

Production, Management & the Environment - Livestock and Poultry: Poultry Production, Management and Environment

137 Increasing lighting program effects on production characteristics of modern broilers. K. Schwan-Lardner^{*1}, H. L. Classen¹, and B. I. Fancher², ¹University of Saskatchewan, Saskatoon, Saskatchewan Canada, ²Aviagen North America, Huntsville, AL.

An experiment was conducted comparing growth parameters, meat yield characteristics and mobility indices of broilers (Ross × Ross 308) when raised under three lighting programs, initiated at 7 d of age (14L:10D; 23L:1D; increasing (INC) (7-14 d = 14L:10D, 15 -19d = 16L:8D, 20 - 24 d = 18L:6D, 25 - 29 d = 20L:4D, 30 - 34 d = 22L:2D, and 35 - 38 d = 23L:1D)). Three room replications were used per lighting program, and each room contained 6 pens for each sex of Ross x Ross 308 broilers (total number placed - 5022). Interactions between sex and lighting program were minor, so only overall lighting effects are reported. All numeric data is presented in order of 14L, 23L and INC, respectively unless otherwise stated. Bird weights at 31 (1.683c, 1.714b and 1.751a) and 38 (2.380b, 2.339b and 2.438a) d were highest with the use of an INC program. FCR was lowest for birds raised on 14L, and equal for INC and 23L (F:G 1.642b, 1.719a and 1.697a). Although not statistically different, mortality was highest when birds were raised on 23L (4.50%, 8.01% and 6.02%). Using an INC program resulted in an intermediate proportion of breast meat yield as a percentage of carcass weight (26.11c; 28.06a; 27.13b). In contrast, birds raised on 14L had heavier percent whole thighs (9.32a vs 8.87b for INC and 9.03b for 23L) and drums (7.01a vs 6.74b and 6.76b for 23L and INC respectively). Mobility (measured by gait scoring) was best when birds were raised under 14L, and intermediate when an INC program was used (0.75b, 1.13a and 0.90ab), indicating better welfare with regards to leg defects than birds raised under 23L. In conclusion, use of an INC program resulted in the most rapid growth and was intermediate in the level of mortality, breast muscle production, and leg weakness to 14L and 23L programs.

Key Words: Broiler, Photoperiod, Gait Score

138 Does broiler breeder flock age influence embryonic metabolism in different genetic strains? J. A. Hamidu^{*1}, G. M. Fasenko¹, E. E. O'Dea¹, J. J. R. Feddes¹, C. A. Ouellette¹, V. L. Christensen², and M. J. Wineland², ¹University of Alberta, Edmonton, Alberta, Country, ²North Carolina State University, Raleigh.

The study examined the effect of genetic strain (Ross 308 (R); Cobb 500 (C)) and flock age on eggshell conductance (G), and embryonic metabolism. The G value was calculated on 30 hatching eggs from mature (M) (45 wk), old (O) (55 wk), and very-old (VO) (59 wk) flocks during 9 d from egg moisture loss and vapor pressure difference. Ten eggs per strain by flock age were also weighed and incubated for 21.5 d in individual metabolic chambers to measure embryonic O₂ consumption and CO₂ output. The data were then used to calculate the respiratory quotient (RQ = CO₂/O₂) and embryonic metabolic heat production during incubation. After hatching the chicks were euthanized, the yolk sacs removed, and the wet and dry wt obtained. Data were analyzed by SAS[®] GLM at P≤0.05. Genetic strain did not affect the G value but flock age had an effect; the O flock had a higher G (20.20±0.79 mg/day/mmHg) than the M flock (17.46±81), but neither of these differed from the VO flock (19.17±0.78) over the 9 d. However the R strain produced more average heat (88.48±1.78

mW) than the C (83.56±1.76 mW) over 21 d. Flock age did not affect embryonic heat production. Strain did not influence mean RQ but mean RQ was higher in M (0.82±0.009) versus the O (0.67±0.008) and VO (0.67±0.008) flocks. Chick wt did not differ between strains, but chicks from the VO flock were heavier (49.22±0.28g) than either the M (47.33±0.29g) or O (47.04±0.29) flocks. Wet carcass was significantly heavier in M (81.37±0.46) than O (79.95±0.46) flocks while dry carcass was heavier in M (16.18±0.251) than both O (15.82±0.25) and VO (15.43±0.24) flocks. Wet yolk sac was heavier in O (19.30±0.44) than VO (17.89±0.44) and M (18.20±0.42) flocks while dry yolk sac was heavier in O (10.96±0.27) than M (10.04±0.27) but not VO (10.24±0.26) flocks. The study showed that genetic selection of modern broiler strains has impacted embryonic heat production. The results also showed that as flock age increased the embryos increasingly used more fat substrates than carbohydrates.

