

**173 Determining the accuracy of gestation feed drops.** J. D. Schneider\*, M. D. Tokach, S. S. Dritz, R. D. Goodband, J. L. Nelssen, and J. M. DeRouchey, *Kansas State University, Manhattan*.

An experiment was conducted to determine the accuracy of three different styles of gestation feed drops (Econo, Accu, Ultra; Automated Production Systems, Assumption, IL). Each drop was tested at three different angles (90, 75, 60°) from the feed line. Drops were attached to a 5 cm diameter feed line and feed was collected and weighed at settings of 0.91, 1.82, 2.73, 3.64, and 4.55 kg for the Econo and Accu feed drops. Due to the smaller feed storage capacity, settings of 0.91, 1.82, 2.73, and 3.64 kg were used for the Ultra feed drop. A typical corn-soybean meal diet was used. There were five replicate drops of each type and two replicates at each angle and feed setting. Data was analyzed as a split plot design with the feed drop as the whole plot and angle as the subplot. Feed drops were blocked based on type and analysis of variance was performed using the PROC MIXED procedure of SAS. There was a drop type by angle interaction ( $P < 0.01$ ) for the feed settings versus the actual amount dropped. The amount of feed dropped at each setting was influenced more by angle to the feed line with the Econo than the Accu or Ultra feed drops. At 90 degrees, the relationship between the feeder setting (x) and actual quantity of feed dropped was best described by the equation  $(1.11x + 0.54)$  for the Econo;  $(1.01x + 0.16)$  for the Accu; and  $(1.01x + 0.51)$  for the Ultra. At 75 degrees, the equations were  $(1.05x - 0.31)$  for the Econo;  $(1.00x + 0.13)$  for the Accu; and  $(1.01x + 0.34)$  for the Ultra. The Accu and Ultra had a lower ( $P < 0.10$ ) slope and less change ( $P < 0.05$ ) in slope and intercept when the angle to the feed line changed from 90 to 75 degrees compared to the Econo indicating they more accurately dropped the correct amount of feed. This study demonstrated that the Accu and the Ultra feed drop are more accurate than the Econo feed drop.

**Key Words:** feed, equipment, gestation

**174 The effects of feeding schedule on body condition, aggressiveness, and reproductive failure in group housed sows.** J. D. Schneider\*, M. D. Tokach, S.S. Dritz, R. D. Goodband, J. L. Nelssen, and J. M. DeRouchey, *Kansas State University, Manhattan*.

A total of 208 sows and 288 gilts (PIC Line C29) were used to determine the influence of feeding frequency (two versus six times per day) in gestation on performance and welfare measurements. Treatments consisted of feeding similar amounts of feed to each sow or gilt divided equally between two (07:00 and 15:30) or six meals per day (07:00, 07:30, 08:00, 15:30, 16:00, and 16:30 h). There were 8 sows or 12 gilts in each pen. Gilts and sows were moved to pens after breeding and randomly assigned in a balanced incomplete block design. In sows, there were no differences ( $P > 0.10$ ) between treatments in ADG (0.47 vs 0.42 kg), backfat change (3.30 vs. 3.32 mm), or variation in final body weight (14.9 vs 17.22%). There was a trend ( $P < 0.08$ ) for sows fed twice a day to farrow more total pigs (14.6 vs. 13.6), but pigs born alive (12.0 vs 11.3) or other reproductive performance were not affected ( $P > 0.21$ ) by treatment. Sows fed 6 times a day had increased vocalization during the morning ( $P < 0.07$ ) and afternoon ( $P < 0.01$ ) feeding periods compared with sows fed

twice a day; however, sows fed twice a day had more skin ( $P < 0.01$ ; 1.51 vs 1.34) and vulva ( $P < 0.04$ ; 1.08 vs 1.03) lesions as well as a small, but significant, increase in feet/leg ( $P < 0.01$ ; 1.21 vs 1.12) and hoof ( $P < 0.02$ ; 1.05 vs 1.01) lesion scores. From d 0 to 42, gilts fed two times a day had lower ADG ( $P < 0.07$ ; 0.27 vs 0.36 kg), and d 42 backfat ( $P < 0.09$ ; 18.8 vs 19.7 mm). From d 42 to farrowing, ADG was similar ( $P = 0.39$ ) for gilts fed twice or six times per day (0.47 vs 0.42 kg). Gilts fed twice a day had lower CV for weight at farrowing ( $P < 0.10$ ; 10.4 vs 15.1%). In gilts, there were no differences ( $P > 0.17$ ) for reproductive performance, skin and vulva lesions, and leg/feet and hoof scores. Increasing the feeding frequency from two to six times per day does not appear to have a dramatic negative or positive impact on performance or welfare of group housed gilts and sows. Research supported by National Pork Board.

**Key Words:** group housed, gestation, welfare

**175 Evaluation of crystalline amino acid supplementation and feeding frequency in gestating sows.** P. Srichana<sup>1</sup>, A. M. Gaines<sup>1</sup>, J. L. Usry<sup>2</sup>, R. D. Boyd<sup>3</sup>, and G. L. Allee<sup>1</sup>, <sup>1</sup>University of Missouri, Columbia, <sup>2</sup>Ajinomoto Heartland LLC, Chicago, IL, <sup>3</sup>The Hanor Company, Inc., Franklin, KY.

Five experiments were conducted to study the effects of dietary L-Lysine.HCl inclusion and feeding frequency on N balance in gestating swine. Nitrogen balance trials were conducted in early gestation (d 50 to 650; Exp. 1); mid-gestation (d 80 to 90; Exp. 2); and late gestation (d 100 to 110; Exp. 3) to investigate the effect of L-Lysine.HCl inclusion and feeding frequency (Exp. 4 and 5). In Exp. 1, 2, and 3 a total of 72 gilts (24, Monsanto Choice Genetics Genepacker, and 48, PIC Camborough 22) were assigned to one of four levels of dietary L-Lysine.HCl inclusion (0, 0.1, 0.2, and 0.3%, respectively). In Exp. 4 and 5, a total of 24 gilts and 16 parity 1 sows (Monsanto Choice Genetics Genepacker) were assigned to one of two levels of L-Lysine.HCl inclusion (0 and 0.2%, respectively) and fed either one or two times/d. The diets were formulated to be isocaloric (3.30 Mcal ME/kg) and contained 0.64% total lysine. Crystalline L-threonine was used to keep the ratio of total threonine:lysine at 77%. The level of feed intake in all experimental diets were held constant at 2,041 g/d, in early gestation period (Exp. 1), 2,359 g/d in mid gestation period (Exp. 2, 4, and 5), and increased to 2,813 g/d in late gestation period (Exp. 3). Similar nitrogen retention was observed ( $P > 0.05$ ) when the level of L-Lysine.HCl was held at 0.2% or less at each state of gestation. However, nitrogen retention was reduced ( $P < 0.05$ ) when averaged over three stages of gestation 60 to 70, 80 to 90, and 100 to 110 d) 25.13, 24.73, 22.95 and 16.80 g/d when L-Lysine.HCl was increased in the diet from 0.0, 0.1, 0.2 and 0.3%, respectively. For every 0.1% of L-Lysine.HCl inclusion, N excretion decreased approximately 8 to 10%. Feeding sows in gestation two times/d did not improve N retention with either a corn soybean meal or a crystalline amino acid supplemented diet. Based on these data, L-Lysine.HCl can be used up to 0.2% in corn soybean meal based gestation diets when fed either once or twice per day.

**Key Words:** sow, gestation, lysine