

**199 Reduced dietary crude protein impacts growth performance, carcass nutrients and energy metabolism in growing and finishing pigs.** A. D. Beaulieu\*<sup>1</sup>, G. L. Allee<sup>2</sup>, F. Ji<sup>3</sup>, R. B. Hinson<sup>2</sup>, D. Y. Kil<sup>3</sup>, H. H. Stein<sup>3</sup>, L. L. Stewart<sup>3</sup>, J. E. Pettigrew<sup>3</sup>, and J. F. Patience<sup>1,4</sup>, <sup>1</sup>*Prairie Swine Centre, Saskatoon, SK, Canada*, <sup>2</sup>*University of Missouri, Columbia*, <sup>3</sup>*University of Illinois, Urbana*, <sup>4</sup>*Iowa State University, Ames*.

Pressure on the cost and availability of dietary energy has increased the need for information on energy metabolism. This experiment evaluated the impact of low protein diets on energy utilization in the growing and the finishing pig. Growing (ave. initial wt 25.3±0.3 kg) and finishing (ave. initial wt. 77.3±0.9 kg) pigs were used in a serial slaughter study of 28 and 35d for the growing (GEX) and finishing (FEX) experiments, respectively. The two experimental treatments contained 22.0% and 17.9% CP in GEX or 16.0% and 12.5% CP in FEX. Diets were formulated with constant net energy across treatments within experiment. In total, 32 barrows were employed in each experiment: 16 in the initial slaughter group and 8 per dietary treatment. In GEX, reduced CP had no effect on ADG or ADFI ( $P > 0.10$ ), but lowered G:F (0.6 vs 0.5;  $P < 0.05$ ). It also lowered carcass water (70.0 vs 66.4%) and increased fat (10.9 vs 15.0%;  $P < 0.01$ ), but had no effect on CP or ash ( $P > 0.10$ ). The quantity of energy retained in the carcass increased on the low CP diet (53.6 vs 71.9 Mcal;  $P < 0.05$ ). In FEX, reduced CP no effect on growth performance ( $P > 0.10$ ) but it decreased the concentration of carcass fat (25.7 vs 22.5%;  $P = 0.05$ ) and tended to reduce the concentration of water (58.2 vs 56.3%;  $P < 0.10$ ). Diet had no effect on carcass CP or ash ( $P > 0.10$ ). The quantity of energy retained in the carcass decreased (159.2 vs 123.8 Mcal) on the low CP diet ( $P < 0.05$ ). Dietary net energy, calculated from operational maintenance plus retained energy, was 1982, 1855 and 1775 and 2028 kcal/kg, for the low and high CP diets in GEX and FEX respectively. Utilization of energy is altered by lowering dietary crude protein, reflecting changes in the composition of gain not necessarily observed in total body growth performance.

**Key Words:** pigs, low protein diets, energy