

were not different between treatments ($P < 0.05$) and averaged 0.016% of total fatty acids. Color stability tests were performed tri-weekly on top loin steaks for 21 d. By day 7, FO steaks had a higher hue angle (indicating brownness), which continued until day 20 ($P < 0.05$). Neck muscle vitamin E levels in FO were lower than in LO and TF, but not different from ML ($P < 0.05$). Vitamin E values for ML, FO, TF, and LO were 2.35^{ab}, 1.58^b, 3.29^a, and 2.99^a, g/kg of neck muscle, respectively. Off-flavor was stronger in FO ($P < 0.05$) according to a trained

taste panel. In the present study, supplementing trans fat and linseed oil increased cis-9 trans-11 CLA levels in beef tissue by 88% and 71% compared to control, respectively. The TF and LO treatments had 108% and 89% higher tissue vitamin E levels than FO, respectively. Feeding fish oil decreased color stability and introduced an off-flavor to the beef.

Key Words: Beef, Fat, Conjugated linoleic acid

Dairy Foods Symposium: Dairy foods research success stories

439 Dairy foods research success stories. W. Sandine¹, C. White², D. Hettinga³, J. Hotchkiss⁴, R. Thunell⁵, M. Mangino⁶, and D. Willrett⁵, ¹Oregon State University, ²Mississippi State University, ³Land O' Lakes, Inc., ⁴Cornell University, ⁵DSM, ⁶Ohio State University.

This symposium results from the need to remind federal granting agencies and legislators of the economic and social benefits from agricultural research. While research funding from NSF and NIH has increased dramatically since 1990, that for agriculture has decreased, especially for agricultural experiment stations. Examples will be given. Research success stories benefiting this nation will be presented: A brief history of dairy foods research and its contribution to the American way of life; the

dramatic impact of increased market milk shelf life for consumers and industry profits; the value of cheese starter culture media developments to industry and consumers; the defined strain starter culture program for Cheddar cheese plants; carbon dioxide and shelf life extension in cottage cheese for an expanded market; and successful whey research yields new products and eliminates an environmental pollutant. From these and other success stories the 38 member societies of CAST along with N-CFAR and other agencies are developing Fact Sheets to distribute to members of the U.S. congress and administrators to heighten their awareness of needed funding increases for agricultural research.

Key Words: Research, Funding, CAST

Beef Species: Beef cattle performance

440 Influence of breed on performance and dry matter intake by feedlot bull calves in Brazil. R. Almeida^{1,2} and D.P.D. Lanna², ¹UFPR and PUCPR, PR, Brazil, ²LNCA-ESALQ/USP, SP, Brazil.

Performance and daily feed intake records from the largest bull test in Brazil were analyzed to determine differences attributable to breed. Postweaning performance of purebred calves was evaluated from seventeen pens, which held 145 Angus, 342 Brangus and 911 Nellore, for a total of 1,398 bulls tested in 2000, 2001 and 2002. Bulls calves arrived at 8 months of age and initial weight of 218 kg, and were fed for 28 days of adaptation and 112 days of test. A high forage diet (50% of DM as concentrate; 14% CP and 67% TDN) typical of Brazilian feedlots was used and monensin included at 27 ppm. Data were analyzed using GLM procedure of SAS. The first data set (performance data) included 1,398 individual records and the second set used 17 pens monitored daily for dry matter intake. Breed type affected weights at 8, 9 ($P < .01$) and 11 ($P < .05$) months, but not ($P > .05$) at 13 months of age (end of feedlot period). Nellore bulls started on test with heavier weights but had the same final weight (13 months) as Angus and Brangus. Breed type also affected ($P < .01$) average daily gain. Brangus and Angus had higher gains (1.34 ± 0.04 and 1.27 ± 0.03 kg/d) than Nellore bulls (1.19 ± 0.02 kg/d). Angus and Brangus consumed more feed ($P < .01$) than Nellore calves. During the 112 day-evaluation period intakes for Angus, Brangus and Nellore calves were: 7.23 ± 0.12 , 7.19 ± 0.10 and 6.71 ± 0.06 kg/day, and 2.55 ± 0.05 , 2.49 ± 0.04 and 2.20 ± 0.02 of BW, respectively. There were no differences ($P > 0.05$) in feed efficiency among breeds. NRC (1984 and 1996) equations were used to predict DMI. The biases were -0.3, +0.6 and +10.0% for the NRC (1984) and -3.0, -2.1 and +7.2% for the NRC (1996), and for Angus, Brangus and Nellore, respectively. NRC equations overpredicted DMI for *Bos indicus* breeds. New DMI prediction equations for high roughage and purebred Zebu cattle need to be developed and validated.