Key Words: Genetic Strain, Flock Age, Embryonic Metabolism

139 Effects of *in ovo* injection of select salt solutions and metabolic compounds on chicken embryo livability and growth. B. M. McGruder^{*1}, E. D. Peebles¹, D. A. Braasch¹, M. A. Dekich², P. D. Gerard¹, and R. W. Keirs¹, ¹Mississippi State University, Mississippi State, ²AviTech, LLC, Salisbury, MD.

Pilot trials were conducted to evaluate the effects of various physiological salts and metabolic compounds administered *in ovo* on the livability and growth of broiler embryos. Solutions of 200 µL were injected into the amnion of embryos at d16 of incubation using an AviTech Intelliject[™] single egg injector. Based on their potential to augment nutrient metabolism and subsequent growth, the efficacies of potassium chloride (KCl) (110, 118, 125, 130 mM), sodium acetate (0.5, 1.0, 1.5, 2.0 mM), and monosodium phosphate (4.0, 4.5, 5.0, 5.5 mM) were evaluated in trial 1. Also, based on their potential to affect diverse metabolic pathways and stimulate growth, the efficacies of tripotassium citrate (1x, 2x, 4x, 8x), a carbohydrate/electrolyte nutrient solution (CEN) (1x, 2x, 4x, 8x), and caffeine (1x, 3x, 6x, 9x), in relative concentrations, were examined in trial 2. Physiological saline and non-injected treatments were used as standard controls in both trials. In both trials, the following were examined on d18 of incubation: embryo mortality; relative embryo weight and moisture content; relative dry embryo weight; and relative yolk sac weight and yolk moisture content. None of the injected solutions had a significant effect on embryo mortality. However, KCl at all molarities and physiological saline increased relative yolk sac weight in comparison to non-injected controls. All relative concentrations of the metabolic compounds decreased relative embryo BW, and the CEN injection at all 4 relative concentrations increased embryo moisture and decreased embryo dry matter content. In conclusion, injection of physiological saline and KCl into the amnion at d16 may provide a yolk sparing effect and may subsequently have a positive effect on post hatch chick growth. Furthermore, all the salt solutions tested have the potential for use in commercial egg injection, and might also be combined with the metabolic solutions examined to promote hatchability and post-hatch growth.

Key Words: Embryogenesis, *In Ovo* Injection, Physiological Compounds

140 Partial coefficients of nutrient partitioning of broiler breeders using different feeding strategies during the production phase. L. F. Romero^{*1}, M. J. Zuidhof², A. Naeima¹, F. E. Robinson¹, and R. A. Renema¹, ¹University of Alberta, Edmonton, AB, Canada, ²Alberta Agriculture and Food, Edmonton, AB, Canada.

This study was conducted to identify a model to estimate partial coefficients of nutrient partitioning of broiler breeders using a set of biologically meaningful explanatory variables of ME intake and compare the coefficients among different feed allocation strategies. A total of 288 pullets (Ross 708) were reared in floor pens, individually caged at 16 wk and assigned to one of four feed allocation groups. Three groups had feed allocated on a group basis with divergent target BW reached at 20 wk: Standard (STD), HIGH (STD \times 1.1), and LOW (STD \times 0.9). The fourth group had feed allocated on an individual bird basis (IND) and followed the STD BW target. Models explained average daily ME intake using weekly data from 20 to 52 wk and regressions used generalized least squares. Maintenance estimates were based on Metabolic BW (MBW=BW^{0.67}). Model fit was assessed with the Bayesian Information Criterion (BIC). A total of 9394 valid observation sets were used. Besides MBW, Average Daily Gain (ADG) and Egg Mass (EM) (BIC=94187.9), improvements of fit allowed the inclusion of MBW \times temperature (T), MBW \times T², percentage of yolk, wk from first egg, wk before first egg, corrections due to negative ADGs, and hours of photoperiod (BIC=83958.3). The residuals showed a peak at the beginning of egg production in all groups. ME requirements increased by 3.26 kcal/wk (SE=0.22) before, and decreased by 4.16 kcal/wk (SE=0.04) after the first egg. From a model including MBW, ADG and EM, partial coefficients of the pooled data were 117.36 kcal ME/kg MBW (SE=0.73), 3.33 kcal ME/g ADG (SE=0.04) and 2.16 kcal ME/g EM (SE=0.03). Compared to STD, LOW hens showed higher MBW and lower ADG and EM coefficients, and HIGH hens showed higher ADG and EM coefficients ($P<0.001$). IND hens showed lower MBW and higher ADG and EM coefficients than STD hens ($P<0.001$) although there were no differences in the residuals between these two groups ($P=0.127$).

