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Increasing sow longevity: The role of people and management

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Introduction

Much has been written about the industry's seemingly dramatic increase in sow mortality. Concerns and questions about genetics, predisposition (possibly from a move to a leaner/meatier animal), and a rapid industry switch to total confinement housing have led the list of potential causes of sow mortality. Although not totally dismissing the above list of possible causes, my 22 years in swine practice and 50 or more hours per week working in swine confinement facilities has lead me to think that the increase in sow mortality is much more complicated than these causes. Although I believe that a thorough investigation of all potential causes must be conducted, in virtually all cases management and husbandry factors can be improved upon to reduce sow mortality.

Sow mortality: Potential contributing factors

The following are potential contributing factors that I believe have played minor to major roles in elevated sow mortality on individual farms and in the industry.

Today's labor force

We have gone from the majority of the industry being family farms with family farm workers to an industry where the majority of the people:

- Lack experience and management knowledge for large confinement units.
- Were not raised on livestock farms and therefore have limited previous husbandry skills.
- Have little or no training. Many of today's organizations are new or have recently undergone rapid expansion and have not had or taken the time to properly train people. The unemployment rate in Minnesota and in much of the US is at historically low levels. Many—if not most—farms are understaffed. This leads to work prioritization which often doesn't involve good and timely sow care.

Observation skills

With lack of experience and limited husbandry skills, it's often found that workers have not recognized that an animal is getting sick, going lame, has poor structure, is losing weight, etc. until it is too late. The ability to recognize these things early, to predict the seriousness of the situation, and to take the appropriate preventative or supportive action is critical. The following decisions must be made:

- Should the animal be moved to a pen?
- Should treatment begin immediately?
- Should the animal be culled immediately?

These decisions are based on observation skills that are not only learned but are gotten from experience. The recognition of too many animals getting too thin or the subtle signs that a sow is becoming sore-legged or sick are often missed until the animal is too severely affected to have any chance of recovery.

Increasing farm size

In the search for efficiencies of building size and scale, feed deliveries, labor force, etc., sow farms have increased dramatically in size during the last five years. As farms have gotten bigger, there is obviously more work and farms are not prioritizing daily individual sow observation, individual sow treatment, individual sow housing, and individual sow culling decisions. These things are not getting done on a timely basis. In 1200-, 2500-, 5000-sow or larger units, detailed, regular schedules are required to make time in the day to do these observations. They cannot be expected to be done casually as one goes about the rest of one's job as we used to do on the 50 and 100-sow farms. There are many animals that need close observation every day, and a dedicated time must be set aside to do this.

Crowding of facilities

With large expensive buildings and historically low market prices and margins, owner and managers of these facilities have been pushed to maximize output in order to lower overhead cost on each pig going out the door. This has led to excess inventories in the barns greater than what was initially expected to be placed; this, in turn, has resulted in a reduced number of empty pens for debilitated or recovering animals. These pens or empty crates are now used by production inventory animals in an effort to

make the desired quota of pigs. The desire for extra output has been complicated by production deficiencies in recent years. PRRS, PRV, A.I. techniques, early weaning, etc. have also necessitated a high sow inventory to satisfy weekly output targets of piglets. Many farms are forced to fill every nook and cranny with sows, leaving few or no options for handling sick or lame pigs. In the past, we either had these pens available within the barn, or many farms had outside lots (old Cargill units, old dairy barn lots) with abundant open space and dirt or bedded floors that could be used for the recovery of these animals. With the increased need and desire for biosecurity, these outside facilities are no longer considered a viable option.

Culling practices

The traditional family farm would often cull on an as-needed basis. If there was an animal that looked like it might go lame, the animal was brought to the buying station. In today's modern hog farms, because of biosecurity, trucks are backed up to the facility as infrequently as possible. At a maximum, farms now see one cull truck visit per week. Most firms get a cull truck every second or third week, or not until there is a trailer-load of cull animals for maximum transportation efficiency. This is especially true if local buying stations are not used and animals must be transported longer distances. Obviously, some of these animals could have been put on a truck and salvaged. With a couple of extra weeks in the barn, these animals become more severely lame, go down, and are no longer salvageable because of structural weakness.

