# Environment and Management: Layers, Turkeys, Waterfowl

**193 Acclimation of laying hens to new environments.** J. Thaxton* and J. Odhiambo-Mumma, *Mississippi State University*, *Mississippi State*.

One hundred and fifty Single Comb White Leghorn hens that were approximately 52 wk of age and had been laying intensely for 28 wk were housed in single-bird laying cages (35L x 25W x 30H cm). Fifty hens were relocated to different single bird cages, 50 hens to battery cages (60L x 60W x 30H cm) in an environmentally regulated room, and the last 50 hens to floor pens in a curtain-sided pullet grower house. The photoperiod in all three locations was 16L:8D. Hens were allowed to acclimate to the new environments for 30d. Then BW and plasma corticosterone (CS) were assessed in all hens and 10 hens from each environment were killed and relative weights of liver, spleen, and oviduct were determined. Results suggest that hens in the three different environments acclimated similarly. Of the remaining 40 hens in each environment, 20 received implantations of osmotic pumps that were calibrated to continuously infuse 8IU ACTH/kg BW/d for 7d and the other 20 hens in each environment received pumps that infused an equivalent volume of saline. On d6 after implantation of pumps, all hens were weighed, bled, and relative organs were determined. Results suggest that hens in commercial-type cages and those in floor pens exhibited very similar stress responses, while hens in battery cages exhibited a degree of stress that surpassed that of hens in the other two environments.

**Key Words:** Laying hen, Welfare, Acclimation

**194 Determining protein and energy levels needed for full fed molting procedures.** P. Ruszler* and C. Novak, *Virginia Polytechnic Institute and State University*, *Blacksburg*.

To determine the energy and protein levels needed for optimum results when molting without feed withdrawal, 1152 hens were housed 3 per cage at 464 sq cm. Four strains; Bovans, Hyline W-98, Hyline W-36 and Lohmanns were compared. The following molt diets, A=9.5% CP/1100 Kcal, B=9.5% CP/1430 Kcal, C=11.75% CP/2090 Kcal and D=14% CP/2750 Kcal of energy were used. The layer diet used was 17% CP/2794 Kcal of energy. The 4 strains were equally assigned to diets A & B for the first two weeks. The first one-third of the A & B diets was changed to the C diet for weeks 3 & 4. The second one-third of the A & B diets was changed to the D diet during the fourth week while the last third remained on the A & B diets. All hens were placed on the D diet during week 5. The original third of the hens remained on the D diet during week 6 while the other two thirds went on the layer diet. All hens were fed the layer diet starting the seventh week through the end of the trial at 24 weeks. Water was given ad libitum. Body weight loss of 20 to 23% occurred in the third week. Egg production reached zero during the second week and started up during the fourth week. It returned to 50% during the eighth week and achieved peak production ranging from 85 to 93% during the eleventh week. Feed intake ranged from 36 to 41 g/hen in the first week to a high of 126-129 g/hen during the 9 to 12 wk period and subsequently dropped to 110-112 g/hen. Body weight ranged from 1856g to 1893g at the end of the trial. The total eggs per hen housed ranged from 99 to 105 and was not significantly different even though the higher nutrient treatments laid the most eggs. Significant strain differences which follow those in the management guides were observed in all parameters. This study confirms that layers molted without feed withdrawal can achieve optimum productive performance post molt as long as the nutrient level is properly controlled during the first four weeks.

**Key Words:** Molting, Nutrient levels, Egg production

**195 Effects of feeding grains naturally contaminated with *Fusarium* mycotoxins on hepatic fractional protein synthesis rates of laying hens.** S. Chowdhury* and T. Smith, *University of Guelph*, *Guelph, ON, Canada*.

Experiments were conducted to evaluate the effects of feeding grains naturally contaminated with a combination of *Fusarium* mycotoxins on hepatic fractional protein synthesis rates (FSR) of laying hens. Thirty-six, 32-week-old laying hens were fed diets formulated with (1) uncontaminated grains, (2) contaminated grains, or (3) contaminated grains + 0.2% polymeric glucomannan mycotoxin adsorbent (GMA) for a period of 4 weeks. Hepatic FSR were measured in vivo by the flooding-dose method. The feeding of contaminated grains decreased hepatic FSR in laying hens compared to controls after 4 weeks. Supplementation of contaminated diets with GMA did not prevent the reduction in FSR compared to unsupplemented contaminated grains. It was concluded that hepatic in vivo FSR of laying hens were sensitive to the feeding of grains naturally contaminated with *Fusarium* mycotoxins. The magnitude of inhibition of FSR caused by *Fusarium* mycotoxins was minor, therefore, the scope of GMA to prevent the adverse effect was limited.

