formulated to NRC (1994) with the exception of CP (19%) and Amino Acids (110%) as research indicates VZ has protease activity and is optimized at lower CP levels. Diets were fed in the mash form from 0-26 d, and VZ was either added post mixing of original feed (D) or sprayed on top of the feed (L). A total of 168 Ross x Ross male broiler chicks were allocated to 24 pens of a battery brooder in a Completely Randomized Design with 12 replicate pens/control and 6 replicate pens/treatment (D or L); the experimental unit was a pen of 7 birds. Body weight (BW), gain, and feed intake were determined at 14, 21, and 26 d, and mortality used to calculate adjusted feed conversion ratio (adjFCR). Feeding VZ (whether in D or L form) compared to the control diet did increase ($p<.01$) overall Gain (1012^b, 1108^a, and 1087^a g/bird for control, D, and L, respectively) and improve ($p<.01$) overall adjFCR (1.52^b, 1.47^a, and 1.42^a for control, D, and L, respectively). Supplementing VZ in the D form did increase overall ($p=.04$) feed intake (1543^b, 1630^a, and 1545^b for control, D, and L, respectively). FCR at d 14 only was most improved ($p<.01$) by the L form (1.24^a) followed by D form (1.29^b) when compared to control (1.34^c). No difference between the two applications (D vs. L) was observed on mortality, BW, and gain at any age. Supplementing diets with VZ improved all broiler growth parameters measured in this study. These results suggest that VZ supplementation in broiler feed may improve growth performance irrespective of application form (D or L).

Key Words: Versazyme®, Growth Performance, Broiler Chicks

PSA-Nutrition: Layer and Miscellaneous Nutrition

677 The influence of restricted intake of energy and fat on egg solids in laying hens. J. A. Arthur*[1], K. S. Kreager[1], N. P. O'Sullivan[1], and H. J. Kuhl, Jr.[2], [1]*Hy-Line International, Dallas Center, IA,* [2]*Nest Egg Nutrition, Gardnerville, NV.*

Restriction of feed or energy intake has been noted to have an association with a reduced proportion of solids in liquid egg. Hy-Line variety W-98 and W-36 hens were fed rations designed to restrict energy and fat intake by 10% (Low group) for each variety, compared to hens fed a measured amount of feed in accordance with expected intake level for that variety (High group). The amount of feed provided to the W-98 High, W-98 Low, W-36 High and W-36 Low groups was 104.3, 95.2, 95.2 and 86.2 g/bird/day. The energy intake was 297, 265, 276 and 243 kcal/bird/day. The intake of crude fat was 3.45, 3.15, 4.36 and 3.93 g/bird/day. All other critical nutrients were fed at approximately the same level to both High and Low groups within variety. After nine weeks (period one), the feed given to each group was reduced by a further 10% for eight weeks (period two). Eggs were sampled five times during a pre-trial period, 5 times during period one and 8 times during period two, at intervals of one week or more. Egg weight (EW), % yolk (PY), white solids, yolk solids (YS) and total liquid solids (TS) were determined. Body weight (BW) was measured biweekly. Feed consumption (FC) and % production (PD) were measured daily. Results during the experimental period were corrected for differences between groups within variety during the pre-trial period. During period one, not all the feed was consumed and the % restriction was somewhat less than planned. The effect of energy and fat restriction on solids was not significant in period one, but was in period two. In period two there was a significant reduction of 0.32% in TS in the Low group (P#88040.001). TS were reduced because of reduced YS and PY (P#88040.01 and 0.0004, respectively). PD was reduced by 13% (P#88040.0001). Comparison of varieties over both experimental periods showed significant differences for W-36 in contrast with W-98 of 0.81% higher TS, 0.75% lower YS, 2.93% higher PY, 3.89 grams lower EW, and 0.14 Kg. lower BW (P#88040.0001 for each trait).