Back fat

The rapid move to genetically leaner and meatier pigs has obviously resulted in an animal with much less natural back fat than we had in the past. When production replacement gilts go to market with 13-18 mm of backfat after being on full feed in finishing barns, it's obviously difficult to get more fat than this once in the sow herd taking on the rigors of pregnancy and lactation. Post mortem examinations of dead animals during the last 5-8 years have revealed that these animals have increasingly less back fat. When sow conditioning in the past and grading animals on a scale of 1-5 by observing the shape of the animals as well as by palpating the back fat over the spine, ribs and hips, one could get relatively close to the actual back fat on animals. It takes a trained eye and an experienced touch for a production worker to do this accurately. Then one has to predict how much feed it will take to achieve the proper level of condition. These skills have often not been learned by many production workers, or they are in the process of learning. Recently, with ultrasound techniques, we have been able to help train production workers that a percentage of the thinner sows have severely depleted fat stores and are in fact carrying less than 10 mm back fat. I am convinced that thin sow herds will have a higher sow death loss. However, I also caution farms not to have a fat sow herd because that isn't a healthy alternative. So most often we're working on the bottom 20-30% of the animals trying to bring them up into a normal range of back fat (16-19 mm).

Lack of good phenotypic selection

In the past on family farms, many people grew up participating in 4-H, took judging classes, and possibly took agricultural classes in high school. Many also received some instruction in post-high school classes involving livestock care and/or judging. Very few of today's workers have this kind of background and, therefore, lack the ability to recognize good phenotypic traits—especially in crowded pens. Owners and workers in the past were often involved in selecting their own gilts and boars from "breeders." Today's farms are sent replacement animals either from the genetic company or from their own multiplication system, often without adequate selection time and effort. Too often these precious potential new breeding stock are thrown into isolation barns where chores are done only at the end of the day when workers are in a hurry to get home. Because of the need for more gilts on the farm, these isolation facilities are also often overcrowded and it's difficult to properly observe the condition of feet and legs in these situations. Animals with buck-knees, improper set to the hock and fetlock, sickle-hocks, potential splay-legs, and "bubble-butts," which all should be culled prior to entering the breeding herd, are not getting culled. They enter the herd only to become early culls or downers—death loss animals.

Artificial insemination

Natural breeding where the boar jumps the sow was an early indicator to the farm workers that a sow was becoming unsound or had structural weakness, and these animals were often culled. With the increasing prevalence of A.I., this early warning doesn't happen, and animals are not culled early enough.

Rapid expansion of farms in the industry

With the tremendous changes in the industry in the last 5-10 years (e.g., the move from small to large farms; the move from outside sow housing to inside confinement), the demand for gilts has been tremendous. Many genetic suppliers and companies have been forced to take a very high selection rate. Even if these companies did have well trained selection personnel, standards were lessened because of the high demand for animals. Not only did we often lack trained and experienced personnel to do genetic selection for us on these farms, but customers' demands often negated the selection process, and compromises were made as a result. When these animals didn't perform on farms, resulting in higher cull or death rates, this created a death-spiral effect where the farm required more gilts. The additional quality gilts were not avail-

able, so selection rate had to be increased again to meet demand. Obviously, there was not a quick fix to this problem until the industry stopped the break-neck rate of expansion in the mid 1990s. Also, with the consumer demand for less back fat and better meat quality, selection for back fat, muscle, average daily gain, and feed efficiency became the highest priorities with phenotypic structural traits coming in low on the list of selection criteria.

Parity

With rapid expansion, high turnover, high death loss, and high culling rates, many herds experienced their parity structures becoming over-balanced to the young side. These animals had less immunity and natural disease resistance, coming off gilt development floors with too high of a selection rate. This lead to poor quality animals and higher death loss once they reached the sow farms. The other phenomenon that occurred in 1998 and 1999 when market prices hit a historic low ($8.00/cwt in the fall of 1998), was that producers were forced (for cash flow reasons) to stop or reduce purchasing replacement gilts. They tried to keep the older sows going on the farms; if kept too long, older sows will have higher death loss. So after nearly an unprecedented move to young herds in 1995-1997, the tide turned and I saw older herds than ever before in 1998-1999. Average parity of farrowed sows on PigCHAMP records went to six or seven on numerous farms—a phenomenon that I had never seen in my 22 years of practice. Older animals that had gone through multiple lactations and multiple breedings have traditionally always had higher death rate. This was not only a result of the industry's desperate attempt to conserve cash, but it was also probably a period where the industry was changing from a very low percentage of A.I. to a very high percentage of A.I. and animals were culled due to non-breeding (whether it was the animal's fault or due to A.I. technique). In order to keep replacement rates low, old sows were kept. The same was true for disease-related abortions (flu, PRRS, PRV) in the upper Midwest. In the struggle to meet breeding targets, old sows were kept on the farm.

