MANAGEMENT TO OPTIMIZE PRODUCTIVITY OF THE WEANED PIG

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ABSTRACT

Management factors to optimize the productivity of the weaned pig include communicating the proper message to barn staff, sanitation and barn preparation practices, healthy pigs of maximum weight and age entering the barn, and feeding management practices. Clearly, these factors are interrelated and important to optimize nursery productivity.

INTRODUCTION

A successful nursery management program depends on many interrelated practices. These include the importance of weaning weight and age for a successful start in the nursery, as well as feeding and environmental management procedures to enable successful performance. Diet formulation and ingredient selection to maximize performance and minimize cost and disease problems also are important factors to optimize nursery productivity.

COMMUNICATE THE MESSAGE

Do the people understand the program? At K-State we work with a wide range of production systems and interact with a wide variety of people including owners, managers, contract growers, owner operators, and frontline employees. Commonly, we encounter nursery programs with below optimum performance. Many times the cause is because of inexperience or communication and cultural barriers of workers who fail to understand desired procedures rather than technical problems such as diet formulation.

Do you have the right personality? The KSU Swine Nutrition group and several producers that we work with have used formal personality profiling to enhance communication and categorize the most effective methods of communication. Usually, we find that if we are having a difficult time with compliance or getting the message across it is not the fault of the audience that we are dealing with but rather a need for communicating the message in a different format.

Is management communicating the proper message or are they communicating a message? An example is communicating the importance of feeder adjustment. The importance of proper feeder adjustment for improving feed efficiency is well known to producers, employees, and

professional advisors. However, this is the number one cause of sub optimal feed efficiency we encounter on farms time and time again. When discussing feeder adjustment with personnel in the barns, few disagree that adjustment is important, however, there is much confusion as to how much feed should be in the pan for optimal feed efficiency. Usually, we find the message being communicated by different service managers is different. We have found using pictures of a properly adjusted feeder has been a very effective communication tool. Therefore, each service manager is working from the same standard. Additionally, several productions systems have placed the pictures of optimally adjusted feeders in every barn of pigs.

START OUT WITH HEALTHY PIGS

Without a doubt the swine industry has restructured dramatically in the last decade to harness the health benefits of multi site pig production. While extremely successful at minimizing the impact of chronic disease, the impact of viral agents such as porcine reproductive and respiratory virus, swine influenza, and circovirus have increased. Field reports seem to indicate dramatically enhanced nursery growth performance when PRRSV elimination programs have been successful.

Therefore, it is imperative to deal with health challenges immediately with proper diagnostics and an appropriate therapeutic plan. As the veterinary profession is under increased scrutiny, we must continue to make informed therapeutic decisions and ensure that safe and effective treatment protocols are being used.

PERFORM PROPER CLEANING, DISINFECTING, AND DRYING

It has been well documented that animal performance is increased in “clean vs. dirty” environments and cleanliness is probably responsible for a large percentage of the growth performance benefits from all-in-all-out production. Also, since the young pig is more susceptible to infections from enteric organisms this is especially critical for nursery facilities. In general, organisms are protected against agents of disinfection by organic materials such as pus, serum, or feces. Fortunately, most swine pathogens only survive for a brief amount of time outside the host in the absence of organic materials or moisture. Up to 99% of bacteria can be removed by cleaning alone under experimental conditions. However, the relative importance of the stages of sanitation include: 1) 90% removal by removing all visible organic matter, 2) 6 to 7% killed by disinfectants, and 3) 1 to 2% killed by fumigation (Morgan-Jones, 1987).

Recent reports indicate that environmental contamination is an important contributor of Salmonella infection (Nietfeld et al., 1998; Davies et al., 1999). From one study, 27% (7/26) of drag samples obtained from a fully slatted finishing floor just prior to placement of pigs were found to be positive for salmonella. Anecdotal observations from our group indicate that there is a seasonal nature to enteric problems in nurseries during the latter winter and early spring period. We have observed that during this time period, due to environmental

conditions, nursery spaces take longer time periods to dry and pigs are commonly placed in nurseries with moist surfaces and humid environments. Other observations indicate that feeding mat sanitation is also an important factor. If using feeding mats, we advocate they only be used for the shortest time period (3 to 5 d) after weaning.

