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SYMPOSIA AND ORAL SESSIONS

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T87 Effect of egg shell and yolk colour on sales of eggs in Nigeria: A case study of egg producers in Ogun, Nigeria. A. A. Mako*¹, O. A. Ogunwole², E. O. Uwagboe³, O. I. Abiola-Olagunju², and R. A. Hamzat³, ¹Tai Solarin University of Education, Ijebu Ode, Ogun State, Nigeria, ²Department of Animal Science, University of Ibadan, Ibadan, Oyo State, Nigeria, ³Cocoa Research Institute of Nigeria, Ibadan, Oyo State, Nigeria.

Demand for colour of egg shell and yolk had significantly affected the sales of eggs among egg producers in Nigeria and this study is focused on the effect of these parameters on the sale of eggs in the study area. Five communities; Ijebu-Ode, Odogbolu, Ikenne-Remo, Ijebu East and Ijebu North local government areas were purposively selected for this study as they are major producers of eggs in Ogun state Nigeria. One hundred and fifty respondents were randomly selected for the study.

The result revealed that majority 60(40%) of the respondents were between ages of 41 and 50 which indicated that they were in their prime age. Majority 110(73.3%) were males while 40(26.7%) were females which shows that more males are into egg production than the females in the study area. Majority of the respondents rear between 1001 and 3000 layers while few 5(3.3%) rear between 50 and 100 layers. All 150(100%) of the respondents indicated that customers prefer brown eggs. Majority 110(73.3%) of the respondents agreed that breeds of birds determine egg colouration while 30(20%) agreed that it is feed and 10(6.7%) had no idea of the cause. Majority 135(90%) of the respondents indicated that customers select eggs based on shell colour and 140(93.3%) agreed that customers dislike white eggs mainly because it is similar to native eggs.

Chi-square result revealed that there is significant difference in the consumers preference between brown and white eggs shell ($X^2=11.65$, $P \leq 0.05$).

In conclusion, egg buyers prefer brown shell and yellow yolk eggs which influence producers sales. It is recommended that egg producers rear breeds of layers that produces brown shell and yellow yolk, and also use feed that has the ingredients that is capable of meeting these requirements.

Key Words: effect, egg shell, egg yolk, sales, Nigeria

T88 Impact of training on middle level manpower on the feed-livestock value chain in Nigeria. O. Johnson*, Federal College of Animal Health & Production Technology, Ibadan, Oyo State, Nigeria.

The traditional combination of research and training at colleges of Agriculture, Animal Health and Production Technology have contributed significantly to the strength of today's poultry industry in Nigeria. According to survey carried out on major poultry companies, government agencies and agro-allied industries that employed middle level manpower. It has been discovered that their performance have

been encouraging. Rural farmers are also eager to listen to extension worker in view of the diverse methods of technology transfer employed. These include on visit, demonstration project, field studies drama and short play on video. Extension /outreach program are relevant, current applicable within the economic confines of this sector. Emphasis is on frequent assessment and timely implementation to technology to enhance productivity and efficiency of poultry. The worldwide poultry and feed industry will continue to need highly qualified specialists, therefore a continued efforts to keep up with international development is essential and also link with information in internet. The study focus on the extension service, research and training in agricultural colleges, research institute and government agencies in Nigeria.

Key Words: training, manpower, diploma

T89 Effect of die thickness and pellet mill throughput on pellet quality. C. R. Stark*, North Carolina State University, Raleigh.

Nutritionists and purchasing agents control approximately 60% of the factors that affect pellet quality, primarily through diet formulation, ingredient specifications, supplier selection, and particle size. Feed mill managers and pellet mill operators can affect pellet quality through die selection, conditioning, cooling, and production rate. The objectives of this experiment were to evaluate the effect of die thickness and pellet mill throughput on pellet quality and pellet mill efficiency. A corn-soybean meal diet containing 3% poultry fat added in the mixer was used in the study. The experimental design was a 3 x 3 factorial arrangement of treatments: production rate (545, 1,091, and 1,636 kg/h) and pellet die thickness (29, 35, and 44 mm). There were three replications per treatment. The calculated L/D ratios (thickness/hole diameter) of the dies were 6.6, 8.0, and 10.0, respectively, based on a 4.4 mm diameter pellet die hole for all dies. Results of the pelleting study showed positive effects on pellet quality (as measured by pellet durability index (PDI, %)) with thicker dies and improved pellet mill efficiency at higher production rates with no interactions. Increased die thickness resulted in a linear decrease in pellet mill efficiency (97.5 to 89.8 kg/hph), and, as expected, a linear improvement in pellet quality (31.8% to 60.0%) was observed with thicker dies. The increase in pellet mill throughput produced a linear increase in pellet mill efficiency (73.3 to 112.4 kg/hph) and a linearly reduction in pellet quality (55.4 to 30.2%). Hot pellet temperatures after the die increased linearly as die thickness increased due to friction between the die and feed. The results of this study confirm the positive effect of die thickness on pellet quality. Additionally, these data demonstrated that throughput should be added to the list of dependant factors (along with feed formulation, particle size, conditioning, cooling, and die specifications) that influence pellet quality.

