

Reproduction, Culling, and Mortality Levels on Current Commercial Sow Farms

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Summary and Implications

Sow longevity is a large component of profitability for commercial swine operations with the sow needing to produce three litters to recover her investment costs. With current culling rates averaging near 50% and mortality rates averaging almost 9%, a small proportion of the sows have the responsibility of making a profit. Past research has shown the primary reasons for culling to be reproductive failure and structural soundness (Chagnon et al., 1991; Stone, 1981), but much of this work is outdated, especially in regards to the genetic background of the sows analyzed. Therefore, a new 20 month study starting in 2005 was conducted on 2,000 commercial sows. This study revealed that the primary culling reasons for sows from current genetic lines has not changed markedly over the years with a large portion of sows being culled for reproductive failure and structural soundness, despite emphasis by genetic companies to improve longevity. The primary reason removal reason listed for sows over parity 5 was “old age” even though most of these sows are still producing at or above herd average. Sows from the group that produced at least 5 parities (parity5+) out performed the young group for number born alive (NBA) when compared at the same parity and had a shorter wean-to-first-service interval than the young group following their first parity. Additional comparisons among sows in the young group revealed that sows that dropped out of production earlier were inferior for reproductive traits when compared to those sows lasting at least four parities. This study shows that sow removal reasons have not changed over the years and sheds new light on differences between sows that drop out of production relatively early and those females that remain productive longer. This study also confirmed that selecting for longevity in sows is not counterproductive to selecting sows for reproductive performance and is actually quite beneficial to reproductive performance.

Materials and Methods

A total of 2,000 commercial breeding age females were selected for evaluation in the present study from a large Midwestern commercial swine operation with 120,000 breeding females in their system. Five hundred females from each of two farms and an additional 1,000 females were selected from a third farm. The females from the first two farms were PIC Line 42 females while the females from

the third farm were PIC Camborough 22 females. Equal numbers of parity 0 females (replacement gilts) here after termed “young” and females that had produced a minimum of 5 litters were selected from each farm. The females with a minimum of 5 parities ranged from parity 5 to parity 13 and are here after termed “parity 5+” females. Other than the criteria for age group, the females were randomly selected with all “young” females being classified as acceptable replacement females by the management and workers from each of the three participating farms. The “parity 5+” females were selected as a means of acquiring a greater volume of culling information from older sows in a more timely manner when compared to the time required to identify a group of selected replacement gilts to attain the advanced parities or age examined in this study.

Individual sow identification numbers were obtained from each respective farm and were recorded such that general reproduction and longevity records including the number of days in the herd, total number of parities that each female produced, and removal records could be obtained from PigCHAMP™ records. Sow removal reasons were determined and entered into the database by farm personnel as well as all performance records (number of pigs born, number of pigs born alive and wean to first service intervals). The sows were monitored for a period of 20 months allowing the “young” females sufficient time to produce four parities. Standard statistical methods were used to estimate reproductive performance differences between the “young” females and the “parity 5+” group of sows. Sow line and sow age group were used as fixed effects. Given that these were commercial sows, parentage was unknown and therefore, the relationship among animals or even sire and dam information could not be included in the models used for analysis in this study.

Results and Discussion

From the “young” females with PigChamp™ records, 7.0% failed to produce even a single litter while 13% of them were removed from the herd before they produced their second litter. Another 12.5% of the females were removed after producing a second litter and 10.5% of the females were removed after producing their third litter. Thus, 43% of the “young” females were removed from the breeding herds before they produced a fourth litter. Of the “young” females removed to date, 11.3% were removed because of feed intake/body condition, 4.7% had gastro-intestinal issues, 4.9% were removed because of heart issues, 4.3% were culled for multiple systems failure, 7.3% were culled for productivity reasons, and 10.1% sows were culled for irregular reasons. The largest removal reason groups were leg soundness/lameness problems with 22.3%

removed and reproductive issues causing 35.2% to be culled according to the removal reason identified and recorded by individual farm staff in the PigChamp™ records. The main reason that the sows in “parity 5+” age group were culled was because of “old age” with 48.2%. While these sows averaged 8.0 litters. The sows that were removed for old age averaged 8.0 litters, 11.4 live pigs born per parity, and 91.3 live pigs per sow over their lifetime and still produced 9.4 live pigs born in this last litter.

When comparing both age groups for their parity 1 reproductive performance records, the “parity 5+” sows had more total pigs born 12.3 versus 12.0, more pigs born alive 11.3 versus 10.8, and had a shorter wean to first service interval 6.3 days versus 7.0 days. When making similar comparisons between the two age groups in the second parity, there was no difference for total pigs born in their second parity or wean to first service interval. However, the “parity 5+” sows still maintained their superiority for the number of pigs born alive in the second parity with 11.5 pigs born alive versus 11.1 born alive for the “young” female group. The “parity 5+” group of sows also had more live pigs in their third parity than the “young” group with 12.0 and 11.7 pigs, respectively. Furthermore, within the “young” female group, sows that stayed in the herd longer typically had greater reproductive performance traits compared with females that were removed from the farm before they produced a fourth litter. Sows that dropped out of the breeding herd after only producing 1 litter averaged only 9.7 live pigs born in their only litter while all sows which produced at least three litters had 10.6 pigs in their first litter. Additionally, the sows that dropped out of the breeding herd after 1 litter had a higher wean to first service interval (8.6 days versus 6.5 days) when compared to those breeding herd females that remained in the breeding herd until for at least 4 parities, a difference of over two full days.

At a time when voluntary culling (culling by producers) at parities four, five and six for reproductive performance or mothering ability is virtually nonexistent, culling sows simply because they have reached a predetermined parity is haphazard to say the least. If producers would retain more of these elite older females it would allow producers to cull low performing sows and would decrease the need for the large number of replacement gilts that enter the breeding herds. Voluntary culling of low performing sows has obvious benefits to the operation, but decreasing the number of replacement gilts entering the farm has many often overlooked benefits such as decreasing the risk of a disease outbreak, improved average growth rate of terminal offspring, and improved herd health (both breeding herd and terminal offspring) (Moore, 2001).

It has been suggested that in order to achieve an ideal parity structure that producers strive to lose no more than 5 percent of the replacement females before they produce a litter and 10 percent for every litter thereafter. The main target that producers should aim for would be to have 75 percent of the females that enter the herd farrow a third litter. Only 67.5 percent of the females in this study remained productive through their third parity. This study also demonstrates that swine producers need to select for sows that can remain in production beyond parity 5 because of lower replacement costs, disease issues and other factors, but that these sows also are superior for reproductive performance traits when compared to parity 1 and parity 2 females and appear to be easier to rebreed for their next litter. This study also confirmed that selecting for longevity in sows is not counterproductive to improving reproductive performance. Furthermore, selecting for sows that remain in the breeding herd for a longer period of time is actually quite beneficial to reproductive performance.