Key Words: Broiler Breeders, ME Partitioning, Residual Feed Intake

141 Broiler breeder strain and egg size affect egg characteristics, hatchability, and broiler performance in old flocks. A. M. Franco^{*}, G. M. Fasenko, and E. E. O'Dea, University of Alberta, Edmonton, Alberta, Canada.

Broiler breeder flock age is an important factor in determining egg and chick quality. This trial analyzed the effects of strain and egg size on egg characteristics, hatchability, and broiler performance using eggs from 59 wk old flocks. Eggs were collected from two strains (Ross308 (R), Cobb500 (C); n=1380/strain) and three egg sizes (small (S), medium (M), large (L); n=920/size). Specific gravity, albumen, shell and yolk weights were measured in 30 eggs/strain/size, the remaining eggs were incubated. Saleable chicks were weighed, placed in floor pens (n= 2 pens of 119 chicks/strain/size) and grown out for 42 days. Daily mortality, 3 and 6 wk feed consumption and BW were recorded. Data were analyzed using SAS proc Mixed ($P\leq 0.05$). C eggs were heavier (71.3 \pm 0.09g) than R (68.3 \pm 0.09g), had higher specific gravity (1.075 \pm 0.0005) than R (1.071 \pm 0.0005), and higher % dry shell (C=8.6 \pm 0.07%; R=8.3 \pm 0.07%). S eggs had higher % dry shell

(8.6 \pm 0.08%) than L (8.3 \pm 0.08%). Strain and size affected % egg weight loss at transfer: R was higher (13.4 \pm 0.08%) than C (11.8 \pm 0.08%) and S (13.3 \pm 0.1%) higher than M (12.4 \pm 0.1%) and L (12.2 \pm 0.1%). Infertility was greater in R (20.7 \pm 0.86%) than in C (5.5 \pm 0.86%). Early embryo mortality was greater for R (6.4 \pm 0.64%) than for C (4 \pm 0.64%), but late embryo mortality was the opposite (C=4.5 \pm 0.56%; R=2.9 \pm 0.56%). S eggs had lower late embryo mortality (2.4 \pm 0.69%) than M (3.5 \pm 0.69%) and L (5.2 \pm 0.69%) and higher hatchability of fertile eggs (S=87.3 \pm 1.22%; M=86.3 \pm 1.22%; L=84 \pm 1.22%). S eggs hatched sooner (496.7 \pm 1.19h) than M (501.4 \pm 1.19h) or L eggs (503.1 \pm 1.19h). C eggs hatched heavier chicks (48.9g \pm 0.07g) than R (44.3 \pm 0.07g), and L eggs hatched heavier chicks (51.6g \pm 0.08g) than M (48 \pm 0.08g) and S (44.6g \pm 0.08g). The results indicate that strain and egg size affected egg quality and hatchability in old flocks; future research should evaluate specific incubation conditions based on strain and size to improve hatchability.

Key Words: Broiler Breeder Strain, Egg Size, hatchability

142 Effect of early and late incubation temperature profiles and hatching basket ventilation on broiler embryonic development. K. E. Brannan^{*}, N. Leksrisompong, P. W. Plumstead, J. H. Small, E. O. Oviedo-Rondon, and J. T. Brake, North Carolina State University, Raleigh.

