

The Effect of Birth Weight on the Growth of Pigs Differs from that of Litter Size

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The increase in litter size successfully attained by pork producers in recent years results in reduced average birth weight. However, the impact this has on overall performance is not clear. This study was conducted to investigate: 1) the effect of birth weight (BW) on growth performance to market, and 2) the effect of litter size (LS) on growth and the variability in growth. Birth weight, birth order, total number born (n=1200) and number born alive (n=1114) were recorded at farrowing for 98 litters. Litter size was divided into small, medium or large litters with 3 to 10, 11 to 13 and 14 to 19 pigs born alive, respectively. Management, including cross-fostering, was as per normal barn procedures. BW was divided into 4 quartiles (0.8 to 1.2, 1.25 to 1.45, 1.50 to 1.70, 1.75 to 2.50 kg; Q1 to Q4, respectively). Pigs < 800 g BW were excluded.

Birth order had no effect on BW. Average BW (kg) ranged from 1.04 (Q1) to 1.93 (Q4; $P<0.01$). Weight (kg) at weaning (5.48, 6.30, 7.04, 7.68; Q1 to Q4) and at 7 wk post-weaning (29.60, 31.78, 33.77, 34.74; Q1 to Q4) increased with BW ($P<0.01$) as did ADG (kg/d) from birth to weaning and weaning to 5 wk post-weaning (0.23, 0.42; 0.26, 0.45; 0.29, 0.47; 0.30, 0.49; Q1 to Q4; $P<0.01$). ADG from 5 to 7 wk post-weaning (0.68, 0.71, 0.73, 0.73; Q1 to Q4) differed among BW quartiles ($P<0.01$); however, Q2, Q3 and Q4 were similar. Days to market (159.3, 154.9, 152.3, 149.6; Q1 to Q4) declined as BW increased ($P<0.01$). Mean BW (1.58, 1.40, 1.32 kg) decreased ($P<0.01$) and total litter weight (12.90, 16.14, 19.30 kg) increased ($P<0.01$) as LS increased. Litter size had no effect on body weight at weaning, 5 and 7 wks post-weaning, or on days to market ($P>0.05$). The SD (kg) and the CV (%) of weights at birth, weaning, 5 and 7 wk post-weaning, and at first pull were similar among LS. Although BW affected pig performance, LS did not; even though larger litters had reduced average BW.

Implications: Pork producers can achieve increased LS with minimal concern for later performance. Birth weight, by itself, however, should continue to receive attention, in both genetic selection and pork production.