

102 Sow and offspring performance after feeding additional diet or corn from d 30 to 50 of gestation. R. E. Musser^{*1}, R. D. Goodband¹, D. L. Davis¹, S. S. Dritz², M. D. Tokach¹, J. L. Nelssen¹, J. S. Bauman³, and M. Heintz³. ¹Kansas State University, Manhattan, ²Food Animal Health and Management Center, Manhattan, KS, ³Global Ventures, Inc., Pipestone, MN.

Litter size and carcass traits of offspring were evaluated for sows provided control diet (1.81 kg/d complete corn-soybean meal based diet) vs either increased feed (3.63 kg/d of complete diet) or supplemental corn (1.81 kg/d of complete diet plus 1.81 kg/d of ground corn). Treatments were provided from d 30 to 50 of gestation. Maternal line sows (PIC[®]), n = 321, produced 2,363 market pigs for this study. Sows fed additional diet had fewer (P = .05) pigs born live (9.80) than control (11.01), but sows fed additional corn farrowed litters similar to controls (10.67). Offspring were slaughtered at similar ages and increased complete diet from d 30 to 50 of gestation resulted in gilt offspring with heavier (P < .05) and leaner (P < .01) carcasses than controls. Offspring of sows fed additional corn were intermediate between those fed control and additional diet. It is suggested that additional nutrient intake between d 30 to 50 of gestation influences postnatal development of offspring. Decreased litter size for sows provided increased feed may have affected carcass traits of their offspring, however providing additional corn did not affect litter size but offspring were leaner than controls. The negative effects of additional diet on litter size was unexpected and requires further study.

Maternal Treatment		Control	Extra		P <	SEM
			Corn	Feed		
Number of pigs	barrows	404	412	366		
	gilts	403	433	340		
Hot carcass weight, kg	barrows	94.2	94.9	95.8	.05	.56
	gilts	91.7	93.2	93.3	.03	.62
Tenth rib fat depth, mm	barrows	20.3	20.2	20.4	.77	.13
	gilts	17.3	16.5	16.4	.01	.11
Loin depth, mm	barrows	57.9	58.9	57.6	.01	.17
	gilts	59.0	59.7	59.2	.21	.18
NPPC percentage lean, %	barrows	53.5	53.6	53.3	.41	.07
	gilts	55.5	56.0	55.9	.01	.08

Key Words: Gestation, Offspring, Lean

103 Effect of gestation dietary crude protein level on the lactation performance of primiparous sows. B. A. Belstra^{*}, B. T. Richert, and J. W. Frank, *Purdue University, West Lafayette, IN.*

Sixty-three gilts (1/2 Landrace, 1/4 Large White, 1/4 Duroc) were allotted by weight to 3 dietary treatments at d 14 of gestation and housed in groups of 7. All treatments initially received 2.0 kg/d of a 13.3% crude protein (CP), .6% lysine diet until d 40 of gestation. Treatment 1 remained on the basal diet and feeding level throughout gestation. Treatment 2 was stepped up in dietary CP at d 40 and d 80 to 2.0 kg/d of a 14.6% CP, .7% lysine and 16% CP, .8% lysine diet, respectively. Treatment 3 was stepped up at d 80 of gestation in both CP and energy by increasing feed intake of the basal diet from 2.0 to 2.7 kg/d. Dietary treatment did not significantly affect 10th rib backfat depth (P > .40), 10th rib backfat change (P > .34) during any trimester of gestation or total gestation backfat change (TGBF; P > .58). Diet did affect gestation weight gain (GWG) from d 80 to d 108 (P < .02) and total gestation weight gain (TGWG; P < .01). Diet did not influence the number of pigs born alive (BA) or stillborn (SB) (P > .17), but BA was numerically greater for treatment 2. Litter birth weight (LBW, BA + SB) adjusted for litter size was affected by dietary treatment (P = .05). Litter weight gain at d 14 and lactation feed intake were not different between dietary treatments (P > .20). Sow lactation weight loss (LWL, 20 d) was greater for treatments 1 and 2 (-12.1 and -17.5 kg) than treatment 3 (-3.3 kg; P < .01). This data suggests that 12 g/d lysine is adequate to support gestating gilt reproduction; however, increased protein levels do increase gilt weight gain and stair step increases in lysine by trimester may also increase litter size.

