

COMPARATIVE STUDY OF THREE EXPELLER PROCESS SOYBEAN MEALS IN DIETS FOR LACTATING DAIRY COWS

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Introduction

Several expeller process soybean meals with similar specifications are available to dairy producers in Kansas at varied prices. Some of these products have been evaluated in research studies but others have only on-farm results without a control group for comparison. Cow performance data obtained in comparative studies with known products will improve our decision making process. The purpose of this study is to determine if cow performance or price is the deciding factor when comparing three expeller process soybean meals.

Procedures

Forty-eight primiparous Holstein cows were used in two simultaneous 3x3 Latin squares with 28-day periods. Cows were housed and fed in a freestall facility at the Kansas State University Dairy, Manhattan, Kansas. Six pens containing eight cows each were utilized. Cows were given pen feed diets formulated in accordance with the Dairy NRC (2001) and based on the assumption that the three sources of soybean meal were nutritionally identical. Diets contained, on a dry matter basis, 24.3% chopped alfalfa hay, 9.3% processed corn silage, 9.2% whole fuzzy cottonseed, 19.2% wet corn gluten feed (Minnesota Corn Processors, Inc., Columbus, NE.) and 38% grain mix (70.2% dry rolled corn grain, 18.44% expeller soybean meal, 2.15% wet molasses, 3.47% Menhaden fish meal, and 5.74% min/vit premix). The experimental diets differed only in source of expeller soybean meal; 1) Soybest, 2) NCKP, and 3) BGF (Bruning Grain and Feed) and were offered ad libitum as a total mixed ration twice daily. Cows were fed each diet for 28 days with pen feed intake and individual cow milk yield measured daily. Milk samples (am/pm composite) were analyzed for milk composition weekly with analysis of milk protein, fat, lactose, solids-not-fat, urea nitrogen, and somatic cells being measured by the Heart of America DHI Laboratory, Manhattan, Kansas. Body weights and condition scores were measured at the beginning of the study and at the end of each 28-day period.

Results and Discussion

The first lactation cows used in the study averaged 77 pounds of milk and consumed approximately 55 pounds of dry matter daily. Dry matter intake as a percentage of bodyweight averaged 3.9% and they gained an average of 28 pounds of bodyweight (one lb per day) during the 28-day feeding period. Results of the study are depicted in Table 1. No differences due to source of soybean meal were observed in any of the parameters measured.

Table 1. Production responses of cows to diets.

Parameters	SoyBest	NCKP	BGF
Milk, lbs/d	77.9	76.8	76.9
ECM, lbs/d	80.8	80.2	80.2
BF, %	3.73	3.77	3.77
BF, lbs/d	2.86	2.88	2.86
Protein, %	3.27	3.24	3.25
Protein, lbs/d	2.53	2.49	2.49
Lactose, %	5.34	5.41	5.41
Lactose, lbs/d	4.25	4.18	4.18
SNF, %	10.10	10.05	10.07
DMI, lbs/d	55.94	55.24	55.28
DMI, % of B. Wt.	3.93	3.89	3.89
Initial Wt., lbs	1411	1407	1406
Final Wt., lbs	1436	1434	1439
B. Wt. Change, lbs	+ 25.6	+ 26.6	+ 33.2
Initial BCS	3.15	3.18	3.10
Final BCS	3.24	3.34	3.30
BCS Change	+ 0.03	+ 0.17	+ 0.15