Key Words: feed manufacturing, pelleting, pellet quality, die thickness, efficiency

T90 Limited broiler breeder feeder and drinker space decreases the incidence of floor eggs. M. Gucbilmez¹, O. Elibol¹, and J. Brake*², ¹*Department of Animal Science, Faculty of Agriculture, University of Ankara, Ankara, Turkey*, ²*Department of Poultry Science, North Carolina State University, Raleigh.*

Three experiments were conducted to determine the effect of broiler breeder female feeder space after photostimulation on egg production and percentage floor eggs. A fourth experiment investigated the effects of drinker space. All experiments were conducted in enclosed fan-ventilated deep litter commercial houses that housed 8,000-10,000 hens each. Ross 344 males and Ross 308 females were grown sex-separate in light-controlled facilities on an 8 h photoperiod. A floor-feeding system was utilized during rearing with 9 pullets/m² and 9 pullets per nipple drinker. All management and infrastructure factors during the production period were the same except feeder or drinker space. Eggs were collected four times daily from the nests and floor and recorded separately. In the first experiment two houses were divided into two pens each so that four 12.9 x 72 m pens were used. Two or three chain feeder lines provided 10.5 cm or 15 cm of feeder space per female, respectively. In the second experiment four 14 x 120 m houses were used and two or three chain feeder lines provided either 12.2 or 17.5 cm of feeder space per female, respectively. In the third experiment a single house was divided into two 12.4 x 68.5 m pens and two or three chain feeder lines provided 12.2 or 18.4 cm of feeder space per female. In the fourth experiment three 14 x 120 m houses were employed. Two or three nipple drinker lines resulted in 7.9 or 5.3 females per nipple, respectively. Hen-housed egg production and female mortality from 25 to 37 wk of age were not affected by feeder or drinker space. However, percentage floor eggs was less for the lesser feeder or drinker space in all experiments.

Key Words: broiler breeders, feeder space, floor eggs, drinker space, drinkers

T91 Molting Leghorn hens using a Pecan Natural Fiber™ product. P. L. Ruszler*¹, C. L. Novak², and J. Nizio³, ¹*Virginia Polytechnic Institute and State University, Blacksburg*, ²*Land O'Lakes Purina Feeds, Kansas City, MO*, ³*Southeastern Reduction Company, Valdosta, GA.*

A by-product of pecan processing, Pecan Natural Fiber™ (PNF), may have beneficial properties affecting a total ovarian rest when fed to laying hens. To evaluate the effectiveness of these properties, molt diets containing PNF were compared with full fed and 4-day feed withdrawal molting programs. Five treatments (tmt) of 18 hens each were compared. Treatments A & B were full fed a 9.7% CP/1430 Kcal ME/kg molt diet. Treatment C was full fed a 14% CP/2778 Kcal ME/kg molt diet and tmt D was full fed an 11% CP/1681 Kcal ME/kg molt diet, both blended with PNF. Both tmt C & D diets had 20% PNF added for the first 7 days then 15% PNF added the next 7 days followed by 9% added for 14 more days. Treatment E (control) was molted by a 4-day feed withdrawal, followed by limit feeding a 14% CP/2778 Kcal ME/kg molt diet to day 33 then full fed a 15.5% CP/2816 Kcal ME/kg layer diet. At 29 days post-molt, tmt A was fed a 14% CP/2783/Kcal ME/kg diet, tmt B a 14% CP/2816 Kcal/kg diet while tmts C & D were fed 15.5% CP/2816 Kcal ME/kg layer diets. Treatments A, B & C reached 50% production by 7 wks post-molt while tmts D & E took 8 wks. Body weights as a percent of initial weight for tmts A,B,C,D & E were 96.6, 98.9, 100.9, 97.8 & 99.2, respectively at 8 wks. Treatments A & B produced 1% or fewer eggs for 4 wks during the molt, while tmts C

