

Evaluation of the factors affecting the seasonality of mating failure in sows

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Seasonality of reproduction is a major factor affecting consistency of production in commercial swineherds. Identifying the relative importance of factors influencing seasonality of reproduction would provide a better basis for appropriate management interventions. Retrospective data involving 868,904 service records of sows from 58 Canadian swine herds, pertaining to the period 1999 to 2003, were retrieved from the PigCHAMP DataShare database (PigCHAMP Inc. Ames, IA). Aspects evaluated were the effect of parity (categorized as parity 1, parities 2 to 5 and parity >5), wean to service interval (WSI, ≤ 5 days and > 5 days) and number of inseminations per service (1 and >1) on seasonal fluctuation in mating failure. The service months were grouped as summer (July, August, September and October) and other (rest of the months). The interaction of factors was demonstrated by path analysis with path coefficients estimated using logistic regression model having farm as a random effect variable. The population attributable fraction (PAF) was calculated to determine the proportion of mating failure that could be attributed to each risk factor significantly associated.

The farrowing rates over the 4-year period during summer and other months were 76.5% and 79.1% respectively. The path model showed that all the factors except parity 2-5 vs. parity >5 were significantly and indirectly associated with mating failure. The PAF indicated that up to 9 % of mating failures in summer could have been avoided if sows were inseminated more than once in the estrus and increasing the number of AI would have avoided 8% of mating failures in other months (OR 1.36 and 1.26 respectively for summer and other months). In summer, the likelihood for mating failure was 1.5 times higher in sows with a WSI of > 5 days than in sows with a WSI of ≤ 5 days and in other months it was only 1.4 times higher. Up to 15% of mating failure was attributable to increase in WSI in summer and in other months it accounted for 10%. The PAF indicated that the mating failure in the population would have increased by another 5% and 11 % in summer and other months respectively if there were no parity 1 sows in the population compared to sows of parity >5 (OR 0.82 and 0.78 in summer and other months respectively). Parity 1 sows reduced the proportion of mating failure in the population and the effect was significant only in months other than summer. The mating failure would have increased by 15% and 6 % in summer and other months respectively if there were no sows of parity 2-5 in the population compared to sows of parity >5 (OR 0.81 and 0.78 in summer and other months respectively). Although the results suggest that increasing number of AI and a higher proportion of sows of parity 2-5 in the herd may reduce the seasonal variation in mating failure, the success will depend on prompt heat detection and timely AI that synchronizes with ovulation and on management interventions to ensure satisfactory body condition at weaning to reduce the adverse effect of high ambient temperature on voluntary feed intake during summer.

Key words: sow, season, mating failure, WSI, AI