SET THE BARN UP PROPERLY BEFORE THE PIGS ARRIVE

In addition to sanitation, before arrival procedures include setting ventilation controls to allow for the room to dry and warm up. If used, mats and supplemental heat sources should be in place and functioning. All waterers should be functioning and adjusted to the proper height. Waterers should be set at shoulder height for the smaller pigs in the pen. Regardless of whether the first diet after weaning is bagged or bulk, the feed gate in all feeders should be closed before the first pellets are placed in them. The feed gate then is opened so that a small amount of feed is visible in the feed pan. Placing pelleted feed into empty feeders with the gate open will result in large amounts of feed wastage.

During the first 36 hours after weaning, pigs need to find the water and feed. During this time period height adjustment of waterers should be rechecked to ensure proper access to water for pigs, feed should be always available in the feeder, and small amounts of feed should be placed on the mats to encourage feeding behavior. Also, during this period the environmental temperature and zone heat are adjusted to ensure that the pigs are comfortable. Standard environmental temperature recommendations are difficult to generalize due to differences in effective temperature due to flooring materials, heating sources, and drafts. Therefore, the objective during the immediate period is to make minor environmental adjustments and let the pigs rest and acclimate after weaning.

The transition period immediately after weaning is a critical time in nursery management. Water intake is crucial in the newly weaned pig. Because of the low body weight in proportion to metabolic rate, dehydration occurs easily in young pigs. The unguarded center-flow water nipple has worked well in the SEW nurseries at Kansas State University to facilitate drinking and prevent dehydration. In addition, it is important to ensure that the water pressure is below 20 psi, so that pigs can easily operate the water nipples. Many producers block or tie the nipples open for the first 24 hours, so that the newly weaned pigs rapidly find the waterer. Cup waterers have been used successfully in other nurseries. A simple rule of thumb to use for height adjustment is shoulder high for the smallest pigs in the pen.

If all of the proper preparatory procedures are performed, the pigs can be left to rest for approximately 36 hours after weaning. Pigs should be observed to ensure that they have found the water source and are beginning to develop feeding behavior.

COST EFFECTIVE DIET FORMULATION AND HIGH INGREDIENT QUALITY

While diet formulation and ingredient selection are critical factors for successful implementation of nursery programs this section will only briefly outline some commonly encountered problems. A general outline for diet formulation and feed budgeting in the nursery are provided in tables 1 and 2. For a discussion of the specific nutrient requirements as well as recommended dietary formulation for nursery pigs, please refer to Tokach et al., (1997), Nelssen et al., (1999), or Tokach et al., (2003). The major principle of nursery diet formulation is to transition pigs to a grain soybean meal-based diet as rapidly as possible without sacrificing growth performance. Feed intake is critical for the maintenance of thermoregulatory capabilities. The relative rate of body heat loss is greater for lighter weight pigs than heavier weight pigs. Rarely is feed intake maintained at a sufficient amount to sustain before weaning growth rates and maintenance energy requirements. Thus, maximizing feed intake after weaning reduces stress and increases growth rate by decreasing the mobilization of lipid stores to provide energy for protein deposition (Whittemore et al., 1978). As feed intake increases after weaning, a lower effective environmental temperature is needed to maximize pig growth performance. Therefore, a rapid increase in feed intake is a high priority when weaning lightweight pigs because of their relatively larger amount of heat loss compared to heavier pigs.

Table 1. Recommended sequences and composition of nursery nutritional programs.

SEW Diet for pigs weighing less than 5 kg	Transition Diet for pigs weighing 5 to 7 kg
Grain-based	Grain-soybean meal-based
1.6 to 1.7% Lysine	1.5 to 1.6% Lysine
0.44 to 0.47% Methionine	0.38 to 0.43 Methionine
18 to 25% Lactose equivalent	15 to 20% Lactose equivalent
5 to 7% Spray-dried animal plasma	2 to 3% Spray-dried porcine plasma
10 to 15% Soybean meal	2 to 3% Spray-dried blood meal and
3 to 6% Added fat	(or)
0 to 2% Spray-dried blood meal	Select menhaden fish meal
3 to 7.5% High quality fish meal	3 to 5% Added fat
3,000 ppm Zinc oxide	3,000 ppm Zinc oxide
Pelleted	Pellet or meal form
Phase 2 for pigs weighing 7 to 11 kg	**Phase 3 for pigs weighing 11 to 25 kg**
Grain-soybean meal-based	Grain-soybean meal-based
1.30 to 1.50% Lysine	1.25 to 1.45% Lysine
.36 to .41% Methionine	.34 to .40% Methionine
6 to 8 % Lactose equivalent	No added specialty ingredients
2 to 3% Spray-dried blood meal	0 to 6% Added fat
or 3 to 5% High quality fish meal	0 to 250 ppm Copper sulfate
0 to 3% Added fat	Pellet or meal form
2,000 ppm Zinc oxide	
Pellet or meal form	