& D produced no eggs compared to 5 wks with no eggs for tmt E. Egg weights at 8 wks post-molt were similar (65 - 66 g) for all tmts. Egg production at 12 wks was 90, 85, 86, 83 and 91 percent for tmts A, B, C, D and E, respectively. Daily feed intake per hen at 12 wks was 127, 129, 120, 117 and 128 g, respectively for each treatment. Treatment D consuming the least protein and energy during the molt was the slowest to return to full production. The results suggest that, although the PNF product has potential as a full fed molt inducing ingredient, further study is warranted.

Key Words: pecan product, molting, egg and body weight

T92 Effects of American and proposed European lighting programs on broiler live and processing performance. R. J. Lien*, J. B. Hess, and S. F. Bilgili, *Auburn University, Auburn, AL.*

To determine effects on live and processing performance, broilers were subjected to lighting programs meeting US National Chicken Council (NCC) guidelines or European Union (EU) guidelines proposed in 2005. Eighty male broilers were placed in each of twelve 3.0 by 3.7 m light controlled rooms. Four rooms were provided NCC photoperiods and dim intensity (20D treatment) (1-7 d, 23L:1D and 0.5 FC; 8-40 d, 20L:4D and 0.1 FC; 41-47 d, 23L:1D and 0.1 FC). Four rooms were provided an EU intensity and photoperiod with a split dark period (14B treatment) (1-3 d, 23L:1D; 4-44 d, 14L:4D:2L:4D; 45-47 d, 23L:1D; all at 2 FC), and four were provided an EU intensity and single dark period (16B treatment) (1-3 d, 23L:1D; 4-44 d 16L:8D; 45-47 d, 23L:1D; all at 2 FC). Twenty birds per room were processed at 47 d to determine parts weights and yields. At 47 d, the 14B and 20D treatment BW were greater than 16B; otherwise, BW was unaffected by treatment. Similarly, at 47 d feed consumption was greater in the 14B treatment than 16B, and 20D was intermediate. Feed conversion was unaffected by treatments. Uniformity at 22 d did not differ between treatments; however, at 47 d it was greater in the 20D treatment than 16B, and 14B was intermediate. Overall mortality did not differ between treatments; however, mortality to 22 d was greater in the 20D treatment than in 16B, and 14B was intermediate. Carcass, total breast, fillet, tender, and thigh weights and yields did not differ between treatments. Drumstick yield was greater in the 16B treatment than 14B, and 20D was intermediate. Wing yield was greater in the 20D and 16B treatments than 14B; however, drumstick and wing weights were unaffected by treatments. Results indicate splitting an 8 hr daily dark period into two 4 hr blocks improves live performance relative to a single 8 hr dark period, and that although the yield of minor parts was reduced by splitting the dark period, breast weights and yields were unaffected.

Key Words: broiler, chicken, photoperiod, light intensity, lighting

T93 Effects of fan staging on airflow uniformity in layer houses. J. L. Purswell*¹, J. D. Davis², and S. L. Branton¹, ¹*USDA-ARS Poultry Research Unit, Mississippi State, MS*, ²*Mississippi State University, Mississippi State.*

Modern poultry facilities rely on power ventilation to manage temperature, humidity, and air quality within the house. Variations in air flow occur naturally from friction losses along the sidewalls and obstructions, making it difficult to achieve uniform air velocities and thermal condi-

tions within a house. Different fan staging methods were investigated to determine which progression yielded more uniform air velocity in a layer and pullet house. The layer house was an open ceiling type with a 16 ft peak and was equipped with eight 48" fans and one 36" fan; the pullet house had a flat dropped-ceiling and was equipped with six 48" fans. Two fan staging progressions were compared to determine the effect on airflow uniformity: 1) staging from the center pair of fans outward and 2) staging from the outer fans towards the center pair. Air velocity was measured in each of five aisles in both houses using a high-accuracy anemometer. The initial stage (2 fans) starting with the center pair of fans produced a more variable air velocity distribution when compared to starting with outer pair of fans in the layer house (CV = 37% vs. 6.4%, respectively). The next stage (four fans) in the layer house showed the least variation (CV = 11.3%) when the four outer fans were running vs. the inner four fans (CV = 31.9%) and the outer pair plus the inner pair (CV = 16%). Similar patterns held for the pullet house as well, with the minimum CV for the initial stage occurring with the two outer fans (5.6%) and for the secondary stage occurring with the four outside fans (8.8%).

