

had 8.15 g Hb/dL, indicating anemic status. Changes in Hb contents for pigs with various Fe intakes from two Fe sources were modeled as:  $Hb \text{ (g/dL)} = 7.6509 + 0.0756 \times A + 0.0002 \times B$  ( $P < 0.01$ ) and changes in WG of pigs were modeled as:  $WG \text{ (kg)} = 3.417 + 0.113 \times A + 0.092 \times B$  ( $P < 0.01$ ), where A and B are average daily Fe intakes (mg/d) from humate and FeSO<sub>4</sub>, respectively. Increases in Hb content were different ( $P < 0.05$ ) whereas increases in WG were not different ( $P = 0.415$ ) between Fe sources. Relative bioavailability of Fe in humate to FeSO<sub>4</sub> was 0.3% (0.0002/0.0756) based on Hb content. However, increases in WG as Fe increased did not differ between Fe sources. Collectively, this study suggests that humate is not an effective source of bioavailable Fe for pigs. Positive effects of humate on WG were likely not due to Fe in humate but to other components of humate which warrants further investigation.

**Key Words:** Bioavailability, Humate, Pigs

**119 The effect of initial market grade on linear measurements and carcass characteristics of feeder goats.** J. Robinette\*, R. Miculinich, B. Galbreath, T. Platt, and T. Wistuba, *Morehead State University, Morehead, KY.*

Several studies have indicated that meat goats can be economically produced in the United States and that market demand for goat meat exceeds current supplies. However, live goat markets continue to be difficult to quantify and qualify. Therefore, the purpose of this project was to determine the impact of initial market grade on linear and carcass characteristics of Boer buck kids. Forty five kids ( $20.9 \pm 2.9$  kg) were purchased at local auction on January 14, 2007, processed upon arrival and allowed *ad libitum* access to feed and water during a 14 d adaptation phase. Goats were then visually evaluated and classified into one of three market grades. Every two weeks the following measurements were taken: horn length, horn circumference, horn width, heart girth, chest width, forearm circumference, cannon bone circumference, cannon bone length, rack length, loin length, rump length, hip width, pin width and weight. Upon completion of the 45 d feeding period the goats were harvested and carcass measurements were taken. The analysis of variance was generated utilizing PROC MIXED (SAS Inst., Inc. Cary, NC), the model included market grade. Initial weights were increased ( $P < 0.05$ ) for goats in market grades 1 and 2 compared to goats in market grade 3 (23.0 and 21.4 vs. 19.2 kg). Furthermore, market grade 1 and 2 goats had larger initial chest widths, forearm circumferences, and cannon bone circumferences when compared to market grade 3 goats ( $P < 0.07$ ). Additionally, market grade 3 goats had longer cannon bone lengths than market grade 1 goats initially ( $P < 0.05$ ). Market grade classification had no impact on rack or loin length. After 45 d on feed, goats with a market grade 1 had greater ( $P < 0.05$ ) end weights than goats in market grade 3 (34.2 vs. 30.5 kg). Hot carcass weights varied significantly in the market grade 1 goats which had greater (18.1 kg,  $P < 0.05$ ) weights than market grade 2 goats (16.8 kg) which were greater ( $P < 0.01$ ) than market grade 3 goats (15.2 kg). Results of the present study indicate that initial market grade classification is a relatively accurate estimation of final carcass yields.

**Key Words:** Meat goats, Marketing, Linear measurements

**120 Effects of corn processing method and wet distiller's grains plus solubles inclusion and source on ruminal pH and *in situ* digestibility of crossbred steers.** J. B. Lewis\*<sup>1,2</sup>, K. J. Jenkins<sup>2</sup>, J. M. Patterson<sup>2</sup>, N. A. Cole<sup>3</sup>, J. B. Osterstock<sup>2,4</sup>, L. O. Tedeschi<sup>4</sup>, and J. C. MacDonald<sup>1,2</sup>, <sup>1</sup>West Texas A&M University, Canyon, TX, <sup>2</sup>Texas AgriLife Research, Amarillo, TX, <sup>3</sup>USDA-ARS, Bushland, TX, <sup>4</sup>Texas A&M University, College Station.

Six ruminally cannulated crossbred steers (472 kg) were used in a 6x6 Latin square design to determine effects of corn processing method and wet distiller's grains plus soluble (WDGS) inclusion and source on *in situ* digestibility and ruminal pH. Finishing diets were dry-rolled corn (DRC) or steam-flaked corn (SFC) based and included 20% WDGS from corn (CWDGS), sorghum (SWDGS), or no WDGS. All diets contained 10% alfalfa hay and were formulated to contain 6% dietary fat, 0.70% Ca and 13.5% CP. Periods were 21 days in length (16-d adaptation, 5-d collections). Ruminal fluid pH was tested 4 times/d for 3 consecutive d so that ruminal pH was measured every 2 hr for a 24 hr period. Samples of DRC, SFC, CWDGS, and SWDGS were incubated *in situ* for 0, 2, 4, 8, 12, 16, 24, and 48-h. Samples were incubated only in steers fed diets containing that sample. Mean ruminal pH was greater in steers consuming DRC-based diets than SFC-based diets ( $P < 0.01$ ) and was greater in steers consuming SWDGS than CWDGS and no WDGS ( $P < 0.01$ ), mean ruminal pH for steers consuming CWDGS did not significantly differ from steers that did not consume WDGS ( $P = 0.65$ ). There was no effect of WDGS on *in situ* digestibility of corn ( $P > 0.13$ ); however, SFC had a greater soluble fraction ( $P < 0.01$ ) and a smaller potentially digestible fraction ( $P < 0.01$ ) than DRC. The indigestible fractions of DRC and SFC did not differ ( $P = 0.12$ ). Steam-flaked corn had greater effective ruminal digestibility than DRC ( $P < 0.01$ ; 52.6% vs. 36.1% for SFC and DRC respectively). Corn processing method had no effect on the soluble fraction ( $P > 0.21$ ) or the indigestible fraction ( $P > 0.19$ ) of WDGS. The potentially digestible fraction of CWDGS and SWDGS did not differ in SFC-based diets ( $P = 0.71$ ), but was greater for SWDGS in DRC-based diets ( $P = 0.02$ ). The effective ruminal digestibility was greater for CWDGS (64.3%) than SWDGS (46.1%) regardless of corn processing method ( $P < 0.01$ ). Differences in ruminal digestibility and pH in SWDGS vs. CWDGS and DRC vs. SFC are likely related due to VFA production.

**Key Words:** Distiller's grains, Corn processing, Ruminal digestibility

**121 Effects of intra-nasal or oral administration of a zinc solution on health and growth performance of newly-received stocker cattle.** A. R. Guernsey\*, E. B. Kegley, J. G. Powell, D. L. Galloway, A. C. White, and S. W. Breeding, *University of Arkansas, Fayetteville.*

Male beef calves ( $n = 88$ , initial BW  $229 \pm 1.4$  kg) were purchased from area auction barns and delivered as a single group. Upon arrival, cattle were sorted by gender and assigned randomly to 8 pens. Pens were assigned randomly to 1 of 3 treatments; 22 cattle (2 pens) received 3 mL of a nasal spray solution (10.8 mg Zn/mL) into each nostril using a single-use nasal atomizer; 33 cattle (3 pens) received 40 mL of an oral drench (16.25 mg Zn/mL), and 33 cattle (3 pens) received no Zn at processing (negative control). Appropriate treatments were administered at processing on d 0 of the 43 d study. Processing also included

# abstracts

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