An experiment was conducted to examine the effects of early and late incubation temperature profiles and hatching basket ventilation during the last 4 d of incubation on embryonic development. Eggs from a 52-wk-old Ross 344 \times 708 broiler breeder flock were divided equally between two incubators to create an Early Hot (EH) treatment with an average air temperature of 38.1°C and an Early Cool (EC) treatment with an average air temperature of 36.9°C during E0 to E3 of incubation. From E4 to E18, both machines were adjusted to maintain an egg shell temperature of 37.5°C. On E15, 40 eggs from each early temperature treatment were sampled. Embryo weight and length were significantly larger in the EH treatment while yolk and albumen weights were significantly smaller. At transfer on E18, eggs were randomized by tray within each early temperature treatment and placed into plastic hatching baskets with 170 eggs in each basket. The plastic hatching baskets were divided into two ventilation treatments of top taped (TT) and control (CN) and then equally divided between two hatcheries representing two late temperature treatments. One machine was designated as Late Hot (LH) and maintained at an air temperature of 38.2°C, while the other machine was designated as Late Cool (LC) and maintained at an air temperature of 36.1°C. At hatching, chick BW and relative weights of the yolk, heart, proventriculus, and gizzard were determined. The EH treatment chicks were longer and exhibited larger gizzard and proventriculus weights despite having a smaller BW and yolk sac. The LH treatment produced a smaller BW but no other differences. Basket ventilation also did not produce any differences. Although there were no two-way early by late incubation temperature interactions the EC treatment consistently produced smaller proventriculus weights across the three-way interactions.

Key Words: Ventilation, Incubation Temperature Profile, Egg Temperature

143 Effect of early and late incubation temperature profiles on broiler long bone development. J. H. Small*, K. E. Brannan, N. Leksrisompong, P. W. Plumstead, J. Brake, and E. O. Oviedo-Rondon, *North Carolina State University, Raleigh*.

Incubator conditions during the plateau stage of incubation can affect avian long bone development. This experiment was conducted to evaluate the effects of early and late incubation temperature profiles on broiler long bone development at hatching. A 2 × 2 factorial design of treatments was applied during early, E0-E3, and late, E18-E21, incubation. Eggs from 52-wk-old Ross 344 × 708 breeders were divided equally among two incubators to create Early Hot (EH) and Early Cool (EC) air temperatures of 36.9 and 38.1°C, respectively. Both machines were adjusted to maintain eggshell temperatures of 37.5°C from E4 to E18. At transfer on E18, eggs were randomized by tray within each early temperature treatment and placed into plastic hatching baskets in both machines. One machine was then designated as Late Hot (LH) with an air temperature of 38.2°C, and the other was designated as Late Cool (LC) to maintain an air temperature of 36.1°C. At hatching, 15 chicks from each treatment were randomly selected. BW and yolk sac weights were recorded, and legs were removed. Weight and length of tibia, femur and shanks were determined. Relative percentages of bones and fluctuating asymmetry for each limb section were calculated. Hatchlings from the EC treatments had the heaviest BW ($P < 0.001$) and reduced yolk absorption ($P < 0.001$), but yolk-free BW was not affected by the treatments. The EC profiles increased ($P \leq 0.05$) shank weights. The highest relative asymmetry of femur ($P < 0.01$) and tibia length ($P < 0.05$) was observed with the ECLH profile. In conclusion, the EC incubation profiles may affect long bone development and increase relative asymmetry of legs in day-old chickens especially when they are placed in hatchers with hot temperature profiles. These results may have implications on broiler leg health during grow-out.

Key Words: Incubation Temperature Profile, Bone Development, Broiler Leg Health

144 Feeding broiler breeder hens twice a day after photostimulation improves reproductive performance. J. M. Spradley*, M. E. Freeman, J. L. Wilson, and A. J. Davis, *University of Georgia, Athens*.

After photostimulation, the reproductive performance of broiler breeder hens is sensitive to extended periods of fasting. In a past experiment, extending a skip-a-day feeding program past photostimulation until five percent egg production decreased total egg production by more than 19 eggs per broiler breeder hen through 65 weeks of age, as compared to commencing a once a day feeding program after photostimulation. In the current research the effects on reproductive performance of shortening the fasting period even further by implementing a twice a day versus a once a day feeding program after photostimulation was investigated. Pullets were reared using a skip a day feeding program from 2-21 weeks of age. All pullets were weighed at 20 weeks of age and then distributed into 30 laying pens (35 hens and 4 roosters per pen) such that each pen had a similar body weight distribution. At 21 weeks of age 15 of the laying pens were placed on a once a day feeding schedule while the other 15 pens were placed on a twice a day feeding schedule. The total amount of feed provided per day to all the laying pens was the same; however, the birds fed once a day received all of their feed at 6:30AM, while the birds fed twice a day received 60% of their total feed allotment at 6:30 AM and the other 40% at 3:00PM. Even though both treatment groups began egg production

at the end of week 23, the birds receiving feed twice a day have laid significantly more eggs through 45 weeks than those fed once a day. Since 26 weeks of age, eggs produced by birds fed twice a day have been significantly and consistently heavier by about 1g than the eggs produced by the birds fed once a day. Feeding hens twice a day has also improved their body weight uniformity compared to the hens fed once a day. These results further demonstrate that to achieve optimum reproductive performance in broiler breeder hens it is necessary to limit fasting durations after they have been photostimulated for reproduction.

