effects of feeding level on components of HP, including extrapolated plateau HP following a 24 h fast (FHP). Based on a crossover design, pigs were exposed to three feeding levels (1.56, 2.05 and 2.54 MJ ME.kg $BW^{-0.60}.d^{-1}$) between 30 and 90 kg BW. One diet was used throughout the experiment. Following a 14 d adaptation period, HP was estimated using indirect calorimetry on pigs housed individually. Dynamics of HP was recorded in pigs for 5 d during the fed state and during a subsequent 24 h fast. Feeding behavior, animal activity and N-balance were monitored, allowing estimation of HP associated with thermic effect of feeding (TEF), activity, and body lipid and body protein deposition. Feeding level influenced (P<0.05) various aspects of HP (all expressed as kJ.kg $BW^{-0.60}.d^{-1}$; low, medium and high ME intakes, respectively): total HP during the fed state (1068, 1232, 1431; SE 34), short term TEF (127, 195, 267; SE 13), long term TEF (133, 202, 227; SE 19) and FHP (609, 644, 729; SE 31). Feeding level did not (P>0.10) influence activity HP in fed pigs (188, 185, 195; SE 11). Regression of total HP and resting HP (total HP minus activity HP and short term TEF) during the fed state to zero ME intake yielded values of 489 (SE 69) and 396 (SE 75), respectively. Extrapolation of total HP or resting HP in pigs in a fed state to zero ME intake yield lower estimates of BE than FHP in pigs previously exposed to high levels of feed intake.

Key Words: Pigs, Energy, Maintenance

635 Energy cost of excreting indigestible material in growing pigs is minimal.

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The nutritive value of feed ingredients is generally derived from digestible nutrient supply, while little consideration is given to the impact of indigestible material on nutrient utilization. An experiment was conducted to determine heat production (HP) associated with ingestion and excretion of indigestible material in growing pigs. Five pairs of littermate barrows were assigned to either a wheat, corn and soybean meal based diet (control) or the control to which 25% wheat straw was added (straw). Pigs were housed individually in metabolism crates and adjusted to feeding regimes for at least 10 days prior to measuring components of HP using indirect calorimetry. Dynamics of HP was recorded in pigs for 5 d during the fed state and during a subsequent 24 h fast. Feeding behavior, animal activity and N-balance were monitored, allowing us to associate HP with thermic effects of feeding (TEF, sum of short and long term TEF), activity and energy retention. Mean body weight (BW) was similar (P>0.10; 61.5 kg vs 62.4; SE 0.8) for control and straw, respectively. Dry matter intake (DMI) (1774 vs 2217 $g.d^{-1}$, SE 4) and fecal DM excretion (201 vs 588 $g.d^{-1}$, SE 10) were higher (P<0.05) in straw fed pigs, while ME intake was similar (2302 vs 2359 kJ.kg $BW^{-0.60}.d^{-1}$; SE 28). Various aspects of energy utilization (expressed as kJ.kg $BW^{-0.60}.d^{-1}$; control vs straw, respectively; adjusted to similar ME intakes) did not differ (P>0.10) between treatments: total HP (1372 vs 1345; SE 16), fasting HP (762 vs 747; SE 6), activity HP (150 vs 164; SE 15), TEF (452 vs 444; SE 7), and energy retention (965 vs 995, SE 13). When expressed per kg of DMI, TEF was lower (P<0.05) in straw fed pigs (2832 vs 2279 kJ; SE 46). The overall energy cost of ingesting and excreting indigestible material in growing pigs appears minimal and could not be identified in this experiment.

Key Words: Pigs, Energy, Nutrient excretion.