**Key Words:** Fusarium, Laying hen, Protein synthesis

**196 Effect of dietary phosphorus concentration on nutrient mass balance of laying hens.** T. Applegate*[1], W. Powers[2], P. Jaynes[1], A. Storm[1], and M. Jeffrey[2], [1]*Purdue University*, *West Lafayette, Indiana*, [2]*Iowa State University*, *Ames*.

An experiment was conducted to determine the fate of fed nutrients through egg, excreta, and feed analysis when four concentrations of dietary phosphorus were ad libitum fed (0.16, 0.24, 0.32, and 0.40% non-phytate phosphorus; NPP) from 28 to 75 wk of age. The experiment was conducted with W-36 Hyline hens (average 28 wk BW=1.62 kg) in individual cages (15 hens/ diet). Feed intake was determined and excreta and eggs were quantitatively collected during a 3 d total collection at 28, 44, 60, and 75 wk of age, lyophilized, and analyzed for DM, N, Ca, P, K, Cu, Mn, Zn, S, Fe, Al, Na, and Mg. Egg production, weight, and nutrient composition were unaffected by dietary NPP. Similarly, feed DM intake was unaffected by dietary NPP (average=83.8 g DM/hen/d and 96.74 g DM/hen/d; 28 and 75 wk of age, respectively). Excreta DM was 16.45 and 21.71 g/hen/d at 28 and 75 wk of age, respectively. Excreta N was 887 and 1240 mg/hen/d at 28 and 75 wk of age, respectively. Dietary P intake, however, increased with increasing dietary NPP. At 28 wk of age, hens fed 0.16 % NPP ate 0.277 g/hen/d vs. hens fed 0.40% NPP at 0.482 g/hen/d, resulting in 0.187 and 0.408 g P being excreted/hen/d ($P < 0.05$). By 75 wk of age, hens fed 0.16 % NPP ate 0.34 g/hen/d versus that of hens fed 0.40% NPP at 0.589 g/hen/d, thereby resulting in 0.277 and 0.406 g P excreted/hen/d ($P < 0.05$). Excretion of Ca was unaffected by dietary NPP and averaged 1.35 and 1.85 g/hen/d at 28 and 75 wk, respectively. Excretion of K was unaffected by dietary NPP and averaged 0.533 and 0.61 g/hen/d at 28 and 75 wk, respectively. Excretion of S, Fe, Al, and Cu were the most notable minerals affected by dietary NPP and increased from 72.6, 14.1, 4.56, 0.87 mg/hen/d when fed 0.16 % NPP to 88.3, 20.8, 11.62, and 0.97 mg/hen/d when fed 0.40 % NPP, respectively ($P < 0.05$). In conclusion, hens fed increasing NPP concentrations from 0.16 to 0.40 % excreted 32 to 54 percent more P over the first cycle of egg production.

**Key Words:** Laying hen, Manure, Nutrient excretion

**197 Effects of chronic social stress on immune function, production and feather condition of three genetic strains of leghorn hens at 45 weeks of age.** A. G. Fahey*[1,2], R. M. Marchant-Forde[1], H. W. Cheng[1], and W. M. Muir[2], [1]*USDA-ARS*, *West Lafayette, Indiana*, [2]*Purdue University*, *West Lafayette, Indiana*.

Social stress in hens is a common problem impacting welfare. To examine whether there are genetic differences in response to chronic social stress, three genetic strains of White Leghorn hens (docile (KGB), aggressive (DXL), and control (MBB) strains) were housed in low (L) (4 birds/cage, 175cm$^2$/bird) or high (H) (10 birds/cage, 213cm$^2$/bird) density cage systems from 17 wks of age to form 6 treatments. At 45 wks of age blood samples were collected for immunological analysis from 12 birds per treatment. Following euthanasia, body weight and organ weights were measured and feather condition was assessed on a 0 to 5 scale with 0 indicating smooth, intact plumage and 5 indicating bare skin with injury. Results showed that DXL (H and L) had significantly heavier body weights than other treatments ($P<0.05$). High density DXL had lower spleen weights than birds from all other treatments ($P<0.05$) and L MBB had larger

spleens than H MBB birds (P<0.05). Low density DXL had smaller livers than birds from all other treatments (P<0.05) and L MBB was found to have reduced liver size relative to H MBB (P<0.05). No other significant treatment differences were found for body, heart or adrenal weights. Likewise there were no differences in birds' T- or B- lymphocytes among treatments. In general, H and L DXL birds had the worst feather condition with H MBB birds exhibiting the best feather condition (P<0.05). Overall, chronic social stress was shown to have little effect on the immune parameters measured in the three genotypes. While some body and organ weights differed across genotype, there was no notable impact of stress on these parameters. Feather condition was affected by treatment indicating a possible difference in feather pecking among strains. In conclusion, hens exhibit some genetic differences in response to chronic social stress, however more research is needed to evaluate the extent of these differences.