Key Words: Egg Solids, Energy Restriction, Fat Restriction

678 Evaluation of prediction equations and modeling metabolizable energy intake for commercial strains of laying hens. M. A. Jalal*, S. E. Scheideler[1], and D. Marx[2], [1]*Department of Animal Science,* [2]*Department of Statistics, University of Nebraska, Lincoln.*

A study was conducted to assess and contrast the accuracy of 4 existing metabolizable energy intake (MEI) prediction equations (Combs, 1968; Emmans, 1974; NRC, 1981, and NRC, 1994) and our Jalal model using our production data to derive equations for individual strains. Three strains of White Leghorn hens (Hy-Line W-36, Hy-Line W98, and Bovans) were fed 2 levels of dietary ME in a 2 x 3 factorial arrangement in a an augmented block design. A total of 60 hens were used for this trial with 10 replicate cages (hen/cage) per dietary treatment. Modified models were derived by reparamatizing parameter estimates of explanatory variables in originak models using nonlinear regression. Results of model assessment showed that Combs model had significantly (P#88040.05) greater bias and mean square error (MSE) values for all strains, and was least accurate predictor of MEI among models evaluated. Therefore, Combs was excluded from further evaluation. NRC models were the best predictors and had the least bias and MSE, with Emmans and Jalal in close second and third. Pooled data results showed modified models predicted MEI more accurately in contrast to original models for Hy-W36, while only modified Emmans and Jalal were more accurate for Hy-W98 and Bovans. An F-test showed significant differences among strain-derived equations for all models. These equations were tested using 2 sets of field data per strain acquired from a commercial layer facility. Testing of strain-derived models using field data showed no significant differences in bias or MSE estimates for Emmans, NRC or Jalal models for accuracy of predicting MEI. The results indicated that the models fit the field data well for all strains. The NRC models were the best predictors of MEI for the present data set for all strains. Testing of the strain-derived equations using field data showed that Emmans, NRC and Jalal were accurate predictors of MEI as demonstrated by non-significant comparisons of bias and MSE.

Key Words: Prediction Equations, ME Intake, Strain

679 Effect of enzyme supplementation in laying hens on egg weight and commercial egg classification. M. I. Gracia*[1], G. L. Campbell[2], E. McCartney[3], J. Peinado[1], and P. Medel[1], [1]*Imasde Agropecuaria, S.L., Spain,* [2]*GNC Bioferm, Canada,* [3]*Pen&Tec Consulting, Spain.*

Four experiments involving a total of 1,820 laying hens distributed in 108 replicates evaluated the efficacy of an enzyme complex (Endofeed DC, EC No 25) containing 1,100 U/g of Endo-1,3(4)-β-glucanase (EC 3.2.1.6) and 1,600 U/g of Endo-1,4-β-xylanase (EC 3.2.1.8). A completely randomized design was applied in each study using two experimental treatments: 1) basal diet (control), and 2) basal diet with 125 mg/kg of enzyme, the recommended commercial dose. Selected data on egg weight (at 34, 46, and 54 wks of age) were combined in a meta-analysis. The original data used for the statistical analysis were the mean egg weight per replicate, and enzyme supplementation and experiment were considered as main effects. At 46 wks of age enzyme supplementation significantly increased mean egg weight (68.30 *vs* 66.07 g; $P<0.001$). At 34 and 54 wks of age, no statistically significant differences were detected between treatments, but hens supplemented with enzyme laid eggs that were numerically heavier than controls (65.90 *vs* 64.97 g; $P=0.19$, and 67.76 *vs* 66.63 g; $P=0.20$; for 34 and 54 wks of age, respectively). To assess the commercial significance of these improvements, a second meta-analysis was carried out using individual egg weight data at 42 wks of age, obtained from two of the experiments. Each egg was classed according to commercial categories: S (<52.5 g), M (52.5-62.5 g), L (62.5-72.5 g), and XL (>72.5 g). Enzyme supplementation significantly increased the percentage of XL eggs (15.2 vs 5.3 %) at the expense of other commercial categories ($P<0.01$). In conclusion, the data from these studies suggest that enzyme supplementation improves mean egg weight, allowing classification into larger egg classes.

Key Words: Enzyme Meta-Analysis, Egg Commercial Categories, Laying Hens

680 Enzyme supplementation of laying hens fed diets containing barley and wheat. P. Medel*[1], L. Pastrana[2], J. Méndez[3], E. McCartney[4], and M. I. Gracia[1], [1]*Imasde Agropecuaria, S.L., Spain,* [2]*Universidad de Vigo, Spain,* [3]*Coren, S.C.L., Spain,* [4]*Pen&Tec Consulting, Spain.*

