g/kg and 0.8 g/kg to the starter, grower and finisher diet, respectively. Trial B, consisting of three dietary treatments (with each 7 replicates of 30 birds or 630 birds in total) was also wheat/corn/soy based. Aromabiotic was added during the whole experimental period at 0.8 g/kg or 1.2 g/kg, respectively. For each trial, average pen weight was recorded at day old, 13, 26 and 39 days of age. Feed intake was recorded for 1-13, 14-26, and 27-39 days. Feed conversion, daily growth rate, bird-days and daily feed intake per bird were calculated. At the end of trial B from each pen 2 broilers with average pen weight were selected to determine slaughter results. In trial A growth performances were influenced in a positive way. Average daily gain was significantly (P<0.05) better in the control group (1.62 vs. 1.64). In trial B average daily gain and feed conversion were significantly (P<0.05) improved with the best results using the lower dosage (ADG: 64.9 vs 62.6 g/d; WAFCR: 1.53 vs 1.58). Breast meat yield was only improved using the higher dosage (23.1 vs 22.6 %). In conclusion, Aromabiotic Poultry proves to be a valuable functional feed ingredient to sustain the rising production potential of broilers.

Key Words: Aromabiotic Poultry, medium chain fatty acid, breast meat, feed conversion ratio

Environment Management II

M69 WITHDRAWN

M70 Strain differences among Salmonella serotypes  Paula Fedor­ka-Cray1, Jovita Haro1, Tiffanie Woodley1, Jodie Plumblee1, Nelson Cox2, Charlene Jackson1 1USDA-ARS-Bacterial Epidemiology and Antimicrobial Resistance Research Unit, Athens, GA 2USDA-ARS-Poultry Microbiometry Safety Research Unit, Athens, GA

It is well documented that there are over 2500 different serotypes of Salmonella. Less well documented is the strain variation that can exist within each serotype as well as knowing whether each variant is capable of causing food borne illness. Pulsed field gel electrophoresis (PFGE) is used to determine genetic relatedness between isolates. PFGE of Salmonella isolated from humans and food animals at slaughter and processing is also used by the CDC PulseNet and USDA VetNet programs, respectively to assist in food borne outbreaks. The purpose of this study was to determine the most frequently observed PFGE patterns for poultry in VetNet. Salmonella Kentucky, Heidelberg and Enteritidis are historically the top serotypes recovered from poultry. Of the 8290 pulsotypes examined from poultry, 10 patterns represented 46.2% of the isolates and were distributed among only 4 serotypes, Kentucky, Heidelberg, Enteritidis, and JF6X01.12:1:.- The three top patterns, JGPX01.0003ARS (Kentucky), JEGX01.0003ARS (Enteritidis) and JF6X01.0015ARS (Heidelberg) accounted for 14.4%, 8.1%, and 4.8% (27.3% total) of pulsotypes, respectively and all have a matching PulseNet pattern indicating that these pulsotypes have been associated with human illness. Of the top 10 PFGE patterns, four were represented by Kentucky, three by Enteritidis, two by Heidelberg, and one by JF6X01.12:1:.-. These data illustrate the heterogeneity observed among isolates within the same serotype and suggest that when intervention and control measures are developed, strain variation may need to be considered. VetNet data are also important in outbreak investigations and are routinely used in support of the PulseNet program.

Key Words: Salmonella, Pulsed field gel electrophoresis, USDA VetNet

M71 Effects of feeding ducklings with aflatoxin contaminated diets and the efficacy of an adsorption-based feed additive  Karin Naehrer1, Ursula Hofstetter1, Carlos Mallmann2 1BIOMIN Holding GmbH, Herzogenburg, Austria 2Universidade Federal de Santa Maria, Santa Maria, Brazil

Aflatoxins can have severe economic consequences for poultry producers and especially ducks are very sensitive to these mycotoxins. An experiment with the aim to evaluate the effects of aflatoxins on ducklings and the efficacy of an adsorption-based feed additive (Mycofix® Secure) in diminishing the toxic effects of aflatoxins (Afla), was performed at the SAMITEC Institute, Santa Maria, Brazil. 168 one-day old male ducks were divided into 4 treatment groups with 6 replicates and 7 birds each replicate for 21 days. Dietary treatments were as follows: Group 1 - Control group (no aflatoxins, no feed additive), Group 2 - 250 ppb Afla, no feed additive, Group 3 - no aflatoxins, 0.5% feed additive and Group 4 - 250 ppb Afla, 0.5% feed additive. Ducklings were fed and given water ad libitum. Average weight of the birds and feed intake per replicate was measured on a weekly basis. At the end of the experiment, performance parameters, relative liver weight, serum total protein (Biuret method) and colorimetric analysis of the liver of 12 randomly selected birds was evaluated. The parameters evaluated were submitted to variance analyses (ANOVA). Differences between means were compared by Bonferroni test (P≤0.05). Analyses were done by Statgraphics Centurion XV, version 15.1.