Key Words: layers, ventilation, airflow

T94 Efficacy of the adsorbent Calibrin-A in ameliorating the toxic effects of aflatoxin in broiler chicks. D. R. Ledoux*¹, G. E. Rottinghaus¹, A. J. Bermudez¹, and J. N. Broomhead², ¹University of Missouri, Columbia, ²Amlan International, Vernon Hills, IL.

An experiment was conducted to determine the efficacy of the adsorbent Calibrin-A (CA), in ameliorating the toxic effects of aflatoxin (AF) in broiler chicks. A second objective was to determine if Calibrin-A at 0.5% of the diet would negatively affect chick performance. Three hundred and twenty day-old male broiler chicks were assigned to 8 dietary treatments, with 8 replicate pens of 5 chicks per treatment. Dietary treatments included: 1) 0 AF, 0 CA; 2) 0 AF, 0.50% CA; 3) 2 mg/kg AF, 0 CA; 4) 2 mg/kg AF, 0.25% CA; 5) 2 mg/kg AF, 0.50% CA; 6) 3 mg/kg AF, 0 CA; 7) 3 mg/kg AF, 0.25% CA; and 8) 3 mg/kg AF, 0.50% CA. The addition of CA to chick diets at a level of 0.50% did not negatively affect ($P > 0.05$) chick performance or relative liver weight or cause any liver lesions. Compared with controls, feed intake (FI) and body weight gain (BWG) were depressed ($P < 0.05$) in chicks fed AF, with greater reductions in FI and BWG observed in birds fed 3 mg/kg AF compared with those fed 2 mg/kg AF. The addition of 0.25% or 0.50% CA to the AF-contaminated diets significantly ($P < 0.05$) improved FI and BWG. Compared with controls, relative liver weights were higher in chicks fed AF ($P < 0.05$), and the addition of CA (0.25% or 0.5%) to the AF diet containing 2 mg/kg AF reduced ($P < 0.05$) the increase in liver weight. Compared to controls, with a lesion score of 1 (no lesions), liver lesion scores in birds fed AF averaged 2.69 (moderate aflatoxicosis). The addition of 0.25 or 0.50% CA to the 2 mg/kg AF diet reduced the lesion scores to 2.25 and 1.63, respectively. Results indicate that Calibrin-A at 0.50% of the diet did not negatively affect chick performance, relative liver weight, or cause any liver lesions indicating that this level of CA did not negatively affect nutrient content of the diet. Calibrin-A at 0.25 or 0.5% of the diet significantly ameliorated the toxic effects of 2 and 3 mg/kg AF in young growing chicks.

Key Words: aflatoxin, adsorbent, broiler chick, Calibrin A

T95 A study of the bacterial and fungal contaminants of poultry drinking water. J. A. A. Sansi*^{1,2}, L. O. Obisesan², B. O. Fasanmi², and G. E. O. Makinde², ¹University of Georgia, Tifton, ²Federal College of Animal Health & Prod. Tech, Ibadan, Oyo State, Nigeria, ³Federal College of Animal Health & Prod. Technology, Ibadan, Oyo State, Nigeria, ⁴Federal College of Animal Health & Prod. Technology, Ibadan, Oyo State, Nigeria.

Water is the most important nutrient of poultry birds. The requirement for water far exceeds that for protein and energy. Decrease in water intake directly leads to decrease in feed intake and feed conversion. However, it is very important that the water supply is clean and does not contain harmful microorganisms and minerals. The drinking water plays an important role in the transmission of many pathogenic agents among poultry.

This work was done to investigate the occurrence and quantity of bacterial and fungal contaminants in poultry drinking water and to high light the consequent risk of infection to poultry birds. Water samples were collected from the drinking water source of ten poultry farms. Characterization and identification via staining, sugar hydrolysis, catalase, oxidase and motility tests as well as colony counting were done.

