FEEDING BEHAVIOR OF LACTATING DAIRY COWS

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- A method of analyzing the feeding behavior data of confined cows was developed.
- Variables describing the feeding pattern were related to total feed intake, suggesting that particular milking and feeding times may maximize intake and production.

INTRODUCTION

To increase milk production, various management schemes are employed. These include increased feeding frequency, feed processing, manipulation of diet composition, increased milking frequency, control of artificial lighting, and addition of cooling systems. Using one of these management tools, or combinations of two or more, may affect eating behavior. The effect of most of these management tools on the daily eating behavior pattern is not yet known. Dairy producers can use knowledge of animal behavior to improve cow well being and performance.

Our objective was to examine the feeding patterns of lactating cows and determine whether or not there was any relationship between variables describing their feeding behavior and total feed intake, milk production, or milk composition.

MATERIALS AND METHODS

A real-time control system for measuring the individual feed intakes of group-housed lactating dairy cows was used to evaluate feeding behavior. The system consisted of 40 feeding stations, one for each cow. Each station was equipped with an individual identification system, an on-line scale, and a logic controller. The date, entrance time, exit time, and food consumed for each visit were recorded. Later, daily food consumption, number of visits, meal duration, and rate of food intake were calculated from the recorded database. A statistical model, which combined two normal curves, was fitted to cumulative daily consumption data from two months during a summer (Figure 1 – averaged across cows).
The average daily intake was 79.4 pounds (as fed) per day, time spent eating was 170 minutes per cow per day, and 12 visits to the feeder were made daily. The two normal curves explained more than 91% of the variation in feeding behavior (Figure 2, $P < 0.01$). The first peak was at 08:14 A.M. (mean sunrise was 5:08 A.M.) and the second at 4:34 P.M. (mean sunset was 6:18 P.M.).

It was found that the later the second peak in feed consumption occurred, the more visits cows made to the feeder ($r = 0.363, P < 0.02$). The broader the second peak in feed consumption was, the more total feed was consumed ($r = 0.378, P < 0.03$). On average, 61% of the total intake was associated with the first peak.
These results have likely implications for the scheduling of milking and feeding times that will maximize intake and production. Now that a method of analyzing and summarizing feeding behavior data has been developed, further research can be designed to specifically address these issues.