Addition of 250 ppb aflatoxins influenced statistically significant the average body weight, feed intake and feed conversion of ducklings. In animals challenged with aflatoxins significant effects on the total plasma protein were observed as levels were decreased in comparison with the control groups. Parameters evaluated in this study showed significant efficacy of an adsorption-based feed additive to diminish aflatoxins' negative effects on ducklings.

Key Words: Mycotoxins, Aflatoxins, Ducks

M72 37+ Mycotoxin Analysis on 2012-2013 North American and European Poultry Feeds and Feedstuffs H.V.L.N. Swamy1, L. Breeding2, L. Jackson3, A. Yiannikouris4 1Alltech India, Bangalore, India 2Alltech USA, Nicholasville, KY

Numerous studies have shown that mycotoxins negatively affect the bottom line of poultry operations in North America and Europe. However, many in the poultry industry of these regions feel that poultry can manage the toxicity of one of the most common Fusarium mycotoxins, DON (vomitoxin). The studies with natural-contaminated grains clearly indicated that many other mycotoxins produced from Fusarium, Penicillium, Aspergillus and Claviceps can contribute to DON-toxicity. To analyze such multiple mycotoxins, Alltech recently established 37+ Program which includes the analysis of 38 mycotoxins using UPLCMS/MS instrument. For the ease of understanding of the total toxicity to animals, the toxins of similar structure and effects were further clubbed into groups. Only 10 samples out of 162 tested were negative for all the mycotoxins tested giving 94% as level of contamination. Type B trichothecene mycotoxins (DON-Group) were quantified in 75% of the samples followed by fumonisins (59%), zearalenone (38%) and Type A trichothecenes (T-2-Group; 31%). Other mycotoxins were present between 3 and 23% of samples tested. On an average, fumonisins were present at the highest concentrations (12834ppb) followed by Type B mycotoxins (1712ppb) and ergot toxins (716ppb). A
maximum concentration for an individual sample was recorded for fumonisins (1,157,645ppb) followed by ergot toxins (106,284) and Type B trichotheccene mycotoxins (41,356ppb). Only 12% of the samples contained mycotoxin. The highest percentage of samples, 47, contained 2 to 5 mycotoxins followed by 29% containing 6 to 10 mycotoxins. 6% samples contained more than 10 mycotoxins. The detection levels of trichotheccene mycotoxins and zearalenone were expected due to temperate weather in North American and European grain growing regions. The study clearly showed that poultry operations in these regions should be wary of fumonisins and ergot toxins. These lesser known mycotoxins can increase so called DON-toxicity through compromising the immune system of poultry. Fumonisins are also known to affect intestinal integrity and therefore, can increase the intestinal colonization of pathogens. It can be concluded that poultry operations in North America and Europe should consider analyzing as many mycotoxins as possible in order to understand the total toxicity to the birds. Such analysis not only helps in diagnosing mycotoxin issues but also develop appropriate broad-spectrum prevention and treatment programs.

Key Words: 37+ Program, Fusarium, Poultry, Mycotoxins, Fumonisins

M73 Evaluation of a Bacillus-based DFM on horizontal transmission of Salmonella in broiler chicks. Amanda Wolfenden1, Ross Wolfenden1, Srchaitanya Shivaramaiah1, Guillermo Tellez2, Billy Hargis1
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Food safety is an ever growing public health concern, and in poultry production Salmonella Enteritidis is arguably the most serious food safety risk. In these experiments we tested the ability of a commercial Bacillus-based DFM, Sporulin®, and another candidate DFM to prevent horizontal transmission of Salmonella in broiler chicks under experimental conditions. In 2 experiments, 300 chicks were obtained from a local hatchery and randomly assigned to one of three experimental groups, control, Sporulin, or candidate DFM, (n=100) and placed in separate pens. Each group was fed a ration containing the appropriate DFM for the duration of the experiment. On day 4, 30 chicks per group were tagged and challenged by oral gavage with 107cfu/chick Salmonella. Shigellosis and Colonization in Broiler Chickens

