

## ANIMAL SCIENCE

**Title:** Effects of Prewaning factors on Sow Lifetime Productivity – NPB#11-146

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### Scientific abstract:

The objective of the study was to associate preweaning factors in gilt multiplication with the subsequent lifetime productivity of females in commercial sow herds. Sows were farrowed at two Smithfield Hog Production multiplication farms located in North Carolina between May 2013 and December 2013. From these sows, preweaning data was collected on 12,943 individual gilts. Prewaning factors of the gilt's birth litter included total number born, number nursed, number weaned, litter sex ratio, cross-foster status (0 or 1), weaning age, birth dam parity and individual traits birth weight, weaning weight (adjusted to 21 d of age) and preweaning average daily gain. Gilts were traced from finishing facilities to commercial sow farms ( $n = 11$ ) in eastern North Carolina. All analysis were conducted using SAS software. Stayability to parity 1, 2 and 4 was analyzed using PROC LOGISTIC. Stayability can be defined as whether a gilt obtained a particular parity. For stayability models including all 12,934 gilts (identified at birth) fixed effects included the farm and contemporary group (month) in which the gilt was born. For stayability models including the 6,249 gilts that arrived at commercial sow farms, fixed effects included the farm and contemporary group in which the gilt was born and the sow farm she was delivered to. Reproductive throughput traits, total number of piglets born through 4 parities and total number of piglets produced per day of herd life, were analyzed using PROC GLM. Fixed effects included the farm and contemporary group in which the gilt was born and the sow farm she was delivered to. Of the 12,934 gilts individually tagged at birth, 10,613 (82.1%) survived to weaning and 6,249 (48.3%) eventually entered a commercial sow farm. When including all gilts tagged at birth in the analysis, a lower litter size at birth, piglets not cross-fostered and greater piglet birth weight, piglet weaning weight and preweaning ADG were associated ( $P < 0.01$ ) with increased stayability to parity 1. Yet only a lower litter size at birth tended ( $P = 0.06$ ) to increase stayability to parity 4. When including all gilts that were delivered to commercial sow farms, a greater weaning age, weaning weight and preweaning ADG were associated ( $P \leq 0.01$ ) with more total pigs farrowed through 4 parities. Similarly, when including all gilts that were delivered to the commercial sow farms, a greater weaning age, weaning weight and preweaning ADG were associated ( $P < 0.01$ ) with more total pigs produced per day of herd life through 4 parities. Results suggest gilt multiplication farms should not cross-foster gilts, increase weaning age to 25 days, increase piglet birth weight and preweaning ADG to enhance sow lifetime productivity.

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