

Large Group Housing – Learning From Experience

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■ Introduction

Conventional management of grow/finish pigs until recently has been to keep one or two litters in each pen in order to minimize aggression. In recent years we have moved to sorting pigs by sex (for split sex feeding) or weight (in an unsuccessful attempt to reduce variation at marketing). However we retained small group sizes, usually limited by the number of pigs that could be fed from a 2-4 hole feeder. With larger operations, or those that practice batch farrowing, we are now able to form groups of several hundred pigs of similar age and gender. Large groups of 100-1,000 pigs per pen are being tried on numerous farms throughout North America.

There have always been a few operations that have used large groups. These have generally been seasonal in nature using multi-purpose yards or open front buildings in the summer, or facilities that were inexpensive (hoop structures) or converted from previous use (old barns). In these cases, the significant reduction in capital costs meant that although productivity was compromised, the system remained viable. The objective of this discussion of in large groups relates to intensively managed facilities that require high levels of performance to succeed.

Why Large Groups?

There are a number of reasons to consider large grow-finish groups. Less penning is used and the need for alleys within the room is eliminated, thus reducing some aspect of capital cost. It has been suggested that less floor space per pig is required in large groups. More importantly, large groups allow us to apply new technology, particularly when it comes to sorting animals not only for market but also for phase feeding programs within each group. There is the potential for handling to be improved through the use of

facilities designed for large groups, and anecdotal evidence would suggest that pigs from large groups handle and load better at marketing.

Of course, large groups for grow-finish pigs need to work well if they are to be adopted by the industry. There were a number of reasons why large groups of pigs were discouraged in the past. Most, if not all, of these concerns have proven to be invalid. However, a number of producers who have adopted large groups, particularly those using auto-sort technology, have experienced unsatisfactory results. This is common whenever new technology is tried, and solutions need to be found to the problems they are experiencing.

■ Fears From the Past

Most of the concerns about large group sizes in the past were related to the behaviour and stability of the social structure within groups. Small groups of pigs have a very stable social structure. Every pig knows its position relative to every other pig in the pen. Once the social order is established there is no reason for further aggression. Increasing the size of the group made the social structure more complex, with more relationships to be established through aggression and to be remembered by the pig. As group size increased, social problems increased, and many producers feared that aggression, productivity, and general health of the pigs would deteriorate.

Research Finds Different Behaviours in Large Groups

This was true to a certain point, but research in poultry, and now in pigs, indicates that the nature of the social structure among animals changes in very large groups. At some point the benefits of being dominant, or of keeping track of all relationships around you, becomes too difficult to maintain and animals change their approach to living together. In our studies we have found that aggression following regrouping is similar, when expressed as minutes per pig, in conventional groups of 10-20 and large groups of over 100. We then examined how readily pigs could move into small and large groups. When pigs were added to a small group there was more fighting than when pigs were added to a large group. They were able to avoid fighting better, but it also appeared that the existing pigs in the large group were less interested in attacking the newcomers as well. We then conducted tests in small pens in which we placed four pigs from either two small groups or two large groups. In these uniform conditions it was clear that pigs from large groups were less interested in fighting. This has been termed 'tolerant' behaviour and is seen in animals living in large aggregations rather than in well-defined societies.

A second concern for large groups is the potential for behavioural vices, such as tail-biting, to be socially 'facilitated'; this means the behaviour increases

rapidly because of the stimulation derived by observing other animals perform the behaviour. Cattle feedlots experience the buller steer syndrome, in which one or more animals within a pen are ridden by several others. This problem increases in frequency when cattle are kept in large groups. Social facilitation seems to be present for this behaviour. However, this is not true for tail biting in pigs. Our experience has been that the level of tail-biting, as a proportion of the animals affected, is similar or reduced in large groups when compared to small.

We saw a reduction in performance in large groups, even in those that do not use auto-sorters. This reduction occurred during the first two weeks in the large pens, and thereafter the pigs grew as fast or faster than those in small groups. Growth rate did not appear to be directly related to aggression, as aggression levels and the severity of wounding was similar to small groups. We saw a difference in eating behaviour whereby the pigs in large groups had more meals, but shorter ones. We attribute this to visiting several feeders during each eating period, but eating less. The net result, over the entire 14-16 week grow-finish period was an extra 2 days to market. However this highlights the need for good feeder design and management that ensures pigs have optimal access to feed when placed in large groups.

