HANDLING LARGE GROUPS OF GROWING PIGS

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ABSTRACT

After 30 years of designing grow-finish facilities with pens designed to house no more than 25-30 pigs, there is renewed interest by pork producers in facilities with group sizes over 100 pigs per pen. Reasons for this interest include marginally lower construction costs, the ability to stock pens at a higher density, the ability to mix pigs with minimal aggressive encounters and the use of auto-sort technology to identify pigs for slaughter. The major limits to use of large pens are people related. It becomes harder to isolate individual pigs for medical treatments or to sort-off pigs destined for slaughter as group sizes increase.

INTRODUCTION

The North American swine industry is rapidly moving towards wean-finish pig flow. In this system, 4-5 kg pigs (often 17 days of age), are placed in fully slatted pens where they remain until slaughter at 115-120 kg. Research has suggested pig performance in this management system is similar to pigs placed in conventional weaned pig nurseries and moved to grower-finisher facilities at 25-30 kg (Brumm et al, 2002; Wolter et. al, 2002). The main reasons cited by producers for adoption of wean-finish pig flow is labor savings, both from one less pig movement and one less facility to clean per growth cycle.

Typical modifications to traditional fully-slatted grow-finish facilities that producers make to accommodate wean-finish include:

- Supplemental zone heating such as heat lamps or infrared brooders.
- Mats under the supplemental zone heating area for 3-5 weeks.
- Wean-finish feeders or modified grow-finish feeders. These generally have solid dividers between spaces to prevent pigs from sleeping in the feeder and becoming trapped as they grow.
- Modified gating. Gating rods can be no more than 50 mm apart for weaned pigs, and gating must come within 35-50 mm of the floor so weaned pigs don't get their heads caught.
- Cup drinkers must be no more than 100 mm off the floor so weaned pigs can drink readily.

LARGE PEN BASICS

In addition to wean-finish, many production systems are using large pen designs for both wean-finish and grow-finish facilities. Generally these large pens consist of 80-250 pigs per pen. With adequate feeder and drinker space, data suggests no difference in performance versus conventional pens with 20-30 pigs per pen (Schmolke and Gonyou, 1999; Wolter et. al, 2001).

Most recently Payne et. al. (2001) examined the impact of group size (5 to 100 pigs per pen) on weaned pig performance and concluded that there was slight negative correlation between group size, growth rate and feed intake. However, they noted no evidence of increased variation in within-pen weights as group size increases. Turner et al. (2003) concluded that a large group size may compromise the growth performance of young pigs, but the long term consequences for other economically important traits is likely to be slight.

Possible reasons why large groups don't have as large a depression in performance as once believed (Kornegay and Notter, 1984) include:

- Flight zone. In large pens pigs have room to flee an aggressive encounter. Kay et al. (1999) observed that when groups of six unfamiliar sows were mixed, 50% of flight distances were less than 4.7 m and 95% less than 13.6m. In the US, typical pen dimensions for groups of 25-27 pigs are 3.1 m x 5.8 m. In this instance, an aggressive encounter begun in the center of the pen means the pig desiring to flee the encounter has insufficient distance. In a large pen of 100 pigs that often has dimensions of 6.1 m x 11.3 m, there is distance to flee the encounter.

- Sleeping area. Pigs prefer to sleep with the back against a solid surface. In small pens, the feeder and drinker are often located in the pen partition, meaning these devices are located in a preferred sleeping area. This leads to aggressive encounters as the pig that desires to eat or drink must make the sleeping/slumbering pig move. In large pens, feeding and drinking devices are often located in the center of the pen, leaving the perimeter as an undisturbed lying area.

- Social hierarchy. In small pens, there is clear evidence for dominant/submissive behaviors. In large pens, there is beginning to be suggestive evidence that the pigs go from a dominance/submissive behavior to a tolerant behavior. In large pens, it is possible to introduce new pigs at infrequent intervals with no visible disruption of the social order. In small pens, this introduction of unfamiliar pigs would result in aggressive encounters, biting, hot pigs, etc.

- Free space. In small pens, space is required for eating, drinking, fecal deposition and sleeping. In large pens, while these same activities occur, the space required is less per pig than in small pens. Thus, the pig reacts to large pens as though there were an increase in space allocation (McGlone and Newby, 1994).

LARGE PEN RECOMMENDATIONS

Based on the results of McGlone and Newby (1994), stocking density in large pens can be increased. While data is limited, many producers who stock small pens (25-30 pigs/pen) at 0.69 m^2/pig increase the density to 0.65 m^2/pig in large pens (100+ pigs/pen) with little impact on pig performance.

Individual treatment of sick pigs and sorting of market weight pigs are often cited as disadvantages of large group pens. Many producers utilize gating which can be secured on the feeder to provide a corner to trap a pig for individual treatment or to restrict pig movement in general when sorting.

Large pens require a different observation routine from that typically employed in facilities with small pens. Often times, the pigs will be laying some distance from the passageway. Thus, pig observation requires the caregiver to walk every pen every day. Many caregivers comment that identifying sick pigs is easier because there is room for the healthy pigs to scatter as the caregiver approaches. The last or slowest pigs to scatter are often the ones that deserve extra attention.

In addition to identification of sick pigs, daily human contact makes load-out for slaughter an easier process. Pigs reared in large pens are used to movement and human contact. This routine contact, along with the lack of social hierarchy, results in pigs that fight less during loading and transport to slaughter.

The difficulties of sorting pigs for slaughter have resulted in many producers installing "auto-sorters". These devices are automatic scales with two-way exit gates. Upon exit from the scale, pigs are directed by the gates to one of two pens based on a predetermined weight. Producers utilizing auto-sort technology report reductions in packer discounts and improved ease of loading. While not evaluated yet, there have been suggestions that auto-sort technology could be utilized to feed pigs in large pens according to weight. Possibilities include pulse dosing of growth promoting antibiotics, differential dosing of products such as ractopamine, or variations in lysine content.

CONCLUSIONS

The adoption of large pen technologies has challenged many producers and scientists' preconceived ideas of pig behavior. Large pen facilities have allowed for new technology, such as auto-sorting, to be utilized. These technologies are enabling pork producers to better manage the growth process.

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