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Review of production responses from cows fed calcium salt of isobutyric and mixed 5-carbon volatile fatty acids

Abstract

Recent developments in dairy cattle nutrition have resulted in the marketing of a calcium salt of isobutyric and mixed 5-carbon volatile fatty acids (IsoPlus®). The FDA approved product has been neutralized with calcium to form a dry salt of the acids, which are found naturally in the rumen. The following review of research results is intended as a guide for feeding IsoPlus®.; Dairy Day, 1986, Kansas State University, Manhattan, KS, 1986;

Keywords

Kansas Agricultural Experiment Station contribution; no. 87-88-S; Report of progress (Kansas Agricultural Experiment Station); 506; Dairy; Calcium salt; Isobutyric; Volatile fatty acid; Nutrition

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REVIEW OF PRODUCTION RESPONSES FROM
COWS FED CALCIUM SALT OF ISOBUTYRIC AND
MIXED 5-CARBON VOLATILE FATTY ACIDS

J. R. Dunham

Background

Recent developments in dairy cattle nutrition have resulted in the marketing of a calcium salt of isobutyric and mixed 5-carbon volatile fatty acids (IsoPlus®). The FDA approved product has been neutralized with calcium to form a dry salt of the acids, which are found naturally in the rumen. The following review of research results is intended as a guide for feeding IsoPlus®.

Research Results

A summary of demonstration trials in 34 commercial herds is shown in Table 1. In these trials, the experimental cows were fed 3 oz IsoPlus® daily either top-dressed or in total mixed rations. The rolling herd average of the farms ranged between 16,038 to 22,500 lb. Forages fed varied from mostly corn silage to mostly alfalfa haylage or hay. The milk production summary includes those cows and heifers in milk at the start of the trials and those cows and heifers that freshened after the beginning of the trials.

Table 1. Summary of demonstration trials in 34 commercial herds

Stage of Lactation	Months after Feeding IsoPlus®	Number of cows	Response, lb milk/day
Cows and heifers all stages	1	1651	+0.7
	2	1434	+1.3
	3	1177	+1.7
Fresh heifers	1	202	+2.2
	2	146	+2.3
	3	75	+2.8
Fresh cows	1	462	+3.0
	2	322	+3.7
	3	161	+4.2

Discussion

As shown in Table 1, the greatest response to feeding IsoPlus® occurred in fresh cows. Fresh heifers were less responsive. University studies have shown an average response of 4.2 lb of 4% fat-corrected milk/day during 305 lactation studies. However, the greatest response from IsoPlus® was during the first 32 wk of lactation, when nutritional stress was the greatest. Feeding IsoPlus® does not affect feed intake, milk composition, or reproduction.

Recommendations

1. Herds producing less than 16,000 lb milk/cow/year should initiate improved feeding and management programs before feeding IsoPlus®.
2. The most economical returns can be expected in high-producing herds with feeding systems that can control intake of IsoPlus® at 3 oz/cow/day during the first 225 days of lactation.
3. The decision to include IsoPlus® in a feeding program should be based upon the cost of the additive in relation to the value of increased milk produced.



Dr. J. R. "Dick" Dunham at work in his office, assisting a dairy producer to balance his dairy ration.