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Culling intervals in four stages of reproductive life of first service and reserviced female pigs in commercial herds

Y. Sasaki and Y. Koketsu

Meiji University, Kawasaki, Japan

Introduction and Objectives

Culling is a function both of the biology and a management decision made by producers. The culling interval is a part of the nonproductive days of female pigs (females) that heavily influences herd productivity measured as pigs weaned per mated female per year (PVMFY; Dial et al., 1992). Culling intervals vary depending on the stages of their reproductive life (reproductive stage) when the female was culled. Culled females could be divided into four groups based on their reproductive stage at culling, i.e. unmated and mated gilts and sows. In addition, culling intervals based on the four reproductive stages in high-performing herds determined by the basis of PVMFY can be used as feasible targets for producers and veterinarians (Koketsu, 2005). The objectives of the present study were to measure culling intervals in the four reproductive stages by two herd groups (high-performing vs. ordinary herds), and to obtain survival probability by the two herd groups.

Material and Methods

Our dataset included lifetime records of 52,792 females born between 2001 and 2004 in 101 commercial herds using a recording software system (PigCHAMP® Inc., Ames, IA, U.S.A.) in Japan. Culling intervals in unmated gilts and mated gilts were defined as the number of days from birth to culling and the number of days from first mating to culling, respectively. Culling intervals in unmated sows and mated sows were the number of days from weaning to culling. The number of services was categorized into two groups: first service and reservice groups. Two herd groups were formed on the basis of the upper 25 percentile of PVMFY: high-performing and ordinary herds. All statistical analyses were performed in SAS (SAS Inst. Inc., Cary, NC, U.S.A.).

Results and Discussion

Culling intervals (\pm SEM) in unmated gilts, mated gilts, unmated sows, and mated sows were $302.9 \pm$

1.2 , 98.4 ± 0.9 , 14.3 ± 0.1 , and 89.6 ± 0.4 days, respectively. In unmated gilts, mated gilts, and mated sows, the culling intervals in the high-performing herds were shorter than those in ordinary herds ($P < 0.05$). However, in unmated sows, no difference was found between the herd groups for the culling interval (Table).

Weaning-to-culling intervals for mated sows in the first service group were 27.4 days shorter than those for mated sows in the reservice group (78.4 ± 0.4 vs. 105.8 ± 1.0 days; $P < 0.05$). For mated sows in the reservice group, culling intervals of high-performing herds were 13.7 days shorter than those of the ordinary herds (95.0 ± 1.6 vs. 108.7 ± 1.1 days; $P < 0.05$). However, no difference for mated sows in the first service group was found between the herd groups in the weaning-to-culling interval.

The culling hazard from 8 weeks postweaning for mated sows in the high-performing herds increased more rapidly than that in the ordinary herds.

In conclusion, implementing a strict culling policy for mated gilts and mated sows, especially for reserviced females, can reduce culling intervals and improve herd productivity.

Table. Culling intervals of four female groups by the herd groups

| Female groups | High-performing | | Ordinary | |
|-------------------------|-----------------|------------------|----------|------------------|
| | n | Mean \pm SEM | n | Mean \pm SEM |
| Culling intervals, days | | | | |
| Unmated gilts | 845 | 272.3 \pm 1.2b | 2,090 | 315.3 \pm 1.0a |
| Mated gilts | 942 | 84.3 \pm 1.1b | 2,811 | 103.2 \pm 0.7a |
| Unmated sows | 10,694 | 12.0 \pm 0.1 | 19,943 | 15.6 \pm 0.1 |
| Mated sows | 4,116 | 77.8 \pm 0.6b | 11,351 | 93.8 \pm 0.3a |

Means with different letters within the row (a-b) differ significantly ($P < 0.05$).

References

- Dial et al. 1992. Diseases of Swine. 7th ed. Iowa State University Press, Ames.
Koketsu. 2005. J. Anim. Sci. 83:1406–12.