

## Effects of feeding low or high oxidized dried distillers grains with solubles (DDGS) to sows on piglet birth weight variation and litter performance

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We hypothesized that sow diets containing DDGS with evidence of elevated oxidative damage would increase the incidence of low birth weight piglets. To test this hypothesis, an experiment was conducted to evaluate the effects of feeding sow diets containing DDGS with low or high levels of oxidative damage on variation in piglet birth weight and litter performance. Mixed parity sows (n = 40; mean parity = 3.3) were assigned randomly to 1 of 3 dietary treatments. Sows were fed either corn-soybean meal control diets (CON), or diets containing DDGS (gestation = 40%; lactation = 20%) with low oxidative damage (LOD; 1.6 ng malondialdehyde equivalent/mg oil), or high oxidative damage (HOD; 5.2 ng malondialdehyde equivalent/mg oil). Dietary treatments were imposed for one reproductive cycle. Concentrations of supplemental Se (0.30 ppm) and vitamin E (66 IU/kg) were similar among gestating and lactating diets. Individual birth weight was recorded for pigs before suckling (BS) and after suckling (AS) and data were sorted into 3 classes: small ( $\leq 1.0$  kg), medium ( $> 1.0$  kg and  $< 1.6$  kg), and large ( $\geq 1.6$  kg). Neither LOD nor HOD affected distribution of pigs in birth weight categories or CV of birth weight within litter AS compared with CON. For BS pigs, feeding HOD caused greater ( $P < 0.05$ ) within litter variation in birth weight compared with CON or LOD (CV = 25.8% vs. 19.0% or 18.5%; Pooled SE = 1.67). Sows fed HOD farrowed 2.3 and 3.8 fewer ( $P < 0.05$ ) medium-sized pigs than sows fed CON and LOD, respectively. Feeding HOD increased ( $P < 0.05$ ) the number of large pigs born per litter compared with feeding LOD (4.7 vs. 2.3; Pooled SE = 0.64) and increased the number of stillborn pigs per litter compared with feeding CON (1.7 vs. 0.4; Pooled SE = 0.43). Dietary treatment had no effect on litter size, litter weight gain, piglet ADG, or pre-weaning mortality. In conclusion, sows fed HOD produced litters with greater variation in piglet birth weight by farrowing fewer medium-sized pigs and more large pigs, but did not affect incidence of small pigs or litter performance.

**Key words:** oxidized DDGS, sow performance, litter performance