A study was conducted to evaluate the efficacy of a feed enzyme additive (Endofeed DC, EC No 25) containing 1,100 U/g of Endo-1,3(4)-β-glucanase (EC 3.2.1.6) and 1,600 U/g of Endo-1,4-β-xylanase (EC 3.2.1.8) in laying hens. A total of 1,170 Isa Brown laying hens (30-54

wks of age) were allocated randomly to the experimental treatments. A completely randomized block design was applied using two barns (block) and three experimental treatments: 1) basal diet (control), 2) basal diet with 100 mg/kg of enzyme, and 3) basal diet with 125 mg/kg of enzyme. Each treatment was replicated 26 times (13 per barn) with 15 laying hens constituting the experimental unit. From 30 to 38 wks of age, no significant differences were observed. From 38 to 46 wks of age enzyme addition tended to increase egg weight (P=0.10) yielding significant differences when comparing control vs 100 mg/kg (P<0.05). Also, enzyme supplementation improved feed conversion both per g (P<0.01) and per dozen eggs (P<0.05). Yolk color was significantly increased in this period (P<0.01) and these differences were dose-dependent and linear (P<0.01). From 46 to 54 wks of age, enzyme supplementation improved egg weight significantly in a linear, dose-dependent fashion (P<0.05), and tended to improve feed conversion per g of egg (P=0.07). Enzyme supplementation also increased yolk color (P<0.01), improved shell thickness (P<0.01) but decreased Haugh Units (P<0.05) within this period. For the whole study period, enzyme supplementation improved egg weight by 1.5% (66.60 *vs* 67.65 g; P=0.01), feed conversion by 2.7% (2.05 *vs* 2.00 g feed/g egg; P=0.01), and yolk color in a dose-dependent fashion (P<0.01), but control hens tended to have higher Haugh Units than T2 or T3 hens (P=0.06). It was concluded that enzyme improves egg weight, feed conversion and yolk color.

Key Words: Glucanase, Xylanase, Laying Hens

681 Evaluation of low-energy diets for a non-feed withdrawal laying hen molt program. P. L. Utterback*, P. E. Biggs, K. A. Rafacz, C. M. Amezcua, K. W. Koelkebeck, and C. M. Parsons, *University of Illinois*.

An experiment was conducted using 504 Hy-Line W-36 hens (69 wk of age) to evaluate several low-energy non-feed withdrawal molting methods. Six treatments provided *ad libitum* access for 28 d to diets consisting of: 1) 47% Low Trypsin Inhibitor soyhulls and 47% corn (LTI-C), 2) 47% Medium Trypsin Inhibitor (MTI) soyhulls and 47% corn (MTI-C), 3) 47% High Trypsin Inhibitor soyhulls and 47% corn (HTI-C), 4) 32% MTI soyhulls, 30% wheat middlings and 32% corn (SH-WM-C), 5) 47% rice hulls and 47% corn (RH50-C), and 6) 25% rice hulls and 68% corn (RH25-C). The seventh treatment consisted of feed withdrawal for 10 d followed by feeding a 16% CP corn-soybean meal diet for 18 d. At 28 d, all hens were fed a 16% corn-soybean meal layer diet and production performance was measured for the next 20 weeks. Hens on the feed withdrawal treatment ceased egg production by Day 8. All other treatments did not reach 0% egg production or ceased production sporadically for one or two days. Body weight loss for hens on the feed withdrawal treatment was 25.8% on Day 10 of the molt period. Hens fed the LTI-C, MTI-C, and HTI-C diets had body weight losses of 17, 18, and 20%, respectively, on Day 28. Hens fed the SH-WM-C, RH50-C, and RH25-C diets had respective body weight losses of 11, 18, and 14% on Day 28. Hen-day egg production was not different ($P > 0.05$) among treatments for Weeks 1 to 24. No consistent differences were observed among treatments for mortality, egg weight, egg specific gravity, feed efficiency, and feed consumption during the 20-wk post-molt production period. When compared to the 10-d feed withdrawal, this research indicates that diets containing soyhulls, wheat middlings, or corn and diets containing combinations of these ingredients are effective non-feed withdrawal methods for molting laying hens.

Key Words: Molt, Laying Hen, Trypsin Inhibitor

682 The effect of supplemental phytase sources on the sparing effect of phosphorus in Pekin ducks. J. K. Rush*, K. M. Banks, K. L. Thompson, and T. J. Applegate, *Department of Animal Sciences, Purdue University*.

