

were more erratic. There may be a connection between cow capacity and urge to graze at the time of feeding, rather than the kind of feed, that influenced the amount of wheat flavor in the milk. In further tests involving different silage feeding times the amount of wheat forage consumed is being determined, to resolve this question.

As yet, there is not a satisfactory "field testing kit" devised that can be truck transported and driver operated to assist the driver in making the decision on whether a tank of suspected wheat flavor milk is acceptable or not. This is very difficult to do because the taste "threshold" for the compound responsible for the flavor, trimethylamine, is quite low, i.e. 3 ppm. Nevertheless, our laboratories are continuing their efforts to devise a practical small testing system.

Comparison of Finely Ground and Micronized Sorghum Grain for Dairy Cows

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Story in Brief

Since grain comprises a large part of the feed cost for dairy cows, it is important to determine whether processing by different methods will improve its feeding value. In this trial, sorghum grain processed by fine grinding was compared to grain micronized to different degrees.

Yield and composition of milk was similar for cows fed grain processed by fine grinding or micronizing. In particular, micronized grain had no consistent effect on milk fat as one or more cows in each treatment group had lower fat tests than usually expected.

Introduction

In previous feeding trials, micronized sorghum grain was found to be essentially equal to finely ground or steam rolled grain in terms of milk yield by dairy cows. However, there was some evidence of depressed fat tests when micronized grain was fed. For this reason, the trial reported last year and the current one were designed as continuous type

trials wherein cows were fed the same ration throughout the trial. While this type of trial is not as sensitive as other types in terms of detecting differences in milk yield that may result from different processing methods, it was deemed appropriate because any ration effects on fat test were considered to be long term in nature.

The purpose of this trial was to compare sorghum grain micronized to different degrees with finely ground grain in terms of yield and composition of milk of dairy cows.

Materials and Methods

Twenty-four lactating cows (12 Ayrshires and 12 Holsteins) were used in a continuous type trial to compare rations containing sorghum processed by (a) fine grinding (1/16 inch screen), (b) micronizing (30 lb. test wt.) or (c) micronizing (18 lb. test wt.).

Sorghum grain comprised 75 percent of the concentrate mixture (Table 1) which was fed in a 50:50 ratio with excellent quality alfalfa hay. The cows were challenge fed during a 2 to 3-week adjustment period starting about 2 months after calving, with only the restriction that approximately equal amounts of grain concentrate and hay be consumed. Ration allowances for the comparison period of the experiment were calculated to meet 1971 NRC requirements with due consideration for body size, age, milk yield and fat test. Each cow was fed the calculated amount of feed for a 2-week preliminary period and then the same amount of experimental ration each day throughout an 8-week trial.

Milk production was recorded twice daily, with samples from four consecutive milkings each week composited for analysis of total solids and fat percentage. Body weights were recorded on three consecutive days at the start and end of the trial.

Table 1. Ingredient Composition of Ration.

Ingredient	Percent
Sorghum grain ¹	75.0
Soybean meal	10.0
Molasses, liquid	7.5
Corn, ground	5.0
Urea	1.0
Dicalcium phosphate	1.0
Trace mineral salt	0.5

¹ Processed as required for different experimental rations.

Results and Discussion

Method of processing sorghum grain fed cows in this trial did not have a consistent effect on total yield or composition of milk. The higher average daily yield by the cows fed grain micronized to a minimum degree (30 lb. test wt.) was judged to be a reflection of differences among cows in persistency of production as there was considerable variation among cows within each group (Table 2).

There was a downward trend in milk fat test of around .2 to .3 percent in all the groups during the 8-week trial. Conversely, the percent non-fat solids in milk increased gradually during the trial. Presumably, these changes in milk composition were merely a reflection of the stage of lactation. In any event, there was sufficient variation among cows within each ration group that differences among groups in average fat tests were not considered to be of real importance. One or more cows in each ration group had lower fat tests throughout the trial than is usually expected.

On the basis of the results obtained to date, it may be concluded that micronizing is equal but not superior to fine grinding as a method of processing grain for dairy cow rations. On the other hand, micronized grain would be expected to have greater feeding value for lactating cows than coarsely ground or dry-rolled sorghum grain.

Table 2. Average Feed Intake and Milk Yield.

Item	Method of processing grain		
	Finely ground	Micronized 30 lb./bu.	Micronized 18 lb./bu.
Feed intake ¹			
Concentrate, lb./day	18.0	18.9	20.2
Hay, lb./day	18.0	18.0	19.2
Milk production			
Yield, lb./day ²	48.2	49.1	48.1
Fat test % ²	3.7	3.4	3.5
Non-fat solids, %	9.10	9.02	9.14
Weight change, lb./8 wk.	16	6	-9

¹ Dry matter basis.

² Averages adjusted by covariance analysis on basis of initial yield and fat test, respectively.