USE OF RAW SOYBEANS IN SOW DIETS

Gary L. Allee, De-Fa Li, and Jim Nelssen

Summary

Seventy-six gilts were used to evaluate the effects of feeding raw soybeans during gestation, lactation, and rebreeding on sow and litter performance. Reproductive performance during two parities was not impaired by feeding raw soybeans. However, sows fed raw soybeans lost more weight during lactation than sows fed soybean meal. The factor (or factors) responsible for this increased weight loss during lactation and the long-term consequences remains to be determined.

Introduction

It has been generally accepted that raw soybeans contain antigrowth factors for swine that are destroyed by heating. Recent research at the University of Nebraska has demonstrated that raw soybeans can be effectively utilized by sows during gestation. The objective of this study was to compare soybean meal and raw soybeans in gestation and lactation diets.

Procedures

Seventy-six crossbred gilts, approximately 8 1/2 month of age, were bred and randomly assigned to either a soybean meal diet or a diet containing raw soybeans. Composition of the diets is shown in Table 1. Diets were isonitrogenous but not isocaloric. Raw soybeans were ground through a hammer mill with a 3/8 inch screen.

During gestation, all gilts received 4.5 pounds of their respective diets, while housed in individual gestation stalls in an environmentally controlled building. Approximately 30 days after breeding, gilts were moved to outside lots and individually fed 5 pounds per day in individual feeding stalls.

At approximately 110 days of gestation, gilts were moved to the farrowing house. All gilts stayed on the same diet during gestation and lactation. Gilts were fed ad libitum during lactation. Pigs were weighed at birth and 21 days. No creep feed was given but pigs did have access to sow's feed. Pigs were weaned at approximately 25 days (18-28 days).

After weaning, gilts returned to individual gestation stalls and were fed 4.5 pounds of their respective diets. The breeding period was 14 days.

During the second parity, management procedures were identical to those employed with gilts except that sows received only 4.5 pounds of diet when moved to outside gestation lots.

Results and Discussion

The effects of feeding raw soybeans on sow and litter performance during parity I are shown in Table 2. There were no differences in sow or litter performance between diets with the exception that sows fed raw soybeans tended to lose more weight during lactation.

Sow and litter performance during parity II is shown in Table 3. A higher percentage of sows farrowed on the raw soybean meal diet (76.9 vs 50%). Number of pigs weaned per litter was .9 pig higher for sows fed the raw soybeans. Sows fed the raw soybean diet lost more weight during lactation. In the second parity, the larger litter size could partially explain the greater lactation weight loss. However, the reason for the greater lactation weight loss during parity I cannot be explained by number of pigs weaned per litter.

This study is a part of a North Central Regional Sow Study (NCR-42). Recent progress reports from several stations also have demonstrated increased weight loss during lactation for sows fed raw soybeans. The factor (or factors) involved has not been determined.

Table 1. Composition of Diets, %.

Ingredient	Soybean Meal	Raw Soybean
Gr. corn	81.05	73.15
Soybean meal	15.1	
Soybeans[a]		23.0
Dicalcium phosphate	2.0	2.0
Limestone	.8	.8
Salt	.5	.5
Trace-mineral premix	.05	.05
Vitamin premix	.5	.5
Santoquin	+	+
	100.0	100.0

[a]Contained 32.0% protein.

Table 2. Effect of Raw Soybeans Fed during Gestation and Lactation (Parity I).

Criteria	Diet	
	Soybean Meal	Raw Soybeans
No. of gilts bred	38	38
No. farrowed	33	31
Weight at breeding, lb	260	255
Gestation wt. gain, lb	121.2	125.2
No. pigs farrowed/litter	10.6	10.7
No. of live pigs farrowed/litter	9.8	9.8
No. of pigs weaned/litter	9.3	9.4
Survival rate, %	94.9	95.9
Birth wt. of live pigs, lb	2.97	2.94
Weaning wt., lb	11.7	11.3
Litter weaning wt., lb	105.2	105.2
Daily lactation feed intake, lb	12.54	12.32
Lactation weight loss, lb	-16.9	-24.4
Days to estrus	6.25	6.72

Table 3. Effect of Raw Soybeans Fed during Gestation and Lactation (Parity II).

Criteria	Diet	
	Soybean Meal	Raw Soybeans
No. of sows started	28	26
No. of sows farrowed	14	20
Gestation wt. gain, lb	109.6	110.8
No. pigs farrowed/litter	8.4	8.9
No. of live pigs farrowed/litter	8.2	8.8
No. of pigs weaned/litter	7.5	8.4
Survival rate, %	91.5	95.5
Birth wt. of live pigs, lb	3.58	3.34
Weaning wt., lb	12.5	11.5
Litter weaning wt., lb	91.1	93.1
Daily lactation feed intake, lb	12.2	11.9
Lactation wt. loss, lb	-8.1	-20.7