Phytate phosphorus (PP) is relatively unavailable to the duck and therefore the majority of the PP that is fed to ducks is excreted. Therefore, an experiment was conducted to determine the effect of supplemental phytase on the sparing effect of phosphorus (P) in Pekin ducks. Drakes were fed 0, 250, 500, 750, or 1000 U/kg phytase (6-15 d) from Eco-Phos. Two reference diets were included that contained 500 U/kg from one of two commercial phytases (A and B) derived from Aspergillus and Peniophora. Four additional reference diets were also fed (6-15 d) with no supplemental phytase and increasing concentrations of non-phytate phosphorus (nPP) (0.22, 0.29, 0.36, or 0.43 %) to determine P equivalency values of phytase supplementation from improvements in bone mineralization (6 replicate cages per diet, 4 birds per cage). The nine phytase diets were formulated with 0.22 % nPP and 1.0 % calcium (Ca) (8 replicate cages per diet, 4 birds per cage). Supplementation with 500 U/kg of Eco-Phos improved the P equivalency value based on body weight (BW) gain by 0.147 %. Supplementation with 500 U/kg of phytase B and Eco-Phos improved the P equivalency value based on tibia ash (%) by 0.072, and 0.121 %, respectively. Supplementation with 500 U/kg of phytase B and Eco-Phos improved the P equivalency value based on tibia ash weight by 0.06, and 0.068 %, respectively. When apparent P retention was determined from excreta collected from 13 to 15 d of age, 500 U/kg of phytase B and Eco-Phos improved P retention by 0.048 and 0.092 percentage units, respectively.

Key Words: Phytase, Phosphorus, Duck

683 The availability of energy in meat and bone meal and poultry by-product meal in poultry rations. D. H Robbins* and J. D Firman, *University of Missouri-Columbia*.

Meat and bone meal and poultry by-product meal are common by-products used in poultry rations. Unfortunately, the quality of meals varies greatly, making it difficult to precisely measure the nutrient availability. The variability of the above mentioned by-product meals has made it difficult to determine their available energy for utilization by poultry. Several trials were conducted to determine the metabolizable energy (ME) of several meat and bone and poultry by-product meals for both chickens and turkeys. An effort was also made to find an equation that could accurately predict the ME of a by-product meal given its proximate composition. If a simple and consistent method for determining the ME of the feedstuffs could be found, use of meat and bone meal and poultry by-product meal could substantially increase. Briefly, there were few differences found among assay procedures. Species and collection techniques had little impact on the ME values of the feedstuffs. The largest source of variation was the feedstuffs themselves. As mentioned previously, this variability is indicative of animal by-product meals. This made the development of a prediction equation to determine the ME value of meat and bone meals or poultry by-product meals impractical without measurement of gross energy. However, any assay procedure, battery trials or tube feeding, should provide similar results.

Key Words: Meat and Bone Meal, Poultry By-Product Meal, Metabolizable Energy

684 Broiler study nutritional evaluation of b.t.cry1f maize corn from *bacillus thuringiensis* subsp. *aizawai* and phosphinothricin-n-acetyltransferase. J. L. McNaughton*[1] and L. Zeph[2], [1]*Solution BioSciences, Inc., Salisbury, MD,* [2]*Pioneer Hi-Bred International, Inc. Johnston, IA*.

Two maize (corn) lines have been modified to express both the Cry1F protein from *Bacillus thuringiensis* subsp. *aizawai* and the phosphinothricin-N-acetyltransferase (PAT) protein, referred to as B.t. Cry1F maize lines 1507 or 1360 (Cry1F event TC1507 and event TC1360). Expression of Cry1F and PAT proteins provides control of European corn borer (ECB) and certain other ledpidopteran pests, as well as conferring tolerance to glufosinate-ammonium herbicides. A study was conducted to determine the effect of diets containing maize from transgenic Cry1F hybrid maize lines on the performance of commercial broiler chickens (Cobb x Cobb strain) from 0-42 days of age when reared in wire floor cages. Seven reps, containing 5 male broiler chicks per rep, were fed diets containing either Cry1F event TC 1507 and/or event TC1360 and these maize sources were compared to four sources of U.S. corn commercial sources from various feed mill sources in the Eastern U.S. and a positive Control maize hybrid source 7250 (a non-transgenic control maize line). Maize (54.2% in starter and 57.0% in grower rations, across all treatments)- soybean type rations were employed throughout the study and fed *ad libitum* from 0-42 days of age. Prior to adding to rations, hybrid maize kernels from B.t. Cry1F event TC1507 or event TC1360, and control substances were analyzed for expression of the Cry1F protein using a specific ELISA. Cry1F proteins were confirmed to be present in the Cry1F event tC1507 and event TC1360 and absent in the control substances. Based on the results of this study, mortality, mean body weight, and feed conversion were statistically similar (P<0.05) among treatment groups. Therefore, maize grain from Cry1F event TC1507 and TC1360 are considered nutritionally equivalent to

maize grain from commercial hybrids when fed to commercial broiler chickens.