Table 2. Example feed budget (amount, kg of each diet that should be fed/pig).

		Weaning Age and Initial Weight		
		14 d	21 d	24 d
Diet	Pig weight, kg	4 kg	5.9 kg	6.8 kg
SEW	< 5 kg	0.9	0.4	-
Transition	5 to 7 kg	2.3	0.9	0.9
Phase 2	7 to 11 kg	6	6	5
Phase 3	11 to 25 kg	23	23	23

Ingredient quality is imperative for the nursery diet, such as using edible grade dried whey, spray-dried blood meals, and high quality fish meal like select menhaden. We frequently encounter diet formulation errors such as incorrect pharmacologic zinc concentration and inadvertent substitution of ingredient sources (Tokach et. al, 2000). Therefore, we recommend scrutinizing mill formulations closely and making periodic feed mill audits to ensure that desired ingredients are being used. Minimize manual feed handling, size deliveries and bins to maximize efficiency of feed delivery and feed budgeting. Many producers eliminate as much hand feeding as possible. They concentrate their time and effort on skills that are not easily automated, such as treating sick pigs, observing eating behavior, and making environmental adjustments. Labor needs and attention to management in the early period after weaning are critical. This is the most important time to prevent starve out pigs and eliminate problems with habits such as navel and flank sucking.

Slight alterations in the appropriate amount fed can be made based on a minimum feed mill order, size of the delivery compartments of trucks, and location of the nursery on delivery routes from the feed mill. Feed processing and delivery charges account for approximately $.01 per lb. of gain or $.40 per pig in the nursery phase. Therefore, synchronization of optimum feed processing and delivery in nursery feeding programs represents a significant opportunity to increase efficiency and decrease cost.

Overfeeding of the first diets after weaning is a common cause of excessive feed cost in the nursery phase. However, based on the relatively wide range of weight distribution in nurseries with pigs that have widely varying nutrient requirements, astute nursery managers modify the amounts of segregated early weaning (SEW) and transition diets that are fed by pen within a nursery.

The phase 3 diet is the lowest cost diet in the SEW nursery-feeding program. However, because consumption of the phase 3 diet is the greatest, it usually accounts for 50% of the total feed cost from weaning to 23 kg. Thus, cost of this diet is critical to minimize total feed cost while maximizing performance in the nursery. Specialty ingredients, such as spray-dried blood meal, fishmeal or dried whey, are cost prohibitive, because research has failed to indicate improved growth performance from feeding such ingredients in phase 3 (Kats et. al., 1994).

MAXIMIZE WEANING WEIGHT AND AGE

A critical area that impacts nursery feeding and management is age at weaning. It is generally recognized that implementation of earlier weaning ages results in a greater output of pigs per year. The decreased subsequent reproductive performance is overcome by an increase in litters per sow per year. However, populations of weaned pigs within production operations are commonly assigned an equal value, regardless of weaning age or weight. Although there are typically individual pig quality criterion or discount programs, weaned pigs meeting the minimum standards are valued equally. Additionally, in multi-site production the sow farm is evaluated as a separate financial entity or cost center. Therefore, in these production systems, increasing pig numbers regardless of age or weight are strong drivers of sow herd financial performance. These drivers produce strong motivation for production managers to decrease weaning age. However, pigs weaned at heavier weights and older ages are simply easier to manage in the nursery and have lower risk of developing enteric disease (Cranwell et. al., 1995; Madec et. al., 1998). Other data indicate that pigs with lighter weight at weaning are at a higher risk of death (Deen et. al., 1998).

