

$\pm 0.3$  kg) and litter wt gain from d 3 until weaning ( $42.7 \pm 2.0$  vs.  $39.2 \pm 2.2$  kg) were greater ( $P < 0.01$ ) with AL feeders than with HF feeders, respectively. Number of pigs weaned did not differ ( $P > 0.05$ ,  $9.7 \pm 0.1$ ). The AL sows tended to have greater ( $P = 0.07$ ) wt gains during lactation ( $12.2 \pm 3.1$  vs.  $8.2 \pm 3.2$  kg, AL and HF, respectively). Backfat change during lactation and wean-to-estrus interval did not differ ( $P > 0.05$ ). Sows with AL feeders wasted less ( $P < 0.01$ ) water than sows with HF feeders ( $12.7 \pm 14.8$  vs.  $236.0 \pm 20.7$  kg, respectively), but water intake and feed waste was similar ( $P > 0.05$ ). Sows given ad libitum access to feed during lactation responded with productivity.

**Key Words:** Sow, Lactation, Feeder

**796 Interactive effects of milk supplementation, parity and season on preweaning mortality and growth performance of piglets on a commercial farm.** B. W. Ratliff<sup>1</sup>, A. M. Gaines<sup>1</sup>, G. L. Allee<sup>1</sup>, M. O'Brien<sup>2</sup>, and J. A. Coalson<sup>2</sup>, <sup>1</sup>University of Missouri, Columbia, <sup>2</sup>Merrick's, Inc., Union Center, WI.

A total of 703 (Genetiporc) sows and 7,301 piglets (PIC 337  $\times$  Genetiporc) were used on a commercial farm to evaluate the interactive effects of milk supplementation, parity and season on piglet growth performance and pre-weaning mortality. Data were collected over a 12 month period. Sow diets were formulated to meet all minimal NRC requirements. Sows were grouped according to parity as follows: parity 1 =

group 1, parities 2 and 3 = group 2, and all parities greater than 3 = group 3. Litters from sows within the same group were randomly allotted to either milk or no milk treatments. At 48 h post parturition, milk supplementation was initiated and piglets were counted and weighed. All cross-fostering and litter processing occurred prior to 48 h. Mortalities, their weights, and date of occurrence were recorded daily for each litter. At d 14 to 18, each litter was weighed, counted, and weaned. Data indicated that milk supplementation increased ( $P < 0.05$ ) number of pigs weaned, weaning weight and total litter gain (includes mortality weights), while lowering ( $P < 0.05$ ) pre-weaning mortality. Parity groups 1 and 2 weaned more ( $P < 0.05$ ) pigs per sow and had lower ( $P < 0.05$ ) pre-weaning piglet mortality than parity group 3. Furthermore, parity groups 1 and 3 had lighter ( $P < 0.05$ ) weaning weights, piglet average daily gains and total litter gains than parity group 2. Warm season decreased ( $P < 0.03$ ) piglet average daily gain. Treatment by parity group interactions ( $P < 0.05$ ) were present for number of pigs weaned, litter weaning weight, pre-weaning mortality and total litter gain, with milk supplementation being most beneficial for parity group 2 and 3 sows. Milk supplementation did not affect ( $P > 0.05$ ) any parameters measured in parity group 1 sows. Collectively, these data indicate that milk supplementation will improve litter growth performance and decrease pre-weaning mortality in parity 2+ sows.

**Key Words:** Milk Supplement, Piglets, Sows

## Production, Management and the Environment: Nutritional Management

**797 Blood metabolites during the transition period of Holstein cows receiving a monensin controlled-release capsule.** P. Melendez<sup>\*1</sup>, J. Goff<sup>3</sup>, C. Risco<sup>1</sup>, L. Archbald<sup>1</sup>, R. Littell<sup>2</sup>, and A. Donovan<sup>1</sup>, <sup>1</sup>College of Veterinary Medicine, University of Florida, Gainesville, <sup>2</sup>Institute of Food and Agricultural Sciences, University of Florida, Gainesville, <sup>3</sup>National Animal Research Center, USDA, Ames, IA.