Results: Experiment 1; broilers receiving EO had significantly greater gain and lower mortality than other treatments. Challenged broilers receiving EO and unchallenged broilers receiving EO and lactic acid had significantly lower SH in crops than other treatments. Experiment 2; the 0.05% EO administered in drinking water significantly reduced SH colonization in crops of challenged birds, significantly lowered the FCR, and increased weight gain compared to controls. The EO in drinking water did not significantly reduce SH colonization in ceca or fecal shedding in broilers.

Significance: Essential oils may control SH contamination in crops of broilers when administered in drinking water. Furthermore, essential oils may be an alternative to organic acids in broilers as pre-slaughter intervention as SH reduction treatment.

Key Words: Salmonella, Essential oil, Broiler, Feed withdrawal

M74 Effect of Essential Oil Compound on Salmonella Shedding and Colonization in Broiler Chickens Walid Alali1, Charles Hofacre1, Greg Mathis1, Gary Faltys1, Steven Ricke1, Michael Doyle1
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Wild restoration attempts with captive released ring-necked (RN) pheasants often result in poor nesting and brooding success, often reaching 100% failure. An attempt to improve nest/brood success from released RN hens by using chicken and RN pheasant broody parents as surrogate mothers was compared against captive reared and wild caught RN pheasant hens. Twenty five RN pullet hens and five RN roosters were selected from each of four groups (captive reared, chicken brooded, RN pheasant brooded, wild caught), radio-tagged, and placed in flight pens with heavy corn, sorghum, and legume cover. Roosters were removed after nesting occurred. Nesting and brooding success was monitored via the radio monitors for the 23 day incubation period and six weeks of brood. There was no significant difference between the nesting and brooding success for the chicken brooded RN hens (85% 92%), RN pheasant brooded RN hens (84%, 93%) and wild caught RN hens (86% 94%). Captive reared hens (12%, 24%) were significantly lower for both nesting and brooding rates. Brooded reared hen pullets may provide an improved rate of nesting and brooding success upon release into the wild and provide the basis for restoration efforts.

Key Words: pheasant, brooding, nesting, restoration
M76 Evaluation of Captive Bolt Method of Turkey Euthanasia Device (TED) for Humane Euthanasia of Poultry R. Michael Hulet1, Terri L. Cravener1, Randall G. Bock2 1Department of Poultry Science, Penn State University, University Park, PA 2A Bock Industries, Philadelphia, PA

Standards of humane euthanasia are changing as new and novel methods are introduced and used. Many culling situations have not been adequately addressed by current technology. The ability to euthanize a 20 kg tom turkey by current methods of carbon dioxide, cervical dislocation or blunt force trauma is inadequate when evaluated for humanness, human safety, effectiveness, or repeatability. Many caretakers are physically unable to perform the task. A new method using a non-penetrating captive bolt device has been recently developed to meet this need. Evaluation of this device included effectiveness, speed of use, ease of use, human safety, economics, and repeatability for large fowl and turkeys. The TED was found to successfully euthanize 20 kg turkeys or 3.5 kg chickens with lack of nictitating membrane response by 2 seconds and 100% dead within 2 minutes (no respiration or heart beat). In summary, the device is light and ergonomic, low operational cost, and allows operators to successfully euthanize poultry in many different circumstances. The disadvantage is initial cost which is comparable to other similar devices.

Key Words: Euthanasia, Turkeys, Captive Bolt

M77 Evaluation of Selection Progress in Two Local Egyptian Chicken Lines Mostafa Helal1, Essam El-Gendy2 Department of Animal Production, Cairo University, Cairo, Egypt

