

The interaction of net energy concentration and feeding level in weaned pigs

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Previously, we showed that increasing dietary energy concentration did not improve performance, primarily because feed intake (ADFI) declined and daily energy intake remained unchanged. This study evaluated the interaction of increased dietary energy concentration (NE) at various feeding levels (FL) on performance and energy utilization in weaned pigs.

Barrows (n=81; 9.5 ± 1.0 kg) received one of 9 treatments in a 3X3 factorial arrangement until they reached 25 kg. Factors were NE (formulated; 2.21, 2.32 or 2.42 Mcal/kg; calculated from nutrient digestibility; 2.15, 2.26, and 2.37 Mcal NE/kg) and feeding level (FL; 100%, 80% or 70% of ad lib intake).

Average daily gain (572 g/d), ADFI (781 g/d) and gain/feed (0.732) were unaffected by NE (P>0.05). Gain and ADFI, but not gain/feed, increased with increasing FL (P<0.05). Digestibility of gross energy, DM, fat, CP and ash increased with increasing NE (P<0.05), but declined with increasing FL (P<0.05). Crude fibre digestibility decreased with increasing NE and FL (P<0.001). Energy intake increased with increasing NE and FL (P<0.001), but the efficiency of the utilization of energy for growth (Mcal NE/kg BW gain) decreased with increasing NE and FL (P<0.001).

Carcass lipid content increased and water content decreased in pigs fed 100% FL, but only at the highest NE level (interaction, P<0.01). Carcass protein content was unaffected by FL (P>0.05) but decreased with increasing NE (P<0.01). Protein deposition (g/d) increased with increasing FL (P<0.001) but not NE (P>0.05). Lipid deposition, and the ratio of lipid/protein deposition, was greatest in pigs fed 100% FL and the high NE diet (interaction, P<0.01).

Implications:

The effects of NE concentration on performance and the interactive effects of NE concentration and feed intake on carcass lipid content indicates that increasing energy concentration is not desirable in weaned pigs. Surprisingly, body composition of the weanling pig was altered by diet.