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Development of an early weaning program for dairy calves

Abstract

After preliminary experiments, four trials were conducted to develop and test a new feeding program for calves. The program involves the use of a special feed (a prestarter) to encourage calves to eat dry feed and to provide high quality nutrients during the time of initial rumen development. Using this plan, calves were weaned at 2 weeks of age with good results.; Dairy Day, 1984, Kansas State University, Manhattan, KS, 1984;

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K DEVELOPMENT OF AN EARLY WEANING PROGRAM FOR DAIRY CALVES¹**S**J. L. Morrill, A. D. Dayton², A. J. Zmolek³,and M. A. Vitcenda³**U**

Summary

After preliminary experiments, four trials were conducted to develop and test a new feeding program for calves. The program involves the use of a special feed (a prestarter) to encourage calves to eat dry feed and to provide high quality nutrients during the time of initial rumen development. Using this plan, calves were weaned at 2 weeks of age with good results.

Introduction

After calves are weaned, there is a reduction in labor required, less expensive feeds are needed, and the incidence of scours usually decreases. Previous research has indicated that calves could be weaned as early as 3 wk of age with good results. In spite of this, most dairy calves in the United States are weaned at 6 to 12 wk of age. Since the main factor that determines when calves can be successfully weaned is the amount of dry feed consumed, anything that would increase dry feed consumption would help in an early weaning program. We conducted a series of experiments to evaluate the use of a special feed (a prestarter) to stimulate intake and we developed a program for the use of this prestarter.

Experimental Procedure

Preliminary observations indicated that a prestarter composed of milk solids, supplementary fat, and additives (Table 1) increased dry feed consumption if mixed with a calf starter. In Trial 1, 21 bull calves were purchased from local dairy producers and assigned to one of three treatments. Each calf was fed colostrum until 3 days of age, then milk at 8% of birth weight daily, and either prestarter, starter (Table 2), or an equal mixture of the two. Daily feed intake and weekly calf weights were recorded and the health of each calf was monitored. The calves were weaned at 2 wk of age, if consuming 1 pound of dry feed daily.

The results of Trial 1 suggested that a feeding schedule involving the use of changing ratios of prestarter and starter would be advantageous. Three subsequent trials were conducted to evaluate different feeding schedules and methods. In each, bull calves were fed milk or milk replacer and prestarter or starter according to the schedule being evaluated. Feed consumption, weight gains, fecal scores, and other observations of health were recorded.

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Results and Discussion

In Trial 1, calves that were fed prestarter as the only dry feed consumed the most and gained the most during the first part of the trial, those fed a mixture of prestarter and starter consumed most and gained fastest during wk 4 and 5, and calves fed only starter performed best during wk 6 (Table 3). This suggested that a program providing prestarter as the only dry feed at first, then a mixture of starter and prestarter, and finally starter alone would give good results.

During the next three trials we tested various schemes and developed the following program which gave good results when calves were weaned at 2 wk of age.

1. Ensure adequate consumption of colostrum soon after birth and during the first 3 days of life.
2. Provide adequate individual housing.
3. Feed milk or diluted colostrum at 8% of birth weight daily, using an open pail.
4. Stimulate calves to eat dry feed by putting a small amount of prestarter in the milk.
5. Provide prestarter (Table 1) ad libitum.
6. Add palatable, fibrous starter when consumption of prestarter is $\frac{1}{2}$ pound daily, first in small amounts, then increasing to appetite of calf.
7. Wean at 2 wk of age, if calf is healthy and eating dry feed well.
8. Continue to feed $\frac{1}{2}$ pound of prestarter mixed with all the starter the calf will consume to 6 wk of age.
9. Allow access to hay unless starter contains adequate roughage.

Table 1. Composition of prestarter, %

| | |
|------------------------|----|
| Whey, dried | 46 |
| 7-60 ^a | 23 |
| Skim milk, dried | 19 |
| Sodium caseinate | 12 |
| Additives ^b | + |

^aA mixture of milk solids and fat containing 7% protein and 60% animal fat.

^bAdditives provided antibiotics, vitamins, and minerals.

Table 2. Composition of starter, %

| | |
|---|------|
| Corn, ground | 30 |
| Alfalfa, ground | 25 |
| Oats, rolled | 20 |
| Soybean meal | 10 |
| Sorghum grain, rolled | 7.5 |
| Molasses, dry | 5 |
| Dicalcium phosphate | .7 |
| Limestone, ground | .3 |
| Salt | .25 |
| Trace mineral salt | .25 |
| Vitamin and mineral supplement ^a | 1.00 |

^a Provided 1000 I.U. vitamin A, 150 I.U. vitamin D, and .4 mg selenium per pound.

Table 3. Results of Trial 1

| Week | Weight gain (lb) | | | Feed consumed (lb) | | |
|------|------------------|-----------|------------|--------------------|-----------|------------|
| | Starter | 50-50 mix | Prestarter | Starter | 50-50 mix | Prestarter |
| 1 | 3.70 | 4.99 | 6.42 | .92 | 1.28 | 2.60 |
| 2 | 2.86 | 6.42 | 3.15 | 1.89 | 2.82 | 2.99 |
| 3 | 7.26 | 3.15 | 3.85 | 7.00 | 8.40 | 4.55 |
| 4 | 3.85 | 6.84 | 2.29 | 1.39 | 15.16 | 9.53 |
| 5 | 7.83 | 11.97 | 6.71 | 19.07 | 20.79 | 12.54 |
| 6 | 12.98 | 9.55 | 2.42 | 25.59 | 22.90 | 13.86 |