Meta-analysis of the influence of gender, weaning weight, and weaning age on post-weaning performance in pigs

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Performance data from 13 different experiments with weaned pigs that were conducted at South Dakota State University from 2001 to 2005 were included in a meta-analysis to determine the influence of gender, weaning weight, and weaning age on post-weaning pig performance. Data for ADG, ADFI, and G:F were used in the analysis that included a total of 1,358 pigs (average age at weaning: 19.2 ± 2 d). In all experiments, weight and sex were registered at the d of weaning. The ADG, ADFI, and G:F were calculated for the initial seven d post- weaning, for the initial 14 d post-weaning, and at d 35 post-weaning. Results of the analysis showed that increased weaning weight increased ($P < 0.01$) post weaning ADG. If weaning weight was increased by 1.00 kg, then pig weight would be increased ($P < 0.01$) by 1.020, 1.090, and 1.420 kg at d 7, 14, and 35, respectively. At weaning, barrows were heavier ($P = 0.02$) than gilts (5.78 vs. 5.64 kg), but gilts were heavier than barrows at d 7 (6.13 vs. 6.03 kg; $P = 0.01$) and at d 14 (8.08 vs. 7.96 kg; $P = 0.01$). At d 35, there was a tendency ($P = 0.06$) for gilts to be heavier than barrows (18.14 vs. 17.75 kg). The ADG was increased ($P = 0.001$) with increased weaning age. For each one d increase in age at weaning, pig BW was increased by 0.145, 0.230, 0.280, and 0.390 kg at d 0, d 7, d 14, and d 35 post-weaning, respectively. There was no effect of weaning weight on G:F during the initial 7 d post-weaning, but during the initial 14 d post-weaning, G:F was negatively effected by increased weaning weight (linear effect, $P < 0.02$). During the entire 35-d period, a quadratic effect ($P < 0.001$) of weaning weight on G:F was observed. The lowest G:F was observed for pigs weaned at 6.5 kg. The weight at weaning was only moderately correlated with age at weaning ($R^2 = 0.34$) which indicates that factors other than age contributes to the weight at weaning. The results of the present meta-analysis indicate that gilts have higher ADG during the post weaning period than barrows and that post-weaning ADG is improved by increased weaning weight. The poorest post-weaning G:F is obtained if pigs are weaned at a weight of 6.5 kg.

Key Words: Meta-analysis, Performance, Pigs, Weaning Age, Weaning Weight