Culling risks for served females and farrowed sows at consecutive parities in served gilt cohorts in commercial herds

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Introduction

- ✓ A culling decision in everyday practices is critical for retention patterns and financial performance in breeding farms.
- ✓ Log-binomial regression models with relative risk ratios is recommended to use in cohort studies, rather than logistic regression models with odds ratios[1].

Objectives

1) to characterize culling and retention patterns from parities 0 to 6 in both served females and farrowed sows in two herd productivity groups

2) to quantify the factors associated with by-parity culling risks for both of the served females and farrowed sows using log-binomial regression models.

Materials and methods

Farms

- ☐ Data collected from 98 Spanish farms cooperating with the consultancy firm PigCHAMP pro Europa S. L. (Segovia, Spain).

Performance data

- ☐ We analyzed 465,974 service records of 94,691 females served between 2008 and 2013.

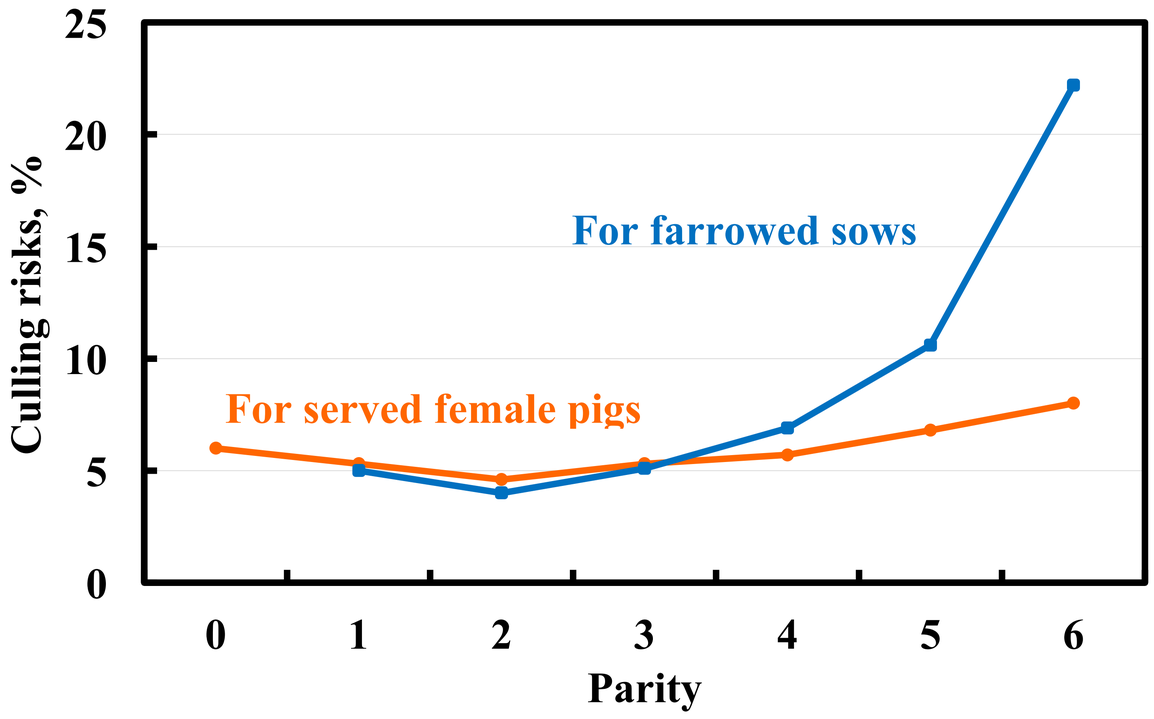
Definitions and categories

- ☐ By-parity culling risk (%) for pigs served and sows farrowed were defined as the number of culled divided by the number of female pigs served and sows farrowed, respectively, at that parity x 100.
- ☐ By-parity retention rate was defined as the number of sows successfully reached the farrowing at the next parity divided by the number of gilts first-served.
- ☐ Farms were categorized into two groups based on the upper 25th percentiles of the farm means of annualized lifetime pigs weaned per sow: high-performing and ordinary farms.

Statistical analysis (SAS)

- ☐ Two-level log-binomial regression models were used to examine risk factors and risk ratios associated with by-parity culling risks for served females and farrowed sows.