**Key Words:** Stress, Genotype, Hens

**198 Behavioral assessment of efficiency of hens housed at different stocking densities.** S. J. Shields*, S. E. Scheideler, E. E. Blankenship, L. Robeson, and M. M. Beck, *University of Nebraska*, *Lincoln*.

Efficiency of hens decreases with increased stocking density; we hypothesized that changes in behavior divert dietary energy from productivity. Thirty cages (41.15 x 50.8cm) were stocked with Bovan hens at 5 densities (D) (1,3,4,5, or 6 hens), with 6 replicates per D. Hens in each cage were videotaped for 1h, 3x/day (early (ED), 0600h to 1300h; late (LD),1400h to 2100h; night (N), 2200h to 0500h), for ~2 wk. Behaviors were scored by a trained observer at 5-min intervals during each h using scan and zero-one sampling. Feed intake and egg production (EP) were recorded daily. Data were analyzed by ANOVA. There was no effect of density on EP, but hens at higher D ate more (p=0.0007), resulting in lower feed efficiency. There was an effect of D (p=0.0003) on out of view behaviors. In feeding behavior, there were differences between ED and LD (p=0.0048) and between ED and N (p=0.0038) in D1; between ED and N in D3 (p=0.0066), D4 (p=0.0727), D5 (p=0.0001) and D6 (p=0.0029); and between LD and N in D3 (p=0.0151), D4 (p=0.0130), D5 (p=0.0001), and D6 (p=0.0037). For "stand active," there were differences between D1 and both D4 (p=0.0061) and D5 (p=0.0028); between ED and N in D3 (0.0048), D5 (p=0.0001), and D6 (p=0.0003); between ED and LD in D4 (p=0.0461) and D5 (p=0.0876); and between LD and N in D3 (p=0.0019) and D6 (p=0.0150). There were time effects for sleeping (P<0.0001) and drinking (P<0.0001). For drinking, all times (ED, LD and N) were different (p < 0.0004); for sleeping, N was different from both ED and LD (p<0.0001) but ED and LD were not different. There was an interaction between time and D (p<0.0001) for stretch and wing flap behaviors, with differences between ED and LD (p=0.0001) and between LD and N (p=0.0026) in D1. Behavior is thus substantially affected by D; it may be easier to conserve energy in single hen cages by reducing activity. Conversely, competing for food and vying for space in more crowded cages may contribute to reduced efficiency.

**Key Words:** Stocking density, Laying hen behavior, Production efficiency

**199 Effects of fluoride fed during growth on bone strength of caged laying hens.** A. B. Webster*[1], R. J. Buhr[2], N. M. Dale[1], and R. M. Jardim[3], [1]*University of Georgia*, *Athens*, [2]*USDA ARS Russell Research Center*, *Athens, Georgia*, [3]*Federal University of Goias*, *Goias, Brazil*.