Key Words: Maize, Corn, *Bacillus thuringiensis* subsp. *Aizawai*

685 Nutrient composition of peanut meal. N. M. Dale* and A. B. Batal, *Poultry Science, University of Georgia, Athens*.

Solvent extracted peanut meal is becoming increasingly popular as a feed ingredient for poultry. Due to limited availability, levels of inclusion in broiler diets are generally in the range of 3-4%. The ingredient is an especially good source of arginine, while having a low level of lysine. As the origin of nutrient values for peanut meal reported in the standard tables of nutrient composition is unclear, a study was undertaken to document the nutrient composition of peanut meal samples currently available to the poultry industry. Seventeen samples of peanut meal were obtained during 2003 from commercial sources in the southeastern United States. Each was analyzed for proximate composition, true metabolizable energy, and mineral composition. Seven representative samples were analyzed for total and available amino acid content. All values have been adjusted to a 90% dry matter basis, this being representative of the meals evaluated in this study. While considerable variation was noted between samples, a reasonable consistency was observed in samples from each of the five suppliers, reflecting modest differences in processing procedure. Metabolizable energy (TME_n) ranged from 2314-2821 kcal/kg, with a mean of 2663 kcal/kg. Protein ranged from 40.1 to 50.9%, with a mean of 45.0%. Mean values for fat, fiber, and ash were 2.5, 8.7, and 5.2%, respectively. Total concentration and percent availability, respectively, of several critical amino acids were: lysine, 1.58% (85); methionine, 0.53% (88); cystine, 0.66% (80); threonine, 0.58% (81); and arginine, 5.08% (91). Average levels of calcium, phosphorus, sodium, and potassium were 0.08, 0.56, 0.01, and 1.19%, respectively. The variation observed between samples strongly indicates that confirmatory analyses should be conducted prior to utilizing samples from a new supplier.

Key Words: Peanut Meal, Metabolizable Energy, Protein and Amino Acids

686 Sweet potato as a feed resource for layer production in Nigeria. O. A. Ladokun* and O. O. Tewe, [1]*University of Ibadan, Ibadan, Nigeria*.

A study was carried out on the utilization of sweet potato roots (SPR) as replacement for maize and sweet potato tops (SPT) as a replacement for wheat bran in layer's diet. 150 point of lay Yaffa birds were fed for 84 days. The SPR was incorporated at levels of 21 and 42% to partially and completely replace maize respectively. The SPT was incorporated at levels of 10 and 20% to partially and completely replace wheat bran. The age at first egg was significantly ($P<0.05$) different. The birds on the control, laid the first egg at 154 days while those on the complete replacement of maize and wheat bran laid the first egg at 189 days. There was a significant ($P<0.05$) difference, across the treatments, in the feed intake of the birds, which ranged from 108.77g/bird/day to 127.97g/bird/day. Birds on the control diet had the best hen-day production of 61.83 %. The yolk weight did not follow any particular trend but there was a significant ($P<0.05$) difference across the treatments. Results of the study show that: SPR and SPT can be included in layer diet at not more than 50% of maize and wheat bran respectively. The replacement could be achieved concurrently.

Key Words: Sweet Potato, Replacement, Hen-Day Production

Ruminant Nutrition: Beef and Dairy Calves

687 Calf adipose tissue fatty acid profile, immune function and performance while nursing beef cows consuming high-linoleate or high oleate safflower seed supplements. S. L. Lake*, E. J. Scholljegerdes, E. L. Belden, R. L. Atkinson, D. C. Rule, and B. W. Hess, *Univeristy of Wyoming, Laramie*.

