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A comparison between replacement gilt supplier groups for reproductive performance and risk of death or euthanasia related to locomotor problems of sows on Japanese commercial farms

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Introduction and Objectives

Number of pigs born alive (PBA) has been rapidly improved in North America and European swine industries. Additionally, sow removals related to locomotor problems are important for animal welfare. Japanese producers have purchased replacement gilts from the international or domestic gilt suppliers. However, no study has compared reproductive performance and removals related to locomotor problems between gilt supplier groups (GSG) on Japanese farms. The objective of the present study was to compare reproductive performance and risk related to locomotor problems in sows between GSG.

Materials and Methods

A questionnaire form was sent to 115 commercial swine farms in 2009, which farms have participated in the PigCHAMP data-share program. Producers were requested to fill out their breeding company names with product names on the questionnaire sheet. Returned questionnaires from 96 farms (83.5%) were co-ordinated with the relevant reproductive data. Two-level mixed-effects models were applied to 167,242 parity records from 2007 to 2008 by using a farm at the two-level and an individual record at the one-level. Farms were classified into three GSG, namely 1, 2 or 3, based on the gilt supplier information. GSG 1 (JPN) included Japanese breeding companies producing traditional crossbred females between Landrace and Large White pigs. GSG 2 (U.S.) and 3 (EC) included international breeding companies that imported their breeding stocks from the U.S.A and the EC, respectively. Least square means were used for presenting in all comparisons.

Results and Discussion

Proportions of the GSG 1, 2 and 3 sows in all the parity records were 69.1, 18.5 and 12.4%, respectively. Sows on farms using GSG 1 had 9.0 kg

heavier adjusted 21-day litter weights than those on farms using GSG 2 ($P < 0.05$). Parity 3 or higher sows on farms using GSG 1 had 0.7 to 1.2 pigs more PBA than those on farms using GSG 3 ($P < 0.05$), whereas there was no difference GSG1 and GSG2 (Table). Parity 1 to 5 sows on farm using GSG1 had lower death or euthanasia risk related to locomotor problems than those on farms using GSG2 ($P < 0.05$). In conclusion, there were differences between GSG for reproductive performance and risk related to locomotor problems on the studied Japanese farms.

Table. Comparisons between gilt supplier groups for pigs born alive, death risk and euthanasia risk related to locomotor problems (Least square means)

Parity groups	Gilt supplier groups			Pooled SE
	1: JPN	2: U.S.	3: EC	
Number of pigs born alive, pigs				
1	10.1	10.8	9.9	0.119
2	10.7 ^{ab}	11.2 ^a	10.3 ^b	0.229
3	11.4 ^a	11.4 ^{ab}	10.8 ^b	0.235
4	11.4 ^a	11.2 ^{ab}	10.7 ^b	0.245
5	11.3 ^a	10.7 ^{ab}	10.4 ^b	0.257
≥ 6	10.9 ^a	10.1 ^{ab}	9.7 ^b	0.178
Death risk related to locomotor problems, %				
1	0.04 ^b	0.22 ^a	0.06 ^{ab}	0.002
2	0.02 ^b	0.40 ^a	0.00 ^b	0.002
3	0.04 ^b	0.41 ^a	0.09 ^b	0.003
4	0.03 ^b	0.25 ^a	0.15 ^{ab}	0.003
5	0.03 ^b	0.53 ^a	0.00 ^b	0.004
6	0.09	0.30	0.00	0.005
Euthanasia risk related to locomotor problems, %				
1	0.06 ^b	0.29 ^a	-	0.002
2	0.03 ^b	0.47 ^a	-	0.003
3	0.02 ^b	0.46 ^a	-	0.003
4	0.03 ^b	0.58 ^a	-	0.003
5	0.04 ^b	0.51 ^a	-	0.003
6	0.04 ^b	0.71 ^a	-	0.005

^{a-b}Values (within a row) followed by different superscript letters differ ($P < 0.05$).