636 Modelling the effects of thermal environment and dietary composition on pig performance.

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A deterministic pig growth model predicting the effect of thermal environment and feed composition on the performance of pigs fed ad libitum was developed. From the daily potential for protein gain as determined by pig genotype, the potential gains of the other chemical components, including desired lipid gain are calculated. Unconstrained voluntary feed intake, predicted from the current protein and lipid content of the pig and food composition, is that needed to fulfil both potential and compensatory growth. Compensation is accounted for in terms of compensatory lipid gain only. The composition of the food is described in terms of its metabolisable energy content (MEC), digestible crude protein content (CPC), biological value and bulkiness. Both MEC and CPC can be limiting resources and the bulkiness of the food may constrain feed intake depending on the animal's capacity for bulk. The thermal environmental is described by the ambient temperature, wind speed, floor type and humidity, which sets the maximum and minimum heat loss. A comparison with heat production determines whether the environment is hot, cold or thermoneutral. A constraint on voluntary feed intake is imposed in hot environments, while in cold environments, an extra thermal demand is placed upon the pig. Daily gains of each of the chemical components are calculated by partitioning the nutrients between protein and lipid gain according only to the MEC:CPC ratio of the food. The model predicts adequately average daily intake, growth rate and body composition of pigs raised in differing thermal conditions and fed on dietary treatments differing in CPC. The directions of response were always correctly predicted. Where model predictions differed quantitatively from those observed, it was thought to be due to (i) a greater sensitivity of the model to temperature probably due to the omission of long-term adaptation and acclimatisation, (ii) an incorrect estimation of maintenance energy costs, or (iii) an incorrect estimation of the wetness of the pig's skin.

Key Words: Mathematical modelling, Pig, Thermal environment

637 Influence of sex, genotype, and slaughter weight on performance and carcass quality of fattening pigs.

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LandracexLarge White sows from a 600 sow units were crossed either with Duroc or PietrainxLarge White (PxLW) boars. Eighty hybrid pigs, with an average weight of 25 kg, were chosen at random from each type and fed a commercial wheat, barley, and soybean meal diet containing 2,275 kcal NE/kg and 1.01% total lys from 25 to 72 kg, and 2,435 kcal NE/kg and 0,70% total lys from 72 kg to slaughter. Pigs were sacrificed at either 120 or 135 kg BW. Each of the eight experimental treatments (two sexes, two genotypes, and two slaughter weights) was replicated four times (five pigs penned together). Pigs slaughtered at 135 kg ate more and had worse feed conversion than pigs slaughtered at 120 kg (2,590 vs 2,460 g/d and 2.74 vs 2.66 g/g, respectively; P<0.01). Duroc pigs grew faster and had better feed conversion than PxLW pigs (947 vs 917 g/g; P<0.05 and 2.64 vs 2.77 g/g, respectively; P<0.001). Castrates ate 8.2% more, grew 3.3% faster, and had 4.7% worse feed conversion than females (P<0.05). An interaction between male sire line and slaughter weight was detected for growth (P=0.06) and feed intake (P=0.08); male line influenced daily gain and feed intake of pigs slaughtered at 135 kg (970 and 914 g/d and 2,610 and 2,570 g/d for Duroc and PxLW lines, respectively) but not of pigs slaughtered at 120 kg. Increasing slaughter weight reduced loin, ham, and shoulder yield (2.7, 2.3, and 2.6%, respectively; P<0.001) and increased fat thickness as measured at *Gluteus medius* muscle (21.4 vs 18.8 mm; P<0.001). Carcass yield and backfat at P_2 were lower for Duroc than for PxLW pigs (77.9 vs 78.9%, and 21.7 vs 23.7 mm, respectively; P<0.001). It is concluded that Duroc sire line pigs perform better and produce more ham and loin yield than PxLW pigs. Also, an increase in slaughter weight tended to improve the quality of the carcass and the meat of pigs destined to the industry of cured products.

Key Words: Genotype, Slaughter weight, Carcass quality

638 Effect of feeding strategies and sex on performance and homogeneity of pigs at slaughter.

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Two trials were conducted to study the influence of sex and nutrient content of the feeds on productive performance and weight uniformity of finishing pigs. In trial 1, 480 Large White x Landrace hybrids were used to study the influence of sex (boars vs females), nutrient content of the diet (2,375 Kcal NE/kg and 1.05% lys vs 2,250 Kcal NE/kg and 0.96% lys), and number of feeds (one vs two feeds in which the fattening diet had 14% less nutrients per kcal of NE than the growing diet) on productive performance and uniformity of weights at slaughter. There were six replicates of ten pigs per treatment and the trial lasted 105 d (60 to165 d of age). Boars grew faster (721 vs 682 g/d; P < 0.001) and had better feed conversion (2.53 vs 2.66; P < 0.01) than females. Increasing the energy of the diet improved feed intake (1.85 vs 1.78 kg/d;

