

## **Weight Variation – Can It Be Managed?**

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Variation in growth of pigs costs producers significant amounts of money due to increases in sort losses. Although variation has always been an issue, the problem has received much more attention, due in part to the increased problems it presents to barn usage in all-in all-out systems commonly used today. John Patience of the Prairie Swine Center recently has compiled and presented information on how to manage variation in nursery and grow-finish barns, and this information is briefly summarized below.

The level of variability on most farms is not well known, due mainly to the increased time and labor required to weigh animals. However, understanding what the normal or typical variation level of growth on a farm can be quite useful, allowing one to make management decisions to manage or minimize the variation and thereby improve economic returns. Data from the Prairie Swine Center would indicate the coefficients of variation (CVs) of 20-25% for pigs at weaning, 10-15% at the end of the nursery period, and 8-10% when nearing market weight may be normal, although other research has indicated slightly higher levels. The CV is an estimate of the relative range in weights compared in proportion to the average weight of the group, and therefore a higher CV indicates greater variability.

Because variability is much higher at lower weights, more pigs (perhaps 200) must be weighed to measure weight variability in weanling pigs, compared to perhaps only 50 or so finishing pigs when the group nears marketing weight and the first pull of marketing is done. It is also essential that animals are randomly selected. Selecting too many/few lights and/or heavies will over/under estimate variation of the group. Also, when weighing market pigs, do so at the first pull, when all pigs can be sampled, and not at later marketings, because not all pigs can then be included in the group.

There are many causes of variability in body weight and growth:

- There is the innate variability present at birth. CVs of 22 – 26% have been reported for birthweight of piglets within a litter, and decreased birthweights have been associated with reduced digestive and metabolic capacity and fewer muscle fibers.
- Heavier or more dominant piglets consume more milk, resulting in further discrepancies in growth and whole-body protein synthesis. Milk consumption can play an especially important role on later variation, since research has shown that increasing milk consumption 3x during the first week of life increases protein deposition rate by 4x.
- Weaning weight variability is tightly related to later weight and growth variation. One study indicated that 73% of the variation in pigs leaving the nursery was due to variation in previous weaning weight. Exactly how much weaning weight affects later weights differs among farms, but it has been reported that an increase

of 1 lb in weaning weight can roughly be estimated to translate into an extra 2 lbs at the end of the nursery period and 4 additional pounds at market.

- Disease status is perhaps the most important external factor affecting variability in pig weight and growth. Not only does the extent of disease exposure differ among animals, but the impact that exposure has on health and performance also differs greatly among individual animals.
- Limiting availability of feed and/or water can also greater increase variation in growth. If limited, dominant pigs will utilize a disproportionate amount of these resources, thereby decreasing growth in other animals and thereby increasing variation.

How does one try to reduce? Certainly improving the health status of the herd can improve overall uniformity. A number of strategies can be incorporated to reduce disease pressure, including all-in/all-out production, isolation of barns and sources of pigs, and sourcing pigs from high health sow farms. Ensuring adequate nutrition, ventilation, and reduction of stressors are also important.

One may also try and manage existing variation. Many things can be done, but the real constraint is economics and other resources.

- Pre-planned segregation, or splitting a group of pigs into sub-groups on the basis of expected differences in future performance, can be utilized. This would include split-sex feeding and separating lighter pigs at weaning into their own groups. However, the segregation itself won't improve variation unless the separate groups are treated as different groups. For example, different diets would be warranted for gilts and barrows, and providing extra Ph1 and Ph2 diets to smaller pigs would provide opportunity for them to catch up partly to peers.
- Some research indicates that piglets from gilts will grow faster if housed separately compared to piglets originating from older parity sows. This is believed to be due to a lower immunological status of piglets from gilts.
- Increasing weaning age will most certainly decrease variation in pig weight. This is partly due to greater overall pig weights, but can also be partially attributed to the more mature pig being better able to handle weaning.
- Increasing overall weight will decrease problems associated with variation since tail enders will also grow faster, thereby decreasing problems with emptying out the barn
- Weighing pigs for market is still not used greatly, although economic losses due to not meeting a packer's preferred weight range can be substantial.

Controlling weight variation is a constant challenge for swine producers. The key is recognizing the causes of variation and using strategies to minimize the variation in weight.

To access the complete article "Variation in Pig Performance: A Checklist to Improve Performance" by Dr. Patience, access the Prairie Swine Center website at:

<http://www.prairieswine.ca/whatsnew/apr03/Variation.htm>