

Sugar Beet By-Product Tested

alternate for molasses palatable to cows when mixed with concentrates and does not affect milk quality

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No off-flavors were imparted to milk through feeding trials with a condensed beet solubles product—MC-47.

Investigations were conducted to determine the effect of the use of MC-47 instead of molasses on the palatability of the resulting dairy mix and the possibility of its causing undesirable milk flavors.

Ten milking cows from the University herd were separated into two equal groups. Both groups were changed abruptly from their accustomed University concentrate mix which contained neither molasses nor MC-47. Each cow in group A received four pounds of a common dairy mix containing 7.5% blackstrap molasses twice daily, 1½ to two hours before milking, for five days. The cows in group B were handled in an identical manner except the mix they received had 10.5% MC-47 replacing the molasses.

Eating time for each cow was determined when the change was made to the experimental mixtures and thereafter at each afternoon feeding.

Samples of milk obtained from each cow both before and daily during the experiment feeding period were analyzed for flavor.

At the end of five days the two groups were reversed and again eating time was recorded and milk samples obtained for flavor tests.

Following the second five-day period, a third group of six additional cows and the five higher producing cows from the combined groups, A and B, were given, at one feeding, 11 or 12 pounds each of the mix containing MC-47. The six cows added to the trial had been receiving the University mix and three of the other five had been receiving the mix containing molasses. All 11 cows were changed abruptly to the mix containing MC-47.

When the mixtures under test were first introduced there was some indication that the cows were reluctant to accept the new feed, which was to be expected because cows are critical of changes in feed.

Individual cows varied in eating time regardless of the mixture. After the second feeding it was impossible to distinguish between the two mixtures as to eating time. The cows receiving 11 or 12 pounds of MC-47 mix at one feeding consumed their feed with relish. None of the feed was refused.

Maximum feed flavor is evident in milk

when a flavor producing feed is consumed by cows one or two hours before milking. Off-flavors can be prevented by withholding such feed during the five-hour period preceding milking.

The experimental feeds containing molasses and MC-47 were fed 1½ to 2 hours before milking.

Flavor tests showed the milk—all samples were identified by code only—to be of the same quality before and after the feed change to the experimental mixtures. The milk produced by the cows receiving the MC-47 mix could not be identified by flavor tests nor distinguished from the milk produced by the cows receiving the molasses mix.

To further test the palatability of MC-47 in combination with other feeds and its possible effect on milk flavor, a feeding trial involving 173 milking cows was conducted in Los Angeles County.

The cows were divided into three groups, each receiving the same basic concentrate mixture and chopped alfalfa hay. One group of cows received hay containing 10% MC-47, the second group was fed hay with 10% molasses added, and the third group received hay containing 5% molasses and 5% MC-47. Thus each group served as a control for the other two. The average daily consumption was 11 pounds of concentrates and 25 pounds of hay per cow. Each cow consumed an average of 2.6 pounds daily of either MC-47, molasses or equal parts of MC-47 and molasses.

At the end of the first 30 days each group was changed to one of the other feeds. This phase of the experiment lasted 15 days and then each group was returned to its original trial mixture.

Group No.	No. of cows	Supplement added to hay		
		Period I (31 days)	Period II (15 days)	Period III (13 days)
1	89	10% Mol.	10% MC-47	10% Mol.
2	42	5% Mol. 5% MC-47	10% Mol.	5% Mol. 5% MC-47
3	42	10% MC-47	5% Mol. 5% MC-47	10% MC-47

Though the groups were changed abruptly from one feed mixture to the other, there was no indication that one was more or less palatable than the others.

No off-flavors were reported—during the entire feeding period—by the dairy

plant to which the milk was shipped and where its average rating was 94%.

In the first trial—conducted at Davis—none of the cows received more than 0.9 of a pound of MC-47 per feeding or 1.8 pounds per day. The cows used in the Los Angeles County trial received an average of 2.6 pounds daily.

Neither trial was designed to investigate the effect of larger amounts of MC-47 on milk flavor nor the effect of a more extended feeding period. The palatability of MC-47 fed alone rather than in combination with dry concentrates or hay was not investigated.

Further studies are planned in an attempt to answer these questions. Trials under way will give information concerning the digestibility of MC-47.

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months when the adult birds were going through the molt. Squab weight on the other hand, was highest when squab number was lowest indicating a negative correlation between squab number and weight. Even though the rate of production was increased considerably by the addition of riboflavin and B₁₂, no decrease in squab weight attributable to this cause occurred in the supplemented pens. The addition of these vitamins to the diet increased squab number without decreasing squab weight.

The addition of vitamins A and D did not appear to add to either squab number or weight. Further tests of these vitamins are needed before the levels contained in the basal diet are considered adequate.

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