313 Lean gain in Suffolk ram lambs relative feed efficiency and cost. E. C. Westover*[1], A. B. Culham[1], G. M. Hill[1], A. L. Bushman[1], J. E. Link[1], J. L. Hayes[1], and M. E. Benson[2], [1]*Michigan State University, E. Lansing*, [2]*Washington State University, Pullman*.

With rising feed costs, it is critical to understand composition of growth and feed efficiency in lambs. Therefore, our objective was to evaluate lean growth, efficiency of gain and cost in Suffolk ram lambs. February born lambs were creep fed a 21% protein diet until weaned at about 70 d of age (DOA). Rams were acclimated (25 d) and then fed a 15% protein diet that met or exceeded the NRC requirements (1985) for rapid growth potential. At approximately 95 DOA, rams were shorn, fitted with an electronic ear tag, sorted into 2 pens. Each pen contained 1 Osborne electronic feed intake monitoring system. Weight and feed intake were recorded each time a ram entered and exited the feeder. The ADG, G/F, and composition of gain data were collected for 11 rams. Rams' average initial weight was 57.37 kg and end weight (21 d) was 73.8 kg with an ADG of 0.78 and a cost of $0.08/ kg of gain. The G/F was 3.63 ± 1.46. Rams were ultrasounded (Pie Medical Machine, Model: 41263) at 0 and 21 d to estimate BF and LEA at the 12th rib. Body wall thickness was determined from the animal's BF (Boggs and Merkel, 1993). Percent boneless, closely trimmed retail cuts (% BCTRC) was calculated (S. P. Griener, personal communication): 49.936-(0.0848*carcass wt) - (4.376*BF) - (3.53*body wall) + (2.4756*LEA). Lean gain per day was calculated utilizing 50% dressing percent, the animalâ€™s initial weight, BCTRC, and days on trial. Rams averaged 0.28 ± 0.09 kg lean gain/d after 21 d. The rams in the higher lean gain/d group (> 0.27 kg) averaged 8.60 cm2 LEA with 0.43 cm of BF, while the lower lean gain/d rams (< 0.27 kg) had 8.30 cm2 LEA with 0.30 cm of BF. Higher lean gain rams had a higher ADG than lower lean gaining rams (0.86 vs. 0.67, P = 0.05). The r2 between lean gain and G/F was 0.92 (P=0.01) for higher lean gain rams, but was not significant for lower lean gain rams. Therefore, total cost of producing lean gain can be reduced by selecting rams with a greater lean gain growth potential.

Key Words: sheep, growth, lean gain

314 Measuring the compositional and instrumental firmness variations in fresh pork bellies. K. A. Trusell*, J. K. Apple, J. W. S. Yancey, T. M. Johnson, and R. J. Stackhouse, *University of Arkansas Division of Agriculture*, *Fayetteville*.

Fresh pork bellies (n = 24) from pork carcasses with an average weight and fat-free lean yield of 93.6 ± 5.2 kg and 51.8 ± 2.0%, respectively, were cut into 15 sections to measure the intra-belly variation in compositional and mechanical firmness characteristics. Range in belly-flop measurements was 8.9 to 24.8 cm when measured skin-side down and 10.0 to 30.0 cm when measured skin-side up. Length and width of each belly was measured before it was divided into 3 rows (D = dorsal; C = central; and V = ventral) and 5 columns (labeled 1, 2, 3, 4, and 5 from anterior to posterior), resulting in 15 belly sections of equal dimensions. Thickness of all 4 sides of each section was averaged before two 2.5-cm-diameter cores were removed and compressed to 50% their average thickness between compression plates, whereas each section was also punctured twice with a 1.3-cm-diameter, rounded-tip bar. Then, each section, including the compressed cores, was knife-dissected into lean, fat and skin components and component weights were recorded to calculated composition of each belly section. The lean and fat portions from each belly section were then ground twice, and composite section samples were used to measure moisture content. The belly section with the greatest ($P < 0.05$) compression value was D-1 (88.86 kg), whereas the lowest ($P < 0.05$) compression value was found in the V-4 (36.97 kg) section (column × row, $P < 0.001$). Conversely, the greatest ($P < 0.05$) and least ($P < 0.05$) puncture values were observed in the C-2 and V-5 locations, respectively (column × row, $P = 0.016$). The greatest ($P < 0.05$) and lowest ($P < 0.05$) fat percentages were found in the D-3 (75.2%) and C-4 (29.5%) sections, respectively, and the greatest ($P < 0.05$) and lowest ($P < 0.05$) lean percentages were observed in the V-1 (57.7%) and D-3 (11.3%) sections. Lastly, the D-3 section had the greatest ($P < 0.05$), whereas the C-4 section had the lowest ($P < 0.05$), moisture content (column × row, $P < 0.001$). It is apparent from these results that there is considerable intra-belly variation in the composition and firmness of fresh pork bellies.

Key Words: pork belly, firmness, composition

315 Determination of amino acids digestibility and calculated energy values for a high-protein sorghum DDGS in growing pigs. H. L. Frobose*, J. Y. Jacela, J. M. DeRouchey, S. S. Dritz, M. D. Tokach, J. L. Nelssen, and R. D. Goodband, *Kansas State University, Manhattan*.

Fractionation of traditional DDGS to separate the majority of fat and fiber resulting in a higher protein product has become more common; however, nutrient values for these new products must be established for accurate diet formulation. Therefore, an experiment was conducted to determine the amino acid (AA) digestibility and calculated energy value in a high-CP sorghum DDGS. Six growing barrows (BW = 22.7 kg) were surgically fitted with T-cannulas at the terminal ileum. Each was randomly allotted to 2 dietary treatments in a crossover design with 2 periods. The treatments diets were: 1) high-CP sorghum DDGS as the only protein source; and 2) N-free diet for determining basal endogenous AA loss. Both diets contained 0.25% chromic oxide. Ileal digesta samples were collected for amino acid analysis to calculate apparent (AID) and standardized (SID) ileal digestibility. Energy values were calculated based on chemical nutrient analysis. The analyzed nutrient composition on a DM basis was 48.5% CP, 3.2% crude fat, 17.5% ADF, 20.5% NDF, 0.13% Ca, and 0.82% P. The DM was 91.88%. Also, it contained 1.73% Lys on a DM basis, with other AA and their AID and SID values reported in Table 1. For energy, the analyzed GE was 5,108 kcal/kg of DM. The calculated DE, ME, and NE energy values were 3,878, 3,549 and 2,256 kcal/kg of DM, respectively. High-CP sorghum DDGS is higher in CP, AA, Ca, and P but lower in AA digestibility and energy than reported research evaluating traditional DDGS.

Table 1. Amino acid composition and digestibility coefficients

Amino Acid	%1	SID, %	AID, %
Arginine	1.85	79.5	77.7
Cysteine	0.80	67.9	66.2
Histidine	1.11	65.2	64.0
Isoleucine	2.18	71.8	70.8
Leucine	5.89	75.5	74.9
Lysine	1.73	56.9	55.1
Methionine	0.85	75.6	74.9
Threonine	1.79	65.6	63.2
Tryptophan	0.39	75.7	73.6
Valine	2.63	70.3	68.8

[1]Dry matter basis

Key Words: digestibility, pig, sorghum DDGS