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Lifetime efficiency and longevity of sows based on a difference in the number of pigs born alive between parity 1 and 2 in commercial herds

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Introduction and Objectives

A second-litter syndrome in sows, that is defined as the same or fewer numbers of pigs born alive (PBA) in parity 2 compared to PBA in parity 1 (Morrow et al., 1992), was suggested to be a reproductive problem of sows in parity 1 (Kemp and Soede, 2004). However, 47% of the sows having high lifetime efficiency and high longevity experienced the second-litter syndrome (Sasaki and Koketsu, 2008). A difference of the numbers of PBA between parity 1 and 2 (PBADIFF) is another measurement to identify a sow with high efficiency and longevity. The objectives of the present study were to observe sows with PBADIFF and to compare lifetime efficiency and longevity between PBADIFF groups.

Material and Methods

Of approximately 130 herds using PigCHAMP® (PigCHAMP Inc., Ames, IA, U.S.A.) in Japan, 123 mailed their production records to the University by Aug. 2007. Of the 123 herds, 101 were used for further analysis. The sow data used were 29,912 sows entered into the herd from 2001 to 2003 and farrowed in parity 1 and 2. Sows were categorized into nine groups based on the PBADIFF: ≤ -4, −3, −2, −1, 0, 1, 2, 3 and ≥ 4 pigs. Female lifetime efficiency of piglet production was measured by annualized lifetime PBA (ALPBA). ALPBA was calculated as the sum of PBA in lifetime divided by the female life days x 365 days. All statistical analyses were done using SAS (SAS Inst. Inc., Cary, NC, U.S.A.).

Results and Discussion

Of the 29,912 sows, relative frequencies (%) of PBADIFF ≤ -4, −3, −2, −1, 0, 1, 2, 3 and ≥ 4 pigs were 13.5, 6.2, 8.1, 10.0, 11.1, 11.6, 10.4, 8.5 and 20.6%, respectively. Means ($\pm$ SEM) of parity at removal and ALPBA were 5.6 $\pm$ 0.01 and 18.7 $\pm$ 0.03 pigs, respectively. Sows with PBADIFF −2 to ≤ -4 pigs and ≥ 4 pigs had fewer ALPBA than those with PBADIFF 0 to 3 pigs ($P < 0.05$; Table). Additionally, sows with PBADIFF −1 pig had ALPBA similar to those with PBADIFF 0 to 3 pigs. No difference in parity at removal was found between the PBADIFF groups except for PBADIFF ≤ -4 pigs. In conclusion, the occurrence of PBADIFF −1 to 0 pig in parity 2 may not be a serious problem for lifetime efficiency of sows. Sows having PBADIFF −2 to ≤ -4 pigs and ≥ 4 pigs are likely to have suboptimal lifetime efficiency.

Table. Comparisons of ALPBA and parity at removal (Mean $\pm$ SEM) between the nine PBADIFF groups

Sows with PBADIFF	n	ALPBA	Parity at removal
≤ -4	4,025	17.3 ± 0.09^{d}	5.4 ± 0.03^{b}
−3	1,848	18.3 ± 0.11^{c}	5.5 ± 0.05^{ab}
−2	2,433	18.7 ± 0.10^{bc}	5.5 ± 0.04^{ab}
−1	3,004	19.0 ± 0.10^{ab}	5.7 ± 0.04^{a}
0	3,334	19.1 ± 0.08^{a}	5.7 ± 0.04^{a}
1	3,482	19.2 ± 0.08^{a}	5.7 ± 0.04^{a}
2	3,102	19.2 ± 0.09^{a}	5.6 ± 0.04^{a}
3	2,535	19.4 ± 0.10^{a}	5.7 ± 0.04^{a}
≥ 4	6,149	18.7 ± 0.06^{c}	5.6 ± 0.03^{a}

[abcd]Values (within a column) followed by different superscript letters differ ($P < 0.05$).

References

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