Key Words: Broiler Breeder Hen, Twice a Day Feeding, Egg Production

145 Relationships between broiler breeder body weight, breast meat development, and reproductive tract development. N. Leksrisompong*, E. O. Oviedo-Rondon, and J. T. Brake, *North Carolina State University, Raleigh*.

A study was conducted to investigate the relationships between broiler breeder female BW, breast meat development, and reproductive tract development as influenced by two feed allocation programs during the rearing period followed by two feed increase rates from photostimulation to peak egg production. Females were reared on litter with either of two feeding programs (Low or High) from hatching to 23 wk of age and then moved to individual cages and subjected to either Slow or Fast feed increments from photostimulation to peak egg production in a 2 × 2 factorial design. BW was determined on individual hens at 24 wk, fifth egg, and 44 wk of age. Breast muscle weight was estimated by real time ultrasound at 24 wk and fifth egg while all birds were killed and deboned to determine actual breast meat at 44 wk of age. Weights of the ovary and oviduct segments were also taken at 44 wk. Hens were inseminated artificially at 39 wk and eggs collected for 14 d. Pullets from the High feeding program weighed more at 24 wk but only the High-Fast combination hens were heavier than the other hens at 44 wk. Larger hens possessed greater breast meat at 24 wk and 44 wk. BW at fifth egg was positively correlated with uterus and magnum, but not ovary and other oviduct segment weights at 44 wk. Hens from the Low and Slow feeding programs had the heaviest magnums while hens from the High and Slow programs had the smallest magnums. In a similar manner, breast meat weight at 44 wk was correlated only with magnum weight. These data suggest that the oviduct segments and ovary were not developing in a synchronous manner relative to BW and breast meat development. Feeding programs consistently caused variations in magnum weight but not in any other part of the oviduct. The High feeding program during rearing produced hens that exhibited poorer fertility probably due to their greater biological age at the time of insemination.

Key Words: Broiler Breeders, Oviduct, Ovary

146 Effect of female broiler breeder BW profile and rate of lay on broiler chick traits, growth performance and meat quality. A. Naeima*¹, L. F. Romero¹, M. J. Zuidhof², R. A. Renema¹, and F. E. Robinson¹, ¹*University of Alberta, Edmonton, AB., Canada*, ²*Alberta Agriculture and Food, Edmonton, AB., Canada*.

The impact of divergent female BW profiles from 16 wk of age on broiler offspring chick quality, yield, and meat quality was assessed

in Ross 708 broiler breeders. At hatch, 216 pullets were assigned to a BW profile group and reared in floor pens on a common BW target. Pullets were individually caged at 16 wk. Feed allocation was altered for each group to achieve the following BW profile targets by 20 wk of age: Standard (Std), High (Std \times 1.1), and Low (Std \times 0.9). In the first study (32 wk of age), eggs from 1 wk were incubated and the 988 resultant broilers assessed for chick quality traits and grown to either a 39 or 49 d processing age. Eggs from this period (30-31 wk of age) from Low hens were smaller and had a lower proportion of yolk than eggs from Std or High hens ($P < 0.0001$). Chick length and weight were also lower in Low chicks ($P < 0.0001$), but differences disappeared by 11 d of age. Maternal BW profile did not affect broiler feed efficiency or meat quality traits (pH, color, drip loss, cook loss and tenderness). At 45 wk of age, broiler growth efficiency and yield was assessed in a comparison of the offspring of the 11 best (high: HE) and 11 worst egg producers (low eggs: LE) from each BW profile. The progeny were brooded on litter-floored cages, separated by dam and sex ($2 \times 3 \times 2$ factorial design). At this maternal age, eggs from Std hens had the lowest transfer and hatch weights ($P < 0.0001$), although differences did not persist. The best egg layers (HE) produced 40.2 g chicks compared to 44.3 g chicks in the LE treatment, reflecting their smaller egg size. The HE chicks also had a reduced length at hatch ($P < 0.0028$). Their BW remained 5% lower, but with similar % breast yield. Breast muscle from HE broilers was brighter (L*) than breast from the LE broilers ($P < 0.0002$). While this suggests potential differences in muscle quality, drip loss, cooking loss and tenderness were similar.

