

weeks, and then were transitioned to a self-selection feeding program using 4 feed choices provided on an ad libitum basis. The feed choices included a protein concentrate (39% CP) without added methionine and 3 grains similar in energy content, but differing in protein and methionine content (cracked corn, naked oats, and pearl millet). The feeds were randomly allocated to 4 identical feeders within each pen and the location of the feeders was rotated 2–3 times per week. At 19 weeks of age, individual body weight averaged 1630 g for Red Sex-Link, 1623 g for Black Sex-Link, 1612 g for Black Australorp, 1565 g for Barred Plymouth Rock, 1523 g for ISA Brown, and 1444 g for Rhode Island Red pullets. The body weights of the Red Sex-Link, Black Sex-Link, and Black Australorp pullets were significantly different ( $P = 0.0026$ ) from that of the ISA Brown and Rhode Island Red pullets. The body weights for the Barred Plymouth Rock pullets were significantly different from the Rhode Island Red pullets. Average daily feed intake (52.8 g/bird/day) from placement (1d of age) through the end of the study was not significantly different among the breeds/strains ( $P = 0.27$ ). Additionally, there were no significant differences in diet selection between breeds ( $P > 0.05$ ). Free-choice feed selection for all breeds/strains resulted in a diet containing approximately 3098 kcal/kg, 15.4% protein, 0.26% methionine, 0.51% calcium, and 0.29% phosphorus. Self-selection resulted in diets that were sufficient in protein, methionine, and phosphorus, but lower in calcium and higher in energy than NRC requirements.

**Key Words:** self-selection feeding, alternative breed

**P411 Nutritional evaluation and metabolizable energy of autoclaved castor bean meal for broilers.** J. C. N. Santana<sup>1</sup>, M. C. M. M. Ludke<sup>\*1</sup>, J. V. Ludke<sup>2</sup>, P. S. Pereira<sup>1</sup>, and A. S. Silva<sup>1</sup>, <sup>1</sup>Universidade Federal Rural de Pernambuco, Recife, Pernambuco, Brazil, <sup>2</sup>Embrapa Swine and Poultry, Concórdia, Santa Catarina, Brazil.

A metabolism trial was run to evaluate autoclaved castor meal (ACM) for broilers. The ACM were produced in continuous steps by adding/mixing of 6% calcium oxide (CaO) to untreated castor bean meal, cold water adding (1:1 w/w) with homogenization, autoclaving with 1.23 kgf/cm<sup>2</sup> during 90 min, sun drying and grinding. Metabolism trial were performed using 24 metabolic cages occupied by 144 Ross male broilers with average weight of 2050 ± 20 g and 32 d old. Room temperature were held at 28°C during 5 d of adaptation and 5 d excreta collection. Four treatments were applied with 6 replicates and 6 broilers per plot in completely randomized design. Treatments were: (T1) Reference diet (RD) using corn and soybean meal and (T2 to T4) 8%, 16% or 24% inclusion of ACM by replacement of RD. The calculated parameters were apparent metabolizable coefficients (MC) of dry matter (DM), crude protein (CP) and gross energy (GE) and values of apparent metabolizable energy (AME) and AME corrected to nitrogen retention (AMEn) for ACM. Data were analyzed using ANOVA and means were compared by Tukey test. ACM had 90.30% DM, 27.92% CP, 27.62% crude fiber, 9.68% ether extract, 4.95% calcium, 0.89% phosphorus and 4217 kcal/kg GE. Replacement of RD by 8, 16 or 24% ACM did not affect the MC of DM, CP, GE, and AME and AMEn values for ACM ( $P > 0.05$ ). MC of DM values for ACM were 57.13, 57.74, 56.66%, respectively, at T2, T3 and T4 (mean = 57.18% and CV = 4.3%). MC of CP values for ACM were 76.02, 75.64, and 75.52%, respectively, at T2, T3 and T4 (mean = 75.73%, CV = 2.92%). MC of GE values for ACM were 52.82, 54.97, and 54.31%, respectively, at T2, T3 and T4 (mean = 54.03%, CV = 3.36%). AME values for ACM were 2390, 2381, 2362 kcal/kg, respectively, at T2, T3 and T4 (mean = 2377 kcal/kg, CV = 3.20%). AMEn values for ACM were 2120, 2110, 2101 kcal/kg, respectively, at T2, T3 and T4 (mean = 2110 kcal/kg, CV = 3.57%). The additivity rule underlying the calculus made in metabolism trials

could be stated in the present ACM evaluation. It is supposed that ACM was not harmful for broilers.