Monensin increases the rumen molar proportion of propionate. This change might affect energy metabolic dynamics in transition dairy cows. The objective of this study was to determine the effect of a rumen monensin-controlled release capsule inserted at dry-off on energy blood metabolites in Florida transition cows fed diets containing citrus pulp. The study was conducted on a Holstein farm with 3600 milking cows in north central Florida, with a RHA of 10,700 kg. Cows were housed in a dry-lot system and fed the same TMR 3X. In March, 2002, 24 cows dried-off 50 to 70 d before expected parturition (BEP) were randomly assigned either a treatment or a control group. The treated group (n=12) received orally a capsule of monensin (300 mg/d for 95 d, CRC Rumensin<sup>®</sup>). Control cows (no capsule, n=12) were randomly matched by parity. At assignment, on day 21 BEP, at calving, and at 7, 14, and 21 d postpartum (pp) a blood sample was obtained from the coccygeal vein and body condition scoring (BCS) was conducted (scale 1-5). Serum non-esterified fatty acids (NEFA), beta-hydroxy butyrate (BHB) and glucose were measured. Metabolites were analyzed by ANOVA, mixed model for repeated measures. BCS changed over time, and treatment increased BCS significantly in multiparous cows at calving ( $P \leq 0.01$ ). BHB was lower in treated primiparous cows at calving ( $0.52 \pm 0.2$  vs  $0.90 \pm 0.1$  mmol/L) ( $P \leq 0.1$ ) and 14 d pp ( $0.36 \pm 0.2$  vs  $0.90 \pm 0.1$  mmol/L) ( $P \leq 0.05$ ) and NEFA were lower in treated primiparous cows at 7 d pp ( $0.78 \pm 0.3$  vs  $1.42 \pm 0.2$  meq/L) ( $P \leq 0.05$ ) and 14 d pp ( $0.44 \pm 0.3$  vs  $0.91 \pm 0.2$  meq/L) ( $P \leq 0.1$ ). Independent of treatment, NEFA, BHB and glucose increased dramatically at 21 d BEP, indicating that cows around 3 wks prepartum started to change their metabolic status. It was concluded that transition primiparous cows under the influence of monensin and fed a TMR containing citrus pulp had lower levels of BHB, and NEFA at certain times of the transition period. BCS at calving was significantly higher in multiparous treated cows.

**Key Words:** Monensin, Blood Metabolites, Transition Dairy Cow

**798 Rumen and blood metabolites at 10 d postpartum in Holstein cows supplemented with monensin.** P. Melendez<sup>\*1</sup>, J. Goff<sup>2</sup>, C. Risco<sup>1</sup>, L. Archbald<sup>1</sup>, R. Littell<sup>3</sup>, and A. Donovan<sup>1</sup>, <sup>1</sup>College of Veterinary Medicine, University of Florida, Gainesville, <sup>2</sup>National Animal Research Center, USDA, Ames, IA, <sup>3</sup>Institute of Food and Agricultural Sciences, Gainesville, FL.

The objective was to assess the effect of a monensin controlled-release capsule inserted at dry-off on rumen and energy blood metabolites at 10 d postpartum (pp) in transition cows fed Florida typical diets. The study was conducted on a Holstein dairy with a RHA of 10,700 kg. In March, 2002, 24 cows were randomly assigned at dry-off to 2 groups. Treated cows (n=12) received an oral capsule of monensin (300 mg/d for 95 d, CRC Rumensin). Control cows (n=12) were not treated and matched by parity. At 10 d pp a rumen and blood sample was obtained at 7 A.M. before the first meal. Other samples were taken at 2, 4 and 6 h after feeding (AF). Rumen sample was taken by an orominal tube. Rumen pH was measured immediately after sampling. Serum non-esterified fatty acids (NEFA), beta-hydroxy butyrate (BHB) and glucose were measured by enzymatic colorimetric methods. Rumen samples were analyzed for concentration of VFA, lactic acid and NH<sub>3</sub>. Variables were analyzed by ANOVA, mixed models for repeated measures. Primiparous controls tended to have lower rumen pH at 4 h AF than treated cows ( $6.34$  vs  $6.62$ ) ( $P \leq 0.10$ ). Multiparous treated cows tended to have lower NH<sub>3</sub> at 4 h AF ( $4.28$  vs  $5.01$  mmol/L) ( $P \leq 0.10$ ) and had significantly lower NH<sub>3</sub> at 6 h AF ( $2.8$  vs  $4.01$  mmol/L) ( $P \leq 0.05$ ) than controls. In treated primiparous, BHB tended to be lower at 2 h AF ( $0.65$  vs  $1.0$  mmol/L) and 6 h AF ( $0.71$  vs  $0.99$  mmol/L) ( $P \leq 0.1$ ) and was lower at 4 h AF ( $0.57$  vs  $1.0$  mmol/L) ( $P \leq 0.05$ ) than controls. NEFA tended to be lower at time 0 ( $0.82$  vs  $1.14$  meq/L) ( $P < 0.1$ ) and glucose tended to be higher at 2 h AF ( $54.4$  vs  $45.9$  mg/dL) ( $P \leq 0.1$ ) in treated than controls. In treated multiparous cows, BHB tended to be lower at 4 h AF ( $0.77$  vs  $1.05$  mmol/L) ( $P \leq 0.1$ ) and was lower at 6 h AF ( $0.82$  vs  $1.18$  mmol/L) ( $P \leq 0.05$ ) than controls. NEFA were lower at 2 h AF in treated than controls ( $0.59$  vs  $0.92$  meq/L) ( $P \leq 0.05$ ). Glucose tended to be higher at 2 h AF in treated than controls ( $51.2$  vs  $46.3$  mg/dL) ( $P \leq 0.1$ ) It was concluded that transition cows under monensin had improved energy status within 6 h AF.