Coliforms were found in two of the water samples E and F at 1.20×10^3 cfu/ml and 2.0×10^3 cfu/ml respectively. The water samples from all ten farms had high bacterial counts ranging between 1.04×10^5 cfu/ml and 2.43×10^5 cfu/ml. The samples from three farms B, F and I contained fungi / yeasts in the following concentrations: 10×10^3 cfu/ml, 1×10^3 cfu/ml, and 1.2×10^3 cfu/ml. The number of microorganisms in the drinking water of birds should not exceed 100 cfu/ml for total bacteria and 50 cfu/ml for coliforms [Cater and Sneed, 1996; Reddy et al 1995]. The results of the total bacteria counts and coliforms in the water sample from each of the visited farms are far in excess of these values. Disease outbreaks on poultry farms require closer investigation of the environment and management for disease - associated risk factors and consequent removal of the same instead of only drug administration. The cause and epizootiology of the disease should be considered in order to prevent disease recurrence and drug - resistance which could develop after a period of time. Microbial contamination of poultry drinking water is a potential public health risk and has immense economic implications.

Key Words: poultry, water, contaminants, bacteria, fungi

T96 A novel chlorination technique to improve the safety, efficacy, and handling of chlorine in watering systems. D. A. Anderson*¹ and D. Pennock², ¹Prairie Poultry Services, Loveland, CO, ²Penturk, LLC, Berthoud, CO.

Water sanitation efforts in the poultry industry are often granted less attention and importance than it should receive. To resolve a water-borne bordetellosis problem, a uniquely engineered ORP system was developed to deliver effective levels of active chlorine throughout the water delivery system. It proved to be successful, but had the drawback of excessive storage quantities of liquid chemicals that could present a hazardous situation. To circumvent this problem a novel combination of dry chemicals were tested in the current system and assessed for efficacy, safety, and improved ease of handling. The novel chlorination system proved to be equally efficacious, safe, and was a vast improvement over the handling and cost of the liquid chemicals.

Key Words: chlorine, water, ORP, sanitation, chlorination

T97 Effect of broiler rearing environment on the transmissibility of F Strain *Mycoplasma gallisepticum*. S. L. Branton*¹, J. L. Purswell¹, J. D. Evans¹, S. A. Leigh¹, S. D. Collier¹, H. A. Olanrewaju¹, W. B. Roush¹, and G. T. Pharr², ¹USDA-ARS Poultry Research Unit, Mississippi State, MS, ²Mississippi State University, Mississippi State.

Four layer chickens were eyedrop inoculated with F strain *Mycoplasma gallisepticum* (FMG) vaccine and placed in a pen together with 16 broiler chickens at one week of age (Pen A). Twenty broilers were housed in each of five additional pens (Pens B-F) which were situated relative to Pen A so as to be 1) across and adjacent and separated by a short, solid partition (Pen B), 2) upstream (toward the air inlet) and separated by a pen width (Pen C), 3) downstream (toward the exhaust) and separated by a pen width (Pen D), 4) downstream and separated from Pen A by four pens widths (Pen E), and 5) downstream and separated from Pen A by eight pen widths (Pen F). Temperature and ventilation were maintained for broiler growth through the 9 week study. At the termination of the study, 12 of the 16 broilers and all four layers housed in the same pen demonstrated MG seroconversion via SPA test. Culture results yielded MG from 10 broilers and each of the four layers housed in Pen A. No other broilers in the study either seroconverted or yielded MG subsequent to culture of either the trachea or choanal cleft.

T98 The effect of a soil fumigant on reducing bacterial numbers in broiler litter. K. S. Macklin* and J. T. Krehling, Auburn University, Auburn, AL.

Most litter treatments used on commercial broiler farms rely on a reducing litter pH to either kill or inhibit bacterial growth. *C. perfringens* is the primary causative agent for two important poultry diseases. Hence a reduction of its levels in the litter plays an important role in bird health. Since *C. perfringens* is a spore former it often times is unaffected by a reduction in litter pH. Finding a suitable antimicrobial to control this important pathogen in the litter is important. Herein is tested the soil fumigant metam-sodium, at the application rate of 6 gal/ton to determine its ability in reducing *C. perfringens*, total aerobic and total anaerobic bacteria counts in built up litter. The experiment was performed by placing approximately 11 kg of used litter into eight 0.6x0.4x0.4 m plastic containers, then following one of four possible treatments. The four treatments consisted of adding 1×10^{10} *C. perfringens* (CP) to the litter, adding 1×10^{10} *C. perfringens* and metam-sodium (CPM), adding metam-sodium only (M) or nothing (CON). After the addition of the treatments, lids were affixed to the containers. Samples were collected 5 days post experiment initiation and bacterial counts were determined. Bacterial counts (cfu/g) were transformed using log₁₀ transformation then analyzed using GLM with P<0.05 and significant means were separated using Tukey's HSD. Results indicated that metam-sodium reduces total aerobic bacterial counts 2-3 logs and total anaerobic bacterial counts 1-2 log for all metam-sodium treated treatments, compared to CON and CP. In this study *C. perfringens* numbers were unaffected by the addition of metam-sodium.

