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Early-Weaning of Dairy Calves

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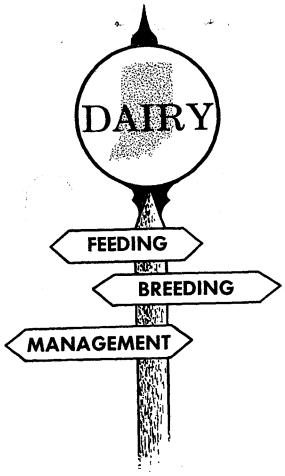

EARLY-WEANING OF DAIRY CALVES

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Summary

Interest in early-weaning systems is stimulated by a desire to reduce the labor and cost of raising calves. Systems that eliminate bucket feeding, use less costly feeds and lend themselves to automatic feeding will reduce both cost and labor. Early-weaning may mean weaning at 3 months to one person, 2 months to another, or even 2 weeks. With any system of weaning, the physiological changes during the development of the calf's stomach and how these changes can be affected by diet must be considered.

The Purdue Agricultural Experiment Station has been conducting studies on raising and feeding dairy calves with special emphasis on early weaning systems. Some very favorable results have been obtained even when whole milk feeding was severely limited. Calves have been fed as little as 58 pounds of whole milk and weaned from milk replacer at 21 days of age.

An early-weaning system should follow a logical pattern of reducing the amount of milk fed. With less milk available, the calf should increase his consumption of starter and, in turn, speed the development of the rumen. However, occasionally a young calf will absolutely refuse to consume a starter and the alternative is to feed more milk.

Early-weaning systems may cut feed costs in half during the first 70 days. Progress is considered normal if the calf gains over a pound daily during the first 70 days. Attention must be given during the first week off milk to determine if starter intake is increasing at a satisfactory rate.

Early Weaning

Early weaning may be defined as a feeding system that shortens the milk or milk replacer feeding period. After weaning, a calf starter is the basis of the calf ration. The length of pre-weaning period depends upon the willingness of the calf to eat solid food and the amount of rumen development. To be successful, early-weaning systems must stimulate early rumen development.

The time to wean the calf can be judged by the amount of starter consumed daily. When the calf is eating from 1 to 2 pounds of starter daily, milk replacer feeding can be terminated safely. Some calves may not readily adjust and it would be best to extend the milk replacer feeding period to 42 days.

Hay is important in starting rumen development. Some calves must be forced to eat hay by limiting the amount of starter or by incorporating coarse ground hay into the starter. Wherever possible it seems best

to incorporate the hay into the starter because digestive upset is less likely to occur.

Holstein calves may be expected to gain from 70 to 90 pounds by the time they are 7 weeks old. This gain may be a little less than that achieved from more conventional systems, but the health and well-being of the calves is entirely satisfactory.

Feeding Programs

Table 1. 21-day weaning system for steer calves, daily feeding schedule (birth weight 70 pounds or more)

Age	Whole milk	Water	Milk replacer	Starter	Hay
days	pounds		pounds		
0-2	On cow				
3-7	6	As needed	--	--	--
8-14	4	As needed	0.5	Free choice	Free choice
15-17	-	As needed	1.0	Free choice	Free choice
18-21	-	As needed	0.5	Free choice	Free choice
22-70	-	Free choice	--	Free choice	Free choice

Table 2. 28-day weaning system for steers and possible herd replacements, daily feeding schedule (birth weight 70 pounds or more)

Age	Whole milk	Water	Milk replacer	Starter	Hay
days	pounds		pounds		
0-2	On cow				
3-7	6	As needed	---	--	--
8-14	4	As needed	0.5	Free choice	Free choice
15-21	-	As needed	1.0	Free choice	Free choice
22-25	-	As needed	0.6	Free choice	Free choice
26-28	-	As needed	0.4	Free choice	Free choice
29-70	-	Free choice	---	Free choice	Free choice

Table 3. 35-day weaning system for herd replacements, daily feeding schedule (birth weight 70 pounds or more)

Age	Whole milk	Water	Milk replacer	Starter	Hay
days	pounds		pounds		
0-2	On cow				
3-7	6	As needed	---	--	--
8-14	4	As needed	0.5	Free choice	Free choice
15-21	-	As needed	1.0	Free choice	Free choice
22-28	-	As needed	0.8	Free choice	Free choice
29-32	-	As needed	0.6	Free choice	Free choice
33-35	-	As needed	0.4	Free choice	Free choice
36-70	-	Free choice	---	Free choice	Free choice

Table 4. 35-day weaning system for herd replacements using whole milk, daily feeding schedule (birth weight 70 pounds or more)

