778 Fixed-time AI conception rates in beef cows resulting from reduced 2-shot prostaglandin intervals on day 5 of a 5-d CIDR-Co-synch estrus synchronization. J. L. Seabrook*, R. K. Peel, G. E. Seidel, and J. C. Whittier, *Colorado State University*, *Fort Collins*.

The objective of this study was to quantify fixed-time AI (TAI) pregnancy rates resulting from reduced intervals between 2 25 mg dinoprost tromethamine (PG) injections on d 5 of a 5-d CIDR-Co-synch estrus synchronization program. Angus and Angus-influenced commercial cows (n = 873) maintained on native pasture at 3 locations were randomly assigned to treatments, blocking for BCS and postpartum interval (PPI). On experimental d 0 all cows received 100 μg GnRH i.m. and a CIDR (1.38 g progesterone). On d 5, CIDRs were removed and cows were administered 2 injections of 25 mg PG i.m. either 2, 4 or 6 h ± 30 min apart. On d 8, 72 ± 3 h after the first PG injection, all cows received 100 μg GnRH i.m. and were TAI. Conception rates were determined by rectal ultrasonography 40 ± 2 d following TAI. The TAI conception rate was 59.7% for the 6 h interval group, 51.4% for the 4 h interval group ($P = 0.05$), and 50.6% for the 2 h interval group ($P = 0.04$). Body condition score ($P = 0.06$) was a marginally significant source of variation for TAI conception rate; shorter PPI intervals negatively affected pregnancy rate ($P = 0.02$). Reducing the interval between PG injections from 6 to 4 or 2 h resulted in a 9-percentage point (15%) reduction in TAI conception rates for cows in this 5-d CIDR-Co-synch estrus synchronization protocol.

Key Words: beef cow, CIDR Co-synch, prostaglandin interval

779 Effect of castration technique on beef calf performance and residual feed intake. T. M. Warnock*[1], T. A. Thrift[1], M. Irsik[1], M. J. Hersom[1], T. D. Maddock[2], and G. C. Lamb[2], [1]*University of Florida*, *Gainesville,* [2]*University of Florida*, *Marianna*.

The objective of this study was to examine whether castration method would alter daily feed and water intake, calf performance, and residual feed intake. Brangus (n = 45) and Angus (n = 30) male calves weighing 226 ± 34 kg (200 + 26 d of age) were placed in a GrowSafe 4000 feed intake facility 7 d post weaning (15 calves/pen; 7–8 calves/feed node). Body weight gain and DMI were recorded over an 84-d period. Calves were offered a mixed diet (TDN = 67.3% and CP = 12.2%, DM = 89%) ad libitum. Calves were adapted to the facility for 21 d before the start of the trial. Shrunk BW was recorded on d 0, 14, and 84; full BW was recorded on d 7, 28, 42, 56, and 70. On d 0 calves were assigned to one of 5 treatments (n = 15/treatment): 1) control steers were castrated surgically before weaning at an average age of 52 d (8–85 d) (CON); 2) intact bulls (BULL); 3) bulls castrated surgically (SUR); 4) bulls castrated by the Callicrate Bander (No-Bull Enterprises, LLC, St. Francis, KS; BAN); and 5) bulls castrated using the Henderson castration tool (Stone Mfg & Supply Co., Kansas City, MO; HEN). During the first 14 d post castration, BAN calves gained BW slower ($P = 0.009$) than CON calves (0.10 vs. 0.68 kg/d) and tended to gain BW slower ($P = 0.08$) than BULL calves (0.12 vs. 0.48 kg/d). Additionally, CON calves gained more BW ($P = 0.04$) than HEN and SUR calves, 0.68, 0.24, and 0.22 kg/d, respectively. DMI was similar ($P > 0.10$) among castration methods 14 d post castration. BAN calves had decreased ($P = 0.04$) average daily water intake compared with BULL, CON, and SUR calves (28.39 vs. 38.86, 45.20, and 39.18 L/d respectively) and tended to drink less ($P = 0.08$) than HEN calves (28.39 vs. 37.20 L/d). During the experiment, all treatments had similar ($P > 0.10$) ADG and residual feed intake. Our results suggest that method of castration did not have a long-term impact on performance or efficiency of weaned calves.

Key Words: beef cattle, castration, performance

780 Effect of preconditioning average daily gain on feedlot performance and carcass characteristics of beef cattle. J. D. Savell*, T. A. Thrift, and M. J. Hersom, *University of Florida*, *Gainesville*.

