27 Defining a robust sow: swine nutrition perspective on reproduction and lactation. Joel M. DeRouchey, Mike D. Tokach, Robert D. Goodband, Jason C. Woodworth, Steve S. Dritz, Mariana Boscato Menegat, *Kansas State University*

Improvements in modern sow prolificacy have markedly increased the number of pigs weaned, thus the ability of sows to provide nutrients to support fetal growth and milk production has been enhanced. The goals of the gestation nutrition program consist of meeting the nutrient requirements for maintenance and growth and for adequate conceptus development, while managing body condition. Early gestation represents the best opportunity for replenishing body reserves, whereas in late gestation, both estimated protein deposition and energy requirement are exponentially increased and directed towards fetal growth and mammary development. Increased feed intake after breeding has been presumed to be detrimental to embryo survival; however, data with modern line sows demonstrates to feed thin sows to recover body condition as quickly as possible while avoiding feed deprivation immediately after breeding. Importance of body condition scoring remains unchanged: feed thin sows to bring back to adequate body condition and prevent over-conditioned sows at farrowing. A recent meta-analysis showed increasing late gestation feed intake seems to modestly improve piglet birth weight by 28 g per piglet in gilts and sows. Also, recent findings in gestating sows suggest modern genotypes have improved feed efficiency and propensity for growth. Therefore, increasing energy intake during late gestation has a modest effect on piglet birth weight and a negative effect on stillborn rate. Historically, lactation catabolism impacted subsequent reproductive performance of sows, particularly in first-parity. However, contemporary sows appear to be increasingly resistant to the negative effects of lactational catabolism. Even so, continued emphasis on maximizing lactation feed intake is critical to support milk production and prevent excessive lean tissue mobilization. Research data suggests that ad libitum feeding and offering lactation diets during the wean-to-estrus interval is not needed. Modern genetic sow lines appear to be more robust from a nutritional perspective than in the past.

Key words: gestation, lactation, nutrition, sow

23 Dietary management of the transition animal: Perspectives from dairy cows to sows. Robert Van Saun, *Penn State University*

Since the 1990s, the impact of late gestational nutrition and management on lactation and reproduction has become the focus of dairy management. Transition cow management has been credited with having greater influence on herd performance as compared to previous focus on lactation nutrition. Several seminal papers published in 1990s and early 2000s directed management practices of dry cows, rightly or wrongly, toward critical factors impacting calving and lactation. Dairy cow gestational protein requirements cited a 1956 study on Red Danish cows until Bell (1995) characterized the modern Holstein fetus' chemical composition over the last 70 days of gestation. Recognized health effects of "fat cow syndrome", similarly described for pigs, focuses late pregnant dairy cow management on body condition management starting in late lactation. Optimum condition was emphasized, recognizing negative impacts of excessive limited BC on lactation and reproduction. Maximizing dry matter intake was a nutritional goal for preventing energy-based metabolic challenges, until research indicated excessive energy during early, non-lactating period was more critical to managing postpartum metabolic derangements than the weeks prior to calving; which is like controlling energy intake of sows. Delivery of amino acids, estimated by metabolizable protein intake, has recently earned focus of research, relative to immune function, metabolic stability and reproductive success during early lactation. Identifying amino acids as critical fetal metabolic fuel, and consequences of excessive maternal protein mobilization, has become a focal point of swine and dairy transition nutrition. Although management of the transition cow has been greatly refined through nutritional research, improved cow performance has not yet been realized in the field. Recognition of the interplay between nutrition, environment and management relative to enhancing cow behavior has provided insight to the challenges of managing the transition cow. Metabolic, environmental and management challenges facing the physiologic transition from pregnancy into lactation occur in all production species. Although cows and sows procure essential nutrients by different digestive modes, cross-species applications can provide new or reinforcing perspectives on collective management approaches.

Key words: sow, gestation, nutrition