**Key Words:** Monensin, VFA, Transition Dairy Cow

**799 Warm-season baleage crops for mid-lactation Holstein cows.** M. E. McCormick<sup>\*</sup>, Southeast Research Station, Louisiana State University, Franklinton.

Conserving forage as baleage is becoming widely accepted by Louisiana dairymen. In the present study, production-scale pastures of bermudagrass (*Cynodon dactylon*, L.), signalgrass (*Brachiaria decumbens*, S.)

and forage sorghum (*Sorghum bicolor*, L.) were used to evaluate the effect of forage type on nutrient composition and feeding value of crops conserved as baleage. Annual ryegrass (*Lolium multiflorum*, L.) served as a positive control. Forages were cut, windrow-wilted for 24-48 h, baled, and wrapped with white stretch film. Following a six-month storage period, baleages were fed to forty multiparous, midlactation Holstein cows (30.1 ± 3.2 kg FCM, 181 ± 32 DIM) in a 42-d randomized block design feeding trial. Forages were individually fed (Calan Gate barn) ad libitum and concentrates (6.1 kg DM/feeding) were fed immediately prior to a.m. and p.m. milkings. Milk weights were recorded at each milking, milk samples were collected weekly for compositional analyses, and body weight/condition scores were measured weekly. Signalgrass ADF and NDF concentrations were lower and in vitro digestibility was higher than those recorded for either bermudagrass or sorghum baleages. Protein concentrations were higher for signalgrass and ryegrass than either bermudagrass or sorghum baleages (16.9 and 16.0% vs 13.1 and 13.4%, respectively). Sorghum baleage intake was lower (P<0.05) than that recorded for ryegrass, signalgrass, and bermudagrass (8.3, 9.6, 10.7, and 12.3 kg DM/d, respectively). Actual milk (kg/d), FCM (kg/d), and % milk fat were 27.5, 27.3, 3.58; 28.0, 26.9, 3.31; 28.7, 28.7, 3.52; and 29.9, 29.7, 3.37 for bermudagrass, sorghum, signalgrass, and ryegrass baleages, respectively. Other animal measurements such as body weight (avg. = 664 kg), condition score (avg. = 2.64), and rumen pH (avg. = 6.28) did not differ with forage type. Under management conditions employed in this study, signalgrass nutrient composition and feeding value were similar to annual ryegrass. Sorghum and bermudagrass baleages tended (P<0.10) to have inferior nutrient composition and produce less milk than either signalgrass or ryegrass baleage crops.

**Key Words:** Baleage, Feeding Trial, Milk Production

**800 Evaluating the distribution of fatty acids in the middle and outer layer of market pigs challenged with conjugated linoleic acid.** A. Cox\*, A. Schinckel, B. Richert, and M. Latour, *Purdue University, West Lafayette, IN.*

A study was conducted to investigate the ability of conjugated linoleic acid (CLA) to alter pig fatty acid distribution within the middle and outer backfat layers during the last 14 and 28 days of the finishing period. Forty-two barrows from a single source were used. Six pigs were slaughtered upon arrival to obtain baseline data. The remaining thirty-six pigs were individually penned and then equally and randomly assigned to control, 0.5% CLA or 1.0% CLA. Eighteen pigs (six per treatment) were sampled on each sampling day. Regardless of layer, there were significant (P<0.05) treatment differences in the percentage of C14:0, C16:0, C16:1, C18:0, C18:1, C18:2, C18:2 9-11, C18:2 10-12, C20:1, C20:4, and C20:5. Both levels of dietary CLA decreased the levels of unsaturated fatty acids compared to control. Conversely, the pigs fed CLA exhibited an overall higher percentages of saturated fatty acids compared to control pigs. Regardless of treatment, significant (P<0.05) differences were observed between the middle and outer backfat layers. The percentage of C16:1, C18:1, and C18:2 were significantly higher (P<0.05) in the outer layer, compared to the middle layer. However, the levels of C18:0 and C20:0 were significantly (P<0.05) higher in the middle layer compared to the outer layer. These data indicate that dietary CLA can alter the fatty acid composition of fat, whereas the differences between layers tends is relatively unaffected by the dietary treatments imposed.

**Key Words:** Swine, CLA, Fatty Acids

**801 Effect of feeding a low nutrient excretion diet on pig growth performance and carcass characteristics in a commercial wean-finish setting.** R. B. Hinson\*, M. C. Walsh, D. M. Sholly, S. A. Trapp, D. T. Kelly, J. S. Radcliffe, A. L. Sutton, A. P. Schinckel, and B. T. Richert, *Purdue University, West Lafayette, IN.*

