

Ovarian follicular development in first parity sows subject to varied split-weaning protocols

J. Barry, W.T. Dixon and G.R. Foxcroft

Swine Reproduction-Development Program, Swine Research & Technology Centre, AFNS, University of Alberta, Edmonton, AB T6G 2P5; *Email:* george.foxcroft@ualberta.ca

In an attempt to develop innovative and more effective split-weaning strategies, ovarian follicular development was investigated in first parity sows randomly allocated to be either Control (C; n=45) or Split-Weaned at d 14 of lactation (SW; n=45). Litter size was standardized to 10 piglets per sow and feed intake, litter growth rate and sow metabolic state were monitored during lactation. SW sows had all but the lightest 6 piglets removed on d14. Ovarian follicular development was determined after euthanizing groups of C and SW sows (n = 15) on d 16, 18 or 20 of lactation. An additional group of 15 sows were euthanized on d 14 of lactation (C14) to establish a baseline of follicular development at this time. Data collected from the reproductive tracts recovered, and reported here, included follicle number and size, and follicular fluid (FF) volume.

Fewer ($P < 0.05$) C14 sows (5/15) had follicles >3 mm diameter compared to all other groups, indicating a critical period of follicular development between d 14 and 16 of lactation. In sows with follicles >3 mm, Split-Weaning increased ($P > 0.05$) the total number of follicles >3 mm, the mean size of follicles greater than 3 mm, maximum follicle size, and the mean size and FF volume of the largest follicles present, with no effect of Day or a SW x Day interaction. The pattern of follicular development observed is consistent with the hypothesis that coordinated waves of follicular growth may be present in the majority of sows in early lactation and Split-Weaning induces a predictable change in the dynamics of these follicular waves. Analysis of accumulated data will allow us to identify possible metabolic causes of markedly reduced follicular development in a sub-population of both C and SW sows.

Implications:

Refinements in split-weaning protocols, based on a better understanding of ovarian follicular development in split-weaned sows, have the potential to improve the fertility of weaned, first parity, sows.