



Fall harvest frost damage did not reduce the feeding quality of faba bean for broiler chickens

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Summary

Feeding frost-damaged faba bean, to the extent observed in this trial, did not affect growth performance or carcass traits of broiler chickens compared to feeding the parent, certified seed bean quality of the popular Western Canadian faba bean cultivars Snowbird, Snowdrop and Fabelle.

Problem

A concern of pulse growers is how frost damage around harvest time can affect the feeding quality of faba bean fed to chickens. To investigate, two cultivars of zero-tannin (Snowbird, Snowdrop) and one of tannin, low vicine/convicine (Fabelle) content were sourced from certified seed growers (HIGH quality) and part of the seed was planted late (May 15) and desiccated late (early October) to purposely increase the proportion of immature (green) and frost damaged (blackened hull) beans at harvest (LOW quality). The objective of this trial was to compare the growth performance, carcass traits and yield of saleable cuts of broiler chickens fed faba bean cultivars Snowbird, Snowdrop or Fabelle of HIGH or LOW quality.

Our Approach

Ross 708 broiler chicks housed in 64 floor level pens (11 birds/pen) were fed 1 of 6 faba bean containing diets (Figure 1) or a wheat-soybean meal (SBM) control diet. Starter (d 0-11), grower (d 12-24) and finisher (d 13-41) phase diets included 15, 30 and 45% faba bean, respectively, in partial (starter, grower) or total (finisher) replacement of SBM.



Figure 1. Three faba bean cultivars of either HIGH or LOW quality, showing the extent of frost damage (blackened hulls).

Our Observations

Controls fed highly-processed, dehulled SBM grew 2.75 g/d faster overall and were 113.5 g heavier at the end of the trial than broilers fed raw, merely rolled faba bean ($P < 0.05$). Controls fed SBM had 0.024 g/g better overall gain:feed ratio (FE) than broilers fed faba bean ($P < 0.05$). Controls fed SBM had 72 g heavier chilled carcass weight and 0.5 %-unit greater dressing percentage than broilers fed faba bean ($P < 0.05$).