Two hundred fifty-six pigs (Initial BW = 25.8 kg) were randomly selected within four 1,000 hd commercial wean-finish swine buildings to determine the effects of feeding a control (CTL) corn-SBM based diet or a low nutrient excretion (LNE) diet, with synthetic amino acids and phytase, on grow-finish (G-F) pig growth, carcass characteristics, and live ultrasound backfat (BF) and loin eye area (LEA). Two barns were fed CTL diets and two fed LNE diets. Six phases of each trt were fed during the G-F period. Thirty-two pigs/sex/barn had individual BW and ultrasound measurements recorded at 3 wk intervals. After 15 wk

on test, 10 pigs/sex/barn were harvested to determine carcass characteristics. Initial BW differed (P<.01) between CTL and LNE (24.6 vs. 26.9 kg) and barrows and gilts (24.9 vs. 26.7 kg). ADG for grower (wk 0-9), finisher (wk 9-15), and overall (wk 0-15; 861 vs. 807 g/d) were higher (P<.01) for CTL vs. LNE. Barrows had greater overall ADG (P<.05; 853 vs. 815 g/d) than gilts. For finisher ADG gilts grew 7 g/d slower than barrows when fed CTL diets, but had 84 g/d lower ADG when fed LNE diets (P<.05). Wk 15 LEA and LEA change (31.10 vs. 27.35 cm<sup>2</sup>) were higher (P<.001) for CTL vs. LNE. Final 10<sup>th</sup> rib (8.8 vs. 6.7 mm) and last rib ultrasound BF change was higher (P<.05) for barrows vs. gilts, while LEA change was not different (P>.50). Carcass last rib BF (23.7 vs. 21.4 mm), and loin eye color (2.61 vs. 2.44) and firmness (2.94 vs. 2.75) were different (P<.04) for CTL and LNE, respectively. Carcass 10<sup>th</sup> rib (18.6 vs. 14.5 mm), last rib, and last lumbar BF, LEA (42.5 vs. 46.0 cm<sup>2</sup>), and predicted fat free lean (46.68 vs. 48.42%) were different (P<.05) between barrows and gilts, respectively. In a commercial setting with significant disease pressure, feeding a LNE diet did not maintain growth performance compared to a standard corn-SBM diet. However, ribbed carcass characteristics were similar between the LNE and CTL diets.

**Key Words:** Pigs, Reduced Crude Protein, Growth

**802 Finishing steer performance on diets with added vegetable oil.** G. M. Hill\*<sup>1</sup>, S. K. Duckett<sup>2</sup>, J. F. Baker<sup>1</sup>, E. Paven<sup>2</sup>, and B. G. Mullinix<sup>1</sup>, <sup>1</sup>*University of Georgia, Tifton*, <sup>2</sup>*University of Georgia, Athens.*

Effects of adding no vegetable oil (Control), low oil (LO, 4.7 % of DMI), or high oil (HO, 7% of DMI) on steer performance during the last 57 d of a 100-d steer finishing experiment were determined. Steers (n=40; 4 Polled Hereford, 3 Simmental X Angus, 33 Angus; initial BW 435.2 ± 27.8 kg) were randomly assigned to six pens and three treatments and implanted with Synovex-S<sup>®</sup> on d 1. Diets contained corn silage (CS; 41% DM, 8.6% CP) and a concentrate mixture (CM; 89.1% DM, 13.72% CP; 88.1% dry rolled corn, 10.0% soybean meal, 1.9% vitamin/mineral premix; Rumensin<sup>®</sup> at 33 mg/kg CM). A total mixed ration consisted of CM and CS was fed free-choice, with CS fed at 24.4% and 20.6% of dietary DM, respectively, during the preliminary period (B4O; d 1 to d 43), and when oil was fed (WO; d 43 to d 100). Steer rib fat (RF, cm) was measured using ultrasound on d 2 and d 100, and RF (Table) with initial BW as a covariate was not affected by treatments (P < 0.22). Steer least square means for ADG B4O with initial BW as a covariate were similar for treatments, but ADG WO and ADG 100 d were lower than Control (P < 0.08) using ADG B4O (mean 1.87 kg) as a covariate. The DMI decreased for HO during WO (P < 0.06) and for the 100-d experiment (P < 0.02), and DM/gain tended to increase for HO during WO (P < 0.08) and for the 100-d experiment. Feeding oil tended to reduce steer performance, with the greatest reductions occurring on the HO treatment.

Item	Control	LO	HO	SE	P
ADG, kg B4O	1.71	2.00	1.89	0.13	0.43
DMI, kg B4O	9.32	10.22	9.37	0.16	0.10
DM/gain B4O	5.50	5.12	5.49	0.34	0.61
RF, cm D 2	1.35	1.17	1.37	0.12	0.37
ADG, kg WO	1.95	1.82	1.12	0.19	0.08
DMI, kg WO	10.26	11.88	8.97	0.34	0.06
DM/gain WO	5.38	6.53	8.22	0.40	0.08
ADG, kg 100d	1.92	1.84	1.44	0.11	0.08
DMI, kg 100d	10.28	11.16	9.10	0.12	0.02
DM/gain 100 d	5.66	5.88	6.32	0.17	0.20
RF, cm 100d	3.86	3.22	3.15	0.29	0.23

**Key Words:** Steer, Gain, Oil

**803 Effect of oil supplementation to finishing cattle on carcass quality and subcutaneous fat composition.** E. Pavan\*<sup>1</sup>, S. Duckett<sup>1</sup>, and G. Hill<sup>2</sup>, <sup>1</sup>*The University of Georgia, Athens*, <sup>2</sup>*The University of Georgia, Tifton.*

Forty steers (4 Polled Hereford, 4 Simmental x Angus, 32 Angus) were used to study the effect of adding no vegetable oil (NO), low oil (LO, 4.7% of DMI), or high oil (HO, 7% of DMI) during the last 57 d of the finishing period on carcass traits and fatty acid (FA) composition.