500 Hy-Line W-36 pullets were raised on the floor and fed one of five diets containing 0, 50, 100, 200, or 400 ppm fluoride (F), as sodium fluoride (NaF), from day 1 to 16 weeks of age. At 16 weeks, 20 pullets per treatment were sacrificed. The left humerus, femur, and tibiotarsus of each bird were excised and cleaned of soft tissue by dissection. After measuring weight and length, each bone was broken in an Instron machine to determine maximum breaking load. The free thoracic vertebra (FTV) and the proximal section of the tarsometatarsus (PTM) were fixed in formalin for subsequent histomorphometric assessment of bone components. The remaining pullets were housed 2 per cage, photostimulated and fed a layer ration, without NaF. At 30 and 45 weeks of age, additional 20 pullets per treatment were sacrificed and data collected as above. Live-bird palpation scoring of deformity at the costochondral junctions of the ribs was conducted at 20, 28, 36, and 45 weeks. A six-point scale (0-5) was used with 0 indicating no deformity and 5 denoting gross deformation of the rib cage. Egg production was recorded from 19-30 weeks and 41-43 weeks. Dietary fluoride resulted in statistically significant increases in bone strength at all ages (P<.05). The improvement was most pronounced in birds fed 400 ppm F. At 45 weeks, the maximum breaking loads for the humerus, femur, and tibiotarsus of these birds averaged 37, 24, and 22% greater, respectively, than those for control hens, although the bones were significantly shorter by 2.1, 2.0, and 2.9 mm, respectively.400 ppm F significantly increased humerus weight but not femur or tibiotarsus weight. Palpation scores were low until 36 weeks and increased considerably by 45 wks, at which time the birds in the 50 ppm F treatment had the best scores. Birds fed 400 ppm F were significantly lighter than control birds (e. g. 1136 vs. 1162 g at 16 wks, and 1612 vs. 1768 g at 45 wks). Egg production was not significantly affected by F level in the diets of growing pullets. Histomorphometric evaluation of the FTV and PTM remains to be completed.

**Key Words:** Caged laying hen, Bone strength, Fluoride

**200 Performance of turkey toms and hens fed diets supplemented with mannan oligosaccharides.** R. M. Hulet* and T. L. Cravener, *The Pennsylvania State University*, *University Park*.

A feeding trial with 486 turkey toms (0.202m$^2$/bird) and 587 hens (0.167m$^2$/bird) was conducted over 13 wks to study the effect of gender and mannan oligosaccharides (BM, Bio-Mos, Alltech) supplementation on performance. Poults (Hybrids) were raised in 24 floor pens (sex-separate), with 6 replicate pens per diet gender combination. The control (CON) feeding program (calculated analysis) included a pre-starter (0-3 week; 26.5% CP; 5.25% CF; BMD, 50 g/ton; Coban,90 g/ton), starter (3-6 week; 27.0% CP; 7.0% CF; Coban,78 g/ton; Flavomycin, 2 g/ton), grower-I (6-9 wk; 23.0% CP, 3.0% CF; Coban,60g/ton; BMD, 50g/ton), grower-II (9-12 wk; 17.0% CP; 5.0% CF; BMD, 50g/ton). The BM diets were supplemented with BM at 3lb/ton (pre-starter), 2 lb/ton (starter) and 1 lb/ton (grower-I and I) and all but the grower-II also included Coban (at above levels). No significant differences (SD) in BW, BW Gain (BWG), or feed intake (FI) from 0 to 13 wks were observed due to BM treatment. Feed conversion (FC) was significantly higher due to BM supplementation during wks 0-3, but was not affected by diet otherwise. No SD in Feed cost per bird or in mortality rate was observed due to BM supplementation. Toms, as expected, consistently obtained higher BW, BWG, and FI over all age phases vs hens. Tom FC was significantly better than hens for 0-3, and 9-13 wks. No SD was noted between FC of toms and hens during wks 3-9. A SD (higher) mortality rate was observed for toms in wk 3-9 vs hens. Hens exhibited a SD (lower) Feed cost/bird through all ages, than toms. No SD was found between CON and BM treatments for any growth parameter.

**Key Words:** Turkey, Mannan oligosaccharides, Bio-Mos

**201 Turkey toms fed low calcium and phosphorus diets supplemented with phytase 1. Growth performance and carcass yield.** R. M. Hulet*[1], P. H. Patterson[1], R. J. Mitchell[2], and T. L. Cravener[1], [1]*The Pennsylvania State University*, *University Park*, [2]*Mitchell Consulting Service*, *Tega Cay, South Carolina*.

A turkey study was conducted to measure the affects of feeding diets formulated to contain lower levels of calcium (Ca) and total phosphorus (tP) (15 and 15%, respectively) than controls (CON) from 6-9 wk, 29 and 23% lower from 9-12 wk and 45 and 33% lower from 12-13 wk with and without phytase supplementation. Toms (BUTA-T2) were raised in 24 floor pens (0.212 m$^2$/bird) with 8 replicate pens per diet treatment (CON, Low Ca and tP (LCP), Low Ca, and tP with phytase (LCPPH)). The CON feeding program (calculated analysis) included a pre-starter (0-3 wk: 28.4% crude protein (CP), 1.45% Ca, 1.03% tP), starter (3-6 wk: 27.4% CP, 1.41% Ca, 1.01% tP) grower-I (6-9 wk: 24.5% CP, 1.48% Ca, 1.00% tP) grower-II (9-12 wk: 22.5% CP, 1.37% Ca, 0.92% tP) and finisher (12-13 wk: 18.9% CP, 1.18% Ca, 0.79% tP). All birds were fed the same commercial diets from 0-6 wk which contained 0.06% phytase. The CON diets did not include phytase after 6 wk. Dietary treatment did not significantly affect BW, BW Gain (BWG), or feed intake (FI) from 0 to 12 wks. At 13 wk, the BW of LCP and LCPPH birds were significantly lower than the CON birds. The BWG from wk 12 to 13 was significantly higher in CON compared to LCP

