

BEEF SPECIES: COW-CALF

0126 Changes in body composition during winter gestation of mature beef cows grazing different herbage allowances of native pastures.

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The aim of this study was to evaluate the effect of controlling the intensity of grazing native pasture (*Campos biome*), through control of herbage allowance (HA), on body composition (water, protein, and fat) of beef cows of different genotype during the winter gestation period. Mature beef cows ($n = 32$) were used in a complete randomized block design with a factorial arrangement of HA (2.5 vs. 4 kg DM/d; LO vs. HI) of native pastures (52% DM, 8.4% CP, 39.7% ADF) and cow genotype (CG; Angus-Hereford vs. F1 reciprocal crosses; PU vs. CR). The experiment was conducted during 3 yr and at the end of the third year at 150, 210, and 240 ± 10 d of gestation (during winter) and 190 ± 10 d postpartum (fall). Body composition was estimated using the urea dilution technique. In addition, at 192 ± 10 d postpartum, cows were slaughtered and weight and samples of all tissues and organs were collected for chemical composition analyses. Multiple regressions, using urea space volume and other animal characteristics as predictors, were adjusted by the regression procedure (SAS Institute Inc.), using data obtained at slaughter to estimate body components (kg) during the winter gestation period. Data of body composition during gestation were assessed using a mixed model repeated measures analysis. During the winter gestation period, maternal live weight (LW) and BCS tended ($P = 0.09$) or were greater ($P = 0.02$) in HI than LO cows and in CR than PU cows. Maternal LW and BCS decreased ($P < 0.05$) 18 ± 5 kg and 0.5 ± 0.1 unit from 150 to 210 d of gestation. Total body water and fat and protein mass were greater ($P \leq 0.05$) in CR than PU cows. Body fat and protein mass tended ($P \leq 0.10$) to be greater in HI than LO cows. Total body water and protein mass decreased ($P < 0.01$) from 150 to 210 d of gestation. Body water was affected ($P = 0.03$) and body fat tended ($P = 0.07$) to be affected by the interaction between CG and days of gestation, as they were greater ($P < 0.05$) in CR than PU cows only at 150 d of gestation and decreased from 150 to 210 d of gestation only in the former ones. Body composition during winter gestation depended on both HA and CG. Changes in the composition of body weight lost or retained would influence energy maintenance requirements and could provide metabolic advantages under periods of negative energy balance.

Key Words: cattle, fat, protein, rangelands

0127 Parturition supplement level and age of weaning: I. Effects on parturition and postpartum beef cow performance and calf performance through weaning.

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Objectives were to determine the effects of parturition supplement level and age of weaning on BW, BCS, milk production, reproduction, and calf performance up to weaning in a fall-calving system over 2 yr. Mature multiparous Angus × Simmental cows (yr 1, $n = 326$; yr 2, $n = 383$) were used in a split-plot design that included 3 supplement levels: no supplement (NS), 2.16 kg/d per animal (LS), or 8.61 kg/d per animal (HS). (The supplement = 70% dried distillers grains plus solubles and 30% soybean hulls; fed 103 ± 11 d parturition to 3 ± 11 d postpartum.) The 2 ages of weaning were: early at 80 ± 11 d of age (EW) and normal at 188 ± 11 d of age (NW). Cow BW for cows fed HS was greater ($P \leq 0.04$) at pre-calving (55 ± 11 d parturition), post-calving (27 ± 11 d postpartum), and post-breeding (81 d post-breeding), compared with NS and LS cows. Cows fed HS had increased ($P \leq 0.02$) pre-calving, post-calving, and post-breeding BCS, relative to cows fed NS, with no effects ($P \geq 0.60$) on calf birth weight or calving ease. Parturition supplementation tended ($P = 0.09$) to improve AI conception. Early weaning resulted in increased ($P \leq 0.05$) AI conception and post-breeding BW and BCS, relative to normal weaning. A significant supplement level × weaning interaction existed ($P = 0.03$) for overall pregnancy. For cows fed HS, EW improved ($P = 0.02$) overall pregnancy; however, weaning age did not affect ($P \geq 0.10$) overall pregnancy for NS and LS cows. At time of early weaning, BW increased ($P = 0.02$) for steers from LS cows compared with steers from NS cows. Steer BW at time of normal weaning and ADG between early and normal weaning was greater ($P < 0.01$) for EW steers, compared with NW steers. A year × weaning interaction ($P < 0.01$) occurred for ultrasound marbling score at time of normal weaning. In yr 1, marbling decreased ($P = 0.04$) in EW steers compared with NW steers; however, in yr 2, marbling increased ($P < 0.01$) in EW steers compared with NW steers. These data suggest parturition supplementation and early weaning improved cow BW, BCS, and reproduction. There were minimal effects of dam parturition supplement on calf performance up to weaning. Early weaning improved calf growth but had inconsistent effects across years on ultrasound measurements.

