uble fiber hydrolysis and improved gut development in pigs potentially compromised by low weaning BW.

Key Words: DDGS, liquid feeding, nursery pigs
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109 Impact of sex on composition and quality of fresh loins, bellies, and fresh and processed hams.

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The objective was to characterize the effect of sex across production focus on primal quality of pigs slaughtered in marketing groups designed to reduce variability. Pigs (N = 7672) from a lean growth [n = 1468 barrows (LB); n = 2151 gilts (LG)] or superior meat quality [n = 1895 barrows (QB); n = 2158 gilts (QG)] production focus were slaughtered over two seasons. Data were analyzed as a 2 × 2 factorial design. Unequal magnitudes of differences of sexes within production focus drove interactions. Random effects included barn (N = 8), marketing group (N = 3), and season (N = 2). Variability between sexes was measured using a Levene's test. Carcass composition, subjective loin quality, and gluteus medius color were collected on all carcasses. In-plant loin quality and belly quality analyses were conducted on 52.0% and 47.5% of carcasses, respectively. Loins and hams from select carcasses (N = 862) were collected for slice shear force (SSF) analysis and processed ham characteristics. Barrows (95.01 ± 2.41 kg) had a heavier HCW than gilts (94.17 ± 2.40 kg; $P < 0.0001$) but did not differ ($P = 0.09$) in variability. Fat depth was greater ($P < 0.0001$) and more variable ($P < 0.01$) in barrows (16.83 ± 0.76 mm) than gilts (14.65 ± 0.76 mm). However, LB had a 13.86% greater fat depth than LG ($P < 0.01$), and QB had a 15.65% greater fat depth than QG ($P < 0.01$). Gilts (68.46 ± 2.49 mm) had a greater loin depth than barrows ($P < 0.01$; 67.22 ± 2.49 mm) with no differences ($P = 0.60$) in variability between sexes. Gilts (58.16 ± 0.58%) had a greater percent lean ($P < 0.01$) with less variability ($P < 0.01$) than barrows (56.66 ± 0.58%). Lean percentage was increased 1.28 units in LG compared with LB but was increased 1.71 units in QG compared with QB ($P < 0.01$). Barrows had heavier (7.60 ± 0.26 vs. 7.32 ± 0.26 kg) and firmer (2.26 ± 0.12 vs. 1.88 ± 0.12) bellies than gilts ($P < 0.01$). Loin marbling was not different between sexes ($P = 0.89$). Gilts (15.11 ± 2.02 kg) had a greater SSF than barrows (14.07 ± 2.02 kg; $P < 0.01$). Pre-trim ham weights were not different between sexes ($P \geq 0.39$); post trim ham weights were heavier in gilts (9.86 ± 0.19 kg) than barrows (9.70 ± 0.19 kg; $P = 0.01$). Gilts (5.14 ± 0.10 kg) had a greater cooked ham weight than barrows (4.97 ± 0.10 kg). Although marketing groups aim to eliminate variability, sex contributes variation to a population. Sex significantly altered primal weight and quality differences across and within production focuses.

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110 Immune system stimulation (ISS) induced by *E. coli* lipopolysaccharide (LPS) alters amino acid metabolism in growing pigs.

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We previously observed that PRRSV infection increased plasma Met and Thr flux but decreased Lys flux in growing pigs. These changes reflect modification of AA utilization during ISS. This study evaluated the effects of ISS induced by LPS on whole body protein deposition (PD) and plasma free amino acid (AA) flux and pool size. Ten gilts (BW 9.4 ± 1.1 kg) were surgically fitted with venous catheters, individually housed in metabolism crates, and feed restricted (550 g/d) on a corn-SBM based diet (ME 14.3 MJ/kg, SID Lys 11.5 g/kg). ISS was induced by two intramuscular injections of increasing amounts of LPS (30 and 36 µg/kg BW) given 48 h apart. Blood samples were collected at 0 and 72 h after initiation of ISS and assayed for hematology and blood chemistry. Body temperature (BT) was monitored on a daily basis. N-balances were determined during a 3-d pre-ISS and a 3-d ISS period. At the end of each N-balance period, a single dose of [U-^{13}C, U-^{15}N] AA mixture (Lys, Met, Thr, Trp, Ile, Leu, Val, Phe, Gln) was infused intravenously, and serial blood samples were taken at 0, 2.5, 5, 7.5, 10, 15, 20, 30, and 45 min after tracer administration to determine isotopic enrichment. A double exponential model was fitted to the plasma enrichment for each pig and AA, and equation parameters were used to estimate plasma AA flux and pool size. Blood chemistry, hematology, and BT results indicated that LPS induced effective ISS in pigs ($P < 0.05$). ISS had no effect on PD (59.4 vs. 55.7 g/d; $P = 0.31$), but it decreased plasma flux (µmol/kg BW/h) for Ile (112 vs. 76; $P < 0.05$) and Phe (126 vs. 79; $P < 0.05$). In agreement with PRRSV challenged pigs, LPS tended to reduce the plasma Lys flux (from 394 to 325, $P = 0.08$). Plasma flux of other AA was not affected by ISS. ISS increased and tended to increase the pool size (µmol/kg BW) for free Leu (22 vs. 34, $P < 0.05$) and Gln (16 vs. 25, $P = 0.11$), respectively, but reduced the pool size for free Ile (13 vs. 9.0, $P < 0.05$). Collectively, these results suggest that ISS induced by LPS alters AA flux and pool size in growing pigs. The decrease in Lys, Phe, and Ile flux in LPS induced ISS pigs may be attributed to a reduction in whole body protein synthesis or decreased