treatments and were intermediate for the LCPPH. From 12 to 13 wk FI was significantly higher for CON and LCPPH, compared to LCP pens. Feed conversion and mortality were not affected by treatment. Processing and cut-up of toms at 13 wks resulted in no treatment differences in the weight of the breast, legs, neck, skin, wings, thighs, back, abdominal fat pad or yield as a percent of the last BW, due to treatment. LCP diets did result in poor performance during wk 12-13, indicating phytase supplementation benefited the LCPPH birds with similar and intermediate BWG to the CON ($P$=0.05).

**Key Words:** Turkey, Phytase, Growth efficiency

**202 Turkey toms fed low calcium, phosphorus diets supplemented with phytase 2. Impact on litter mass, phosphorus, bone mineral density and feed costs.** P. H. Patterson*[1], R. M. Hulet[1], R. J. Mitchell[2], and T. L. Cravener[1], [1]*The Pennsylvania State University*, *University Park*, [2]*Mitchell Consulting Service*, *Tega Cay, South Carolina*.

A turkey study was conducted to measure the affects of feeding diets formulated to contain lower levels of calcium (Ca) and total phosphorus (tP) (15 and 15%, respectively) than controls (CON) from 6-9 wk, 29 and 23% lower from 9-12 wk and 45 and 33% lower from 12-13 wk with and without phytase supplementation. Toms (BUTA-T2) were raised in 24 floor pens (0.212 $m^2$/bird) with 8 replicate pens per diet treatment (CON, Low Ca and tP (LCP), Low Ca, and tP with phytase (LCPPH)). The CON feeding program (calculated analysis) included a pre-starter (0-3 wk: 28.4% crude protein (CP), 1.45% Ca, 1.03% tP), starter (3-6 wk: 27.4% CP, 1.41% Ca, 1.01% tP) grower-I (6-9 wk: 24.5% CP, 1.48% Ca, 1.00% tP) grower-II (9-12 wk: 22.5% CP, 1.37% Ca, 0.92% tP) and finisher (12-13 wk: 18.9% CP, 1.18% Ca, 0.79% tP). All birds were fed the same commercial diet from 0-6 wk, which contained 0.06% phytase. The CON diets did not include phytase after 6 wk. Bone mineral density measurements of humerus and femur from LCP or LCPPH birds were the same as the CON at 6, 9, 12, or 13 wk ($P$=0.05). Dietary treatments did not influence wing or thigh mass when birds were processed at 13 wk ($P$=0.05). Litter mass was not significantly impacted by dietary treatments at the conclusion of the study ($P$=0.05). However, litter phosphorus (LP) was 26 and 24% less on a dry matter and as is basis, respectively for the LCPPH treatment at 9 wk compared to the CON ($P$=0.05). The LCP treatment LP was intermediate and not different from the others. At the end of 13 wk LP on an as is basis was 17% less for the LCPPH and LCP treatments compared to the CON ($45.7^b$, $44.8^b$, $54.7^a$g/kg, respectively, $P$<0.05). Feed costs for the LCP and LCPPH diets during the grower-I, II and finisher phases averaged $2.56, $3.76 and $4.82/ton savings compared to the CON. Total feed costs per bird were similarly less for the LCP and LCPPH compared to the CON ($\$5.57^b$, $\$5.62^b$ and $\$5.74^a$, respectively, $P$=0.05). These findings suggest the negative effects of LCP diets can be averted with greater dietary phosphorus levels in the 12-13 wk finisher phase.

**Key Words:** Turkey, Phosphorus, Bone mineral density

**203 Effect of feeding time on the reproductive performance of Pharaoh quail and Pekin duck.** M. Petek*, *University of Uludag*, *Bursa, Turkey*.

