Key Concepts for a Successful Nursery Nutrition Program

Understanding the main concepts of nursery is key to designing a nutrition program for weaned pigs. The key concepts for a successful nursery nutrition program are discussed in this fact sheet.

Wean good quality pigs

A key recommendation to improve quality of pigs at weaning is to wean pigs as old and as heavy as feasible. Weaning age averages 19 to 23 days in most swine production systems in the United States. Age at weaning greatly influences weaning weight and post-weaning growth rate. After weaning, pigs undergo a period of adaptation, which contributes to lower feed intake and growth performance, impairment of gut barrier function, and greater susceptibility to diseases. Weaning pigs with at least 21 days of age is beneficial to ameliorate the stressful effects of weaning and improve growth performance in the nursery and finisher (Main et al., 2004; Moeser et al., 2007).

Improvements in growth performance and mortality from wean to finish are evident when weaning age is increased through at least 21 days of age (Main et al., 2004). The ability of late weaned pigs to perform better is not only a consequence of heavier weight at weaning, but most importantly a consequence of a physiological change in the pig. Indeed, late weaned pigs have improved gut barrier function (Moser et al., 2007; Smith et al., 2010) and immune response against pathogens (McLamb et al., 2013) compared to early weaned pigs.

Maximize feed intake after weaning

Feed intake is a key determinant of performance and health status of weanling pigs. While the majority of pigs begin consuming feed within the first 24 hours after weaning, approximately 30% take between 24 and 60 hours to start on feed (Bruinix et al., 2001). Weanling pigs are in a highly energy-dependent stage of growth, which means that any increase in feed intake results in improvements in growth rate and lean deposition. Moreover, feed intake is important to sustain an adequate gut structure for nutrient absorption (Pluske et al., 1996) and to reduce the occurrence of diarrhea in weanling pigs (Madec et al., 1998).

The most important aspect to maximize feed intake is to have feed available and offered *ad libitum* as soon as pigs are weaned. There are several strategies to encourage feed intake of weanling pigs. One strategy is to use feeding boards or mats to supply adequate feeding space. Another strategy is to offer a gruel with a mixture of feed with water. With both of these strategies, feed should also be available in the feeders and the strategies should be used temporarily during the first few days after weaning as to not discourage consumption of feed in the feeders. The boards, mats, and gruels should be appropriately managed to prevent feed spoilage and disease transmission.

Feeding behavior after weaning is also stimulated by providing creep feed while pigs are nursing to ease the transition from milk to solid diets (Bruinix et al., 2002). The creep diet doesn't have to be offered for a long duration before weaning (Sulabo et al., 2010), but it must be a highly palatable and digestible diet (Sulabo et al., 2009). A viable strategy is to offer a creep diet for 3 d before weaning to increase the proportion of pigs consuming creep feed and improve feed intake after weaning. Also, using similar ingredients in initial nursery diets can stimulate weanling feed intake in the early post-weaning.

Provide proper management

Management is key for a successful nutritional program in the nursery. Proper management involves maintaining a comfortable environmental temperature for weanling pigs, adequate ventilation, early identification and treatment of sick pigs, and proper feeder and waterer adjustment.

Feeder adjustment is important to encourage feed intake and improve feed efficiency in the nursery. In general, it is recommended to adjust feeders to allow for approximately 50% of feeder pan coverage. The amount of feed flowing into the pan should be greater in the early post-weaning period to stimulate feeding behavior and then gradually adjusted to control feed wastage. However, the influence of feeder adjustment on feed wastage seems to be variable depending on feeder design.

With high quality feeders, a wide feeder gap opening and a feeder pan coverage between 50 to 75% can be used while still achieving good feed efficiency (Smith et al., 2004; Nemechek et al., 2015).

Waterer adjustment is essential to facilitate water access as well as to ensure water cleanliness and a continuous supply of fresh water. In general, it is recommended to adjust waterer height as nursery pigs grow. Cups and nipples mounted at a 90° angle should be adjusted at shoulder height, whereas nipples mounted at a 45° angle should be set at 2 to 3 inches over shoulder height.

Remember the biology of the pig

The biology of weanling pigs must be considered for a successful nutritional program in the nursery. Young pigs have high protein deposition, low feed intake, high lactase activity, and low amylase, maltase, sucrase, and lipase activities. This means that newly weaned pigs are able to easily digest lactose and specialty protein sources, but have limited ability to digest plant protein sources, sugars, and to utilize fat. In general, it is important to provide adequate amino acid levels from highly digestible protein sources because weanling pigs have a high capacity for protein deposition in relation to feed intake level. However, it is not effective to use fat to increase the energy density of the diet to counteract the low feed intake level.

Adjust pigs to simple diets as quickly as possible

One of the goals of the nutritional program in the nursery is to prepare pigs for grow-finish diets. Diets in the grow-finish are relatively simple and less expensive compared to nursery diets. Although the use of specialty ingredients results in excellent performance in the nursery, benefits do not result in further improvement in grow-finish performance. Thus, specialty ingredients should be paid for in the nursery without projections of improved finishing performance. The goal is to gradually remove specialty high-cost ingredients from nursery diets and replace them with typical lower-cost ingredients, such as grains and soybean meal, as quickly as possible.

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