Key Words: metam-sodium, litter, bacteria

T99 High energy electron-beam irradiation to inactivate *Salmonella* for the production of immuno-modulators in poultry. J. L. McReynolds*¹, P. R. Jesudhasan², H. He¹, K. J. Genovese¹, J. A. Byrd¹,

S. E. Duke¹, M. A. Davidson¹, M. A. Cepada¹, D. J. Nisbet¹, and S. D. Pillai¹, ¹USDA-ARS-SPARC-FFSRU, College Station, TX, ²Texas A&M University, Department of Poultry Science, College Station.

Our laboratories are investigating the use of High Energy (10 MeV) Electron-Beam (E-beam) Irradiation for its potential use in vaccine development. It is well known that ionizing radiation damages the nucleic acids by "direct and/or indirect" effects thereby inactivating the organism. Though the cells are inactivated, our studies suggest that the surface antigenic properties of *Salmonella* Typhimurium (ST) are unaltered. The present investigations (3 replicates) were performed to evaluate the efficacy of the vaccine on heterophil function and ST colonization in broilers. Broiler embryos on day 18e were equally divided into 5 trt. groups: pos/neg controls, E-beam ST, CPG-ODN dideoxynucleotide (CPG), E-beam ST/CPG, and injected with 100ul of saline, 100ul of 1×10^4 E-beam ST, 25ug of CPG, or 100ul of 1×10^4 E-beam ST/25ug of CPG respectively. Blood was collected from each trt. group on d 4 and functional assays were performed. On d 21 the chicks were challenged orally with 1×10^6 ST, 4d post challenge the experiment was terminated to determine ST colonization. Heterophil function was measured using several in vitro assays. To evaluate the oxidative burst of heterophils, phorbol 12-myristate acetate was used to stimulate collected cells from each trt. group. The E-beam ST/CPG oxidative response was increased (P<0.05) when compared to all other trt. groups. During the degranulation assay heterophils were stimulated with opsonized ST for one hour. Results showed E-beam ST/CPG degranulation response was increased (P<0.05) when compared to all other trt. groups. ST colonization of the ceca was also reduced (P<0.05) in the E-beam ST, E-beam ST/CPG groups. The results show that the immunological effects of these intact ST immuno-modulators in broilers do stimulate the immune system and provide protection against ST colonization.

Key Words: chicken, electron beam, *Salmonella*, vaccination

T100 Persistence of *Campylobacter* in broiler litter. Z. Williams and Y. Vizzier-Thaxton*, Mississippi State University, Mississippi State.

The source of *Campylobacter* contamination of broilers has been investigated by numerous researchers. Litter has often been associated with this work. However, most projects involved litter that had broiler on it at the time of sampling or immediately after their removal. Preliminary work in our lab indicated that there a factor or combination of factors such as litter type, litter moisture or presence or absence of birds. In this study, the persistence of *Campylobacter* in artificially inoculated broiler litter was tested over 5 day periods. The first 2 experiments utilized different types of litter, sand, pine shavings and rice hulls. In both experiments the litter was inoculated with *Campylobacter* to obtain a concentration of at least 10^5 cfu/g of litter and 1 g samples were taken at the initial inoculation and every 24 hours sampling and beyond. The third and fourth experiments used pine shavings litter in varying conditions: aerobic atmosphere versus microaerophilic atmosphere and moisture content. In this study *Campylobacter* was recovered in all treatments at the initial sampling. By the 12 hours sampling time only the added moisture and microaerophilic atmosphere yielded recoverable *Campylobacter*. After 24 hours, there was no recoverable *Campylobacter* in any treatment.

Key Words: *Campylobacter*, litter, broilers