The basal diet consisted of 20.6% corn silage and 79.4% concentrate mix (88.1% corn, 10% soybean meal). Carcass data was collected at 24 h postmortem and carcass value calculated based on current grid prices. Fatty acid composition was determined from subcutaneous (SC) fat by GLC. Carcass weight was higher for NO and LO than for HO (360, 362 and 334 kg, respectively; SE= 5.3; P=0.05). Neither kidney-pelvic-heart fat ( $2.7 \pm 0.1\%$  of carcass weight), nor SC fat thickness ( $1.42 \pm 0.07$  cm), intramuscular fat ( $587 \pm 17$  marbling score; 500= small), or ribeye area ( $79 \pm 1.6$  cm<sup>2</sup>) were affected by oil level. Both yield ( $3.5 \pm 0.1$ ) and quality grades ( $5.3 \pm 0.2$ ; 5= choice-) were similar between treatments. The product value per kg ( $3.61 \pm 0.04$ ), and the total carcass value ( $2795 \pm 48$ ) were not affected by level of oil. However, SC fatty acid composition (% of total FA) was changed by the level of oil supplied. While total monounsaturated FA decreased by oil supplementation (P<0.01), total trans-octadecanoic acids increased (P<0.01) and PUFA tended to increase (P=0.06) when oil was added. This was mainly due to reductions of oleic acid concentration and increases in the concentration of trans-10 octadecanoic, linoleic acid and total conjugated linoleic acid (CLA; P<0.01). The ratio of n6:n3 was increased by oil supplementation (NO: 4.4 and 5.5 for oil treatments; SE= 0.15; P<0.01). The t10c12 isomer of CLA increased linearly with the addition of oil (HO: 0.01, LO: 0.05 and HO: 0.07%; SE= 0.003; P<0.01); whereas c9t11 was higher in HO (0.59%), but lower in LO (0.39%; SE= 0.02; P<0.01). Supplementing various levels of vegetable oil to high concentrate diets did not alter carcass quality but increased linoleic, trans-10 octadecanoic, and conjugated linoleic acids in subcutaneous adipose tissue.

**Key Words:** Beef, Carcass Quality, Fatty acids

**804 Effects of supplement type on growth and pregnancy rate of yearling, Brahman-crossbred heifers.** J. D. Arthington<sup>\*1</sup>, G. C. Lamb<sup>2</sup>, and F. M. Pate<sup>1</sup>, <sup>1</sup>Range Cattle Research and Education Center, University of Florida, Ona, <sup>2</sup>North Central Experiment Station, University of Minnesota, Grand Rapids.

The effects of winter supplement type on growth and pregnancy rate of fall-born, yearling heifers was investigated over 2 consecutive yr. During both years, heifers were stratified by breed (Braford and Brangus-crossbred) and BW and randomly assigned to one of two treatments consisting of (1) wheat middling-based range cube, or (2) molasses-cottonseed meal slurry (n = 34 and 24 heifers/treatment for yr 1 and 2, respectively). Supplements were fed at rates to achieve a target of 1.47 and 0.34 kg of supplemental TDN and CP daily, respectively. Four limpograss (*Hemarthria altissima*) pastures were utilized each year (n = 2 pastures/treatment; 0.71 and 0.51 ha/heifer for yr 1 and 2, respectively). All heifers were allowed free-choice access to stargrass (*Cynodon nlemfuensis*) hay during periods of limited pasture forage availability. During a 70-d breeding season, heifers were combined by group and exposed to mature Angus bulls. Bulls were rotated among pastures each week. Individual heifer BW and hip height were collected at the start of supplementation and at the start and end of the breeding season. Pregnancy rate was determined by transrectal ultrasonography in late April of each year (minimum of 40 d after the end of breeding). There were no treatment x year, breed x treatment, or breed x year interactions for heifer ADG (P > 0.10). Supplement type did not affect heifer ADG (0.44 and 0.47 kg/d for molasses-slurry and range cubes, respectively). Heifers consuming molasses-slurry had a greater (P < 0.01) overall pregnancy rate compared to heifers consuming range cubes (76.3 vs 49.2% pregnant). Irrespective of treatment, Brangus-crossbred heifers had a greater pregnancy rate (P < 0.01) than Braford heifers (73.2 vs 46.8%). These data indicate that yearling heifers, supplemented with molasses-cottonseed meal slurry, may have increased pregnancy rates compared to heifers supplemented with a wheat middling-based range cube. This response appears to be independent of heifer ADG.