Key Words: beef cattle, early weaning, parturition supplementation

0128 Prepartum supplement level and age of weaning: II. Effects of developmental programming on performance and carcass composition of steer progeny. L. M. Shoup*, D. Gonzalez-Peña Fundora, F. A. Ireland, S. L. Rodriguez Zas, T. L. Felix, and D. W. Shike, *University of Illinois, Urbana.*

Objectives were to determine the effects of prepartum cow supplement level and age of weaning on growth performance, feed efficiency, glucose and insulin concentrations, and carcass characteristics of steers (yr 1, $n = 134$; yr 2, $n = 147$). Mature multiparous Angus \times Simmental cows were used in a split-plot design that included 3 supplement levels: no supplement (NS), 2.16 kg/d per animal (LS), or 8.61 kg/d per animal (HS). (The supplement = 70% dried distillers grains plus solubles and 30% soybean hulls; fed 103 \pm 11 d prepartum to 3 \pm 11 d postpartum.) The 2 ages of weaning were: early at 80 \pm 11 d of age (EW) and normal at 188 \pm 11 d of age (NW). Dam prepartum supplement level did not affect ($P \geq 0.15$) growth performance, respiratory health, or carcass traits, with the exception of percentage \geq Average Choice. A greater ($P = 0.03$) percentage of steers from cows fed HS graded \geq Average Choice when compared with steers from cows fed NS. Early weaning increased ($P < 0.01$) initial BW and final BW, and reduced ($P < 0.01$) G:F compared with normal weaning. A year \times weaning interaction ($P = 0.02$) occurred for ADG; early weaning resulted in reduced ($P < 0.01$) ADG compared with normal weaning in yr 2. Although EW steers were younger ($P < 0.01$) at harvest, they had greater ($P \leq 0.02$) HCW, yield grade, backfat, and marbling scores, compared with NW steers. A year \times weaning interaction ($P \leq 0.04$) occurred for quality grade distribution; carcasses from EW steers had increased ($P < 0.01$) proportions \geq Low Choice and \geq Average Choice than carcasses from NW in yr 2. The EW steers had greater ($P \leq 0.04$) occurrence of single medical treatments and death due to respiratory disease than NW steers. A year \times weaning interaction ($P = 0.03$) occurred for insulin concentration and insulin:glucose; EW steers had greater ($P < 0.01$) insulin concentrations and insulin:glucose than NW steers in yr 1. These data suggest overfeeding supplement to the dam did not affect feedlot performance but did improve steer quality grades. Although EW steers had increased respiratory illness, they were younger at harvest and had greater HCW and marbling scores, compared with NW steers. The absence of supplement level \times weaning interactions indicates that these effects may have an additive effect on developmental programming.

Key Words: developmental programming, early weaning, maternal nutrition

0129 Efficiency and performance of primiparous Angus cows raised in a range system. J. S. Lemes*, C. C. Brauner, R. Z. Vaz, and M. A. Pimentel, *Universidade Federal de Pelotas, Brazil.*