**Key Words:** alternative feedstuff, castor bean meal processing, fibrous by-product, metabolism trial, poultry

**P412 Color and sensory attributes of meat from broilers fed sweet potato root meal.** J. R. Bartlett\*, R. C. Beckford, N. L. Dawkins, E. G. Rhoden, V. A. Khan, and K. M. Liles, *Tuskegee University, Tuskegee, AL.*

This study utilized sweet potato root meal (SPRM) as a partial replacement for corn in the diet of broilers to determine its effect on color and consumers' sensory perceptions of the meat. The SPRM was analyzed for nutrient composition and rations formulated to replace 0% (Diet A); 10% (Diet B); 20% (Diet C); and 30% (Diet D) corn in the diet. Birds were fed for 49 d and slaughtered on d 50. Breast, leg, and thigh were evaluated for color ( $L^* a^* b^*$ ) using a Konica Minolta Chromameter. Sensory evaluation was assessed utilizing dark (leg and thigh) and white (breast) meat. Samples were cooked at 176.67°C to an internal temperature of 73.9°C. Sixty-two panelists representing different demographics (age, sex, education, and income) evaluated juiciness, tenderness, flavor, and acceptability. Results showed that in the leg,  $L^*$  and  $b^*$  were similar for diets A, B and D, with no differences among treatments for  $a^*$ . For thigh, there were no differences among treatments for  $L^*$  and  $b^*$ , however,  $a^*$  were similar in diets B and C. In the breast, there were no differences for  $L^*$  and  $a^*$ . For  $b^*$ , diet A was higher ( $P < 0.05$ ) than diets C and D. Sensory attributes of dark meat were not affected by income, sex, and education. Respondents >70 years old rated the flavor significantly lower in the control. For white meat, those earning  $P < 0.05$  juicy than diets B and D. Males found no differences in tenderness, flavor, and acceptability of white meat; however, diet C was less ( $P < 0.05$ ) juicy. Females found diet C to be less ( $P < 0.05$ ) acceptable. Educational level had no effect on the tenderness, juiciness, and acceptability of white meat; however, those in 'some college' and 'college degree' categories rated diet C as less ( $P < 0.05$ ) juicy. The <18 and 18–29 age group rated white meat from diet C to be less ( $P < 0.05$ ) tender and juicy. The SPRM could be an acceptable alternative to corn in broiler diets.

**Key Words:** sweet potato root meal, sensory evaluation, color, broiler, demographics

**P413 Performance and meat quality of broilers fed different types of fat.** K. M. Liles\*, J. R. Bartlett, R. C. Beckford, K. Washington, E. G. Rhoden, and V. A. Khan, *Tuskegee University, Tuskegee, AL.*

Fat is an important ingredient in poultry diets. The use of oils and fats in the diet of broilers may influence the performance as well as the composition and quality of the carcass. In birds, body fat composition is similar to fat from the diet because dietary fats generally remain unchanged. Therefore, this study was conducted to evaluate BW gain, feed intake, feed efficiency, average daily gain, average daily intake, dressing percentage, non-carcass components (internal organs, feet and neck) and meat quality (protein, fat, moisture, ash, color) of broilers fed different types of fat. This study utilized 180 1-d-old Cornish Rock male broiler chicks that were wing-banded, weighed, and randomly assigned to 1 of 4 dietary treatments (diet A = poultry fat (PF), diet B = peanut oil (PO), diet C = vegetable oil (VO), diet D = canola oil (CO)). Each treatment consisted of 45 birds with 3 replications of 15 birds. Body weights and feed intake were recorded weekly. After 49 d, birds were slaughtered and non-carcass components harvested and weighed. Samples from each treatment were analyzed for color, moisture, fat,