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An association between age at first mating and lifetime reproductive performance in high-performing herds

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Introduction and Objectives

Female pigs (females) aged 200-220 days at first conception had fewer pigs born alive (PBA) in parity 1, but had more reproductive herd life days than those aged > 220 days at first mating (Schukken et al., 1994). The age at first mating is related to herd management (Le Cozler et., 1998), and the age at first mating may differ among herds that were differently performing. However, a relationship between lifetime performance and age at first mating among the herd groups has not been well reported. Few studies investigated interactions between birth season and the herd groups with age at first mating. The objectives were to compare lifetime performance between the groups based on age at first mating, and to investigate the relationship between age at first mating, herd groups, and birth season.

Material and Methods

Of approximately 140 herds using PigCHAMP® in Japan, the production records of 123 were mailed to the University by Aug. 2007. Of the 123 herds, 103 had records of age at first mating. The data included 45,424 mated gilts entered into the herd between 2001 and 2003, and herd data with mean herd measurements from 2001 to 2006 in 103 herds. Annualized lifetime PBA was calculated as the sum of PBA in lifetime divided by the female life days x 365 days. The three herd groups were formed on the basis of the upper and lower 25 percentiles of pigs weaned per mated female per year: high-, intermediate-, and low-performing herds. Age at first mating was grouped into five groups: 150-208, 209-229, 230-250, 251-271, and 272-365 days. Season was classified as winter (Jan.-Mar.), spring (Apr.-Jun.), summer (Jul.-Sep.), and fall (Oct.-Dec.). All statistical analyses were done using SAS (SAS Inst. Inc., Cary, NC).

Results and Discussion

Mean ($\pm$ SEM) of age at first mating was 244.4 $\pm$ 0.14 days. Females aged 209-229 days at first mating had 0.3 higher parity at removal and 2.4 pigs more annualized lifetime PBA than those aged 251-271 days at first mating ($P < 0.05$). High-performing herds had 52.3% of the proportion of females aged $\leq$ 229 days at first mating, whereas low-performing herds had 12.5%. High-performing herds had 27.5 days lower age at first mating, 0.8 higher parity at removal, and 5.4 pigs more annualized lifetime PBA than low-performing herds ($P < 0.05$). No interaction between the age at first mating and herd groups was found for parity at removal. In high-performing herds, females aged 209-229 days at first mating had 1.4 pigs annualized lifetime PBA than those aged 251-271 days at first mating ($P < 0.05$; Table).

Gilts born in fall had 1.3, 2.6, and 2.2 days lower age at first mating than those born in winter, spring, and summer, respectively ($P < 0.05$). In high-performing herds, gilts born in fall had the lowest age at first mating among all the seasons ($P < 0.05$). In conclusion, we recommend increasing the proportion of gilts to mate at $\leq$ 229 days.

Table. Annualized lifetime PBA by the three herd groups and age at first mating groups

	Age at first mating, days				
	150 -208	209 -229	230 -250	251 -271	272 -365
High	20.3[ax]	19.8[ax]	19.2[ax]	18.4[bx]	16.5[cx]
Intermediate	18.0[ax]	17.7[ay]	17.3[by]	16.8[cy]	15.8[dx]
Low	16.4[ay]	15.6[az]	14.3[az]	13.5[az]	12.9[by]
Pooled SEM	0.10	0.06	0.05	0.06	0.07

Means with different superscripts within the row (a-d) or the column (x-z) differ significantly ($P < 0.05$).

References

Le Cozler et al. 1998. Livest. Prod. Sci. 53. 135-142.
Schukken et al. 1994. J. Anim. Sci. 72: 1387-1392.