

191 North American Swine Energy System: Introduction. J. E. Pettigrew*¹, G. L. Allee², J. F. Patience³, H. H. Stein¹, D. Y. Kil¹, A. D. Beaulieu³, R. B. Hinson², and F. Ji¹, ¹*University of Illinois, Urbana*, ²*University of Missouri, Columbia*, ³*Prairie Swine Centre, Saskatoon*.

Energy is the most expensive dietary essential in pig diets, but it receives much less attention in North America than is deserved by its importance. In North America it is usually expressed as either DE or ME, but these systems share important shortcomings. They systematically overvalue fibrous or high-protein feedstuffs and they systematically undervalue fats. These shortcomings seriously limit the precision of formulations the industry needs to ensure high production while limiting costs and environmental impact. It is increasingly apparent to many practicing nutritionists that these deficiencies in measurement of dietary energy are important to the economics of pig production. To improve upon DE and ME, it is logical to move to a net energy (NE) system. There are two recently developed NE systems for swine now in use in Europe, the INRA system in France and the CVB system in the Netherlands, and a theoretically-based Potential Physiological Energy (PPE) system has been developed in Denmark. However, for various reasons they have not captured the confidence of many North American swine nutritionists for use in our conditions. As we refine energy systems to the NE level, it becomes apparent that expression of an energy value for feeds is theoretically inadequate because animal factors influence the efficiency of energy use. To address the need for a more sophisticated energy system for North American producers, we have undertaken a multi-year multi-institutional research program under the leadership of the National Pork Board and the United Soybean Board. The objectives are to determine whether any of 3 European energy systems is adequate for use in North American conditions, and whether a sound energy system must consider animal factors such as protein versus fat deposition. This symposium is a report of that research.

Key Words: swine, energy, net energy