



### ROASTED FULL-FAT SOYBEANS FOR TURKEY BROILERS

#### Introduction

High feed prices and the termination of feed freight assistance has forced Atlantic poultry producers into finding cost-effective feed alternatives. Since there are no oil processing plants for soybeans in the Atlantic region, the use of full-fat soybeans, whether local or imported, is attractive as it would eliminate the cost of oil extraction. This also means homegrown soybeans can be used as a lower priced protein supplement due to the elimination of freight charges for importation from Ontario and Western provinces. In addition to being a high quality protein source, oil retained within the whole bean makes soybeans an excellent source of energy. Due to raw soybean use by poultry being limited by heat-labile trypsin inhibitors, soybeans have to be heat treated before use to destroy the inhibitor. One such method of processing raw soybeans is dry roasting. There are a number of farms with this capacity as well as commercial grain roasting units emerging in the Atlantic region.

#### Trial

Roasted soybeans were incorporated into a corn-based turkey starter diet at a level of 15% and compared to a control diet using the normal soybean meal. Table 1 gives the particulars of these diets. The grower and finisher diets tested contained roasted full-fat

soybeans and soybean meal in one of the following ratios: 0:100, 33.3:66.6, 66.6:33.3, and 100:0.

**Table 1: Diet Composition**

Age (Days)	Diet	CP (%)	Energy (kcal/kg)
0-21	Starter	26	3000
22-63	Grower	20	3176
64-84	Finisher	17	3252

#### Results

At 21 days of age, the birds fed the starter diet with 15% roasted soybeans ate more feed and were heavier, but had a higher feed conversion (Table 2). Birds fed the grower/finisher diets with the 66.6:33.3 ratio had heavier body weights at 63 days but this difference disappeared at 84 days of age (Figure 1). At 84 days of age, carcass crude protein content of the birds fed 15% roasted soybeans in the starter diet were similar to the control-fed birds but the carcass fat content was lower for these birds fed roasted soybeans (Table 2). Complete replacement of soybean meal by roasted soybeans in grower and finisher diets did not affect carcass protein and fat content at marketing (Figure 2).

## Industry Impact

Roasted full-fat soybeans can partially or totally replace soybean meal in turkey diets. The use of locally grown soybeans will eliminate the costs of oil extraction and of importing this feedstuff. A leaner bird was produced using the roasted full-fat soybeans. Using local supplies of soybeans, roasted at local facilities, means a potential economic gain in providing the poultry industry with a lower priced alternative feedstuff that can be easily incorporated into poultry rations.

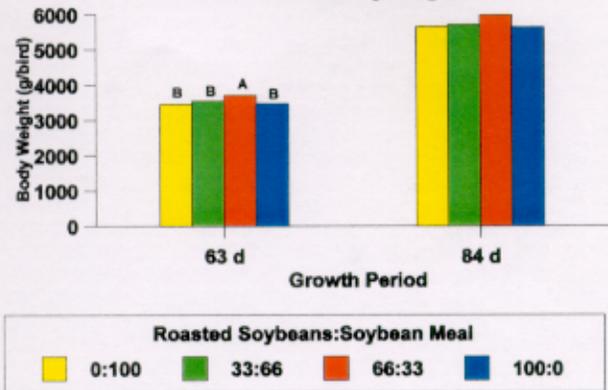
**Table 2: Effect of Roasted Soybeans in the Starter Diet on Growth Performance and Carcass Composition**

Variable	Level of Roasted Soybeans in Starter Diets (%)	
	0	15
Weight Gain (kg/bird) <sup>1</sup>		
1-21 d	0.54b	0.57a
Feed Consumption (kg/bird)		
1-21 d	0.68b	0.74a
Feed Efficiency (feed/gain)		
1-21 d	1.25b	1.30a
Carcass Crude Protein (%)		
84 d	58.4	59.8
Carcass Crude Fat (%)		
84 d	29.3a	25.4b

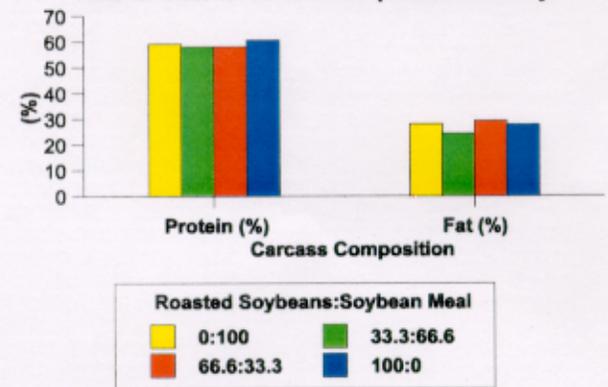
<sup>1</sup>Average day-old body weight=0.057 kg  
a,b Means are significantly different ( $P \leq 0.05$ )

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**Figure 1. Effect of Roasted Soybeans in the Grower and Finisher Diets on Body Weights**



**Figure 2. Effect of Roasted Soybeans in the Grower and Finisher Diets on Carcass Composition at 84 Days**



Researchers:  
K. Burgoyne and D.M. Anderson, Dept. Animal Science, Nova Scotia Agricultural College  
J.L. MacLean, Atlantic Poultry Research Institute