The influence of beak trimming at 18 d of age on ADFI and BW gain for the next 3 d were studied in brown-egg laying pullets hatched from eggs laid by 24-wk old breeders. Eggs were collected at the hatchery and classified according to the pre-incubated egg weight (EW). The EW groups varied from 47 to 53 g with a difference of 1 g between treatments. The pullets resulting from these eggs had a BW that varied between 32.5 and 35.4 g between the 2 extreme EW. From hatching to 21 d of age pullets were fed a control diet without additional fiber or an experimental diet that included 3% oat hulls (OH) in substitution (wt:wt) of the whole diet. ADFI and BW gain were measured before (from 15 to 18 d of age) and after (18 to 21 d of age) beak trimming. Data were analyzed as a completely randomized design with treatments organized as a 2 × 7 × 2 factorial, with 2 measuring times (before and after beak trimming), 7 groups of chicks based on the pre-hatching EW, and 2 levels of OH inclusion (0 vs. 3%). EW effects on ADFI and BW gain were partitioned into linear (L) and quadratic (Q) components. No interactions among main effects were detected and therefore, only main effects are presented. Beak trimming reduced the ADFI of the pullets between the 2 periods of 3 d considered by 45.3% (23.0 g from 15 to 18 d of age vs. 12.3 g from 18 to 21 d of age as an average; $P < 0.001$) with a similar pattern observed for BW gain. The inclusion of 3% OH in the diet did not affect ADFI or BW gain of the pullets. In summary, pullets hatched from small eggs (>47 g) laid by young breeders had similar growth response to late beak trimming than pullets from larger eggs. Also, pullets fed 3% OH containing diets responded similarly to late beak trimming than pullets fed the control diet. Late beak trimming reduces ADFI significantly, resulting in a severe loss of performance. Consequently, the practice of beak trimming of the pullets at a late age might not be advisable.

Key Words: beak trimming, egg weight, oat hull, pullet

445P Influence of body weight of the pullets at hatch on egg production at the onset of the subsequent laying period. Husham A. Mandalawi[1], Beatriz Saldaña[1], Pilar Guzmán[1], Raúl Rodríguez[2], Lourdes Cámara*[1], and Gonzalo G. Mateos[1], *[1]Departamento de Producción Agraria, Universidad Politécnica de Madrid, Madrid, Spain, [2]Ibérica de Tecnología Avícola (Ibertec) S.A.U, Valladolid, Spain.*

We studied the influence of pre-incubation weight of eggs (EW) laid by 24 wk-old brown laying breeders on egg production from 18 (start of egg production) to 22 wk of age (average egg production across EW treatments of 87.8%). The experiment consisted in 7 treatments based on the initial EW (47 to 53 g with 1 g difference between groups) Average BW of the extreme groups varied at hatching from 32.5 to 35.4 g, respectively. Feed intake, egg production, and egg weight were recorded weekly by replicate as well as for the entire experiment (18 to 22 wk of age). Hens were weighed by replicate at the beginning and at the end of the experiment. From these data, ADFI, egg production, egg weight, egg mass, feed conversion ratio per kilogram of eggs and per dozen of eggs, and BW gain were calculated by week and for the entire experiment. Also, the number of dirty, broken, and shell-less eggs was recorded daily by replicate in all eggs produced. Data were analyzed as a completely randomized design with 7 treatments differing in the initial pre-hatching EW. Effects of EW on the variables studied were partitioned into linear and quadratic components. EW did not affect the age at which pullets reached 50% egg production, cumulative egg production, or BW gain of the hens from 18 to 22 wk of age. Egg weight and the proportion of dirty, broken, and shell-less eggs were not affected by the BW of the pullets at hatching. In summary, small eggs (>47 g) laid by young, healthy laying breeders, can be used successfully to produce high quality pullets.

Key Words: egg breeder, egg weight, hen

446P Comparative analysis and characterization of proteins associated with fat accretion in broiler chickens and guinea fowl. Boniface Kimathi*, Fur-Chi Chen, Xiaofei Wang, and Samuel N. Nahashon, *College of Agricultural, Human and Natural Sciences, Tennessee State University, Nashville, TN.*

Selection for rapid growth rate has resulted in excess fat deposition in broiler chickens, which is a liability to producers, processors, and consumers alike. Thus understanding the mechanisms surrounding excessive fat deposition in broilers is of great interest to the poultry industry and consumers. The adipose tissue proteome of broiler chickens and guinea fowl was evaluated using 2-dimensional differential gel electrophoresis (2D-DIGE) followed by in-gel digestion and matrix-assisted laser desorption/ionization Time-of-Flight (MALDI- TOF) mass spectrometry. The assays revealed proteins that were significantly up and downregulated in lean and fat broilers. These proteins include APOA1, vimentin, anexin, DSTN and fatty acid binding factor. While their functions are not very clear, these proteins may be involved directly or indirectly in fat metabolism and transport. The objective of this study was to characterize adipose APOA1 and DSTN in broiler chickens and guinea fowl. The presence of the proteins was confirmed using Western blot. Q-PCR assays were carried out on the adipose tissue of selected lean and fat birds to compare the expression of target proteins in both chickens and guinea fowl. APOA1 was downregulated in fat compared with lean chickens. In guinea fowl APOA1 was highly expressed in adipose tissue of fat than lean birds. DSTN was found to be highly expressed in adipose tissue of fat than lean chicken and guinea fowl. The expression of APOA1 and DSTN was also confirmed in the liver, intestine and pancreas of chicken. Here we report, for the first time, the expression of APOA1 and DSTN in the adipose, liver, intestines and pancreas of guinea fowl. Sequencing of the guinea fowl DSTN was performed using the amino acid sequence data. Here we also report, for the first time, a partial 11-amino acid DSTN sequence YALYDASFETK. Multiple sequence alignment of the partial guinea fowl DSTN sequence revealed 100% homology with mammalian, avian, and reptilian DSTN sequences (UniProt database).

Key Words: poultry, fatness, broiler, guinea fowl

447P Effects of dietary dry brewer's grain on growth performance and the development of gastrointestinal tract of JianChang ducks from 31 to 59 days of age. Yanru Wang, Qiufeng Zeng*, Keying Zhang, Xuemei Ding, Shiping Bai, Yuheng Luo, Jianping Wang, Yue Xuan, and Zhuowei Su, *Institute of Animal Nutrition, Key Laboratory for Animal Disease Resistance Nutrition of the Ministry of Education, Sichuan Agricultural University, Ya'an, Sichuan, China.*

JianChang duck is a lock duck which has a relative lower growth rate and high quality meat compared with modern meat duck. It is popular in Sichuan province of China. The objective of this study was to determine the effect of graded of dietary dry brewer's gain on growth performance and the development of intestinal in JiangChang Ducks from 31 to 59 d of age. A total of four hundred twenty 31-d-old ducks, which had ad libitum access to water and the same pelleted commercial feed (ME = 2850 kcal/kg, CP = 19.5%) from 1 to 30d, were randomly allocated to 5 treatments with 6 pens/treatment and 14 ducks/pen. The 5 experimental diets were formulated in such a way that 0% (a corn-soybean meal basal diet), 15%, 30%, 45% and 60% dry brewer's gain replaced the corn of the basal diet. Five isonitrogenous and isocaloric diets were formulated on a digestible amino acid basis. The ANOVA, linear and quadratic effects of dietary dry brewer's gain levels on performance and the development of gastrointestinal tract were assessed by GLM procedure of SAS software. Dietary dry brewer's grain linearly ($P <$