P < 0.05), daily gain (730 vs 673 g; P < 0.001), and feed conversion (2.54 vs 2.65 g/g; P < 0.01). The use of two diets improved the uniformity of final weights of both males and females (P < 0.05). In trial 2, 348 commercial hybrids were used in a 3 x 2 factorial (three sexes; boars, females, and barrows and two feeding programs; one- or two feeds from 20 to 100 kg). Barrows ate more feed (1,72 vs 1,52 and 1,53 kg/d; P < 0.05) and grew faster (857 vs 804 and 784; P < 0.05) than either males or females. As a consecuence, feed conversion was impaired by castration with females giving intermediate results (2.02 vs 1.97, and 1.92 for castrates, females, and males, respectively). Phase feeding did not influence feed intake or average daily gain but feed efficiency was improved when a single feed was used throughout the trial (2.24 vs 2.29 , P < 0.05). Phase feeding improved uniformity of weights at slaughter (P < 0.05). Also, uniformity of weights was greater for castrates than for males or females (P < 0.05). We conclude that sex and feeding program influence animal performance and may affect uniformity of weights at slaughter.

Key Words: Weight uniformity, Nutrient density, Sex

639 Effects of WEANMOR® feed additive on sow and litter performance. J. A. Loughmiller*[1], B. Hardy[2], E. Cerchiar[3], B. T. Christopherson[3], H. H. Stein[4], and K. Hugoson[5], [1]*Omega Nutrition, Fairmont, MN,* [2]*NutriVision, Fairmont, MN,* [3]*SODA Feed Ingredients, Brookings, SD,* [4]*South Dakota State University, Brookings,* [5]*Hugoson Pork, East Chain, MN.*

Primiparous and multiparous sows (n=90; PIC line 42) were used in an experiment to determine the effects of an acidified mineral additive (WEANMOR®, SODA Feed Ingredients) on the number of stillborn piglets (in total or as a percent of pigs born), and on piglet preweaning mortality in a commercial production situation. Sows were moved into farrowing crates on or about d 111 of gestation and assigned to treatment in an unbalanced completely randomized design using sow and litter as the experimental unit. All sows were fed the same basal diet. Control sows (C; n = 43) received no top-dress, while treatment sows (T; n = 47) received 60 g/d of WEANMOR® top-dress for 4 d prefarrowing and 7 d postfarrowing. Each sow was fed 1.80 kg/d of lactation diet before farrowing and to appetite during lactation. No parity effects were observed for pigs born live, stillborns, mummies, pigs weaned, or preweaning mortality (P > 0.40). Treatment effects included a 64% reduction in stillborns for T versus C (C = 0.74; T = 0.27; P < 0.01). This effect was also observed when stillborns were compared as a percent of pigs born (C = 6.11%; T = 2.30%; P < 0.01). A treatment effect was also observed for the number of pigs weaned (C = 9.97; T = 9.69; P < 0.03). No treatment effect was observed for pigs born live (C = 11.01; T = 10.99; P < 0.96), mummies (C = 0.04; T = 0.01; P < 0.65) or piglet preweaning mortality (C = 7.10%; T = 6.34%; P < 0.62). These results indicate that WEANMOR® reduces the amount of stillborn piglets from sows in commercial production.

Key Words: WEANMOR®, Stillborn piglets, Sow

640 Effect of soybean variety and processing on growth performance of young pigs. M. Palacios*, R. A. Easter, T. Hymowitz, K. T. Soltwedel, and J. E. Pettigrew, *University of Illinois, Urbana.*

The objective of this study was to evaluate the efficacy by which two different genetically modified soybeans improve growth performance in young pigs. The varieties tested were Williams 82 (WM), a commercial variety; and two isogenetic lines of Williams 82, isoline L90-8047, a lectin free variety (LF) and isoline X97-0101, a lectin free and Kunitz trypsin inhibitor free variety (LFKF). A total of seven dietary treatments formulated to 1.01% of lysine and 3600 kcal DE/kg were used in this study. Each variety, used as raw (R) or as extruded (E), was included in a corn soybean diet. Commercial available heated, solvent-extracted soybean meal (SBM) was included in a corn soybean meal diet as the positive control. One hundred and forty pigs with an average initial weight of 13.89 kg were randomly assigned (5 reps/diet and 4 pigs/pen) to the following diet for 28 days: 1)corn-SBM, 2)corn-WM-E, 3)corn-LF-E, 4)corn-LFKF-E, 5)corn-WM-R, 6)corn-LF-R and 7)corn-LFKF-R. Performance was similar (P > 0.05) among pigs fed SBM and all extruded soybeans but was poorer(P < 0.05)in pigs fed raw soybeans. The results of this study indicate that when feeding pigs with raw varieties of soybean, there is a restoration of 21% of the growth depression caused by the raw Williams 82 variety when using a lectin free variety and restoration of 55% of that depresion when using a lectin free Kunitz free variety.