Thirty-six Angus × Gelbvieh calves were used to determine the effect of maternal lipid supplementation on calf adipose tissue fatty acid composition, immune response, and performance. Beginning 3 d postpartum, cows were randomly assigned to be fed hay and a low fat control supplement (CON) or supplements consisting of either high-linoleate cracked safflower seeds (LIN) or high-oleate cracked safflower seeds (OLE) until d 60 of lactation. Cow rations were formulated to be isonitrogenous and isocaloric. Safflower seed supplements were formulated to provide 5% DMI as fat. Calf adipose tissue biopsies were collected near the tail-head region on d 60 of lactation. Calves were injected s.c. with antigen (hen egg albumin) at 21 d of age and again at 48 d of age. Antibody responses were determined in serum; cell mediated immunity was assessed by intradermal antigen injection at 60 d of age. Maternal lipid supplementation did not affect calf adipose tissue content (mg FA/g of adipose tissue) of 14:0 ($P = 0.10$), 15:0 ($P = 0.46$), or 16:0 ($P = 0.12$). Calves nursing LIN and OLE cows had greater content of 18:1 *cis*-9 ($P = 0.05$) than CON calves. Calves nursing LIN cows had greater 18:0 ($P <.0001$), 18:1 *trans*-11 ($P <.0001$), 18:2 ($P = 0.06$), and CLA ($P <.0001$), while OLE calves had greater 18:1 *trans*-9 ($P = <.0001$). A trend was noted ($P = 0.10$) for CON calves to have a greater antigen response compared to LIN and OLE calves; however, there was no difference in cell-mediated immune response ($P = 0.86$). Maternal dietary lipid supplementation also did not affect ($P = 0.44$) calf ADG. Adipose tissue content of metabolically important fatty acid was increased in calves nursing lipid-supplemented cows and, although there was a tendency for decreased immune response by these calves, calf ADG was not affected by providing the dam with high-linoleate or high-oleate supplements.

Key Words: Beef calf, Lipid supplementation, Immune response

688 Effect of feeding extruded soybeans to nursing beef cows on conjugated linoleic acid concentrations in adipose tissue of suckling calves. C. Paradis*[1], R. Bertiaume[2], C. Lafreniére[2], and P. Y. Chouinard[1], [1]*Universite Laval, Quebec, QC, Canada*, [2]*Agriculture and Agri-Food Canada, Lennoxville, QC, Canada*.

The concentration of conjugated linoleic acids (CLA) in meat and milk fat can be increased in ruminants by feeding pasture or extruded soybeans. Nursing calves on pasture have both access to fresh grass and dam milk; the latest being protected against ruminal biohydrogenation by the closure of the oesophageal groove. The objective of this study was to determine the effect of supplementing pasture-fed nursing beef cows with extruded soybeans on the concentrations of CLA in milk fat of cows, and subcutaneous adipose tissue of suckling calves. Thirty-two spring-calving cows and calves were separated in two groups. Cows were distributed in order to have 8 calves of each sex in both groups. Cows and calves were turned out to pasture on June 19 (95 ± 8 days post calving) under a rotational grazing management. Dams received 2 kg/d of full fat soybeans; raw ground (RGSB) for the first group, as a control, and extruded (EXSB) for the second group. Calves were weaned on October 8. The last week before weaning, milk yield of cows was estimated by the weigh-suckle-weigh technique. Milk was sampled for fatty acid (FA) analysis prior to calf nursing. Subcutaneous adipose tissue biopsies were obtained between the 11th and 12th ribs over the longissimus dorsi of the calves. Dietary treatments had no effect on final weight and weight change of cows during the pasture season. Cows fed RGSB tended to produce more milk (5.8 kg/d) than cows fed EXSB (4.1 kg/d) ($P = 0.07$). Weaning weight of calves was not affected by treatments, although the average daily gain tended to be higher for males as compared with females ($P = 0.07$). Milk fat content of CLA increased from 11.2 mg/g of FA in cows fed RGSB to 29.2 mg/g of FA in cows fed EXSB ($P < 0.01$). The CLA concentrations in adipose tissue increased from 17.7 mg/g of FA for calves nursing cows on RGSB to 25.7 mg/g of FA for calves nursing cows on EXSB ($P < 0.01$). Gender had no effect on the CLA concentrations in adipose tissue. Feeding EXSB to cows on pasture increased the concentrations of CLA in subcutaneous adipose tissue of suckling calves by 45%.

Key Words: Conjugated Linoleic Acid, Cow-Calf, Milk Fatty Acids