Age	Whole milk	Water	Milk replacer	Starter	Hay
days	pounds		pounds		
0-2	On cow				
3-7	6	As needed	-	Free choice	Free choice
8-21	8	As needed	-	Free choice	Free choice
22-28	6	As needed	-	Free choice	Free choice
29-35	4	As needed	-	Free choice	Free choice
36-70	-	Free choice	-	Free choice	Free choice

Table 5. 42-day weaning system for herd replacements, daily feeding schedule (birth weight 70 pounds or more)

Age	Whole milk	Water	Milk replacer	Starter	Hay
days	pounds		pounds		
0-2	On cow				
3-7	6	As needed	-	-	-
8-14	4	As needed	0.5	Free choice	Free choice
15-21	-	As needed	1.0	Free choice	Free choice
22-28	-	As needed	0.8	Free choice	Free choice
29-35	-	As needed	0.6	Free choice	Free choice
36-42	-	As needed	0.4	Free choice	Free choice
43-70	-	Free choice	-	Free choice	Free choice

Table 6. Composition of starters

Ingredient	Starter				
	1	2	3	4	5
Coarse ground hay a/	-	-	15	30	45.0
Hay pellets	-	10.0	-	-	-
Ground corn	40	35.5	33	30	23.5
Ground oats	25	22.5	21	17	12.5
Soybean meal	23	21.0	20	16	12.0
Dried molasses	5	4.5	4	5	5.0
Dried skimmilk	5	4.5	4	-	-
Steamed bonemeal	1	1.0	1	1	1.0
Trace mineral salt	1	1.0	1	1	1.0
Antibiotic b/	+	+	+	+	+
Vitamin A & D c/	+	+	+	+	+
Total	100	100	100	100	100
Percent crude protein	18	18.0	17.5	15.5	15.0

a/ Good quality legume grass hay ground through a 1 inch hammermill screen.

b/ Enough chlorotetracycline (aureomycin) or oxytetracycline (terramycin) to supply 1,250 milligrams of antibiotic activity per 100 pounds of mixed feed.

c/ Add 500,000 units of vitamin A to each 100 pounds of mixed feed. About 1/10 as much vitamin D is recommended or 50,000 units of D per 100 pounds mixed feed.

Use of Starters

The daily feeding schedules presented in Tables 1 through 5 indicate that starter should be fed free choice--the question is which starter to use. Consideration should be given to using the starters described in Table 6 in one of the following ways.

1. Use starter 1 or 2 until 70 days of age.
2. Use starter 1 or 2 until 42 days then change to starter 4 or 5.
3. Use starter 3 until 42 days then change to starter 4 or 5.
4. Use starter 3 until 70 days of age.

Dairymen may mix starter 1 and then mix this starter with the proper percentage of ground hay. It can then be fed the same as the other starters containing hay.

Hay is provided free choice with all starters, although calves fed starters with hay included will probably consume little additional hay.

Difficulties and Cautions

Remember, what works well for one dairyman may not work for another--all calves do not respond the same way. Starters 1 and 2 are the highest in energy and protein and are usually readily consumed.

However, they do not contain hay, except for the pellets in starter 2, and some calves are reluctant to consume free choice hay. As a result, bloat sometimes occurs.

Bloat has not been observed in calves consuming hay or starters with hay included. For this reason starters containing hay often produce better results because calves are forced to consume a given amount of hay.

The primary objective of early-weaning is to reduce milk consumption by substituting grain and/or hay. Dry feed substituted for milk must be palatable to ensure consumption. If calves do not consume sufficient dry feed the early-weaning system will be unsatisfactory. Calves should eat at least 2 pounds of starter daily by 1 week after weaning.

The first week after weaning is the most difficult. Some calves will do poorly on a milk-feeding program and also on an early-weaning program. These calves will not respond satisfactorily regardless of treatment.

Although starters containing as high as 45 percent coarse ground hay have been successfully used from the first week, they are not recommended. Young calves will have difficulty consuming enough feed because the hay is bulky and their stomach capacity is limited. However, 15 and 20 percent hay starters are satisfactory. Starters with 30 and 45 percent hay are not recommended until after 42 days of age.

Tables 1 through 5 indicate that water should be fed as needed. Calves should receive 1 pound of liquid daily as milk and/or water for each 10 pounds of body weight. During the winter, feed calves a little less liquid the first 3 weeks of life since too much can cause diarrhea. In the summer, it may be necessary to feed slightly more than recommended after the third week. The air temperature and condition of the calf should be considered.

Which feeding program to use will depend on the end result expected. The earlier that calves are weaned the more difficulty one might expect. Yet a dairyman interested in raising dairy beef must keep the cost low; this is possible with the 21- or 28-day weaning systems. For herd replacements, a 35-day system is recommended since it allows a margin of safety. However, satisfactory herd replacements have been reared on 21- and 28-day weaning systems.

Remember, no feeding system will allow the other phases of calf raising to be neglected. Proper housing, strict sanitation and careful observation of individual calves are always required.

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