Key Words: Broiler Breeder, Growth Rate, Meat Quality

147 The relationship between female feather cover, mating frequency and male-to-female aggression in Broiler Breeders. D. E. Holm*¹, R. A. Renema¹, F. E. Robinson¹, and M. J. Zuidhof², ¹University of Alberta, Edmonton, Alberta, Canada, ²Alberta Agriculture and Food, Edmonton, Alberta, Canada.

A 3×4 factorial design study was performed to examine the relationship of feather cover in female broiler breeders with male BW distribution, aggression, and sexual behavior. Ross 308 broiler breeders (264) were housed in 8 rooms (17.13m² with 60% slats) of 30 hens and 3 roosters. Hen feather score (FS) was based on a 5-point scale with 6 focal hens per room consisting of 2 hens/FS1 (poor), FS3 (moderate) and FS5 (excellent). Male tmt (2 pens/tmt) were based on BW distribution: High Uniform (HU) (BW range < 500g), Uniform (U) (BW range = 600g), Skew High (SH) (2 males 700g > 1 male), and Skew Low (SL) (2 males 700g < 1 male). Rooms were videotaped using ceiling-mounted cameras for 3-hr/d for 3 consecutive days from 6 to 9 pm. Focal scan sampling of all 72 hr of tape documented incidence of specific aggressive and mating behaviors and instantaneous location scans done every 5 min. Birds were dissected to characterize reproductive

morphology. Proc MIXED was used to assess differences in mating and aggressive behaviors, and reproductive morphology. Hens with poor feather cover (FS1) had a lower BW (3.65kg) than hens with moderate (3.97kg) (FS3) or excellent (4.16kg) (FS5) feather cover. The better-feathered FS3 and FS5 hens spent more time on the slatted area compared to the FS1 hens. This could indicate a relationship between feather score and mating frequency. The HU and SH (mean of 5.81 events) male BW treatments demonstrated more male to female aggressive pecks and grabs compared to males of the U and SL (mean of 0.78 events) treatments. The U and SL treatments may have more behavioral stability because one male of higher BW being able to maintain a dominant role. No relationship between feather cover and reproductive morphology was found. Feather cover may be used as general but not definitive indicator of mating frequency while male BW distribution can be used as an indicator of potential male to female aggressive behaviors.

Key Words: Broiler Breeders, Feather Cover, Aggression

148 Novel isolation procedures for developing probiotic cultures against *Campylobacter* for poultry. V. F. Aguiar*¹, I. Reyes-Herrera¹, F. Solis de los Santos¹, M. L. Dirain¹, J. Metcalf¹, P. J. Blore¹, A. M. Donoghue², and D. J. Donoghue¹, ¹University of Arkansas, Fayetteville, ²PPPSRU, ARS, USDA, Fayetteville, AR.

Campylobacter is a pathogenic bacterium that is a leading cause of food borne illness associated with the consumption of poultry products. *Campylobacter* is commonly present in the intestinal tract of poultry and one strategy to reduce enteric colonization is the use of probiotic cultures. These cultures consist of beneficial bacteria which may displace enteric pathogens. Although probiotic cultures have been successfully used to reduce enteric *Salmonella* colonization, their use has met with limited success against *Campylobacter*. In an effort to improve the efficacy of probiotic cultures, new isolates have been collected and identified by our laboratory. Cecal contents from approximately 300 healthy chickens were collected and diluted in Butterfield's Phosphate Diluent and inoculated onto both Blood Agar Plates and Lactobacilli MRS broth and incubated at 37°C over night. Isolates were identified using Gram stain and the Biolog[®] system. Only isolates meeting the GRAS (Generally Recognized as Safe) status according to the Food and Drug Administration were considered for probiotic development. The 45 isolates meeting this criterion were co-incubated with *Campylobacter*, *in vitro*, to determine their ability to reduce *Campylobacter* growth. Of these 45 isolates, 11 isolates inhibited *Campylobacter* growth. We are currently in the process of evaluating the ability of these isolates to reduce gastrointestinal *Campylobacter* colonization in chickens.

Key Words: *Campylobacter*, Probiotic Culture, Poultry