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Heritability estimates and effect on lifetime reproductive performance of age at puberty in sows

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Highlights

- Heritability estimates of age at puberty were 0.25-0.42.
- Rising age at puberty increases the age at first mating/farrowing in gilts.
- Rising age at puberty reduces parity at culling in females.
- Age at puberty doesn't affect lifetime offspring born alive and lifetime litter birth weight
- Frequency of culling due to reproduction problems was highest in IP, second in LP, lowest in EP.

Abstract

Age at puberty closely correlates to the lifetime reproductive performance in sows. This study aimed to estimate the heritability of age at puberty and analyze the effect of age at puberty on lifetime reproductive performance in sows. In total, 1492 Duroc, 2142 Landrace and 3176 Yorkshire gilts with pubertal records were collected from two genetically independent breeding farms in southern China. Heritability estimates of age at puberty were 0.25-0.42. Based on the distribution of age at puberty, gilts in each breed were classified into 1) early puberty (EP); 2) intermediate puberty (IP); and 3) late puberty (LP). Age at first mating/farrowing and parity at culling were significantly influenced by age at puberty ($P < 0.05$), and the least squares means of all were lowest in EP, intermediate IP, and highest in LP. The trend of pigs weaned/per sow/year of EP, IP and LP group gilts in Yorkshire population was almost falling; rising first and then falling in Duroc and Landrace populations. Lifetime offspring born alive and lifetime litter birth weight were not significantly influenced by age at puberty ($P > 0.05$). Reproductive problems were the main reason for culling females. The frequency of culling due to reproductive problems in females was highest in IP, intermediate in LP, and lowest in EP in Duroc and Landrace ($P > 0.05$). Understanding the effect of age at puberty on lifetime reproductive performance could help to improve swine production. Farmers could take measures to detect and keep gilts with the desired age at puberty.

Keywords:

Age at puberty; Heritability; Sow culling; Reproduction performance

1. Introduction

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