The aim of this study was to evaluate the efficiency and performance from calving to weaning of primiparous beef cows in 3 different biotypes in a range system. Forty-two primiparous Angus cows (3 yr of age) with BCS 3 (on a 1 to 5 scale) were classified into 3 groups according to body weight at calving: heavy (431 kg on average, ranging from 405 to 485 kg); medium (388 kg on average, ranging from 373 to 403 kg); and light (348 kg on average, ranging from 293 to 369 kg). Milk production was estimated by weight-suckle-weight method. Calf production efficiency was determined by the adjustment of calf weaning weight (CWW) and pregnancy rate (PR) of cows, resulting in calf production index (CPI) = kg of weaning calves per cow (CWW \times PR/100). Data were analyzed using GLM procedures in SAS software. Total weight gained from calving to weaning was affected ($P < 0.05$) by biotype. Once, light and medium cows had 51 and 25 kg gain, respectively, whereas the heavy group had a 3 kg loss during the same period. Calves from heavy and medium groups were heavier ($P < 0.05$) at weaning as compared with light cow calves, being 166.5 \pm 4.0; 166.0 \pm 3.7, and 151.9 \pm 4.3 kg, respectively. The CPI evaluation demonstrated that light and medium cow groups were able to produce more ($P < 0.05$) calf kilograms (16.0 \pm 0.4; 15.1 \pm 0.4 kg, respectively) than the heavy group (14.0 \pm 0.4 kg). There was no difference ($P > 0.05$) in calf production efficiency among groups, being 63.4% \pm 1.6; 62.2% \pm 1.4; and 59.6% \pm 1.5, respectively, for light, medium, and heavy cows. However, light cows had lower ($P < 0.05$) milk production and, as a result, lighter ($P < 0.05$) calves at weaning (151.9 \pm 4.3 kg) than medium and heavy groups, 166.0 \pm 3.7, 166.5 \pm 4.0 kg, respectively. In conclusion, cows in small and moderate biotypes are more efficient, as compared with larger frames in graze production systems.

Key Words: milk production, reproduction, weaning weight

0130 Effect of an injectable trace mineral on reproductive performance of beef cows grazing irrigated pasture. C. J. Brasche*¹, J. B. Hall², and M. E. Drewnoski¹, ¹*University of Idaho, Moscow*, ²*University of Idaho, Carmen.*

Injectable trace minerals can be used to increase trace mineral status of cows and may result in improved reproductive performance. Beef cows ($n = 174$) were blocked by age and expected calving date, and randomly assigned to treatment in a 2 \times 2 factorial of either an injectable trace mineral containing copper, manganese, selenium, and zinc (TMI), or no injection (CON), and timed AI at either 72 or 80 h post controlled-internal-drug-release device (CIDR) removal.

Thirty-8 d before the start of the calving season and again 23 d before AI, cows in the TMI group were injected with Multimin 90 (0.68 mL/68 kg of BW). Liver biopsies were taken before pre-calving injection, before pre-breeding injection, and again 15 d after pre-breeding injection to assess mineral status. All cows were estrous synchronized, using a 5-d Co-Synch plus CIDR protocol, in which cows were given an injection of GnRH and inserted with a CIDR 8 d before AI. The CIDR was removed 5 d later and a shot of PG was given, followed by a second PG injection 5.6 h later. Cows were given an injection of GnRH and inseminated either 72 or 80 h after CIDR removal with gender-selected semen. Cows were exposed to fertile bulls for natural service breeding 17 d after AI and remained with the bulls for 45 d. Pregnancy was determined by rectal palpation at 105 d post AI. For the responses measured, there was no interaction ($P \geq 0.19$) between TMI and AI timing; therefore, only the effect of injection will be reported. At 15 d post pre-breeding injection, TMI had no effect on liver concentration of manganese ($P = 0.26$), zinc ($P = 0.22$), or copper ($P = 0.11$); however, TMI cows had elevated concentrations of selenium ($P = 0.01$) when compared with CON. Liver concentrations of the trace minerals measured in both treatments were considered adequate at all time points. There was no difference between CON and TMI in the number of days post calving ($P = 0.21$) or BCS ($P = 0.95$) at AI. Trace mineral injection did not affect reproductive performance of cows as both conception to AI ($P = 0.41$) and overall pregnancy rate did not differ ($P = 0.19$) due to TMI treatment. These data suggest that the use of an injectable trace mineral may not improve reproductive performance of cows that have adequate trace mineral status before injection.

Key Words: cows, injectable trace mineral, reproduction

0131 Effect of injectable trace mineral supplementation in yearling bulls on serum and semen trace mineral levels and reproductive parameters.

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We hypothesized that administration of an injectable trace mineral would cause a short-term increase in circulating trace mineral concentrations but not alter semen quality nor ability to pass a breeding soundness exam (BSE). Sixteen Hereford, 52 Angus, and 22 Simmental bulls were blocked by breed and stratified by age (277 ± 20 d) and weight (377 ± 42 kg), and administered subcutaneously, either a commercially available trace mineral supplement (TM; $n = 45$; 15 mg Cu/mL, 60 mg Zn/mL, 10 mg Mn/mL, and 5 mg Se/mL; Multimin 90, Multimin USA, Inc., Ft. Collins, CO) or sterilized saline (Control; $n = 45$) at 1 mL/45 kg BW. Bulls were maintained in a drylot and fed a grower ration that included trace minerals at NRC-recommended levels. Blood was collected via jugular venipuncture immediately before treatment (h 0) and at 8 and 24 h. The

