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A 5-year comparison between a selection of swine farms from Japan and USA for reproductive performance

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Introduction and Objectives

Benchmarking is a process of continually measuring performance and comparing it with established standards to identify improvements. As a part of benchmarking, a comparison between commercial farms in different countries for herd productivity and reproductive performance of female pigs enhances our knowledge of production systems for the swine industry. Furthermore, an analysis of serial data for a relatively long period can provide a view of changes in the reproductive performance of females and in production management and production systems.

The objective in the present study was to compare some critical farm measurements between a selection of Japan and U.S.A. farm groups using PigCHAMP and PigCare systems.

Materials and Methods

The data were obtained from the PigCHAMP database (Meiji University, Kawasaki, Japan) and a PigCare Database from the midwest area of the United States. Annual data from 2004 to 2008 were obtained from a database of 30 USA farms and 112 Japanese farms. Ending female inventory, total pigs born and pigs born alive per litter, piglet age at weaning, pigs weaned per mated female per year, and parity at culling were selected to compare performances between two farm groups. The two recording systems use different formulas and six PigCHAMP formulas were adjusted to be consistent with PigCARE. The observational unit was the farm for 1 year. Repeated measure data between 2003 and 2008 were analyzed by using mixed-effects models with REPEATED and RANDOM statements using SAS (SAS Inst. Inc., Cary, NC). Tukey multiple comparisons were performed when a year or group effect was significant ($P < 0.05$).

Results

Ending female inventories ($\pm$ SEM) on U.S.A. and Japan farms were $1{,}771 \pm 211$ and 361 ± 39 female pigs, respectively. U.S.A. farms had more total pigs born (Table 1) and more pigs born alive per litter than Japan farms (Overall pigs born alive, 10.96 ± 0.07 vs. 10.66 ± 0.06 pigs, $P < 0.05$). However, there was no difference between the both groups for pigs weaned per mated female per year (Table 1).

Five-year averages for sow longevity (parity at culling) on U.S.A. and Japan farms were 4.07 ± 0.04 and 4.89 ± 0.07, respectively. Additionally, 5-year averages for weaning age on U.S.A. and Japan farms were 19.58 ± 0.30 and 22.39 ± 0.22 days, respectively.

Table. A comparison of the number of total pigs born between 30 U.S.A. farms and 112 Japan farms

	U.S.A. farms	Japan farms
Total pigs born per litter		
2004	11.94 c	11.74
2005	12.10 bc	11.74
2006	12.20 bc	11.83
2007	12.26 b	11.86
2008	12.53 a,x	11.96 y
Pooled SEM	0.14	0.07
Pigs weaned per mated female per year		
2004	21.33 b	21.46 b
2005	21.44 ab	21.50 ab
2006	21.39 ab	21.69 ab
2007	21.43 ab	21.70 ab
2008	21.86 a	21.99 a
Pooled SEM	0.48	0.24

Means with different superscripts within the column (a-c) or row (x-y) differ ($P < 0.01$).