Item	Treatment 1	Treatment 2	Treatment 3	SEM	Diet
No. Gilts	22	19	22		
TGWG, kg	40.02	53.67	55.03	±3.64	P < .01
TGBF Change, mm	7.5	7.2	8.4	±0.80	ns
LBW (BA+SB), kg	19.10	17.51	16.98	±0.62	P = .05
BA	9.90	10.47	9.71	±0.23	ns

Key Words: Gilt, Gestation, Crude Protein

104 Effect of pattern of prepubertal feed level on reproductive development of gilts. J. Klindt^{*}, J. T. Yen, and R. K. Christenson, *USDA-ARS, U.S. Meat Animal Research Center, Clay Center, NE.*

Development of gilts such that they conceive early and continue to produce offspring is a primary objective of swine production. Herein we investigated different patterns of growth on reproductive development of gilts. At 13 wk of age white crossbred gilts were penned individually and assigned to treatments: AL, feed offered ad libitum through 25 wk of age, n=64; C, ad libitum feed until 100 kg BW and then fed at 90% of ad libitum until 25 wk of age, n=65; and R, fed at 74% of ad libitum through 25 wk of age, n=64. Feed was formulated so primarily energy intake was restricted. The study was replicated in two seasons. At 25 wk of age gilts were moved to group pens, fed ad libitum and estrous detection initiated. Gilts were mated at first estrus and those recycling were remated. Post-mating gilts were fed 1.5x maintenance in gestation stalls. At 30 d of gestation gilts were slaughtered and no. of CL and live embryos (lv emb) recorded. Among the measures of reproductive performance only lv emb/CL was effected (P < .05) by treatment. An effect (P < .02) of post-treatment ad libitum feeding on reproduction, flushing, was noted after 7 d in the R gilts, but not in AL or C gilts. These results indicate restricted feeding of gilts during development may increase the efficiency of swine production without negative impact on reproductivity through 30 d of gestation.

Variable	AL	C	R	PSE
Feed 13-25 wk, kg/gilt	259	253	191	3
Feed 13 wk-slaughter, kg/gilt	400	385	329	9
Age when pregnant, d	197	201	200	2
No. pregnant/total no. gilts	.89	.80	.88	.03
No. CL/total no. gilts	13.4	12.4	12.0	.6
No. lv emb/total no. gilts	8.8	9.1	9.6	.6

Key Words: Gilts, Puberty, Growth

105 Effect of gilt development diet on maternal traits of primiparous sows. K. J. Stalder^{*1}, T. E. Long², R. N. Goodwin³, J. M. Anderson⁴, R. L. Wyatt⁴, and J. H. Halstead². ¹University of Tennessee, Jackson, ²University of Nebraska, North Platte, ³National Pork Producers Council, Clive, IA, ⁴Ames Plantation, Grand Junction, TN.

The objective of this study was to evaluate the effect of gilt development diet on first parity - maternal performance. Seven hundred-eight gilts from 5 genetic lines with a range in age of 9 d were assembled using SEW protocols. Genetic types represented industry variation for reproductive capacity and lean growth potential. Gilts were assigned to a development diet at 120 d of age. Diet 1 (high energy, 18%CP) and diet 2 (high energy, 13% CP) were fed ad-libitum until the gilts weighed approximately 113 kg. Diet 3 (18%CP) was restricted fed from 82 kg until the gilts reached 180 d of age. Gilts were fed 2 kg of a gestation diet from 180 d to 200 d of age and 2.7 kg from 200 d until mating. Gilts 210 d of age or older were artificially inseminated using commercial semen. Gilts not detected in estrus within the first 50 d of mating were administered PG600 and the breeding period extended for 30 additional d. Of the 657 gilts entering breeding pens, 422 farrowed. Bred gilts were distributed to 10 cooperator facilities prior to farrowing. A categorical analysis was used to evaluate treatment effects on the probability of farrowing. Gilts fed diet 3 had a higher (P < .05) probability (.73) of farrowing a litter than gilts fed diets 1 and 2 (.64 and .58). Mixed model procedures were used to evaluate farrowing data. Gilt development diet did not significantly (P > .15 or higher) effect any of the maternal traits evaluated. Significant (P < .05) genetic type by gilt development diet interactions were found for number born, number born alive, total litter birth weight, and litter birth weight of pigs born alive. Significant interactions consistently involved one genetic line and gilt development diet 2. The results of this study indicate gilt development diet can affect the probability of gilts farrowing, but has little influence on first parity reproductive performance.

Key Words: Gilt Development, Maternal Performance