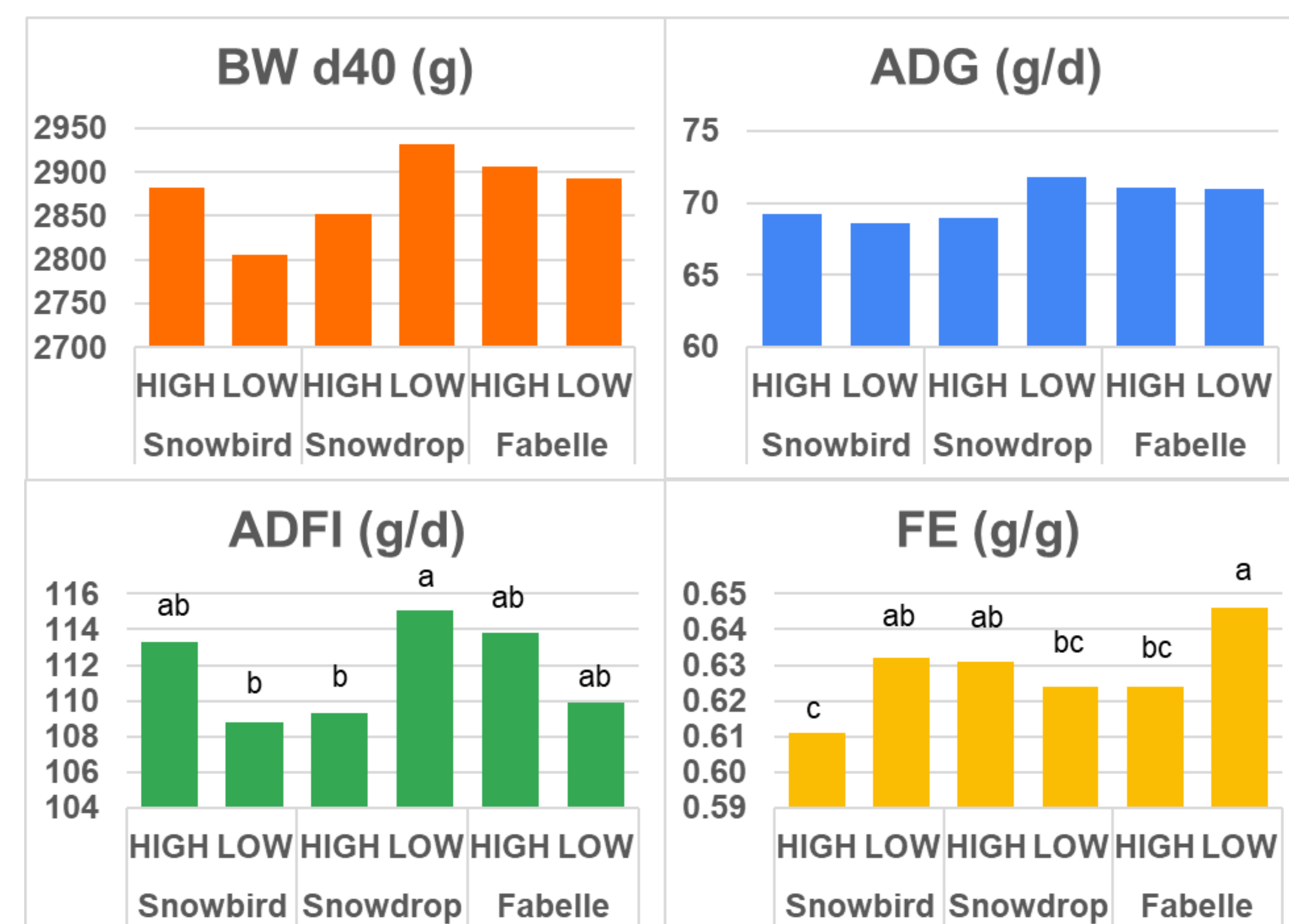


Figure 2. Bird body weight (BW) at the end of each growth phase and daily weight gain (ADG) were not affected by either cultivar or bean quality. There was a cultivar x bean quality interaction ($P < 0.05$) on daily feed intake (ADFI) and feed efficiency (FE). Broilers fed LOW quality Snowdrop consumed 6 g/d more feed overall than those fed LOW quality Snowbird or Fabelle; broilers fed HIGH quality grain were intermediate. Feeding LOW quality Fabelle resulted in best overall trial FE vs. HIGH quality Snowbird, Fabelle or LOW quality Snowdrop.

Table 1. Feeding certified seed (HIGH) or frost-damaged beans (LOW) had no effect on antemortem (AM) live weight (wt), chilled carcass wt, dressing percentage or yield of saleable cuts except that broilers fed Snowbird or Snowdrop had 0.8 %-unit larger thighs than those fed Fabelle.

	Cultivar				Quality			P-value	
	SnB	SnD	Fab	SEM	HIGH	LOW	SEM	Cultivar	Quality
AM wt, kg	2.71	2.76	2.77	0.04	2.74	2.76	0.03	0.337	0.746
Carc. wt, kg	2.03	2.07	2.05	0.03	2.04	2.06	0.03	0.520	0.553
Dressing, %	74.3	74.1	74.3	0.2	74.1	74.3	0.2	0.573	0.722
Carcass component yield, %									
Breast	35.5	35.5	36.0	0.3	35.8	35.5	0.2	0.259	0.481
Thighs	15.5 ^a	15.4 ^a	14.9 ^b	0.2	15.3	15.3	0.2	<0.050	0.931
Drumsticks	13.3	13.2	13.0	0.1	13.2	13.2	0.1	0.212	0.813
Wings	10.1	10.1	10.1	0.1	10.1	10.1	0.1	0.951	0.555
Trim	25.6	25.9	25.9	0.2	25.6	26.0	0.2	0.415	0.193

What does this mean?

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Acknowledgements



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