Farm data analysis for lifetime performance components of sows and their predictors in breeding herds

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Key points

- This review characterizes components of sow lifetime performance (longevity, prolificacy, fertility and lifetime efficacy) and its inter-relationships.
- In the sow lifetime performance trees, annualized piglets weaned and annualized piglets born alive measured as lifetime efficiency are proposed as integrated measurements for sow lifetime performance.

Most producers only use their farm data to generate basic reports such as sow cards, working lists and a brief summary, and so do not use their data to its full potential. This review aims 1) to define the four components of sow lifetime performance, 2) to organize the four components and other key measures in a lifetime performance tree, and 3) to compile information about sow and herd-level predictors for sow lifetime performance.

First, we defined the four components of sow lifetime performance: lifetime efficiency, sow longevity, fertility and prolificacy. Figure 1 shows the inter-relationships between the four components and other key measures for sow life annualized piglets weaned (PW) using theoretical value examples. We propose that lifetime efficiency should be measured as annualized PW or annualized piglets born alive which is an integrated measure for sow lifetime performance, whereas longevity should be measured as sow life days and herd-life days which are the number of days from birth to removal and the number of days from date of first-mating to removal, respectively. We also propose that fertility should be measured as lifetime non-productive days, whereas prolificacy should be measured as lifetime pigs born alive. Second, we propose two lifetime performance trees for annualized piglets weaned and annualized piglets born alive, respectively, and show inter-relationships between the four components of the lifetime performance in these trees. Third, we describe sow and herd-level predictors for high lifetime performance of sows.

An example of a sow-level predictor is that gilts with lower age at first-mating are associated with higher lifetime performance in all four components. Other examples are that no re-service in parity 0 and shorter weaning-to-first-mating interval in parity 1 are associated with higher fertility, whereas more piglets born in parity 1 is associated with higher prolificacy. It appears that fertility and prolificacy are independent from each other. Also, an increased number of stillborn piglets indicates that sows have farrowing difficulty or a herd health problem. Regarding herd-level predictors, large herd size is associated with higher efficiency.

Also, herd-level predictors can interact with sow level predictors for sow lifetime performance. For example, sow longevity decreases more in large herds than small-to-mid herds, as age at first-mating increases. So, it appears that herd size alters the impact of delayed gilt age at first-mating on sow longevity. Increased knowledge of these four components of sow lifetime performance and their predictors should help producers and veterinarians maximize a sow's potential and optimize her lifetime productivity in breeding herds.
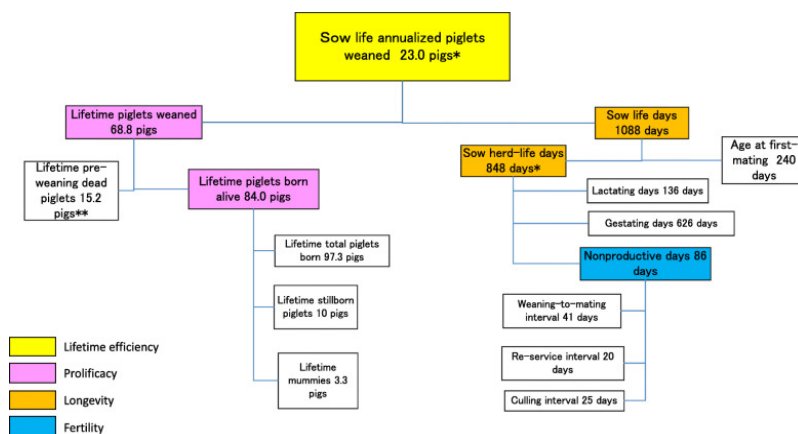

Figure 1. A lifetime performance tree for sow life annualized piglets weaned of 23.0 pigs. *Herd-life annualized piglets weaned is 29.6 pigs. **Average pre-weaning mortality is 18.1%