Fig. 1. By-parity culling risks for served and farrowed female pigs

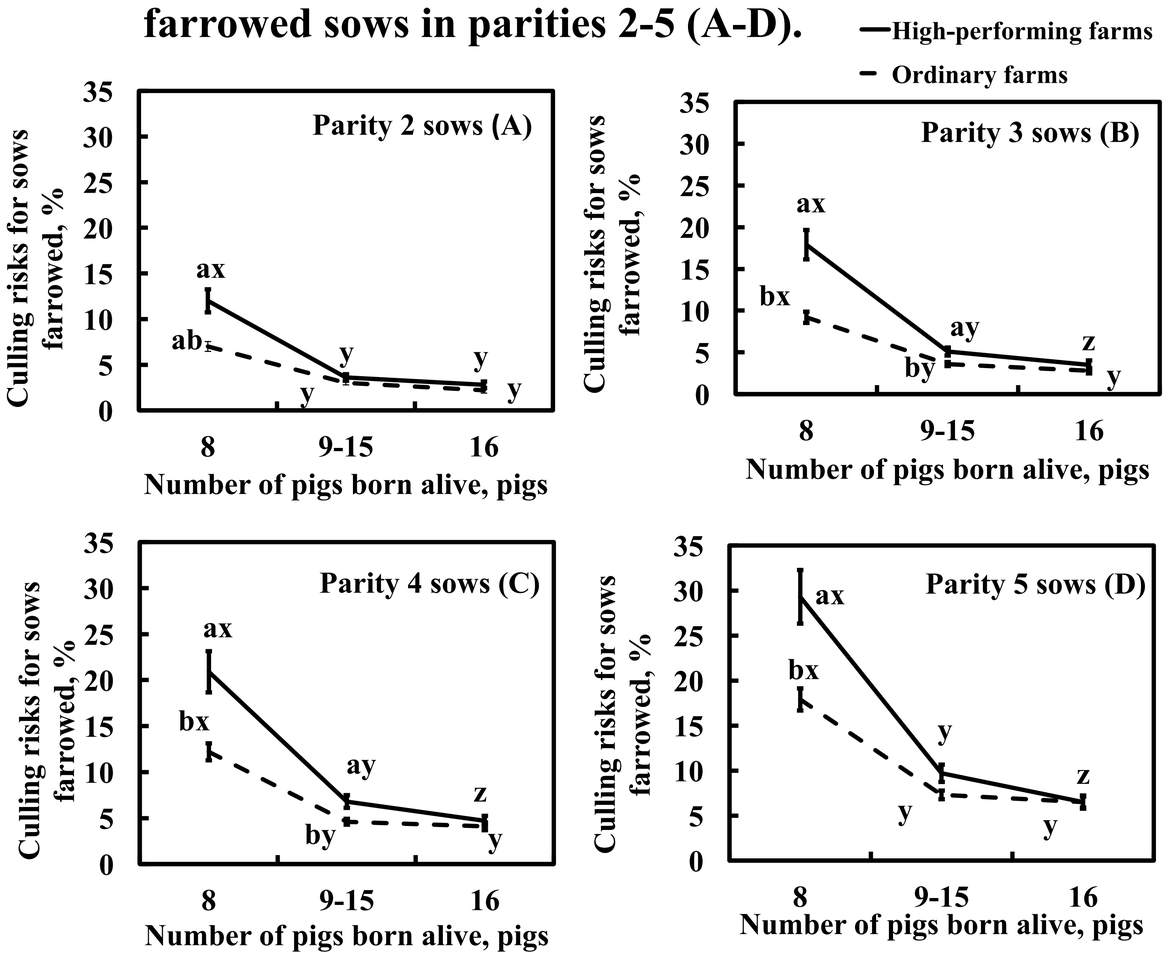


- ➢ Mean by-parity culling risks (± SE) for served females and farrowed sows were 5.9 ± 0.03 and 12.4 ± 0.05%, respectively.

Results

- ➢ Retention rates by parities 1, 2 and 3 were 92.7, 80.9 and 72.2%, respectively.
- ➢ For farrowed sows, increased culling risks were associated with sows farrowed 8 or fewer pigs born alive, sows being fed in high-performing farms and sows farrowed 3 or more stillborn piglets ($P < 0.05$).
- ➢ Sows farrowed 8 or fewer pigs born alive in high-performing herds had 5.0-11.4% higher culling risks than those in ordinary herds ($P < 0.05$; Fig. 2).
- ➢ The relative risk ratios for culling were 3.52-4.11 for sows having 8 or fewer pigs born alive, 1.30-1.52 for sows fed in high-performing farms, and 1.53-1.58 for sows farrowed 3 or more stillborn piglets, compared to the respective reference sows that farrowed 16 pigs or more, were fed in ordinary farms and farrowed 0 stillborn piglets.
- ➢ Also, increased culling risks for served sows were associated with sows having a weaning-to-first-service interval (WSI) of 7 days or more ($P < 0.05$).
- ➢ The relative risk ratios in culling for sows having WSI 7 days or more were 1.56-1.84 across parities, compared to the same parity sows having WSI 0-6 days.

Fig. 2. Comparisons of culling risks (%) between herd productivity groups by pigs born alive groups for farrowed sows in parities 2-5 (A-D).



- ✓ [a,b]Mean values within a column followed by different letters differ ($P < 0.05$).
- ✓ [x-z]Mean values within a row followed by different letters differ ($P < 0.05$).

Conclusions

It is recommended that producers improve management for sows farrowing stillborn piglets and having prolonged WSI and not readily cull sows at mid-parity sows having fewer pigs born alive in order to achieve high retention and high longevity of sows and maximize their reproductive potential.

Reference

1. Spiegelman and Hertzmark, 2005: American Journal of Epidemiology.