In a recent experiment, we characterized the importance of weaning age on growth performance in the first 28 d after weaning (Tokach et. al., 2003). We grouped pigs by age (12 to 15 d, 16 to 18 d, and 19 to 21 d old) and weight (light or heavy) within each age category (Table 3). We found a weaning age by growth performance interaction ($P < .07$). Note that the difference in average weight between the heavy and lightweight categories was approximately 1 kg (Figure 1). Thus, the heavy 12 to 15-d and the light 16 to 18-d old categories averaged similar weights at weaning. The heavy 16 to 18-d and light 19 to 21-d old categories also averaged similar weights at weaning.

Table 3. Influence of weaning age (d) and weaning weight (lb.) on nursery performance.

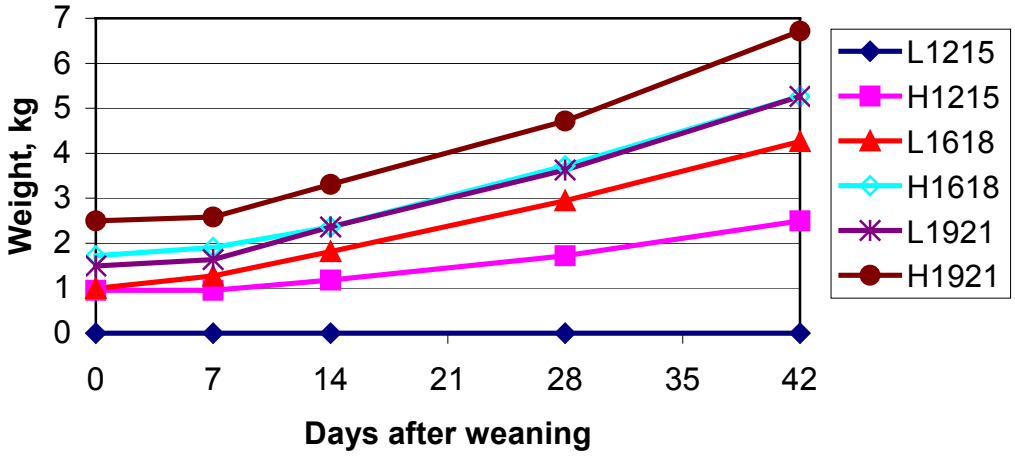
Age:	12 to 15		16 to 18		19 to 21			P Value		
Item Wt:	Light	Heavy	Light	Heavy	Light	Heavy	SEM	Weight	Age	Wt x Age
d 0 to 28										
ADG, g	213	241	286	286	309	295	5	0.05	0.01	0.07
ADFI, g	309	331	381	395	395	409	9	0.04	0.01	0.79
Feed/gain	1.46	1.38	1.35	1.39	1.37	1.39	0.02	0.83	0.10	0.04

Each number is the mean of 12 pens (21 pigs/pen) and pigs averaged 5.3 kg at weaning.

The youngest pigs at weaning gained the least from day 0 to 42 after weaning. The data clearly show that weaning weight is important with all ages of pigs; however, the impact of weaning weight was not as important as weaning age. When comparing pigs that were 16 days or older at weaning, the weight differences at weaning were only slightly increased by day 42 after weaning. Weaning weight was also important for pigs weaned at less than 16 days; however, age also becomes a critical factor as pigs with heavier weaning weights within the 12 to 15 d old category were not able to compensate for their young age. The heavy 12 to 15 day old pigs had the same weaning weight as the light 16 to 18 day old pigs; however, they were 2 kg lighter at day 42 after weaning. Weaning weight differences also become magnified

with young pigs. Note that while the light 12 to 15 d old pigs were 1 kg lighter at weaning than the light 16 to 18 d old pigs, the difference had magnified to 4 kg by 42 d after weaning.

Figure 1. Influence of weaning weight and age on weight difference between groups.

