

Effect of Skip-a-Heat breeding on subsequent reproductive performance in 1st parity sows

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Recent work at the UofA has shown that the performance of contemporary dam-line first parity sows is truly amazing! Even when primiparous sows are induced to lose large amounts of body tissues through imposed feed restriction during peak lactation, there is a relative lack of effect on many measures of post-weaning fertility. However, a second parity “dip” or decrease in size of the second litter is often observed in production. It has been shown, that sows subjected to “skip-a-heat” breeding exhibit excellent productivity and do not experience the “dip” (Clowes et al., 1994; JAS:72:283). Skip-a-heat breeding is a management technique in which sows are bred at the 2nd estrus after weaning resulting in an increase in total litter size born (+2 pigs) compared to sows bred on their first estrus. Yet, this is done at the cost of 21 non-productive days (NPD) and a 9% chance of sows not cycling for the 2nd time. The objective of this trial was to re-assess the effect of breeding sows at 1st vs. 2nd post-weaning estrus on follicular development, size of the largest ovulatory follicle, ovulation rate & embryonic survival.

Based on similar weaning-to-estrus intervals (WEI) (111.7 ± 5.8 v. 113.6 ± 5.9 h; $P > 0.05$), pairs of first parity sows, were allocated to be bred at either their 1st (PE1) or 2nd (PE2) post-weaning estrus. The size of the largest pre-ovulatory follicle detected by real time ultrasound examination was 8.2 ± 0.2 mm (range 4.9 – 9.9 mm) v. 7.2 ± 0.2 mm (range 4.9 – 9.9 mm) and weight change to breeding (11.9 ± 1.6 v. -7.2 ± 1.6 kg) were greater (both $P < 0.05$) in PE2 sows. The percentage of bred (96.0 v. 100.0 %; $P > 0.05$) or conception rate (91.7 v. 92.6 %; $P > 0.05$) did not differ between PE2 and PE1 sows, respectively. Measured at d30 of gestation, PE2 sows had greater numbers of live embryos (15.2 ± 0.8 v. 12.9 ± 0.8 , $P < 0.05$) and higher embryonic survival (77.4 ± 3.6 v. 68.1 ± 3.6 %; $P < 0.05$) with no difference in ovulation rate (19.6 ± 0.6 v. 19.0 ± 0.6 ; $P > 0.05$) compared to PE1 sows.

Implications: These results confirm that breeding gilts at 2nd post-weaning estrus will negate the effects of the second parity “dip”. This can be attributed to increased embryo survival in “skip-a-heat” sows irrespective of WEI.