**Key Words:** Heifer, Molasses, Wheat Middling

**805 Effects of supplemental yeast fermentation product on early-weaned calf performance while grazing winter ryegrass summer stargrass pastures in Florida.** J. D. Arthington<sup>1</sup>, S. Galindo-Gonzalez<sup>\*1</sup>, J. M. B. Vendramini<sup>1,2</sup>, R. S. Kalmbacher<sup>1</sup>, P. Mislevy<sup>1</sup>, L. E. Sollenberger<sup>2</sup>, and I. Yoon<sup>3</sup>, <sup>1</sup>Range Cattle Research and Education Center, University of Florida, Ona, <sup>2</sup>Department of Agronomy, University of Florida, Gainesville, <sup>3</sup>Diamond V, Cedar Rapids, IA.

The objective of this study was to investigate the effectiveness of a supplemental yeast fermentation product (YFP) on the performance of early weaned calves grazing winter annual ryegrass (*Lolium multiflorum*, 112 d) followed by summer perennial stargrass (*Cynodon* spp., 112 d) in Florida. Ryegrass was seeded at a rate of 16.8 kg/ha in early November, and provided three applications of fertilizer (336 kg/ha; 16-4-16, plus micronutrients). Established stargrass pastures were provided an initial fertilizer application (March; 336 kg/ha, 0-10-20, plus micronutrients) followed by three applications of N (56 kg/ha) during the summer grazing period. Twenty-four calves were early weaned from primiparous cows ( $66 \pm 11$  d of age) and randomly allotted to one of eight groups (0.30 and 1.0 ha/calf for ryegrass and stargrass, respectively). All calves received supplemental feed (14 and 75% CP and TDN, respectively) at a rate of 1.0% BW daily. Two treatments were randomly allocated to calf groups (4 groups/treatment) consisting of, 1) commercial yeast fermentation product (YFP, 28 g/d; Diamond V Mills, Cedar Rapids, IA), or 2) a blended corn soybean meal Control. Average available forage did not differ among treatments (P > 0.40), but was greater (P < 0.01) for stargrass compared to ryegrass (0.92 and 6.11 tons DM/ha for ryegrass and stargrass, respectively; SEM = 0.09 and 0.22). Average forage DM digestibility did not differ among treatments (P > 0.26), but was lesser (P < 0.01) for stargrass compared to ryegrass (in vitro organic matter digestibility = 85.1 and 52.9% for ryegrass and stargrass, respectively; SEM = 1.15 and 1.45). Supplementation of YFP did not affect (P = 0.39) calf ADG during ryegrass grazing (0.88 and 0.83 kg/d for Control and YFP, respectively; SEM = 0.04), or during stargrass grazing (P = 0.12) (0.64 and 0.57 kg/d for Control and YFP, respectively; SEM = 0.03). These data suggest that under the grazing management systems used in this study, supplemental yeast fermentation product was ineffective for improving growth performance of grazing early-weaned calves.

**Key Words:** Calves, Weaning, Ryegrass

**806 Response of cow/calf pairs grazing fescue and individually-supplemented with gradient levels of FEB-200<sup>TM</sup>.** D. K. Aaron<sup>\*1</sup>, D. G. Ely<sup>1</sup>, J. Wyles<sup>1</sup>, and V. Akay<sup>2</sup>, <sup>1</sup>University of Kentucky, Lexington, <sup>2</sup>Alltech, Inc..

Angus x Beefmaster cow/calf pairs grazed endophyte-infected (> 90%) KY 31 tall fescue and were supplemented with 0, 10, 20, or 40 g·hd<sup>-1</sup>·d<sup>-1</sup> of FEB-200<sup>TM</sup> (modified glucomannan, Alltech, Inc., Nicholasville, KY) carried in 0.45 kg ground shelled corn beginning May 6. Cattle were managed in eight pastures (two pastures/supplement level) stocked with 10 to 16 cow/calf pairs until July 15 at which time 20 predesignated cow-calf pairs were allotted to individual 1.6-ha plots of equivalent pasture. Cows continued their respective supplement regimes from this date until calves were weaned October 28. Cow weight changes from May 6 to July 15 were -40, -26, 3, and -23 kg/hd (Quadratic; P < 0.01) and 56, 45, 34, and 67 kg/hd (Quadratic; P < 0.01) from July 15 to October 28 for the 0, 10, 20, and 40 g/d supplement levels. Total cow gains from May 6 to October 28 increased linearly (P < 0.05) as level of supplementation increased. No differences were found for calf gains from May 6 to July 15, but calves gained 87, 96, 107, and 106 kg/hd (Linear; P = 0.12) from July 15 to October 28. A similar linear trend was found for overall calf gains (138, 155, 171, and 172 kg/hd; NS). Tympanic temperatures, monitored at 30-min intervals from July 21 through 24, averaged 38.4, 38.4, 38.3, and 38.5 °C (Quadratic; P = 0.10). Average tympanic temperatures measured from August 22 through 25 were not significantly affected by supplement level. Absence of a greater supplementation effect on deep body temperature may be a result of cool ambient temperatures during the measurement periods (avg. 24 °C). Overall, these results show supplementation with 40 g·hd<sup>-1</sup>·d<sup>-1</sup> of FEB-200<sup>TM</sup> can increase production of cows and calves grazing endophyte-infected tall fescue.