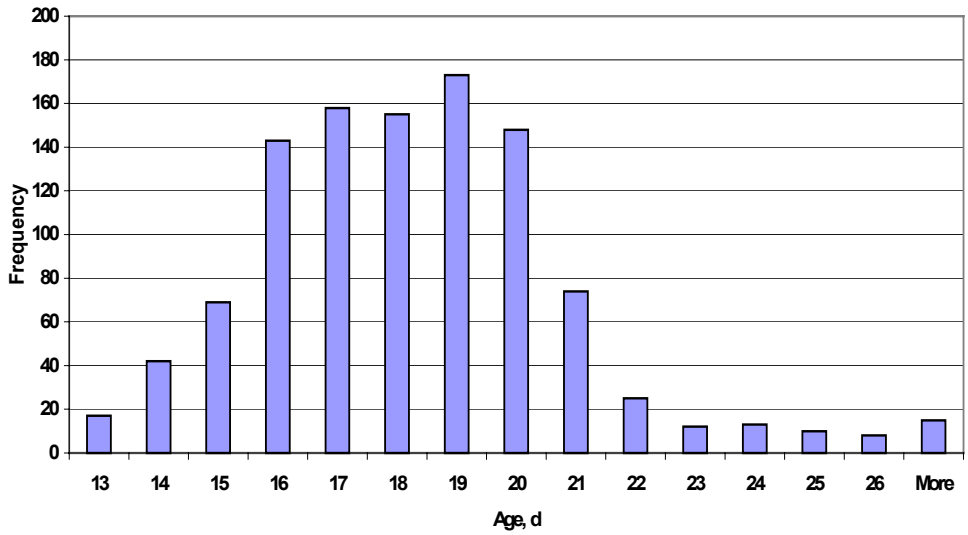


Subsequently, two follow up trials were conducted to determine the effects of weaning age on pig performance in a three-site production system (Main et al., 2004). Trial 2 also evaluated the effects of modifying nursery feed budgets according to weaning age. In trial 1 (2,272 pigs), treatments included weaning litters at 12, 15, 18, or 21 d of age. In trial 2 (3,456 pigs), litters were weaned at 15, 16, 18, 19, 21, or 22 d of age and categorized into three treatments (15.5, 18.5, or 21.5 d of age). In trial 2, pigs in each age group were fed a nursery feed budget classified as more or less complex. Each trial was conducted as a randomized complete block design with four blocks of linked nursery and finishing sites. All wean age treatments were weaned from a 7,300-head sow farm on the same day into the same nursery. Each block remained intact as pigs moved from nursery to finishing site. Increasing weaning age (12, 15, 18, or 21; and 15.5, 18.5, or 21.5 in trials 1 and 2, respectively) improved (linear, $P< 0.001$) ADG (299, 368, 409, 474 ± 7 g/d; 435, 482, 525 ± 13 g/d) and tended to improve (linear, $P< 0.09$) mortality (5.25, 2.82, 2.11, 0.54 ± 0.76%; 2.17, 1.56, 1.30 ± .36%) in the initial 42 d post-weaning. Finishing ADG (722, 728, 736, 768 ± 11 g/d; 783, 790, 805 ± 11 g/d) also improved (linear, $P< 0.01$) with increasing weaning age. Overall, increasing weaning age improved (linear, $P< 0.03$) wean-to-finish ADG (580, 616, 637, 687 ± 8 g/d; 676, 697, 722 ± 6 g/d), mortality rate (9.4, 7.9, 6.8, 3.6 ± 0.95 %; 3.9, 3.4, 2.5 ± 0.5 %), and weight sold per pig weaned (94.1, 100.5, 104.4, 113.1 ± 1.3 kg, 107.6, 111.6, 116.2 ± 1.1 kg). Nursery feed budget did not affect ($P>0.27$) wean-to-finish growth performance. Income over costs ($2.00, 5.11, 7.12, 11.19 ± 0.52/pig; $7.99, 10.04, 12.46 ± 0.46/pig), and cost per hundred lb sold ($39.10, 37.76, 36.96, 35.54 ± 0.21; $36.65, 35.95, 35.15 ± 0.15) improved linearly ($P<0.01$) with increasing weaning age. The improvements in growth and mortality largely occurred in the initial 42 d after weaning, with smaller growth improvements in finishing. These studies indicate that increasing weaning age up to 21.5 d predictably improves grow-finish throughput (i.e. 1.80 ± 0.12 kg sold/(pig weaned • d increase in weaning age) in this three-site production system.