Whether feeding early or late during the day can be used as a means to improve the fertility, hatchability, and embryonic mortality in quail and duck is unknown. Therefore, three feeding periods were used to measure the impact of feeding time on reproductive performance of Pharaoh quail (Coturnix coturnix Pharaoh) and Pekin Duck (Anas platyrhynchos). Male and female quail and duck breeders were housed in colony cages and free-range housing systems, respectively. They were fed ad libitum between 0900 to 1300 h or 1300 to 1700 h or 24 h (control) daily. Eggs (736 quail and 272 duck) were used to determine reproductive performance. Eggs were incubated in a commercial setter and hatcher. The setter was operated at 38.0±1.0ºC dry bulb and 29.0±0.5ºC wet bulb temperatures. The hatcher was operated at 37.0 ±1.0ºC dry bulb and 31.0±0.5ºC wet bulb temperatures. Eggs in the setter were turned 15 times per day. Three days after removing the chicks from the hatcher all unhatched eggs were classified as infertile, early dead, late dead, or dead pipped. Hatchability was calculated as the number of chicks hatched per fertile or total eggs. The fertility results were reported as apparent fertility on clear egg basis. All traits were analysed with Chi-square test using SPSS® computer software (version 10.00). Hatchability of total eggs was significantly increased in duck and significantly decreased in quail due to limited time of feeding. Results indicated that feeding between 1300 to 1700 h reduced apparent fertility when compared with the effects of feeding between 1300 to 1700 h. Different feeding times affected the total embryonic mortality. Further investigations are needed to determine the optimum length of feeding time for each bird species.

**Key Words:** Feeding time, Hatchability, Quail

**204 Comparative histology of duck bills following different bill trimming practices.** H. W. Cheng*[1], L. Gustafson[2], E. A. Pajor[3], and J. A. Mench[2], [1]*USDA-ARS*, *West Lafayette, Indiana*, [2]*University of California*, *Davis*, [3]*Purdue University*, *West Lafayette, Indiana*.

Various histological staining methods have been developed to examine trauma-induced pathological changes. Each method is chosen in a tissue-dependent manner. The aims of this study were to investigate trimming-induced bill morphological changes and to test suitable staining methods for detecting traumatic neuromas. One hundred ninety-two day old Pekin ducklings were randomly assigned into 12 floor pens (3.66 X 0.91 m). The pens were divided into three groups, i. e., control, hot blade trimmed with cautery (HT), and tip-seared (TS). Six bills were randomly collected from each group when the ducks were 3 and 6 wk of age, respectively. Following fixation and decalcification, the bills were embedded in paraffin wax, and sectioned longitudinally. Alternate sections were stained with haematoxylin and eosin and Masson's trichrome for connective tissues, and for the nerve fibers, Bielschowsky's silver impregnation, Bodlan's and Holm's staining were used. Compared to the controls, although both bill trims caused connective tissue proliferation in the bill stumps, HT caused more thickness of tissue scars than those induced by TS. There were nerve fibers in the bill stumps trimmed by TS but not in the bills trimmed by HT. No neuromas were found in the bill stumps following either practice. These characteristics of neuronal reactions were more clearly seen following Holm's staining than others. These results indicate 1) trauma-induced pathological changes are dependent on the type of lesion; 2) in Pekin ducks, TS caused less morphological changes than HT, which suggests that TS may be more humane than HT; and 3) different histological methods should be used to examine different tissues, such as connective tissue vs. neuronal tissue. A further study is needed to examine the correlations between these morphological changes and pain sensations (acute and chronic) following the different bill trimming practices.

## Nutrition: Enzymes

**205 Effect of ß-Mannanase (Hemicell®) on performance and body weight uniformity in broiler chickens provided with corn-soybean meal diets and economic ramifications.** M. Jackson*[1], D. Anderson[1], H. Hsiao[1], F. Jin[1], and G. Mathis[2], [1]*ChemGen Corp*, *Gaithersburg, Maryland*, [2]*Southern Poultry Research*, *Athens, Georgia*.

The enzyme B-mannanase has been shown to improve growth, feed conversion and body weight uniformity in broilers. The value of uniformity is difficult to quantify and is dependent on carcass value within various weight categories as well as other factors. A 42-day trial was conducted in floor pens with male Cobb X Cobb broilers provided with corn-soybean meal based diets in the absence of antibiotics. Treatments consisted of a control, control + B-mannanase 0-42 days, and control + B-mannanase 0-17 days of age. There were 45 birds/pen and 8 replications per treatment. At 0, 17, and 42 days of age, all birds were individually weighed to determine body weight uniformity (%CV) on a pen