**Key Words:** Fescue, Production, Cows

**807 Response of cows and calves to gradient levels of a supplemented modified glucomannan when grazing tall fescue.** D. G. Ely<sup>\*1</sup>, D. K. Aaron<sup>1</sup>, J. Wyles<sup>1</sup>, and V. Akay<sup>2</sup>, <sup>1</sup>University of Kentucky, Lexington, <sup>2</sup>Alltech, Inc..

Eighty-four Angus x Beefmaster cow/calf pairs were randomly allotted to eight, 10.5-ha, endophyte-infected (>90%) tall fescue pastures on May 6. The objective was to determine production responses to a daily supplement of 0, 10, 20, or 40g FEB-200(tm) (modified glucomannan, Alltech, Inc., Nicholasville, KY) carried in 0.45 kg/hd ground shelled corn (group-fed) until calves were weaned on October 28. Cows averaged 5.4 yr, 500 kg, and 5.6 body condition score (BCS) on May 6. Initially, calves averaged 109 kg at 74 d of age. Interim weights, BCS, and rectal temperatures of cows and weights of calves were taken at 35-d intervals. Cows in 0, 10, 20, and 40 g treatments lost 12, 16, 10, and 4 kg/hd (Linear,  $P < 0.10$ ), respectively, from May 6 to July 15, but gained 44, 36, 49, and 52 kg/hd from July 15 to October 28. Total gain (May 6 to October 28) increased linearly ( $P < 0.01$ ) as level of supplementation increased. Period BCS changes were nonsignificant, but overall BCS (May 6 to October 28) increased linearly ( $P = 0.06$ ) as level of FEB increased. Rectal temperature change from May 6 to October 28 was greatest for 0 and least for 40 g FEBhd<sup>-1</sup>d<sup>-1</sup> (Linear,  $P < 0.01$ ). Calf gains were 63, 56, 57, and 65 (Quadratic,  $P < 0.10$ ) from May 6 to July 15 and 98, 91, 92, and 99 kg/hd (NS) from July 15 to October 28. Overall calf gain response was quadratic ( $P = 0.07$ ). Tympanic temperatures, monitored at 30-min intervals from July 21 through 24 in two pre-designated cows per pasture, were 38.5, 38.2, 38.6, and 38.4 °C (Cubic,  $P = 0.08$ ) for 0, 10, 20, and 40 g FEB. Temperatures of the same cows, measured from August 22 through 25, were 38.7, 38.2, 38.3, and 38.4 °C (Quadratic,  $P < 0.05$ ). These results demonstrate weight gains of cow/calf pairs grazing endophyte-infected fescue can be increased by supplementing with 40 g FEBhd<sup>-1</sup>d<sup>-1</sup> even though body temperatures are not decreased.

**Key Words:** Fescue, Production, Cows

**808 Birth season, preweaning stocking rates and sex effects on birth-to-harvest growth and carcass composition of Simmental-sired calves.** F. M. Rouquette<sup>\*1</sup>, G. Estefan<sup>2</sup>, J. W. Turner<sup>2</sup>, and D. P. Hutcheson<sup>3</sup>, <sup>1</sup>Texas Agricultural Experiment Station, Overton, <sup>2</sup>Texas A&M University, College Station, <sup>3</sup>Texas Agricultural Experiment Station, Amarillo.

Growth and carcass data were collected during a 5-year period from 375 fall-born and 160 winter-born  $\frac{1}{2}$  Simmental x Hereford x Brahman calves reared at TAMU-Overton to quantify effects of birth season (fall vs. winter), preweaning stocking rates, sex of calf, backgrounding method and feedlot performance on calf performance from birth-to-harvest and carcass characteristics. Calves were grazed at 3 levels of forage mass (stocking rates, SR) preweaning and then sent directly to feedlot or backgrounded on either bermudagrass or rye-ryegrass pasture before entering the feedlot. All calves were fed in Pinpointers at TAMU-Amarillo prior to being harvested at a commercial packing facility. Fall-born calves grazed on low SR weaned heaviest, 305 kg, and winter-born calves grazed on high SR weaned lightest at 216 kg ( $P < .05$ ). Differences in weaning weights between steers and heifers were greater

for fall-born (291 vs. 278 kg) than for winter-born calves (251 vs. 244 kg). Calves grazed at high SR pre-weaning exhibited compensatory gains during the stocker, backgrounding phase ( $P < .01$ ); however feedlot ADG, gain:feed, average daily intake, and final weight of calves were not affected by preweaning SR. At termination of the backgrounding phase, winter-born calves entered the feedlot heavier (424 vs. 334 kg) and older (16 vs. 12 mos) than fall-born calves ( $P < .01$ ). Cattle were harvested at a relatively uniform, visual backfat and thus, no major differences in carcass traits were detected due to pre-or post-weaning management. When finished to a visual backfat of  $>.76$  and  $<1.27$  cm, 65% of cattle graded USDA Select with an average USDA Yield Grade of 1.9. This sire-dam combination resulted in good growth rate of calves with high cutability and lean carcasses.