A study was conducted to evaluate the effect of preconditioning ADG (PCADG) on feedlot performance and subsequent carcass characteristics in beef cattle. Steers (n = 1,100, BW = 254 ± 28 kg) and heifers (n = 421, BW = 241 ± 25 kg) from a single ranch were shipped 370 km to be preconditioned in North Central Florida. Calves were preconditioned on 8 ha bermudagrass pastures and acclimated to a high energy starter ration with a DMI target of 3% of live BW. Calves were preconditioned for 43 ± 9 d and then shipped 2,365 km to a feedyard to be finished in Western Kansas that utilized the Micro Beef Technologies ACCU-TRAC Electronic Cattle Management system. The effect of increasing PCADG was evaluated against the dependent variables (feedlot ADG, feed efficiency, days on feed, cost of gain, HCW, quality grade, ribeye area (REA), REA/100 kg, and yield grade) and regression analysis was performed. Feedlot ADG was similar ($P = 0.54$) across varying levels of PCADG. Feedlot feed efficiency improved ($P < 0.05$) for both steers (0.62 kg of feed/kg of gain) and heifers (0.46 kg of feed/kg of gain) as PCADG increased. Days on feed decreased ($P < 0.01$) by 7.2 d for each 1.0 kg increase in PCADG. Cost of gain decreased ($P < 0.05$) 9.8 cents/kg for each 1.0 kg increase in PCADG. As PCADG increased by 1.0 kg/d, HCW increased ($P < 0.001$) by 19.5 kg. Quality grade ($P = 0.24$) and yield grade ($P = 0.29$) were not affected by PCADG. Calves that gained more during preconditioning had greater ($P < 0.001$) actual REA but smaller ($P < 0.01$) REA/100 kg value. Preconditioning ADG was not a good predictor of feedlot ADG. Improvements in feedlot feed efficiency associated with high gaining calves during preconditioning resulted in fewer days on feed and reduced cost of gain in the feedlot. As PCADG increased, HCW increased, REA increased, and REA/100 kg decreased. Quality grade and yield grade were minimally affected by PCADG.

Key Words: carcass, performance, preconditioning

781 Effect of estimated Brahman percentage on preconditioning performance, feedlot performance and carcass characteristics of beef cattle. J. D. Savell, T. A. Thrift, and M. J. Hersom*, *University of Florida*, *Gainesville*.

A study was conducted to evaluate the effect of Brahman percentage in beef calves on preconditioning and feedlot performance and subsequent carcass characteristics. Steers (n = 1,100, BW = 254 ± 28 kg) and heifers (n = 421, BW = 241 ± 25 kg) from a single ranch were shipped 370 km to be preconditioned in north central Florida. Upon arrival, Brahman percentage was estimated to be 0, 1/8, 1/4, or 3/8 Brahman influence by 2 evaluators, with a third evaluator resolving any discrepancies. Phenotypic evaluation of Brahman percentage was made based on the visual appearance of the underline and size of the hump. Length, shape, and orientation of the ear were also used to estimate Brahman percentage. Calves were preconditioned for 43 ± 9 d and shipped 2,365 km to a feedyard to be finished in Western Kansas that utilized the Micro Beef Technologies ACCU-TRAC Electronic Cattle Management system. The effect of increasing estimated Brahman percentage was evaluated

against the dependent variables (preconditioning ADG, feedlot ADG, G:F, days on feed, cost of gain, HCW, quality grade, ribeye area [REA], REA/100 kg, and yield grade) and regression analysis was performed. As Brahman percentage increased by 1/8, preconditioning ADG increased ($P < 0.05$) by 0.03 kg/d. Feedlot ADG was similar ($P = 0.12$) across varying levels of Brahman percentage. Days on feed, G:F, and cost of gain were similar across levels of Brahman percentage ($P > 0.05$). Hot carcass weight declined ($P < 0.001$) by 8.78 kg as Brahman percentage increased by 1/8. Quality grade also decreased ($P < 0.01$) as Brahman percentage increased. Actual REA decreased ($P < 0.01$) as Brahman percentage increased, but no differences in REA/100 kg were observed. Cattle that exhibited 1/8 Brahman influence had a greater decrease ($P < 0.05$) in numerical values for yield grade than those estimated to be 0 or 1/4 Brahman, and were similar ($P > 0.05$) to those estimated to be 3/8 Brahman. As Brahman percentage increased preconditioning ADG increased, feedlot performance was minimal impacted, and HCW and quality grade declined.

Key Words: Brahman, carcass, performance

782 Breed and winter nutrition effects on body weight, condition, and blood metabolite patterns of cows grazing bahiagrass pastures. S. W. Coleman*, M. J. Williams, C. C. Chase, and D. G. Riley, *USDA ARS Subtropical Agricultural Research Station*, *Brooksville, FL*.