Diet	1	2	3	4	5	6	7
	SBM	WM-E	LF-E	LFKF-E	WM-R	LF-R	LFKF-R
Lectin		+	-	-	+	-	-
Kunitz		+	+	-	+	+	-
ADG, g	408^a	449^a	417^a	407^a	101^c	164^{bc}	266^b
ADFI,g	833^a	809^a	729^b	775^{ab}	512^d	595^c	708^b
Gain/ Feed, g/kg	424^a	499^a	540^a	471^a	6^c	172^{bc}	319^{ab}

^{abcd} Values within a row with uncommon superscripts differ (P < 0.05).

Key Words: Swine, Lectin, Kunitz trypsin inhibitor

641 Effect of soybean meal origin on the growth performance in broilers and pigs. J. G. Kim*, Y. W. Shin, Y. H. Park, H. S. Kim, and K. Y. Whang, *Korea University.*

Three experiments were conducted to compare effect of soybean meal (SBM) from different origin on the growth performance in broilers and pigs. In experiment 1, 720 broiler chicks (Ross) were assigned to three dietary treatments and fed diets containing three different SBM from Korea (KSBM), Brazil (BSBM), and India (ISBM). Experimental diets were starter diet (day 1 to day 21, 19.5% CP, and 3,025 kcal/kg ME) and grower diet (day 22 to day 42, 18.5% CP, and 3,005 kcal/kg ME). The ADG of KSBM treatment was higher (P < .01) than other treatments. In starting period, the ADG of KSBM, BSBM, and ISBM treatments were 30.08 g/d, 21.84 g/d, and 28.18 g/d, respectively. And, in growing period, the ADG of KSBM, BSBM, and ISBM treatments were 49.51 g/d, 43.76 g/d, and 40.92 g/d, respectively. The ADFI and feed efficiency (G/F) of ISBM treatment was lower (P < .01) than other treatments. In experiment 2, 180 crossbred pigs (Yorkshire × Landrace × Duroc) weaned at 21 day were assigned to three dietary treatments. Pigs were fed starter I (day 1 to day 7, 22% CP, 3,370 kcal/kg ME) and starter II (day 8 to day 28, 20% CP, 3,350 kcal/kg ME) diets. The ADG of KSBM treatment was higher (P < .05) than other treatments. The ADFI and G/F were not different among treatments, but KSBM treatment had a numerically higher than other treatments. In experiment 3, 315 crossbred (Yorkshire × Landrace × Duroc) growing pigs (38.4 ± 1.6 kg) were assigned to three dietary treatments. Experimental diets contained 18.5% CP and 3,350 kcal/kg. The ADG and ADFI in ISBM treatment were lower (P < .05) than other treatments. The G/F did not differ among treatments. In these experiments, KSBM fed pigs and broilers gained more weight than BSBM or ISBM treatments. Effect of SBM origin on the growth performance differed depending on age and species.

Item	KSBM	BSBM	ISBM
Exp.1			
ADG, g/day	39.79 ± 2.27^a	32.80 ± 1.08^c	34.61 ± 1.52^b
ADFI, g/day	80.80 ± 4.33^a	78.67 ± 1.08^a	73.83 ± 4.12^b
Feed Efficiency, g/kg	492 ± 18^a	418 ± 35^b	469 ± 19^a
Exp. 2			
ADG, g/day	452 ± 30^d	418 ± 13^d	394 ± 37^e
ADFI, g/day	770±30	763±70	708±82
Feed Efficiency, g/kg	587±46	550±38	559±44
Exp. 3			
ADG, g/day	635 ± 21^d	652 ± 77^d	541 ± 65^e
ADFI, g/day	1669 ± 46^d	1641 ± 55^{de}	1576 ± 58^e
Feed Efficiency, g/kg	380±19	397±37	343±38

^{a,b,c} P<0.01, ^{d,e} P<0.05.

