Table 176.

	Control	ALT	SEP	SW	24HR	SEM	*P* <
WEI, d	3.5[b]	–0.7[a]	–0.5[a]	–0.9[a]	0.0[a]	0.66	0.001
Day in estrus postfarrowing	24.5	24.3	24.5	24.1	25.0	0.66	0.250
Mated in lactation, %	–	79.3	73.3	86.7	64.3	0.17	0.060
Pregnancy rate, %	96.7[c]	78.3[abc]	75.0[ab]	92.0[bc]	66.3[a]	0.13	0.020
Creep feed use, g/pig/d	14[a]	17[a]	34[c]	13[a]	26[b]	2.3	0.001
Pig BW d 21, kg[1]	6.59[d]	6.34[b]	6.23[a]	6.45[c]	6.14[a]	0.056	0.001
Pig BW d 25, kg[1]	7.09[ab]	7.18[b]	7.01[a]	7.40[c]	7.33[c]	0.091	0.001

[a–d]Within a row, means without a common superscript differ ($P < 0.05$).
[1]Initial BW covariate.

176 **Suckling reduction and boar exposure to induce estrus in lactating sows.** H. L. Frobose*, M. D. Tokach, J. M. DeRouchey, R. D. Goodband, S. S. Dritz, J. C. Woodworth, J. L. Nelssen, D. L. Davis, *Kansas State University, Manhattan.*

A total of 135 sows (PIC 1050) were used over 5 consecutive farrowing groups (February to August 2014) to determine an optimal lactational estrus induction strategy. Litter size was equalized within parity to 11.5 ± 1.1 pigs at d 2 postfarrowing. At d 18, sows were assigned to 1 of 5 treatments (n = 26 to 28) based on parity, farrowing date, and suckled litter size. Treatments were: 1) Control, 2) ALT (all but the 5 lightest BW pigs weaned on d 18, remaining pigs combined and alternated between paired sows at 12 h intervals), 3) SEP (pigs separated for 12 h/d from d 18 to 25), 4) Split-wean (SW; all but 5 lightest BW pigs weaned on d 18), or 5) 24HR (pigs removed for a 24 h period on d 18). Controls were weaned at d 21, with all other treatments weaned at d 25. From d 18 until weaning, all sows were provided daily boar exposure within the farrowing house by allowing 5 min of nose-to-nose contact with a mature boar. Creep feed access was provided from d 14 until weaning. Sow backfat and BW losses during lactation were similar across treatments. Sows in the 4 reduced suckling treatments had a decreased wean to estrus interval (WEI; –0.5 vs. 3.5 d; $P < 0.05$) vs. controls, resulting in similar postfarrowing day in estrus across treatments. A total of 80 of 106 sows (76%) subjected to reduced suckling treatments expressed lactational estrus, but SEP and 24HR reduced ($P < 0.05$) pregnancy rate vs. controls. Creep feed disappearance was greatest ($P < 0.01$) from SEP and 24HR litters, but SEP decreased ($P < 0.05$) pig BW vs. other reduced suckling treatments; whereas SW and 24HR pigs were heavier ($P < 0.05$) than controls at d 25. These data indicate that treatments altering nursing differ in their ability to induce lactational estrus and the weight gain of litters.

Key Words: altered suckling, lactational estrus, split weaning

177 **Litter of origin effects on gilt development in a commercial setting.** J. L. Vallet[1,*], J. A. Calderon-Diaz[2], K. J. Stalder[2], C. E. Phillips[3], J. R. Miles[1], E. C. Wright-Johnson[1], L. A. Rempel[1], C. A. Lents[1], D. Nonneman[1], G. A. Rohrer[1], B. A. Freking[1], R. A. Cushman[1], *[1]USDA, ARS, U.S. Meat Animal Research Center, Clay Center, NE, [2]Iowa State University, Ames, [3]Murphy-Brown LLC, Warsaw, NC.*

The preweaning litter environment of gilts can affect subsequent development. In a recent experiment designed to test the effects of dietary ME and lysine on gilt development, individual birth weights, immunocrits (related to colostrum intake), sow parity, number weaned, individual weaning weights, and litter weaning weights were collected for gilts destined for the experiment (n = 1010). Body weight, loin eye area, and back fat were measured at d 100 of age and at 28-d intervals until slaughter (d 260). From d 160 to slaughter, gilts were observed daily for estrus. At slaughter, the reproductive tract and 1 mammary gland were recovered. The reproductive tract was classified as cyclic or prepubertal and the number of corpora lutea was counted. Uterine horn lengths and ovarian dimensions were measured. Mammary gland tissue was assayed for protein and fat using proximate analysis. Day of the estrous cycle at slaughter was calculated using the day of first standing estrus (d 0) recorded within 23 d previous to slaughter. Each gilt development trait was analyzed for association with each litter of origin trait, after adjusting for effects of dietary treatments. Uterine length, mammary gland protein, and fat were also adjusted for day of the cycle at slaughter. Results indicated that body growth (d 100 to 240) was positively associated with immunocrit ($P < 0.01$), birth weight ($P < 0.01$), and preweaning ADG ($P < 0.01$). Loin eye area growth was positively associated with birth weight ($P < 0.01$) and preweaning ADG ($P < 0.05$). Back fat growth was positively associated with immunocrit ($P < 0.01$), birth weight ($P = 0.01$), and preweaning ADG ($P < 0.01$). Age at puberty was positively associated with number of piglets weaned ($P = 0.098$), birth weight ($P < 0.01$), and weight of the litter at weaning ($P = 0.098$), and negatively associated with preweaning ADG ($P < 0.01$). Total uterine length was positively associated with immunocrit ($P = 0.0572$). Ovary length ($P < 0.05$) and width ($P = 0.082$) were associated with sow parity. Prepubertal at slaughter was positively associated