



Raising Dairy Beef Calves — Feeds and Feeding —

D. G. Waldhalm, R. F. Hall and E. A. Fiez

The beef characteristics of Holstein-Friesian, Brown Swiss and most dairy-beef crosses have been recognized by European feeders and markets for years. Many U.S. producers are responding to the growing demand for this type of animal. As a result, raising baby dairy calves of the larger breeds to 300 or 400 pound feeder calves has become an attractive venture, particularly for the part-time farmer. These ventures have also had problems, particularly nutritional problems. These are a frequent cause of death and poor growth performance. The purpose of this publication is to acquaint the beginner with some basic principles of nutrition and feeding essential to successful rearing of dairy beef calves.

Buying Calves

Large, blocky calves that appear healthy and vigorous will grow most rapidly. Calves should weigh 85 pounds or more. Avoid wobbly calves that may be weak or exhausted from being hauled long distances.

The exact history of age and colostrum feeding can be obtained if calves are purchased directly from a dairy. When this record is not available, select calves that have a dry navel and appear to be free from infection. Day-old calves sold before receiving colostrum may have wet navels and be very susceptible to disease.

A visit with your local veterinarian can help you recognize the many diseases common to your area. If calves are obtained from a single source, exposure to disease may be minimized.

Colostrum Feeding

The newborn calf is born without the protective antibodies that ward off infection and is highly susceptible to disease. Colostrum, the first milk secreted after a cow freshens, provides these antibodies plus many other substances — vitamins, minerals, proteins and energy sources — that are important for good growth and development of the calf. The calf must receive colostrum as soon as possible after birth. Studies conducted at the University of Idaho and elsewhere have shown that the calf loses the ability to absorb antibodies from colostrum by 24 hours of age, less in some cases. Those that aren't fed colostrum usually develop scours and die.

Colostrum can be collected from nearly freshened cows and stored frozen for later use. Frozen colostrum is an acceptable substitute for colostrum from the mother. Do not feed any other milk before colostrum feeding since this will impair antibody absorption. The first milk after freshening contains more antibodies than any successive milkings and should be the colostrum used in the first feeding either directly from the cow or frozen. Frozen colostrum can be thawed by immersing the container in lukewarm water.

One quart of colostrum has been found to be the optimum amount for the first feeding. Subsequently, the calf should receive colostrum from 1 to 3 days after birth. The daily intake of colostrum should equal about 10% of the body weight of the calf and should be divided among 2 or 3 feedings. Overfeeding can cause diarrhea and digestive disturbances. Underfeeding diminishes the calf's ability to grow and develop its own body defense mechanisms.

Whole Milk or Milk Replacer Feeding

The calf is a simple-stomached animal that cannot use hay or grain until it is approximately 3 weeks old. Even though the young calf may eat small amounts of these feeds, it still must obtain its basic nourishment from milk or milk products for the first 5 weeks of life.

Calves may receive whole milk or a milk replacer a few days after birth. The choice of which to feed depends on the convenience and comparative cost of whole milk and a high quality milk replacer. Milk replacer is more practical to feed in calf raising programs separate from dairies. Dry milk replacer powder can be reconstituted with warm water at the rate of 1 pound of replacer to 9 pounds of water. Calves may be successfully weaned from milk or milk replacer at 30 days of age. Calves should be eating at least 1 pound of grain daily for at least 2 weeks before weaning. Calves eating less grain may lose weight and do poorly for several weeks after weaning.

Calves should be fed about 10 to 12% of body weight in pounds of milk per day. Thus, a calf weighing 100 pounds would receive 10 to 12 pounds of milk per day. Table 1 shows a suggested plan that may be used as a guide in feeding your calf for dairy beef.

Table 1 — Suggested pounds of milk or milk replacer to feed daily¹.

Age of calf	Pounds per day (calves weighing 80 pounds or more)
1 day (first 24 hours)	suckles cow, or is hand-fed colostrum
2 to 7 days	8-10 pounds ²
2nd week	10-12 pounds
3rd week	10-12 pounds
4th week	8-10 pounds
5th week	4-7 pounds
6th week	no milk after 4th or 5th week if eating grain well

¹ If scours occur during milk feeding, milk may be withheld or reduced to one-half. Provide an equal amount of water or electrolyte solution to replace the milk withheld.