Key Words: Broilers, Pigs, Soybean meal

642 Comparison of a high starch concentrate with a low starch, added fat concentrate for weanling horses. E. A. Ott*, J. Kivipelto, and A. Kavazis, *University of Florida.*

The objective of this experiment was to compare the effect of a high (HS) starch (31%) concentrate with a low (LSF) starch (0%) with added fat

(5%) concentrate on growth, development and blood glucose concentrations in weanling horses. The HS was based on corn and oats and LSF was based on beet pulp, soybean hulls and soybean oil. Twenty foals (14 Thoroughbreds and 8 Quarter Horses) were weaned at 112 d of age and assigned at random within breed and gender subgroups to one of the two diet groups. The concentrates were fed to appetite for 2, 1.5-hr feeding periods daily and 1.0 kg C. bermudagrass hay/100 kg BW was group fed daily. The ratio of concentrate to hay was 64:36. The weanlings were weighed and measured on d 0 and at 14 d intervals for 112 d. Glucose tolerance tests were conducted at the start and completion of the experiment. There were no differences in the concentrate, hay or total intake for the two diet groups. Weight gains were higher for the weanlings fed HS (.81 vs .67 kg/d, P = .01) than those fed LSF. Body length gains also favored the weanlings fed HS (15.5 vs 13.2 cm, P = .04). No other body measurements were different. Fasting blood glucose concentrations were consistent over time and between diet groups (86.4 + .7 mg/l). Blood glucose peaks, 90 min post feeding, at the start of the experiment following a sweet feed meal or an oral glucose challenge (.25 mg/kg BW) were not different between the treatment groups. At the end of the experiment, weanlings fed HS had higher (P=.02) blood glucose values (155.7 + 8.9 mg/l) than those fed LSF (131.0 + 3.3 mg/l). However, after the glucose challenge, weanlings from the HS group had lower (P=.01) blood glucose (117.1 + 3.4 mg/l) than those fed LSF (130.8 + 3.1 mg/l). Results suggest that HS diets result in higher blood glucose concentrations than LSF diets. Even though the analyses of the diet detected no starch, a glucose peak still occurred following a diet challenge, probably as a result of the natural sugars in the ingredients. The weanlings fed the LSF concentrate apparently had a reduced ability to control blood glucose when challenged with oral glucose.

Key Words: Horses, Starch, Glucose tolerance

643 The effects of guar gum (GG), hydroxypropylated starch (HPS), and xanthan gum (XG) on digestive dynamics in dogs fed canned foods. S.E. Kitts*[1], R.M. Yamka[1], A.D. True[1], W.D. Schoenherr[2], T.M. Dubbs[1], L.A. White[1], E.S. Vanzant[1], and D.L. Harmon[1], [1]*University of Kentucky, Lexington, KY,* [2]*Hill's Pet Nutrition, Topeka, KS.*

Gums and starches are added to pet foods as stabilizers/thickeners and to create the gravy portion of canned foods. These additives can produce undesirable effects on fecal quality. The goal of this research was to determine the physiological effects of GG, HPS, or XG in canned diets fed to dogs. GG (Exp. 1), HPS (Exp. 2), and XG (Exp. 3) were included at 2.5%, 11.3%, or 1.2% of DM, respectively. Each diet was compared to a control diet containing 10.7% (DM basis) corn starch (CS). Diets were evaluated in separate experiments by comparing 5-d control and 5-d test periods. Eight or nine mature dogs (18.9 kg ± 0.2 kg), fitted with an ileal T-cannula were used. In Exp. 1, DMI (g/d) decreased while fecal pH and ileal digesta pH increased for GG ($P < 0.001$). Fecal acetate and propionate (μmol/g DM; $P < 0.03$) and fecal quality ($P < 0.003$) decreased although defecation frequency was not affected by GG. Breath hydrogen concentration (BH) increased at 5 and 6 h postprandially for GG ($P < 0.01$). In Exp. 2, DMI (g/d) decreased ($P < 0.0001$) for HPS. Fecal acetate, propionate, butyrate, isovalerate, and valerate (μmol/g DM) decreased for HPS ($P < 0.05$). HPS decreased plasma electrolytes; K^+ from 4.5 to 4.3 meq/L ($P < 0.007$), and Na^+ from 146.3 to 140.1 meq/L ($P < 0.04$). In Exp. 3, DMI (g/d) decreased ($P < 0.0001$) for XG. Fecal moisture increased from 57.3 to 62.5% in dogs fed XG ($P < 0.0003$). Fecal acetate and propionate (μmol/g DM) decreased for XG ($P < 0.05$). Ileal digesta pH increased ($P < 0.005$) and valerate in ileal digesta (μmol/g DM) decreased for XG ($P < 0.04$). Fecal quality decreased for XG ($P < 0.04$), but defecation frequency was not affected. BH increased 1 h postprandially with the XG diet, then decreased from 3 to 8 h ($P < 0.03$). These data indicate that decreases in fecal quality with inclusion of GG, HPS, or XG were not associated with increased fermentation.