Average age at weaning or lactation length calculated at weaning is based on the date of the last recorded wean event for the sow in most record keeping systems. In many farms where pigs are weaned multiple times per week, the heaviest pigs in a litter are weaned before the remainder of the litter. Thus, the actual average weaning age of the pigs will be lower than that stated on the summary report. We have observed actual weaning age as much as 1 day younger than that reported from average lactation length calculated from the sow wean event. Another common practice, even on farms that have strict policies about movement of pigs among rooms, is to hold back older lightweight pigs to wean them at an older age. This is another phenomena that will not be highlighted in records because the average age at weaning will be calculated based on the wean event of the sow.

Actual data from an experiment by Donovan and Dritz (2000) indicates that, on a farm with a 21 d maximum weaning age policy, 7.8% (83/1,062) of pigs were actually greater than the desired 21 d maximum age (Figure 3) and that 1.4% (15/1,062) were weaned at greater than 26 d of age. Also, note that 12% (128/1,062) of the pigs were weaned at 15 d of age or less. Examination of 1,800 pigs from another production system in which piglets are tattooed with date of birth indicated that 17% were greater than 21 d of age at weaning when the policy of maximum weaning age was 21 days.

Figure 3. Histogram of ages at weaning.



Strict adherence to maximum weaning age has been advocated to minimize transfer of infectious disease. Also, a narrow spread of weaning age has been indicated as desirable for success of isowean programs with a maximum of 20 d of age suggested for the elimination or control of most swine pathogens (Harris, 2000). Our experience indicates that the actual weaning age of groups of pigs is highly variable based on farrowing house management practices. Therefore, even though most nursery pig nutritional programs are based on pig

weight, we believe understanding the mean and variation in age are important for successful nursery feeding and management practices.

ASSIST PIGS AND TEACH FEEDING BEHAVIOR

By 36 hours after placement, most pigs will have found water and started to exhibit feeding behavior. However, this is a critical time period to identify pigs that are lacking proper feeding behavior or are becoming dehydrated. This may involve hand feeding a few pellets or using a gruel administered with a syringe. We believe that teaching feeding behavior to a small number of pigs is essential. Developmentally younger pigs weaned at earlier ages do not learn to eat dry diet as quickly as conventionally weaned 21-d-old pigs. The identification of candidate pigs for teaching feeding behavior is a high priority during the first few days after weaning. This is an area of pig management that requires astute observation of pig behavior. Therefore, it is an area on which personnel should concentrate efforts and veterinarians and managers should concentrate training. With proper management of the nursery, the number of pigs requiring extra attention will be limited to 2 to 4%.

The most difficult part of the process involves identifying the small percentage of pigs that are candidates for individual attention. The critical times are approximately 36 to 60 hours after weaning for identifying pigs that are having a difficult time learning proper feeding behavior. For example, for a group weaned on Thursday morning, the critical time period is Friday evening through Sunday morning. Pigs that are eating well will begin to have round abdomens, whereas pigs that have not begun to eat will be gaunt. Although most veterinarians automatically and unconsciously evaluate signs that a pig has not begun to eat, many untrained personnel will have a difficult time identifying the signs. The following mental checklist can be used to inspect pigs from a distance:

- Mental status – alert or depressed
- Body Condition – normal or thin
- Abdominal shape – round or gaunt
- Skin – sleek appearance vs. fuzzy
- Appetite –feeding at the feeder or huddled
- Signs of dehydration – normal or sunken eyes

Depressed mental status, thin body condition, gaunt abdomen, fuzzy appearance, huddling, and sunken eyes are all good indicators that a pig has not been eating or drinking. The appearance of abdominal shape is an especially useful indicator. The abdomen can be palpated for evidence of food intake. Palpating mucous membranes of the mouth or tip of the nose can identify signs of dehydration. Dehydration can be evaluated further by pinching a fold of skin. If the fold remains elevated for more than a few seconds the pig is dehydrated. A good location to do the skin fold test is just behind the front limb. Evidence of urination or defecation also is a reliable sign that pigs are eating and drinking.

Once pigs have been selected for further attention, they should be marked so they can be rechecked until they are feeding on their own at the feeder. One technique that has worked

well in several operations is to have a person who can identify the pigs that are not feeding go through the nursery and mark them. This can serve as an excellent training tool.