Key Words: Beef cattle, Feed intake, Nellore

441 Evaluation of yearling bull sale prices at six regional locations. D. Dean* and A. Herring, Texas A&M University, College Station.

During the spring of 2001, a seedstock marketing cooperative conducted six sales in CO, IA, ID, MO, and SD. Breeders delivered bulls to locations approximately 150 d prior to sale date; bulls were fed to gain approximately 1.4 kd/d. The purpose of this study was to evaluate specific areas of selection used by commercial producers and their effect on sale prices of yearling purebred bulls. Data on Gelbvieh (GV, n = 675), Angus (AN, n = 65) and Red Angus (RA, n = 50) bulls were analyzed.

Specific traits available included sale price, age-adjusted ultrasound rib-eye area (ADJREAU), age-adjusted ultrasound intramuscular fat percentage (ADJUIF), age-adjusted ultrasound 12th and 13th rib back-fat thickness (ADJUBFT), actual birth weight (BWT), actual weaning weight (WWT), average daily gain (ADG), ADG ratio, adjusted yearling weight (ADJYW), Frame score (FRAME), scrotal circumference (SC), birth weight EPD (BWTEPD), weaning weight EPD (WWTEPD), yearling weight EPD (YWEPE), milk production EPD (MILKEPD), total maternal EPD (TMEPD). AN and RA bulls were combined into one group and analyzed separately from GV bulls. RA EPDs were adjusted to the AN base according to 2001 across breed EPD adjustments. Sale price was analyzed by GLM procedures of SAS with independent variables of sire, with regressions on ADJREAU, ADJUIF, ADJUBFT, BWT, WWT, ADG, ADG ratio, ADJYW, FRAME, SC, BWTEPD, WWTEPD, YWEPE, MILKEPD, and TMEPD. EPDs did not account for differences in sale price for GV bulls. Sire ($P = 0.0005$), BWT ($P = 0.0288$), WWT ($P = 0.055$), ADG ($P = 0.0386$), ADGRATIO ($P = 0.0159$), SCROTAL ($P = 0.0006$) and ADJREA ($P = 0.0001$) affected prices paid by customers buying GV bulls with a slight trend for ADJBACKFAT ($P = 0.0628$). Among GV bulls, sale price difference per unit change of the independent variables BWT, WWT, ADG, ADG ratio, SC, ADJREAU, and BACKFAT were -\$7.79, \$1.09kg, -\$256.88, \$9.95, \$41.71, \$82.66, and \$116.87, respectively. Among ANRA bulls, only ADJYWEPE affected ($P = 0.05$) sale prices, with a price per unit change of \$34.24. EPDs were not influential in sale prices of these yearling bulls that had actual performance data reported in sale catalogs.

Key Words: Sale prices, Yearling bulls, Performance data

442 Evaluation of forage sources for finishing diets containing wet corn gluten feed. C. R. Dahlen¹, A. DiCostanzo², R. T. Ethington³, T. L. Durham⁴, J. E. Larson², and G. C. Lamb⁵, ¹Northwest Research and Outreach Center, University of Minnesota, ²Department of Animal Science, University of Minnesota, ³Kansas Feeds, Inc, ⁴ADM Corn Processing, ⁵North Central Research and Outreach Center, University of Minnesota.

Two hundred twenty-three Angus crossbred steers (308 kg) were used to evaluate effects of various forage sources in diets containing wet corn gluten feed. Steers were assigned by weight and origin to one of sixteen pens (14 or 15 steers/pen). Pens were randomly assigned to one of five dietary treatments. Dietary treatments consisted of diets balanced (1.39 Mcal NE_g/kg DM; 12.5% CP) using high moisture and dry rolled corn (50:50 DM basis) with one of the following forage sources: corn silage (n = 3), wet corn gluten feed (n = 3), or wet corn gluten feed in combination with corn silage (n = 3), grass-legume hay (n = 3), or both (n = 4). Effects of forage source on performance and carcass characteristics were determined using non-orthogonal contrasts. Steers fed diets containing