and mortality) was controlled by replicate and the data were analyzed by period (4 wk) and cumulatively (18 to 62 wk of age). Egg quality, including yolk pigmentation, Haugh units, shell thickness, shell strength, and absolute (g) and relative (% egg weight) weight of the shell, were determined by replicate in 6 eggs chosen at random for the last 2 d of each of the 11 experimental periods. Percentage of broken and shellless eggs were determined in all eggs produced. Data were analyzed as a completely randomized design with feeding strategy as main effect using the MIXED procedure of SAS. The Tukey test was used to make pairwise comparisons to separate treatment means. Potential interactions between dietary treatment and period was studied using the repeated measurements analysis. From 18 to 62 wk of age, feeding strategy did not affect hen performance or any of the egg quality traits studied. Data on egg weight and on all shell quality variables measured, favored in all the 11 periods the use of the LAY diet compared with the use of the other 2 pre-lay diets. The differences detected, however, were significant only in few of periods. In fact, no differences among treatments were detected for the entire experiment. The reason for the limited effect of the pre-laying diet on the shell quality variables studied could be that few hens were laying eggs before 18 wk of age, when all the birds were fed a common LAY diet. In summary, hen performance and egg quality from 18 to 62 wk of age were not affected by the type of feed supplied from 15 to 18 wk of age, although some egg quality data support the use of the LAY diet in the pre-laying period from 15 to 18 wk of age.

Key Words: laying hen, nutritional strategies, pre-laying, productive performance


The effects of feed form on growth performance and on the development of the proximal part of the gastrointestinal tract (GIT) of 2 broiler strains were studied from 1 to 22 d of age. The experimental design was completely randomized with 4 treatments arranged as a 2 x 2 factorial with feed form (mash vs. pellet) and bird strain (Ross 308 vs. Hubbard JV) as main effects. A common corn-soybean meal diet (2,970 kcal AMEn/kg and 1.30% SID Lys) presented as mash (GMD ± GSD = 713 μm ± 1.73) or pellets (2 mm Φ) was used. Each treatment was replicated 6 times and the experimental unit was a cage with 9 chicks. BW and ADFI were recorded by replicate at 7, 17, and 22 d of age and FCR was calculated from these data. At the same ages, 2 birds per cage chosen at random were weighed individually, euthanized by asphyxiation in CO2 atmosphere, and used to study the development of the proximal part of the GIT. Main effects of strain, feed form, and age and their interactions on growth performance and GIT traits were analyzed using the MIXED procedure of SAS. Ross birds were heavier and had better FCR (P ≤ 0.001) than Hubbard birds. Pelleting increased ADG and improved FCR (P ≤ 0.001), benefits that were more evident for the Ross than for the Hubbard birds (P ≤ 0.001 for the interaction). Regardless of strain and age, pelleting increased the relative weight (RW; % BW) of the full crop and gizzard, as well as the fresh and dried contents of the crop (P ≤ 0.001). In absolute terms (g), the empty crop and gizzard were heavier in the Ross than in the Hubbard birds at all ages (P ≤ 0.001) but no differences were detected in relative terms. The pH of the crop and gizzard digesta was lower for the Ross than for the Hubbard birds (P ≤ 0.001). In summary, pelleting improved consistently growth and feed efficiency of broilers from 1 to 22 d of age. Pelleting increased the absolute weight and the digesta content of the crop but decreased the RW of the gizzard and its content. Also, pelleting increased the pH

319 Effects of lysolecithins and hydrocolloids on performance, nutrient digestibility, true metabolizable energy, lipid profile, and carcass quality of broilers. R. Riboty*, J. Garcia*, and C. Vilchez*, 1Universidad Nacional Agraria la Molina, Lima, Peru, 2Universidad Tecnologica Equinooccial, Quito, Ecuador.

The objective of the study was to evaluate the effects of the inclusion of lysolecithins and hydrocolloids in a ME deficient-basal diet on performance, nutrient digestibility, true metabolizable energy (TME) content of the diet, lipid profile and carcass quality of broilers raised at 2600 m.a.s.l. 1120 one-day-old Cobb 500 mixed chicks were randomly divided into 28 experimental units with 40 chicks each. Animals of 7 experimental units received, during 42 d, one of the following treatments: T1, Positive control diet; T2, Negative control diet (NC; - 100 kcal/kg ME than that of T1); T3, NC diet + Lysolecithins (1000 ppm) and T4, NC + Hydrocolloids (1000 ppm). A 3-phase (1–14, 15–28 and 29–42 d) restricted mash feeding program was used. Eighty (including a blank group), 7 and 28 (14 male and 14 female) birds per treatment were used to determine nutrient digestibility and TME of the experimental diets, lipid profile and carcass quality, respectively. Statistical significance was evaluated using ANOVA under a Randomized Complete Block Design with Tukey’s test for multiple comparisons. The results indicated that feed intake and lipid profile were not influenced (P > 0.05) by dietary treatments. However, weight gain and feed conversion of birds that were under T2 were lower (P < 0.05) than those of T1 while those corresponding to T3 and T4 were intermediate. The lowest nutrient digestibility and TME content of the experimental diets were observed in birds that received T2 with the highest corresponding to those of T1. Carcass weight was not influenced (P > 0.05) by either dietary treatment or sex; however, high (P < 0.05) abdominal fat content was observed only in male birds that were fed T1 as compared with the other treatments. In conclusion, birds that were fed either lysolecithins or hydrocolloids, in a ME deficient basal diet, do not perform as well as those that were under the positive control diet suggesting that both additives release energy but less than the estimated 100 kcal/kg.

Key Words: lysolecithin, hydrocolloid, digestibility, emulsifier, metabolizable energy

320 Protein degradation of broiler breeders from the onset of lay through peak production. G. Mullerix*, X. Ding2, J. England1, K. Hilton1, M. Schlubohn1, and C. Coon1, 1University of Arkansas, Fayetteville, AR, 2University of Arkansas, Chengdu, China.

The objective of the study was to see how protein degradation effects the onset and peak of lay in broiler breeders. Excreta was collected from hens at 28, 31, 35, 37, 39, 41 and 44 wks of age. 3-methylhistidine (3-mh) was extracted from a 24 h excreta collection and measured on an Agilent 7890A gas chromatographer/5975C mass spectrometer. Uric Acid in the excreta was analyzed at peak production, 31 weeks, with a micro plate photometer. 648 broilerized pureline pullets were obtained at 21 wks of age and placed in individual metabolic cages. At 28 wks of age, 90 birds (n = 30 birds/weight group) were allocated into small, medium and large weight groups. All birds were restrictively fed a generic corn/soybean breeder diet throughout the trial. Although the different weight group of birds showed no statistical difference (P = 0.4191) in degrad-