Two strategies seem to work well for starting pigs on feed. The first strategy is feeding a diet and water gruel multiple times per day to encourage pigs to eat. However, care should be taken so that pigs do not become accustomed to the gruel, leading to difficulty in learning to eat dry feed. Also, the gruel is an excellent bacterial growth medium; therefore, sanitation of the gruel feeding equipment is essential.

The second strategy is to individually teach feeding behavior to the small percentage of pigs that do not learn on their own. This method is based on a technique developed by a Kansas swine producer (Eichman, 1993). After the individual pigs have been identified, a small handful of pellets is wet with water and gently placed in each pig's mouth. Alternatively, if a large number of pigs require attention a small bucket of moistened pellets can be prepared. Some personnel use gruel administered through a 12-cc syringe with the end cut off.

The moist pellets or gruel stick to the tongue of the pig, and it begins to swallow. The next step is to carefully place the pig near the feeder, so it associates the food in its mouth with the feed in the feeder. Setting the pig down gently is important, so pain or stress is not associated with feeding. In fact, people that have mastered the technique will be able to rapidly pick up the pig, resulting in minimal struggle. A good indicator of the operator's technique is that a large proportion of the pigs actually will eat from the person's hand. Hence, this method relies on patience and an understanding of animal behavioral principles.

A small amount of feed such as 20 to 30 g will provide energy to keep the pig from starving. It is critical for small pigs with low body fat reserves to have a ready energy source. Our observations have indicated that in high-health-status, segregated, early-weaned pigs, signs of anorexia, depression, and dullness are more likely to be caused by lack of energy than infectious disease. Thus, giving them feed rather than treating them with antibiotics has saved pigs.

MINIMAL SORTING AND MIXING OF PIGS

It appears that in multi site production systems with a fairly narrow weaning age spread per group that minimal sorting and mixing result in better growth performance. For example in one production system with 12 growers, the growers that do minimal sorting consistently have better growth performance. We have observed as high as 17% of pens left empty at the beginning of the nursery period for sort pens. However, these strategies rarely result in excellent performance. Preliminary evidence from a follow up study to the weaning age by weight study using 16 to 21 d old pigs indicates that there is no advantage to sorting by weight categories upon initial placement into the nursery. While minimizing sorting and mixing of pigs is advocated, lack of individual pig care is not.

ADJUST THE FEEDERS FREQUENTLY

"If your fingers don't ache from cleaning the feed gates, you are not adjusting them properly."

We have observed decreased growth rate as a result of improper feeder adjustment. In an attempt to stimulate feeding behavior, large amounts of the first diet are placed in the feeding pan. Although intention is correct, the outcome is negative. Energy deficiency can result from pigs "sorting" the diet and a buildup of fines in the feeding pan. These fines then lodge in the feed agitator mechanism, making it difficult for new feed to flow from the feeder. This problem is remedied by management of the amount of feed flow in the pan to stimulate development of feeding behavior. Approximately 25 to 50% of the feeding pan should be visible in the first few days after weaning. As the pigs become more accustomed to the location of the feed and adjust feeding behavior, the amount of the feed in the feeding pan should be decreased rapidly to 25% or less coverage. Also, feed agitators need to be tested frequently to ensure that the buildup of fines does not prevent them from working freely.

The data in Table 4 depicts growth performance before and after the institution of an aggressive feeder-management strategy. Contrary to popular belief, reducing the amount of feed present in the pan did not reduce average daily gain. Feed efficiency and daily gain both improved because of decreased wastage and continual access to fresh feed. Our recommendations are to have feed accessible for newly weaned pigs at all times in feeders that are adjusted correctly to teach the proper feeding behavior.

Table 4. Comparison of pig performance before and after institution of an aggressive feeder-management strategy in the first week after weaning.

	Strategy Change	
Item	Before	After
Weaning weight, kg	5.6	5.3
Day 0 to 7 after weaning		
ADG, g	73	100
F/G	2.15	1.27

A total of 3,360 pigs used in analysis. Each number is the mean of 2 groups (Before) or 3 groups (After). Each group consisted of 32 pens each with 21 pigs.

CONCLUSIONS

Optimum nursery management is the sum of many factors such as weaning age, day to day management and critical assessment of management procedures. Recognizing that many of these challenges are interrelated and addressing these areas will lead to successful nursery programs.

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