POSTER PRESENTATIONS

Animal Behavior, Housing, and Well-Being

9 Animal-related factors affecting piglet mortality in loose farrowing systems. Y. Z. Li*[1], J. E. Anderson[2], and L. J Johnston[1], [1]*University of Minnesota West Central Research and Outreach Center, Morris,* [2]*University of Minnesota, Morris.*

A study was conducted to investigate sow-related (sow parity, CV for birth weight within litter, early mortality of piglets) and piglet-related factors (individual birth weight, gender, cross-fostering) affecting piglet mortality in a group-farrowing system. Multiparous sows (n = 108) from 8 breeding groups were used. The farrowing barn housed 8 sows of different parity (2 to 10) in each room where sows shared a communal area and farrowed in individual pens. Piglets were weighed individually within 24 h after farrowing, at pen removal (d 10), and at weaning (d 28), from which CV within litter was calculated. Dead piglets were weighed when found. Behavior of 39 focal sows during farrowing was video-recorded, from which farrowing duration, inter-birth interval, and frequency of posture changes were determined. Data were analyzed using the Glimmix Procedure of SAS with the Tukey test for means separation. Among the 1,233 piglets born, 94.3% were born alive and 5.7% were still born. Of the live born piglets, 20% died before weaning, with 50% of the total deaths occurring during the first 3 d after farrowing. Sows of parity 5 or greater had greater piglet morality (28% vs. 14%, SE = 2.78; $P < 0.01$) and weaned smaller litters (8.6 vs. 9.8 piglets, SE = 0.30; $P < 0.05$) than sows of parity 2. Sows that farrowed piglets with CV for birth weight greater than 20% had greater piglet mortality than sows that farrowed piglets with CV less than 15%, regardless of parity. Sows that lost piglets within 24 h after farrowing lost more piglets during the entire lactation period than sows that did not lose piglets on d 1. Piglets that died during lactation were 0.28 kg lighter in birth weight (1.393 vs. 1.673 kg, SE = 0.065; $P < 0.001$) compared with piglets that survived to weaning. Neither behavior of sows at farrowing, piglet gender, nor cross-fostering affected piglet mortality. The results indicate that parity and birth weight of piglets were the major animal-related factors that contributed to piglet mortality in the loose farrowing system studied.

Key Words: piglet mortality, parity, birth weight, farrowing behavior

10 Effects of increasing stocking density on finishing pig performance. M. L. Potter,* S. S. Dritz, M. D. Tokach, J. M. DeRouchey, R. D. Goodband, and J. L. Nelssen, *Kansas State University, Manhattan.*

A total of 1,201 pigs were used in a 99-d trial to evaluate the effects of increasing stocking density on pig performance. Pens (3.0 × 5.5 m) of barrows or gilts were blocked to minimize variation due to gender and barn location. Pens of pigs were randomly allotted to 1 of 4 treatments (12 pens/treatment). Treatments were stocking pens with 22, 24, 26, or 28 pigs each, allowing 0.75, 0.69, 0.63, and 0.59 m^2/pig, respectively. Each pen had a single 3-space, 106.7 cm long dry feeder and swinging nipple waterer. Pigs were weighed and feed intake was determined on d 0, 14, 28, 42, 56, 70, 84, and 99 to calculate ADG, ADFI, and G:F. Adjustments were not made in the pens to account for space increases due to removed pigs (1.9%, 1.0%, 1.6%, and 1.5% removals for 22, 24, 26, and 28 pigs/pen, respectively). With the exception of d 56 to 70 ADG, after d 14, as stocking density increased, ADG, ADFI, and BW decreased (linear; $P \leq 0.05$). There was no difference (linear; $P = 0.91$) in overall G:F. Overall results indicate that finisher pig ADG, ADFI, and BW increased as the number of pigs/pen was reduced. However, income over feed and facility cost per pig placed was numerically optimized ($93.90 ± 2.22, $94.01, $93.41, and $92.40 for 22, 24, 26, and 28 pigs/pen, respectively; linear, $P = 0.34$) when pens were stocked with 24 pigs each, allowing 0.69 m^2 of space per pig. Although increasing stocking density reduced performance, based on a critical *k*-value of 0.035, stocking density alone should not have affected performance until pigs reached BW of 98.1, 86.2, 75.3, and 67.9 kg for 22, 24, 26, and 28 pigs/pen, respectively.

Table 1. Effect of increasing stocking density on pig performance

	Pigs per pen					
Item	22	24	26	28	SEM	Linear, $P <$
BW, kg						
d 0	28.5	28.6	28.4	28.6	1.10	0.95
d 14	41.7	41.8	41.4	41.6	1.48	0.73
d 28	54.1	53.4	52.6	52.8	1.87	0.05
d 42	68.8	67.8	67.0	66.8	2.21	0.007
d 56	82.2	80.8	80.0	79.2	2.74	<0.001
d 70	98.3	96.5	95.5	94.9	3.12	<0.001
d 84	111.6	109.4	108.5	107.2	3.30	<0.001
d 99	125.8	122.9	121.8	119.8	3.24	<0.001
d 0 to 99						
ADG, kg	0.98	0.95	0.94	0.92	0.023	<0.001
ADFI, kg	2.52	2.43	2.39	2.36	0.095	<0.001
G:F	0.39	0.39	0.39	0.39	0.007	0.91

Key Words: growth, pig, space allowance, stocking density

11 Effects of mixing late-finishing pigs just before marketing on performance. M. L. Potter,* S. S. Dritz, M. D. Tokach, J. M. DeRouchey, R. D. Goodband, J. R. Bergstrom, and J. L. Nelssen, *Kansas State University, Manhattan.*

A total of 512 pigs were used in a 15-d trial to determine the effects of mixing late-finishing pigs from 1 or 2 barns at different stocking densities on pig performance. Pigs from 2 barns (north or south barn) were placed in 32 pens in the north barn at densities of 12 or 20 pigs/pen. Pens were allotted to 1 of 4 mixing treatments (8 pens/treatment). Treatments were: (1) non-mixed pens with 12 north barn pigs (none), (2) mixing 6 north barn pigs with 6 south barn pigs (mix1), (3) mixing 10 north barn pigs with 10 south barn pigs (mix2), and (4) mixing 10 north barn pigs with 10 more north barn pigs (mix3). A common diet was fed to pigs. Pigs were weighed and feed intake measured on d 0, 8, and 15 to determine ADG, ADFI, and G:F. Data were analyzed by a model including the effects of treatment and initial average BW. Gender was used as a random effect. All responses were adjusted to an average initial BW (166.0 kg). Pen inventories had a larger effect on performance than mixing, with pigs stocked at 12 pigs/pen having greater overall ADG ($P \leq 0.06$) and ADFI ($P \leq 0.02$) than those stocked