**Key Words:** Pasture, Stocking Rate, Cow-Calf

**809 Performance of early-weaned calves grazing Tifton 85 bermudagrass and receiving three levels of supplemental concentrate.** J. M. B. Vendramini<sup>\*1,2</sup>, L. E. Sollenberger<sup>1</sup>, J. D. Arthington<sup>2</sup>, J. B. Dubeux, Jr.<sup>1</sup>, and S. M. Interrante<sup>1</sup>, <sup>1</sup>Department of Agronomy, University of Florida, Gainesville, <sup>2</sup>Range Cattle Research and Education Center, University of Florida, Ona.

Early weaning of calves may increase pregnancy rates of primiparous beef cows, however, there is a relatively little information on nutritional management of the early-weaned calf. The objective of this study was to evaluate the performance of early-weaned calves grazing Tifton 85 bermudagrass (*Cynodon* sp.) pastures and receiving three levels of concentrate. Calves were weaned on 6 Jan. 2003 at an average age of 84 d. They grazed annual ryegrass (*Lolium multiflorum*)-rye (*Secale cereale*) mixtures pastures until 14 May 2003, when they were moved to experimental pastures where they remained until 13 Aug. 2003. Three levels of supplementation (1.0, 1.5, and 2.0% BW; 14 and 72% CP and TDN, respectively) were evaluated in a completely randomized design. Experimental units were 0.15-ha pastures, each divided into three paddocks for rotational stocking (7-d grazing and 14-d rest period). Two calves were assigned as testers to each pasture, and additional animals were used to maintain a similar herbage allowance. Every 21 d, calves were weighed and grazing time during daylight was recorded. Herbage mass was measured every 21 d using the disk plate meter methodology. Hand-plucked samples were collected every 21 days and were analyzed for CP and in vitro OM digestibility. Calf ADG (0.54-0.72 kg), stocking rate (10.6-14.2 AU/ha) (AU = 500kg LW), and gain per hectare (1100-1780 kg) increased linearly ( $P < 0.10$ ) as supplementation rate increased. There was no variation ( $P > 0.10$ ) in forage CP and in vitro OM digestibility among treatments but there was a linear decrease ( $P < 0.01$ ) in herbage allowance as supplementation rate increased. Average grazing time decreased linearly ( $P < 0.05$ ) from 274 to 206 min/d as supplementation rate increased from 1.0 to 2.0%. Based on our initial studies, increasing the amount of supplement fed to early-weaned calves increases animal performance and pasture stocking rate, but the economics of its use depend upon supplement cost and calf prices.

**Key Words:** Calves, Tifton 85, Supplement

## PSA-Nutrition: Amino Acids

**810 Comparison of methionine sources based on an equimolar trial design with broiler chickens in Brazil.** S. Vieira<sup>1</sup>, D. Hoehler<sup>\*2</sup>, A. Lemme<sup>2</sup>, A. Kessler<sup>1</sup>, S. Pophal<sup>1</sup>, A. Ebert<sup>1</sup>, and G. Eichner<sup>1</sup>, <sup>1</sup>Federal University of Rio Grande del Sul, Brazil, <sup>2</sup>Degussa Corporation, Kennesaw, GA.

Methionine is the first limiting amino acid in commercial poultry diets and is commonly supplemented as DL-methionine (DL-Met, 99%) or liquid DL-methionine hydroxy analog-free acid (MHA-FA, containing 88% of active substance). Some controversy still exists about the proper trial design and statistics which should be applied in trials comparing the two sources. In the present trial, 2730 male day-old Ross 308 broilers were fed a commercial starter diet until day 6. From day 7 to 40, chicks

were assigned to 13 dietary treatments housed in floor pens receiving corn/soybean-based diets supplemented with DL-Met (0.030 / 0.06 / 0.10 / 0.14 / 0.19 / 0.24%) or equimolar levels of liquid MHA-FA (0.034 / 0.068 / 0.114 / 0.159 / 0.216 / 0.273%) in the starter (day 7-21) and grower (day 22-40) period. Basal diets were formulated to be deficient in Met but adequate in all other nutrients and energy. Each dietary treatment consisted of 6 replicates with 35 birds per pen. Broilers performed well, maximum responses of weight gain, feed conversion, and breast meat yield (% of carcass) were significantly improved by about 10% to maximum responses of 2417 g, 1.613, and 28.5%, respectively. Responses showed the Met deficiency of the basal diets. Exponential regression revealed a relative effectiveness on equimolar basis of liquid MHA-FA for weight gain, feed conversion, and breast meat yield from