Feed changes

With the recognition of the important relationship between reduced average particle size and feed efficiency in the grow-finish phase and with most production systems lacking two different grinds, finer feed (often 500-700 microns) is being fed to sows. Sows are typically fed only once/day and because they are often on and off feed during lactation, we have seen an increase in both acute ulcers, resulting in death loss, and chronic ulcers, resulting in debilitated animals. In the upper Midwest, with the abundance of corn and it being cheaper than any other fiber source such as oats, wheat, barley, or soy hulls, most sow rations are just corn-soy and contain no other gut-soothing sources of fiber.

Multi-site production and isolation changes

Many of today's gilts are raised in multi-site situations, brought to the farm and placed in isolation facilities. Multi-site has definitely proven to be able to rid many pigs of many common diseases. This is good for production but not good for the development of an immune sow. Her first exposure to some organisms (*Strep. suis*, *Actinobacillus suis*, *Haemophilus parasuis*, Mycoplasma organisms, Pasteurella organisms) is when she enters the sow farm. In the past on farrow to finish farms, the gilt has already been exposed to these organisms and is significantly immune to them. Isolation has been very beneficial to ensure that no major organisms are brought into the sow farms, but the detriment has been that isolation facilities are very difficult to manage. Most isolation chores are done at the end of the day when production workers are rushed and tired, so a high level of animal care is often lacking. These animals are often included on the sow herd inventory and rapid, early treatment is deficient which has lead to higher death loss. Also, the multi-site transportation needs including movement into an isolation barn and movement from isolation into the breeding herd presents more opportunities for animals to become physically traumatized.

Diseases

I don't know if there are any more diseases today than in the past, but they are different. We have less APP and Swine Dysentery, but today's diseases are very hard on sow herds. The diseases in the past primarily affected nursery and grow-finish pigs. Swine influenza (H3N2), PRRS (many strains), chronic erysipelas, and acute hemorrhagic ileitis are just a few of the diseases that have all become very common in sow herds. A couple of these are new diseases and some are old, such as erysipelas, which has resurfaced due to vaccine failure, and ileitis because of the rapid industry expansion and resulting young parity structure of many swine herds.

Drug usage

Because of the Pork Quality Assurance program, cost, and unclear studies on efficacy, fewer drugs have been used over time. Fifteen to twenty years ago, we saw CTC, ASP, and Tylan being fed on many farms during breeding and lactation. Today it's rare to see any drug being used at all in either of these rations. This is especially true in the last couple of years with the severe financial crisis suffered by most swine farms; these drugs were removed. Also, nearly all farms are PQA-Level III certified and are very concerned about drug residues. All farms want to be able to cull animals on an "as-needed" basis and for that reason they cannot have routine drugs in the feed. It's very difficult to say whether routine usage of drugs in the feed had a masking effect on some of these diseases in the past (e.g., erysipelas, *Actinobacillus suis*, etc.)

Physical injuries

It's difficult to quantify, but we are obviously using many more sow vaccinations than in the past (PRV, PRRS, Flu, Mycoplasma) in an attempt to make up for a lack of natural immunity. Every time you give shots, sows get jumpy and try to get away from the shot and some animals become injured in this scenario. Also, with the great numbers of animals being moved from breeding to gestation, from gestation to farrowing, and from farrowing back to breeding, proper handling methods are not always used:

- Too many animals are being moved at once.
- Production staff is in too much of a hurry and some people get too physical with the animals.
- Alleyways are too narrow.
- Distances are too long.

These all have contributed to more physical injuries.

Summary

Genetics and intensive confinement rearing are often blamed for an increased sow mortality rate. This has always been a hard sell for me because, within systems or with the Swine Vet Center client base, farms with similar genetics and similar facilities can have very low sow death loss (2-5%) on an annual basis.

Correcting the problems described in this paper will not be easy. Staff training, gilt availability, gilt acclimatization programs, PRRS control, improving nutrition and feeding skills are all complicated, time consuming tasks and in the case of PRRS, often without easy solutions. However, in my experience, concentrating on making improvements in the above 15 points will result in providing better care for the breeding female. Whenever care of the breeding female is improved, production improves.