that approximately 50% of the herds are infected with *M. avium* ssp. *paratuberculosis*, and the overall

prevalence of infection in Alabama beef cattle is approximately 8%, which correlates with other previously published regional estimates.

B. Hill, M. West, and K. Brock  
Journal of Veterinary Diagnostic Investigation,  
January 2003, Vol. 15, No. 1, pp. 21-25

Eleanor Jenson, D.V.M.  
Extension Veterinarian

