

POOR GROWTH FROM BROILER DIETS CONTAINING SOYABEAN MEAL AS THE
SOLE PROTEIN CONCENTRATE

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Raw soyabeans contain a number of anti-nutritional factors which can be destroyed by suitable heat treatment of the seed or meal. Such treated meal is often included in broiler diets as the sole protein concentrate. In recent studies aimed at evaluating the use of broiler diets devoid of animal proteins we have consistently obtained reduced growth when soyabean meal has been used as the sole dietary protein concentrate. Growth has been improved by replacing about one quarter of the soyabean meal with either sunflower meal or mixed plant protein meals. This response has been observed with both American- and Australian- processed soyabean meal. Typical results are shown in the Table for male and female broilers in one experiment.

Table 1 Liveweight gain (LWG,g) and feed intake (FI,g) of broilers fed diets containing various protein concentrates between 1 and 42 days of age.

Protein Concentrate ^A	Male		Female	
	LWG	FI	LWG	FI
Animal 1	1793 ^a	3499 ^a	1714 ^a	3304 ^a
Animal 2	1800 ^a	3475 ^a	1704 ^a	3276 ^a
Soyabean	1598 ^b	3169 ^b	1539 ^b	2986 ^b
Soyabean + Sunflower	1778 ^a	3346 ^{ab}	1586 ^b	2987 ^b

Within a column values with the same superscript are not significantly different ($P>0.05$)

^A Animal 1 = Meat meal + soyabean + sunflower
Animal 2 = Poultry offal meal + soyabean + sunflower

Diets were formulated to ARC (1975) specifications. Both sexes showed reduced feed intake and liveweight gain when fed the diet containing soyabean meal as the only protein-rich feed ingredient. Males, but not females, were able to overcome this problem when part of the soyabean meal was replaced with sunflower meal. Protein solubility and urease tests showed that the soyabean meal had been processed correctly and separate growth trials with supplements of lysine, methionine and cystine failed to improve the performance of broilers receiving the soyabean meal as the sole dietary protein concentrate.

A.R.C. (1975). The Nutrient Requirements of Farm Livestock No. 1. Poultry Technical Reviews. HMSO.

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