BW and scrotal circumferences were measured on the day of treatment (d 0) and d 20, 42, 59, and 91. Semen was collected via electroejaculation on d 42 and 91, and a BSE conducted on d 91. Serum samples from h 0, 8, and 24, and semen samples d 42 and 91, on a subset of 26 bulls per group, were analyzed using inductively coupled mass spectroscopy for concentration of Cu, Zn, Mn, and Se. Data were analyzed using PROC MIXED, PROC GLIMMIX, and PROC FREQ in SAS, with fixed effects of treatment, breed, and time of sampling, and interactions with bull as experimental unit. The TM and Control bulls had similar scrotal circumferences and BW throughout the trial ($P \geq 0.10$). Time and treatment interacted ($P < 0.01$) to affect serum trace mineral concentrations with TM bulls having greater ($P < 0.01$) trace mineral concentrations at 8 h post-treatment than Control bulls. Semen trace mineral concentrations on d 42 and 91 were similar ($P \geq 0.05$) between TM and Control bulls. Sperm motility, percent normal morphology, concentration, and percentage proximal droplets improved ($P < 0.05$) from d 42 to 91, but did not differ between TM and Control ($P \geq 0.05$). A similar ($P \geq 0.05$) percentage of TM (51%) and Control (49%) bulls passed their BSE 91 d post-treatment. A supplemental trace mineral injection is successful at raising circulating trace mineral levels but does not alter semen trace mineral levels nor improve semen quality.

Key Words: bull, semen, trace mineral

0132 Effect of an injection of a fat-soluble vitamin mix (E, A, and D) to newborn beef calves on markers of cell oxidative damage and calf performance.

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Early calf death is 1 of the major contributors to economic loss. Muscle lesions not related to white muscle disease may contribute to reduced vigor of calves suffering from weak calf syndrome. The objective of the current study was to determine the effects of a vitamin E, A and D injection on calves exposed to cold temperature. Thirty-two newborn calves from spring calving multiparous Charolais cows (age 3 to 10 yr) were blocked within gender by date of birth and assigned to treatment in a 2×2 factorial design. At birth, calves were administered an injection of 4 mL of saline (SAL) or 4 mL VITAL E-A+D (EAD; 300 IU/mL vitamin E as D- α -tocopherol, 100,000 IU/mL vitamin A as retinyl-palmitate, and 10,000 IU/mL vitamin D as cholecalciferol). At 5 h of age, calves were placed in a chamber at 0 or 25°C for 90 min and rectal temperature was recorded every 10 min. At 24 h of age, an injection of Bo-Se (2 mg of selenium as sodium selenite and 136 IU of Vitamin E as D- α -tocopheryl acetate) was administered to all calves. Plasma samples were collected at birth, 5, 6.5, 24, and 48 h, and 45 d. Plasma creatine kinase and 8-isoprostane concentrations at 24 h were not affected ($P > 0.48$) by injection or environmental treatment, showing no effect of treatment on markers of cell damage. Regardless of temperature treatment,

calves receiving the EAD had greater rectal temperatures ($P = 0.04$) than those calves receiving SAL (38.85 vs. 38.75 \pm 0.03°C, respectively) at birth. Calves subjected to cold temperature had greater ($P = 0.05$) rectal temperatures than calves subjected to thermo-neutral conditions. Calves receiving EAD had lower ($P = 0.02$) ADG during the first 5.5 wk of life than those receiving SAL (0.93 vs. 1.14 \pm 0.06 kg/d). However, 205-d adjusted weaning weights were not different ($P = 0.58$) between injection treatments (254 vs. 260 \pm 8.2 kg for EAD and SAL, respectively). Calves receiving EAD had greater rectal temperatures and lower ADG than calves receiving SAL. There was no detectable difference in markers of cell damage due to treatments. Calves receiving EAD may have had increased metabolic rates, which could have contributed to the increase in rectal temperature and decreased ADG. Injection of EAD at birth may be beneficial to calf health in terms of body heat production.

Key Words: calf, injectable vitamin

0133 Relationships between maintenance energy EPD and performance measures of progeny from Red Angus sires divergent for maintenance energy EPD.

