Diet Nutrient Digestibility and Growth Performance of Weaned Pigs Fed Field Pea

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Challenging replacement rates of soybean meal (SBM) with field pea in swine diets are economically important for pork producers. To explore, effects of increasing inclusion of field pea by substituting SBM on diet nutrient digestibility and growth performance of young pigs were evaluated. In total, 260 pigs (8.5 kg) starting 1 week after weaning at 19 days of age were fed Phase 1 diets for 2 weeks (day 1–14) and sequentially Phase 2 diets for 3 weeks (day 15–35). Five pelleted wheat-based diets including 0%, 10%, 20%, 30% and 40% yellow field pea (*Pisum sativum* L., subsp. *hortense*) in substitution for up to 30% SBM and 10% wheat were fed. Phase 1 and 2 diets were formulated to provide 2.44 and 2.23 Mcal NE/kg, and 5.02 and 4.18 g standardised ileal digestible (SID) Lys/Mcal NE, respectively. Diets were balanced for NE by reducing dietary canola oil from 4.8% to 3.4% and from 2.7% to 1.2% for Phase 1 and 2 diets, respectively, and for amino acids by increasing crystalline amino acids. Increasing inclusion of field pea by 40% linearly reduced ($P < 0.001$) the apparent total tract digestibility (ATTD) of gross energy by 2% and of crude protein (CP) by 7% in Phase 1 diets, but only linearly reduced ($P < 0.05$) ATTD of CP by 1% in Phase 2 diets. Increasing inclusion of field pea by 40% quadratically reduced ($P < 0.001$) calculated diet net energy (NE) values by 0.10 Mcal/kg as fed in Phase 1 and linearly reduced ($P < 0.001$) calculated diet NE values by 0.05 Mcal/kg as fed in Phase 2 diets. The formulated NE value for field pea was overestimated for pigs immediately after weaning. For day 1–7, increasing inclusion of field pea linearly reduced ($P < 0.01$) average daily gain (ADG) and feed efficiency (G:F), but did not affect average daily feed intake (ADFI). Growth performance was not affected for day 8–14 and 15–21. Increasing inclusion of field pea quadratically increased ($P < 0.05$) ADFI and ADG but did not affect G:F for day 22–28. For day 29–35, increasing inclusion of field pea linearly increased ($P < 0.05$) ADG, but did not affect ADFI or G:F. Overall (day 1–35), increasing dietary inclusion of field pea did not affect ADFI, ADG or G:F.

Implications: Up to 40% field pea can entirely replace SBM in nursery diets formulated to equal NE value and SID amino acid content without detrimental effects on growth performance after a 7-day adaptation.