■ **Managing Auto-Sort Technology**

Large groups make the use of auto-sort technology affordable. In such a system pigs are required to pass through a scale that directs them into different areas based on their weight. The scales are usually set up so that pigs pass through them on the way to the feeder. The pigs can be sorted into groups for market, or directed to different diets according to their weight, or to specific feed additives such as Paylean® during the appropriate period. Sorters may be programmed to provide management information such as the average weight of the pigs, the weight range, and the distribution of weights, which can be used in feeding and marketing decisions. Auto-sort technology has tremendous potential for managing grow-finish pigs.

Although pigs will generally go to great lengths to obtain food, getting pigs to learn that they need to pass through a scale to get to the feeder is not easy. Most problems associated with auto-sort systems involve pigs refusing to pass through the scale or reluctance to do it several times a day. Several management options have been suggested, tried, and modified. We need a combination of good management programs and dedicated producers who will learn how to work the new system.

Two basic options in terms of auto-sort pen design are the food vs. water court concepts. Food courts include both feed and water, but water is

generally available in the non-feeding area as well. Pigs must pass through the scale to enter the food court. Water court designs have separate food and water areas, and pigs must pass through the scale to move between them. Therefore, the animals must pass through the scale on a regular basis to obtain water. Comparative studies of food and water court designs have not been published in the scientific literature, and different equipment manufacturers recommend different systems. Whatever system is used, pigs must learn to pass through the sorter.

There are two basic approaches to 'teaching' pigs to pass through the sorter. The first approach is to force them through to ensure that all animals have passed through the scale to the food court. This needs to be when the pigs first enter the system and it will need to be repeated several times. Pigs learn best when they are not under stress, so move the animals carefully and begin the process before they have gone too long without feed. Our experience suggests that gradually closing off the area in front of the scale, and allowing pigs to pass through on their own will reduce the stress involved.

The second approach involves 'shaping' the pigs behaviour, from that of eating in an open pen to being willing to walk through the scale to obtain feed. Initially the divider between the food court and loafing area is left very open. Pigs can enter and leave the food court at several points. The penning and gates between the food and loafing areas is then gradually closed off over a period of several days or weeks. Eventually the pigs must pass through the sorter or the area adjacent to the sorter to obtain food. Finally the sorter is the only way into the food court. Up to this point the sorter is typically left 'open' and pigs can walk through without waiting for a gate to open. The final step is to set the sorter to operate, closing entrance and exits gates as needed and directing pigs to different sides of the food court. Both training systems need continuous monitoring and pigs that simply refuse to learn need to be pulled from the pen before their welfare is compromised. The number of pigs needing to be moved to a small pen seems to be between 2 and 5% (10-25 pigs per group of 500).

The critical issue to ensure good performance in the system is that getting to the feeder must be easy enough that food intake is not depressed. We are still at an early stage in developing all of the management criteria for these systems, and so it is better to err on the side of the pig rather than attempting to save on equipment and space. To this end, we recommend that more feeder space be provided (8-10 pigs/space rather than 12-14), that movement around the feeders be unrestricted (8 ft between feeders and walls, and frequent wide gaps in lines of feeders), and that sorters work quietly and quickly (3.5 'hits' per pig per day or more). Although many producers are operating sorters with groups of 500 pigs, it is not clear if this is the optimal number in terms of ease of management, animal welfare and productivity.

■ Other Options

Some producers allow their pigs to have ready access the food court at all times with the exception of a weekly managed sort. During this time the animals are gradually moved through the scale and sorted into appropriate weight groups for the following week. The pigs are never required to move through the sorter on their own.

One of the most frequently asked questions we receive is whether large groups can be formed late in the finishing period. Producers would like to add a couple of large group rooms to their finishing barn and to move pigs from small pens into these rooms as they approach market weight. They want to use auto-sorters to facilitate marketing more pigs at the target weight. There are 2 reasons to be cautious about this approach. Firstly, moving pigs from small to large groups, at any stage, will result in an initial depression in growth. Secondly, it will take several days to train these animals, either by forced training or 'shaping', to use the sorter on their own. A managed sort on a weekly basis may be the best approach if large groups are formed near the end of the finishing period.

■ Conclusions

Managing grow-finish pigs in large groups has a great deal of potential, particularly if auto-sorters are used to manage a multi-phase feeding program. Although many of the earlier concerns about large groups appear to be unfounded, there are a considerable numbers of management factors that are not fully understood, particularly in the use of auto-sorters. Producers choosing to adopt large groups for grow-finish pigs should demand a high level of service from their suppliers, and watch for the results of recent research in the producer press.

■ References

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