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EFFECT OF INCREASED NUMBER OF PIGS WEANED FROM PIGS BORN ALIVE OF PARITY 1 SOWS ON SUBSEQUENT REPRODUCTIVE PERFORMANCE IN JAPANESE COMMERCIAL BREEDING HERDS

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Introduction

The use of fostering technique is common in commercial breeding herds. Using fostering technique makes it possible for the number of pigs weaned (PW) by a sow to be higher than the pigs born alive (PBA) to that sow at farrowing. The objective of the present study was to compare sow performance by parity and sow groups, based on the difference between PBA and PW (PBA-minus-PW).

Materials and Methods

The present study included 163,047 parity records of 60,790 sows and lifetime records of 22,711 sows that farrowed during 2007 and 2008 in 113 herds. Sows were categorized into two groups on the basis of PBA-minus-PW: namely Increased-PW (PBA < PW) and Decreased-PW (PBA $\geq$ PW) groups. Two-level mixed-effects models were applied using a herd at level 2 and an individual record at level 1. The repeatability of becoming an Increased-PW sow was determined by using variance component analysis. The repeatability and cross-classified frequency distributions were obtained by using sows having three or more consecutive parity records.

Results and Discussion

Of 163,047 parity records, Increased-PW sows in all the weaned sows in parity 1 and parity 2 or higher were 32.3% and 23.3%, respectively. Means ($\pm$ SEM) of PBA-minus-PW in Increased-PW sows in parity 1 and parity 2 or higher were -2.9 $\pm$ 0.02 and -2.7 $\pm$ 0.01 pigs, respectively. Increased-PW sows had heavier adjusted 21-day litter weights than Decreased-PW sows (P < 0.05; Table 1). However, the Increased-PW sows had longer weaning-to-first-mating interval (WMI), lower farrowing rates and fewer subsequent PBA than Decreased-PW sows in any parity groups (P < 0.05). Furthermore, as PW increased from 4 to 15 pigs, WMI of Increased-PW sows in parity 1 increased by 1.14 days, whereas those in parity 2 or higher increased by 0.50 days. Increased-PW sows categorized at the parity 1 farrowing had lower retention rates at farrowing by parity 3 than Decreased-PW sows (P < 0.05), but there was no difference in the retention rate at farrowing in parity 3 between Increased-PW sows and Decreased-PW sows categorized at the parity 2 farrowing (P = 0.15). Increased-PW sows categorized at parity 1 or parity 2 farrowing had lower parity at removal and fewer average lifetime PBA than Decreased-PW sows (P < 0.05). The repeatability of becoming an Increased-PW sow was 0.18. In all parities, at least 30% of higher Increased-PW sows remained as Increased-PW sows at subsequent parity. In conclusion, Increased-PW sows had better lactational performance, but had lower reproductive performance and lifetime performance than Decreased-PW sows. It is not recommend that producers have parity 1 sows foster too many piglets.

Table 1. Comparisons of reproductive performance between two sow groups and two parity groups

Parity groups	Sow groups	
	Increased-PW	Decreased-PW
Adjusted 21-day litter weight, kg		
	66.8 $\pm$ 0.08a	63.8 $\pm$ 0.04b
Weaning-to-first-mating interval, days		
1	9.0 $\pm$ 0.10ax	8.5 $\pm$ 0.07bx
2 or higher	6.3 $\pm$ 0.03ay	6.2 $\pm$ 0.02by
Farrowing rate, %		
1	85.1 $\pm$ 0.36b	86.0 $\pm$ 0.24ay
2 or higher	85.9 $\pm$ 0.21b	88.0 $\pm$ 0.11ax
Subsequent pigs born alive, pigs		
1	10.1 $\pm$ 0.03b	10.8 $\pm$ 0.02ay
2 or higher	10.2 $\pm$ 0.02b	11.3 $\pm$ 0.01ax

[a,b]Means within a row with different letters differ (P < 0.05).
[x,y]Means within a column with different letters differ (P < 0.05).

Abstracts