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The Red Angus Association of America (RAAA) developed the maintenance energy (ME_M) EPD as an estimator of maintenance requirements, in an attempt to lower cow maintenance costs within the breeding herd. However, no studies have evaluated the selection and incorporation of ME_M EPD into breeding programs, and the resulting effects on progeny postweaning performance. Conducted as part of a larger study, postweaning performance measures were recorded in 3 birth year contemporary groups from the progeny ($n = 222$) of sires ($n = 12$) divergent for ME_M EPD. The objective was to evaluate relationships between various phenotypic performance measurements and EPD of progeny and sires. Sires were partitioned into high and low ME_M EPD groups, based on the RAAA breed average for ME_M EPD. Sire ME_M EPD was found to be positively correlated ($P < 0.05$) with progeny phenotypic performance measurements, including ADG ($r = 0.32$), DMI ($r = 0.21$), and metabolic BW (MBW; $r = 0.22$). Sire ME_M EPD was negatively correlated with progeny feed-to-gain ratio ($r = -0.21$). In addition, sire ME_M EPD was also positively correlated ($P < 0.05$) with progeny ADG EPD ($r = 0.43$) and MBW EPD ($r = 0.24$). No association ($P > 0.05$) was observed between sire ME_M EPD and progeny DMI EPD.

Therefore, our data analyses indicate that sire ME_M EPD is associated with growth and BW in Red Angus-sired cattle.

Key Words: maintenance energy, performance, Red Angus

0134 Effects of breeding system of origin (natural service or AI) on growth, attainment of puberty, and pregnancy rates in crossbred beef heifers.

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The objective of this study was to compare growth, attainment of puberty, and pregnancy rates in beef heifers, originating from 2 different breeding systems. One hundred ninety crossbred Angus heifers were born to dams that were exposed to 1 of 2 treatments: 1) natural service (NS, cows were only exposed to herd bulls for the duration of the breeding season), or 2) fixed-time AI (TAI, cows exposed to ovulation synchronization and AI followed by natural service bulls). Body weights were taken on d 0 and 189, with a mean age of 209 \pm 1.2 d at the initiation of the trial (d 0). Blood samples were collected at d 0, 10, 112, 122, 219, and 229, and progesterone concentrations were used to determine the proportion of females that had attained puberty during the development period. On d 229, synchronization of ovulation was initiated: 7-d CO-Synch + controlled-internal-drug-release device (CIDR) and all heifers were inseminated with a single TAI at 54 h after CIDR removal. Clean-up bulls were placed in breeding pastures 10 d after AI and remained with heifers until 56 d after AI. Pregnancy rates were determined via transrectal ultrasonography on d 27 and 91 after AI. Body weight at initiation of the experiment was greater ($P = 0.01$) for heifers in the TAI treatment (239.9 \pm 2.8 kg) compared with heifers in the NS treatment (229.6 \pm 2.8 kg). However, no differences ($P \geq 0.14$) between treatments were observed in weights of heifers taken at the time of pasture turnout (d 189; 345.1 \pm 3.4 and 338.0 \pm 3.4 kg for TAI and NS, respectively) or ADG (0.56 \pm 0.01 and 0.58 \pm 0.01 kg/d for AI and NS, respectively). At the initiation of the experiment, a greater proportion of the NS heifers (11.6%) tended ($P = 0.06$) to be cyclic compared with TAI heifers (4.2%). However, no differences ($P \geq 0.40$) were observed between treatments in the proportion of heifers cyclic at the interim evaluation (d 112 and 122, 27.5% cyclic) or at the initiation of the breeding season (d 219 and 229, 85.5% cyclic). No differences ($P \geq 0.81$) were present between treatments in either pregnancy rates to AI (32.9%) or season-ending pregnancy rates (91.1%). Breeding system of origin did not influence growth rate during the development phase, attainment of puberty, or pregnancy rates in crossbred beef heifers.