² One gallon of milk weighs 8.6 pounds.

Regularity in calf feeding is always important. The milk can be divided into two equal feedings, one in the morning and one in the afternoon. Once-a-day feeding is satisfactory if you observe calves frequently to detect and treat sickness before it becomes a serious problem. Consult your county agricultural agent, livestock specialist or veterinarian to help you determine the proper amount to feed and the best feeding schedule.

Disease prevention through sanitation is very important in any feeding program. Buckets, pens and utensils must be washed and kept clean. Access to good, clean water is important even to calves on liquid milk or milk replacer.

Milk or milk replacer may be fed cold or warm. The most important thing is that the temperature be constant. There is some advantage to feeding warm milk or milk replacer if the air temperature is below 40° F. At warmer air temperatures, the liquid temperature appears to make little difference, provided it is kept constant from one feeding to the next.

Selecting A Milk Replacer

In selecting a milk replacer, carefully read the list of ingredients. They will be listed in order of decreasing amounts. High quality milk replacers contain feeds that the calf can use with maximum efficiency. Milk by-products are nutritionally superior sources of protein for young calves over plant, fish and animal products in milk replacers. These milk products include skim milk powder, dried whole whey, casein and dried buttermilk or buttermilk powder. Other milk products can be found on milk replacer ingredients lists. Limited amounts of vegetable proteins, some specially processed, are acceptable ingredients.

Fat is also included in milk replacers. Animal fat is the usual ingredient. A wide variety of ingredients appear on milk replacers. Carefully evaluate the first few ingredients, since they usually make up the majority of the milk replacer. Table 2 is an example of a high-quality milk replacer containing milk by-products as principal ingredients.

Table 2. Example of label information for a high-quality milk replacer.

Calf Milk Replacer	
<i>Medicated</i>	
Active Drug Ingredient: Chlortetracycline - 10 grams/ton	
GUARANTEED ANALYSIS	
Crude protein, not less than	24.00%
Crude fat, not less than	10.00%
Crude fiber, not more than	0.25%
Ash, not more than	9.00%
Moisture, not more than	5.00%
Vitamin A (USP)	units per pound 20,000
Vitamin D ₃ (IC)	units per pound 5,000
INGREDIENTS	
Dried skimmed milk, dried whey, dried milk protein, animal fat (preserved with BHA, propyl gallate, citric acid and propylene glycol), soy lecithin, Vitamin A palmitate, d-activated animal sterol (source of Vitamin D ₃), Vitamin E supplement niacin, sodium silico aluminate, manganese oxide, ethylene diamine dihydriodide, zinc oxide, copper oxide, cobalt carbonate, iron carbonate.	

A guaranteed analysis is required on all milk replacers (See table 2). Crude protein should exceed 22% with crude fat at least 10%. The fiber content is important. Crude fiber should not exceed 3% with levels less than 1% preferred.

Base your selection of a milk replacer on guaranteed analysis and ingredients, not only on price.

Solid Feeding

Calves should be offered grain at 3 to 5 days of age. Commercial calf starters are available and usually range from 16 to 20% crude protein. If you plan to prepare your own calf starter, many suggested mixtures are available. Calves require little roughage during the early growth period. They should be consuming over a pound of starter grain per day at the end of the liquid feeding period (4 to 6 weeks).

Increase the starter grain to 4 to 5 pounds per day until the calves reach 3 months of age (200 to 250 pounds). At this age and weight, they can be switched to a lower crude protein (12 to 15%) grower mixture. Grain feeding should continue with the amount held at 4 to 5 pounds per day. Roughages can now become more important in the ration.

Problems and questions will arise that are not covered here. Your county agricultural agent and your veterinarian are always good sources of additional information.

The Authors — D. G. Waldhalm is associate professor of veterinary microbiology and R. F. Hall is Extension veterinarian and veterinarian in charge, both at the University of Idaho Veterinary Research Lab, Caldwell, and E. A. Fiez is associate professor and District II Extension Dairy Specialist, Southwest Idaho Research and Extension Center, Caldwell.

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