



Feeding increasing inclusions of canola meal with distillers dried grains and solubles to growing-finishing barrows and gilts

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Background

Global supply and demand of protein meal fluctuates affecting feed cost, the main cost of pig production. Pricing of locally grown canola meal (CM), field pea, and even distillers dried grains with solubles (DDGS) is set based on their protein content relative to soybean meal. However, the dynamics of protein meals pricing are changing due to the rapid growth of the biofuel industry and expanding canola crushing capacity in Western Canada. Both CM and DDGS are often cheaper than soybean meal, but are both high in protein and fibre, which may limit their inclusion in pig diets.

Our objective

To evaluate the effects of increasing dietary inclusion of solvent-extracted canola meal in grower-finisher diets containing 15% DDGS on diet nutrient digestibility, growth performance, dressing, and carcass characteristics of barrows and gilts in a commercial-scale farm study.

What we did

- We conducted the trial at a commercial contract pig grower farm set up as a test facility (Drumloche, Loughheed, AB).
- 550 barrows and 550 gilts (~30 kg BW) were housed in 50 pens (22 pigs/pen) by sex.
- Pigs were fed 5 dietary test regimens consisting of 0, 6, 12, 18, or 24% canola meal inclusion with 15% DDGS over 5 growth phases (5 replicate pens per treatment).
- Canola meal replaced barley, soybean meal, and field pea.
- Pigs were group-weighted at d 0, 21, 43, 68, weekly thereafter and at shipping for slaughter (~120 kg).
- Feed added to each pen was tracked by a robotic feeding system throughout the experiment.
- Energy digestibility of diets (DE) was determined from faecal samples collected toward the end of each feeding phase.
- Pigs were slaughtered at Britco Pork Inc. (Langley, BC). Individual warm carcasses were weighed and graded (Destron).

What we observed

The effect of increasing dietary inclusion of canola meal on apparent total tract digestibility (ATTD) coefficients depended on growth phase (Table 1), but was not affected when considering all phases together.

Table 1. Effect of increasing dietary inclusion of canola meal in diets containing 15% DDGS on apparent total tract digestibility (ATTD) coefficients of gross energy (GE) and crude protein (CP)

		Canola meal (%)					
		0	6	12	18	24	SEM
Phase 1	GE ¹	77.4 ^b	79.8 ^{ab}	82.3 ^a	81.2 ^a	77.5 ^b	1.1
	CP ^{1,2}	72.6 ^c	76.2 ^b	80.5 ^a	81.7 ^a	75.4 ^{bc}	1.2
Phase 2	GE ²	86.1 ^a	80.5 ^b	81.4 ^b	81.5 ^b	84.1 ^a	1.0
	CP ²	83.4 ^{ab}	77.8 ^c	80.6 ^{bc}	81.2 ^{ab}	83.7 ^a	1.2
Phase 3	GE ^{1,2}	88.9 ^a	87.7 ^b	77.2 ^d	82.5 ^c	82.2 ^c	0.3
	CP ^{1,2}	88.4 ^a	86.8 ^a	76.5 ^c	81.8 ^b	80.5 ^b	0.6
Phase 4	GE	77.1	65.1	74.3	70.0	61.2	5.8
	CP	73.5	60.4	74.1	70.3	63.1	6.3

^{a,b,c,d} Within a row, means without a common superscript differ (P<0.01)

¹ Linear effect (P<0.01), ² Quadratic effect (P<0.001)

For the entire trial (d 0-90), increasing dietary CM inclusion by 6% linearly reduced (P<0.01) feed intake (ADFI) by 19 g/d and weight gain (ADG) by 7.4 g/d, and resulted in a quadratic response (P<0.05) on feed efficiency (G:F; Figure 1).

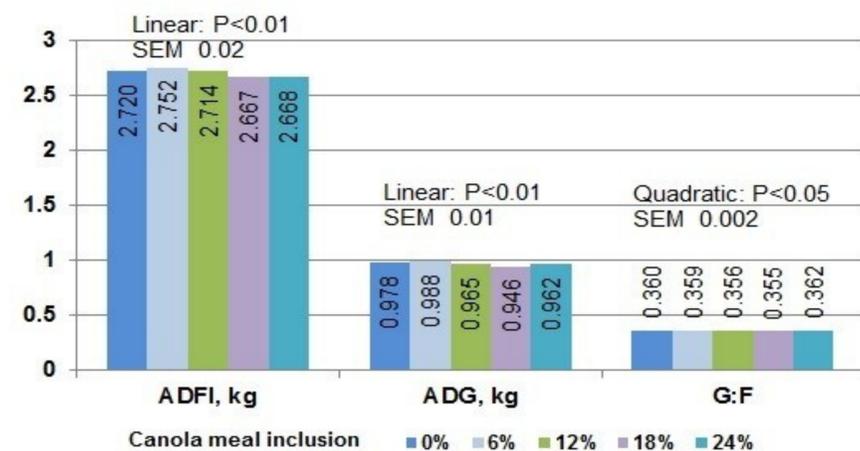


Figure 1. Overall (d 0-90) effect of increasing dietary canola meal inclusion in diets including 15% DDGS on growth performance

Pigs fed 24% CM attained slaughter weight (120 kg) 3 days after pigs fed 6% CM (linear; P<0.05). Increasing dietary CM inclusion in diets including 15% DDGS did not affect carcass weight, dressing, backfat thickness, loin depth, estimated lean yield, or index.

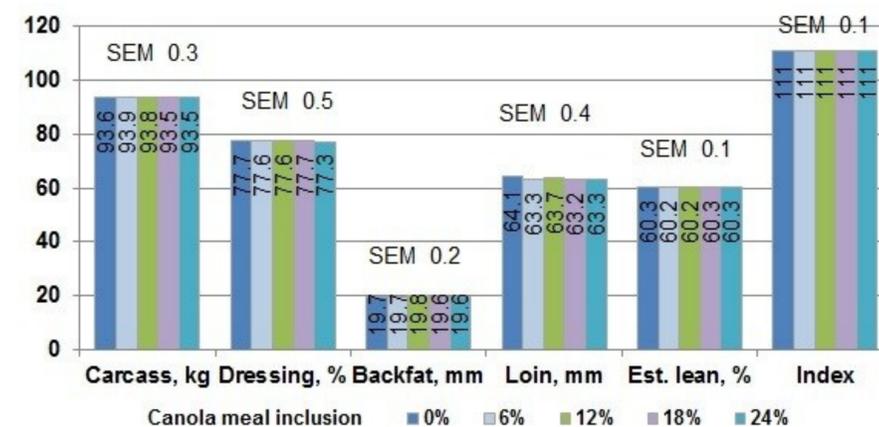


Figure 2. Effect of increasing dietary canola meal inclusion in diets including 15% DDGS on carcass traits

Take home message

Grower-finisher barrows and gilts can be fed diets including up to 24% canola meal together with 15% DDGS without having major effects on pig growth performance, carcass dressing or carcass traits. Therefore, when feedstuff prices permit, inclusion of these two Prairie protein meals with relatively high fibre content can be combined and scaled up to reduce feed cost, increasing producer profitability.

Acknowledgements

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