262 Fiber and Co-product Utilization in Pigs.

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Fiber is one of the four macronutrients that yield dietary energy for pigs (others are starch, fat, and protein). To yield energy, fiber must be fermented (primarily in the hindgut) by microbes producing volatile fatty acids (VFA). Price increases for traditional feedstuffs such as cereal grains and protein meals have stimulated the pork industry to consider dietary inclusion of fibrous co-products that are produced when grain is processed into human food, fuel, and bio-industrial products. High fiber co-products include distillers dried grains with solubles (DDGS), oilseed meal, expeller, and cake, and co-products from flour milling. As omnivores, pigs are ideally suited to convert these non-human edible co-products into high quality food animal protein. Thereby, co-products can partially offset increases in feed cost provided their price is competitive per unit of net energy or digestible lysine, but also present risks and feeding challenges. Effects of feeding high fiber co-product may depend on diets being balanced for energy value or not. In weaned pigs, high fiber diets were thought to reduce feed intake, and thereby hinder energy intake during the energy-dependent phase of growth. However, such a relation is not solid across the spectrum of dietary fiber. Fiber characteristics play a role in gut health and early development. High fiber diets have lower energy digestibility and concurrent lower feed efficiency, but increased feed intake may maintain growth. In growing-finishing pigs, high fiber diets increase viscera mass, and thereby reduce dressing percentage. In restricted-few sows, fiber and produced VFA play a role in reaching satiety responses. In conclusion, depending on the price of high fiber co-products, high fiber diets may be part of a range of solutions to reduce the feed cost, and may thereby support economically-sustainable pork production.

Keywords: co-product, fiber, pig

263 Review of Current Nutrition Knowledge and Practices for Gilt Development.

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Nutrition for replacement gilts aims to support the development of prepubertal gilts towards their physiological maturity in terms of body weight, body tissue composition, structural soundness, and reproductive development. A key concept of gilt nutrition for lifetime productivity is to maintain a positive prepubertal growth rate and reach a target body weight of 115 to 140 kg at puberty. The application of this concept commonly presents a challenge with fast-growing and highly efficient contemporary gilt lines, particularly considering the proportion of gilts exceeding the target body weight at puberty and the negative impacts of overweight gilts on lactational performance, structural soundness, and longevity. Thus, nutritional decisions regarding dietary levels of energy, amino acids, and minerals in the pre- and peripubertal stage can be conflicting. Typically, gilts are fed ad libitum with moderate levels of energy and amino acids because restrictions below the requirements can have a negative effect on puberty onset. In addition, a high plane of nutrition is offered after the pubertal estrus to set ovulation rate for breeding at the next estrus. Moreover, gilts are fed levels of dietary calcium, phosphorus, and trace minerals above the requirements to improve bone mineral density in preparation for fetal development and lactation mobilization. Although these nutritional practices improve gilt performance, they also typically increase weight gain. Thus, there is a need to review nutritional strategies to manage body weight of replacement gilts while attaining optimum reproductive success and lifetime productivity.

Keywords: feeding, replacement gilt, weight gain