

*Director's
Digest*



FRED D. BISPLINGHOFF, D.V.M.
Director Technical Services

7150 ESTERO BLVD. • APT. 906
FT. MYERS BEACH, FL 33931
AREA CODE 813 — 463-4744

April 1992 No. 217

COMPARING WHOLE RAW SOYBEANS PLUS ANIMAL BY-PRODUCT PROTEIN
VS ROASTED SOYBEANS AS PROTEIN AND ENERGY SUPPLEMENTS
TO DIETS FED TO DAIRY CATTLE

By

FRED D. BISPLINGHOFF, D.V.M.

INTRODUCTION:

Dr. Ric R. Grummer of the University of Wisconsin recently completed one segment of a three experiment research project sponsored by F.P.R.F. The major objective of this trial is described in the title of this Digest but essentially Dr. Grummer wanted to determine if it was more economical to feed raw soybeans and animal proteins or to utilize roasted soybeans with their higher by-pass value.

DESIGN:

Twelve cows were used in a replicated 3 x 3 Latin square design. Each period was 21 days. Cows were multiparous Holsteins ranging from 3-11 weeks postpartum and averaged 5.4 weeks postpartum. Cows were blocked (by square) according to date of calving. M305 day production average for the cows was approximately 23,000 lb prior to the start of the trial (Ashland herd).

TREATMENTS:

1. Raw soybeans, no high bypass protein supplement
2. Raw soybeans, animal byproduct proteins (ABP) as high bypass protein supplement
3. Roasted soybeans, steeped following roasting to increase bypass protein value

Diets:

<u>Ingredient</u>	<u>Raw soybeans</u>	<u>Raw soybeans & ABP</u>	<u>Roasted soybeans</u>
		<u>—% ration dry matter—</u>	
Alfalfa	30	30	30
Corn silage	18	18	18
Corn grain	32.3	36.5	36.0
SBM	6.1		3.5
Raw soybeans	10.5	9.6	
Roasted soybeans			9.0
Blood meal		.9	
Meat and bone meal		4.0	
Urea			.6
Tallow	.4		.6
Vit./Min.	2.7	1.1	2.3
CP, %	17.9	17.8	17.9
UIP, % of CP	31.9	36.2	36.4
DIP, % of CP	69.6	63.8	63.9
NEL, Mcal/lb	.77	.77	.78
NDF, %	26.9	26.2	26.6

Measurements:

Milk yield	daily
Milk composition	composite AM & PM samples from each of last 4 days of period
Feed intake	daily

RESULTS AS OF 4-15-92

There was no significant difference in dry matter intake among treatments indicating acceptance of blood meal and meat and bone meal at .9 and 4% of ration dry matter. Acceptance of blood meal and meat and bone meal at .9 and 4% of ration dry matter. An in vitro analysis of protein supplements for protein and undegradable protein was completed. Those results are also shown below. Using these values, Dr. Grummer went back and estimated the total CP and undegradable protein content in each of the experimental diets (see below). The roasted soybeans were lower in undegradable protein than anticipated as was

the meat and bone meal. In contrast, blood meal was higher in both crude protein and undegradable protein than he anticipated. The raw soybean plus animal byproduct diet and roasted soybean diet were formulated to be 36% (of total CP) undegradable protein. Feed analysis shows that the raw soybean plus animal byproduct protein diet was 36.2% undegradable protein while the roasted soybean diet was only 34.3% undegradable protein. This might explain the slight advantage in milk production by cows on the raw soybean plus animal byproduct diet compared to those on the roasted soybean diet. He has completed an economic analysis using the results from the trial.

Feeding raw soybeans and animal byproducts resulted in approximately a 23 cents/d advantage in feed cost assuming meat and bone is \$240/ton and 17 cents/d when assuming meat and bone is \$280/ton (see below). Part of the reason the value is so high is because of the extremely high feed intake experienced on this experiment.

Dry matter intakes.

	Raw SB	Raw SB & ABP	Roasted SB
DMI, lb/d	65.9	65.5	66.0

Crude protein and undegradable protein values of protein supplements and diets.

	%CP	Undegradable protein (%CP)
Raw soybeans	38	32
Roasted soybeans	41	48
Meat and bone meal	52	42
Blood meal	99	88

Economics of the feeding strategies.

	Raw SB	Raw & ABP	Roasted SB
	—¢/day—		
Feed	0	+13	-.05
Milk	0	+53	+34
Net	0	+66	+29

SBM (\$200/t), Raw SB (\$200/t), Rst SB (\$270/t), BM (\$450/t), M&B (\$280/t), Milk (\$11.50/cwt.)