A study was conducted to evaluate selection progress in two local chicken lines selected for high six-week body weight in Egypt. The lines have been developed by selection for high 6-wk BW for 8 selected generations as normally feathered local broilers (Line CE1), and naked-neck local broilers (Line CE3). Both lines have been raised with their corresponding control lines CE2 and CE4. The data of generations 6, 7 and 8 were used for this study. In the 6th generations, the line CE1 was significantly heavier than its control line CE2 by 4.78% at hatch and line CE3 also showed a significant difference from line CE4 by 12.43%. The significant increases in body weights among the growing period of the selected lines were consistent and tended to be gradual and reached, by 20 weeks of age, to 54.70% and 70.84% for lines CE1 and CE3, respectively. Similar to the results obtained in the 6th generation, body weights of both selected lines responded to the selection throughout the growing period in the subsequent generations. The results of body weights over the subsequent generations indicate that line CE1 was significantly heavier than line CE2 throughout the growing period, which indicates that the naked-neck chickens grew at a slower rate compared to the normally feathered birds. The sex differences were significant and in fair magnitude, indicating that the differences were attributed to normal sex variation. Heritability estimates for growth measurements were apparently higher at early ages and decreased with age. Heritability estimates for 6-week body weight of line CE1 were 0.18 and 0.17 in both 7th and 8th selected generations respectively, versus slightly higher estimates of 0.21 and 0.19 in line CE3.

Key Words: growth, local chickens, heritability, selection

Metabolism & Nutrition III

M78 Effects of nutrient variability in corn associated with geographical location and xylanase inclusion on broiler performance Helen Masey O’Neill1, Tryon A Wickersham2, Ashley Campasino2, Jason T Lee2 1AB Vista Feed Ingredients, Marlborough, UK 2Department of Poultry Science, Texas AgriLife Research, Texas A&M University, College Station, TX

The performance of broilers fed corn-based diets has been shown to improve with the use of exogenous xylanase, the response being larger in poor compared with high quality corn samples. The objective of this study was to determine the effect of the source of corn and xylanase addition on broiler performance (body weight and FCR) and the interaction between these two factors. Six samples of corn were obtained from 6 different regions of the USA (IA, MN, ND, NE, SD, TX) to represent the variability in corn available to feed manufacturers. Starter (d1-17), grower (d18-34) and finisher (d35-41) diets were formulated to reflect current USA commercial practice and contained corn at a fixed rate (61.6, 65.0, 71.0% respectively). In the starter, grower and finisher phases, respectively, diets contained 3000, 3024, 3074 kCal/kg; 1.13, 1.04, 0.95 % available lysine; 0.95, 0.87, 0.80 % Ca and 0.45, 0.41, 0.38 available P. The twelve treatments were derived using corn source as the variable, with each corn diet being fed either with or without xylanase at 16,000 BXU/kg. The diets were fed to 2160 broilers with 10 replicates, each containing 18 birds per treatment from 0-41d of age. Corn samples were analysed for starch, protein, oil, fibre, protein solubility index (PSI), moisture and vitreousness using near infrared spectroscopy (NIR, AnNIR, Towcester, UK). These values were used to predict the AME (MJ/kg) of the corn samples. Samples of all treatments were collected and analyzed to confirm nutrient content and xylanase recovery. All broilers were weighed individually on days 1,17, 34 and 41 and feed intake recorded for each phase.

The corn samples varied in composition as follows: starch 76.1-78.5%, crude protein 7.8-9.0%; oil 3.6-3.7%; crude fiber 2.4-2.6%; PSI 36.0-45.5% and vitreousness 55.3-59.0%. In terms of performance, there were no interactions between corn source and enzyme inclusion (P<0.05). There was a main effect of corn source on BW between d1-14 and d1-34 (P=0.007 and 0.048) with d34 weight varying between 2.012 kg (MN) and 2.093 kg (IA). There was a significant difference between the corn from different regions with regards to FCR (P=0.05) at all phases. For example, d41 FCR was greatest for corn from MN (1.711) and lowest with corn from TX (1.647). The effect of inclusion of enzyme was also significant (p=0.017) but only over the period d1-41; those fed xylanase had a mean FCR of 1.668 compared to those who were not, at 1.681. Day 41 FCR and predicted AME were significantly correlated (P=0.018, r²=0.79).

These results suggest that corn source can affect broiler performance but that xylanase is efficacious in improving performance regardless of the source of the corn.

Key Words: Broiler, corn, feed conversion, xylanase

M79 Performance and bone mineralization in broilers fed diets differing in fat source and phytase content Imke Kühn1, Kristof Kozlowski2 1AB Vista, Darmstadt, Germany 2University of Warmia and Mazury, Olsztyn, Poland

The efficacy of a thermostolerant 6-phytase (Quantum Blue) was evaluated in 432 male Ross 308 broilers when added to diets reduced in min-