Generally the largest economic costs for cattle production are for winter feed. This 2-yr study evaluated 2 winter nutrition programs on Angus, Brahman, and Romosinuano purebred cows (n = 298, aged 3 to 16 yr) rotationally grazing bahiagrass pastures at STARS. Treatments (TRT) began after weaning and were replicated (R) over 3 farms. Treatments were: TRT1) peanut/bahiagrass hay fed free choice from first frost and supplemented with heavy blackstrap molasses at 2.2 kg/hd/day from weaning until end of breeding (~June 15); and TRT2) bahiagrass hay supplemented with urea-fortified molasses (16% protein equivalent) at 2.2 kg/hd/d from weaning until Jan 15 and then 4.5kg/hd/d of 50% heavy blackstrap molasses and 50% soybean hulls until end of breeding. At monthly intervals, all cows were weighed (BW), scored for body condition (BCS), and blood samples were collected by jugular puncture (5 cows per breed-TRT-rep group) and analyzed for plasma urea N (PUN), glucose (GLU), and non-esterified fatty acids (NEFA). Data were analyzed on cows that calved using Proc Mixed of SAS. The statistical model included fixed effects of cow breed (BR), cowage, TRT, month (M) and R; year (Y) was random, and cow was a repeated effect. Three-way interactions (Y × TRT × M and Y × TRT × R) were significant ($P < 0.001$) for all responses, and the BR × TRT × M interaction was significant for BW, BCS, and NEFA. Important differences included: 1) cow BW was always lower for TRT2 than TRT1 (avg. 505 vs. 487 kg, $P < 0.002$), especially during winter when supplement was fed, yet PUN was higher ($P < 0.01$) for TRT2 in May, June and Sept-Dec for 2002, but no differences were noted in 2003 until Nov; and 2) Plasma levels of NEFA escalated to near 1 mEQ/L at calving and then declined to 0.40, except for Brahman cows who maintained higher (0.58 mEQ/L, $P < 0.01$) levels than the other breeds from 60 d postpartum until weaning, probably due to inadequate intake to support milk production.

Key Words: cow-calf, winter supplementation

783 Genetic mechanism underlying the effect of breed on fatty acid composition in Angus and Charolais finishing steers. A. K. Sexten*, J. W. Dillwith, D. R. Stein, C. R. Krehbiel, and R. G. Mateescu, *Oklahoma State University*, *Stillwater*.

Genetic variability in beef fatty acid composition consists of differences between breeds and between animals within breed. The effect of breed on fatty acid profile in beef was evaluated in longissimus muscle (LM) from Angus (n = 19) and Charolais (n = 14) feedlot finished steers. Steers were fed a total of 140 d before slaughter. Longissimus muscles were biopsied on d 127 of the finishing period between the 12th and 13th ribs and fatty acid composition was determined. Lipids were extracted in triplicate with a 2:1 (v/v) methanol:chloroform solution then acid and base derivatized before separation by gas chromatography on an Agilent 5890 gas chromatograph with 7673 autosampler. Percent composition of each fatty acid was calculated and the effect of breed was analyzed using the general linear model of SAS. Hot carcass weights did not differ, however, Angus steers had higher marbling scores ($P = 0.01$) and more backfat ($P = 0.01$) than Charolais steers. Although percent of saturated fatty acids did not differ between Angus (44.9%) and Charolais (44.0%) steers, Angus steers LM had a higher percent of monounsaturated fatty acids (43.7 vs. 39.4%; $P = 0.01$) and a lower percent of polyunsaturated fatty acids (11.1 vs. 16.3%; $P = 0.03$), omega-3 fatty acids (0.58 vs 0.82%; $P = 0.04$) and omega-6 fatty acids (10.5 vs. 15.5%; $P = 0.03$). Microarray analysis utilizing a long oligo bovine array was also performed. Preprocessing and normalization of data was accomplished using the R-project statistical environment with the Bioconductor and LIMMA package through the GenePix AutoProcessor (GPAP 3.2). Nine genes were found to be significantly ($P = 0.01$) differentially expressed (DE) between Angus and Charolais LM. Ontology analysis of the DE genes was carried out using GFINDer with KEGG analysis utilized to identify the most relevant biological pathways. These results provide insight into the challenge of developing and implementing a program to improve the healthfulness of beef utilizing existing natural genetic variation to manipulate fat composition through breed selection.

Key Words: beef, fatty acid, gene expression