Key Words: artificial insemination, heifer development, natural service

0135 Simulation and economic analysis of beef cattle natural service and induced twinning via embryo transfer, following AI breeding and 2 calf management systems. D. G. Aherin*, P. J. Ebert, J. R. Shearer, R. L. Weaver, J. M. Bormann, D. W. Moser, and M. D. MacNeil, *Kansas State University, Manhattan.*

The objective of this project was to compare operation profitability, through simulation, of alternate breeding and calf management strategies. Mating systems considered included: 1) 60-d natural bull service and 2) fixed-timed AI program with implanted embryos 7 d following AI to create twins. A 42-d natural service followed embryo transfer (ET). The effect of a preweaning calf nutrient supplementation system that excludes cows (creep feeding) was also of interest. The combination of mating system and calf nutritional management system yielded different management systems for comparison, including: 1) induced twin calving system with calf creep feeding, 2) induced twin calving system without calf creep feeding, 3) natural service (single calving) system with calf creep feeding, and 4) natural service (single calving) system without calf creep feeding. Microsoft Excel was used to develop a spreadsheet that processed input cost and revenue projections, and predicted profitability of each management system. Equations to predict breeding and calf performance allowed entry of different parameters for fertility rates, input costs, and price expectations, which vary across different cattle operations, management, and economic environments. Assumptions incorporated into the simulation included: 1) all natural service cows have single births; 2) no change in stocking rate/pasture usage; 3) simulation in second year of twin production; 4) no heifers involved; 5) if a calf dies, it died the day it was born; and 6) no difference in genetic potential between AI/ET calves and natural service calves. Sensitivity analysis of the simulation model suggests that variation in labor, creep feeding, and reproductive costs between twin and single calving had the greatest impact on profitability. Creep feeding had a substantially greater positive effect on the performance of twin calves compared with single-born calves; thus creating a much greater impact on overall profitability of that management system. Through simulation using common production input costs, creep feed at \$220/ton, it was found that management system 1 (induced twinning with creep feed) was the most profitable, if reproductive costs could be held to < \$170 per head.

Key Words: beef cattle, management systems, twinning

0136 The indirect effects of horn flies and sire breed on calf preweaning and postweaning performance traits. A. R. Mays^{*1}, M. A. Brown², and C. F. Rosenkrans³, ¹*Department of Animal Science, University of Arkansas Division of Agriculture, Fayetteville,* ²*ARS-USDA, Grazinglands Research Laboratory, El Reno, OK,* ³*University of Arkansas, Fayetteville.*

Horn flies negatively impact weaning weight and ADG of beef cattle, but the indirect effect of horn flies on preweaning and postweaning performance traits is less understood. Therefore, the objective of this study was to assess the indirect effects of horn flies on calf performance traits. Angus-sired calves ($n = 51$) from crossbred cows ($n = 53$) from Brangus dams sired by either Bonsmara (BONS; $n = 7$), Brangus (BRAN; $n = 13$), Charolais (CHAR; $n = 8$), Gelbvieh (GELV; $n = 5$), Hereford (HERF; $n = 12$), or Romosinuano (ROMO; $n = 8$) bulls were evaluated. Total horn fly counts were recorded on individual cows while in pasture from 0700 to 0900 h, beginning in May and ending in October. Horn fly counts were transformed to natural log horn fly counts before data analysis. Data for preweaning ADG, postweaning ADG, 365-d adjusted yearling weight (YWT), and birth to yearling ADG were analyzed by mixed model least squares. The linear model included sire breed, calf gender, and sire breed \times calf gender. Effects of horn fly count on these traits were estimated by including a linear covariate of log horn fly count and log horn fly count \times sire breed. Preweaning ADG was affected ($P < 0.002$) by sire breed of dam. Romosinuano, BONS, and CHAR calves had greater preweaning ADG (1.00 ± 0.05 , 0.99 ± 0.04 , 0.99 ± 0.04 kg/d; respectively), compared with BRAN and HERF calves (0.88 ± 0.03 and 0.81 ± 0.03 kg/d), with GELV calves intermediate to ROMO, BONS, CHAR, and BRAN (0.98 ± 0.05 kg/day). Preweaning ADG was dependent on an interaction of cow sire breed and log horn fly count ($P < 0.10$), with results indicating preweaning ADG being reduced 0.19 kg/d per unit increase in log horn fly count in BONS calves ($P < 0.05$). A 1 unit increase in log horn fly count resulted in 0.07 kg/d ($P < 0.10$) increase in postweaning ADG, 19.52 kg increase ($P < 0.10$) in 365-d adjusted YWT, and 0.05 kg/d ($P < 0.02$) increase in birth to yearling ADG. Horn flies indirectly had a negative impact on preweaning performance of calves from certain cow sire breeds. However, a positive indirect effect on postweaning calf performance was documented in this study. Postweaning management and compensatory gains may explain the results reported, but continued research of indirect effects of horn flies on calf performance traits is needed.

Key Words: average daily gain, calf performance, horn fly