Key Words: Gums, Canine, Canned diets

Nonruminant Nutrition
Mineral and Vitamin Nutrition

644 Unraveling mineral essentiality in swine. Bud Harmon*, *Purdue University.*

A century ago mineral nutrition for swine was as sophisticated as offering ashes or bone meal free choice. Rickets was thought to be caused by insufficient mineral matter in the feed. Henry (1890) observed a 40% increase in bone ash and 93% increase in bone breaking strength when hardwood ashes were offered free choice to pigs receiving corn, salt, and water. Henry (1898) stated that ashes from wood or coal will always be in place in the feeding pen. In retrospect, ashes were a blend of many minerals now considered crucial in balanced swine diets. Minerals received minimal consideration as critical nutrients into the early 20th century because of beliefs such as; "Ordinarily the rations of farm animals contain all the necessary mineral matter, at least in small quantities, and since the body retains them with great tenacity when the supply is meager, these small amounts usually suffice." Many mineral studies were initiated in response to observations on swine farms. Iodine is such an example. Although goiters had been diagnosed in man and animals, the mineral I was not associated with goiters until the late 1800s. Welch and Smith (1917) investigated the cause of large numbers of dead hairless newborn pigs. They discovered these pigs had abnormally large thyroid glands with quite low levels of I. Unraveling the cause of an extremely severe exudative dermatitis, called parakeratosis, was just as remarkable. This gruesome condition seen sporadically in growing swine responds to Zn supplementation (Tucker and Salmon,1955). Elevated levels of dietary Ca also precipitated Zn deficiency and parakeratosis. Recognition of Se by Schwarz and Folz (1957) as an essential nutrient and eventual fortification with 0.3 ppm to practical swine diets has saved countless pigs. Fe deficiency anemia in young pigs was often called "thumps" because of labored breathing, thought to be caused by lack of exercise and irritation of the digestive tract. McGowan and Crichton (1924) first attributed this malady to Fe deficiency in nursing pigs. Mineral elements have unique roles and even more unique manifestations of deficiency.

Key Words: Swine, Minerals

645 Effect of feeding chromium tripicolinate as a top dress to boars upon sperm production. M. E. Wilson*[1], T. J. Gall[2], K.J. Rozeboom[1], R. A. Moser[3], D. E. Orr[3], and K. W. Purser[4], [1]*Minitube of America, Inc., Verona, WI,* [2]*Pork Technologies, Danville, IA,* [3]*United Feeds, Inc., Sheridan, IN,* [4]*Prince Agri Products, Inc., Quincy, IL.*

Chromium tripicolinate (CrTp) has been shown to positively influence reproductive performance in sows. This study was designed to test if supplementation of CrTp to boars had an impact on sperm production and sperm quality. 158 PIC boars were blocked for genetic line, age, collection frequency, and total sperm output/week and were randomly allotted to one of two treatments. All boars were fed a corn soybean meal diet (15.5% CP, .85% lysine) according to body weight to meet or exceed NRC 1998 requirement estimates. Treatment 1 (T1) were fed a top-dress of 15 g consisting of 95.25% sodium bentonite, 3.75% ground limestone and 1% mineral premix. Boars in treatment 2 (T2) were supplemented with the same top dress with CrTp substituted for a portion of the limestone to provide 30 mg/kg Cr in the top-dress (equivalent to 200 ppb Cr in 2.27 kg complete feed). Boars were fed their respective dietary treatments for 45 days prior to beginning the 90 d study. Boar ejaculates were collected on a regular schedule throughout the trial. An average of 3 ejaculates were used to set the beginning sperm count and all sperm and semen parameters and at the end of study for comparison to beginning values. ANOVA was analyzed using the GLM procedure in SAS. Boneferronis mean comparisons were used when treatment effects were detected. The beginning and ending sperm parameters were not different between the treatments. There was no difference between T1 (16.23 ± 2.5) and T2 (14.5 ± 2.5) in total sperm count (billion) per ejaculate. Although total sperm counts were different between genetic lines ($P < 0.01$), treatment x genetic interactions were non-detectable. These data suggest that addition of CrTp did not improve important sperm