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Raising Calves on Stored Colostrum

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Colostrum milk is good feed for calves of any age. Currently, it has no market value. So there is great advantage in storing excess colostrum for calf feeding. Refrigeration and freezing is the best method of storing colostrum but is also the most expensive.

Many dairy producers find that colostrum can be allowed to sour, then be fed to calves from two to four days of age until weaning. Gains on sour colostrum have not been as good as on fresh or frozen colostrum nor on whole milk, but frequently have been better than from milk replacers. Many dairy producers report fewer cases of calf scours and digestive disturbances when sour colostrum is fed.

Calves need colostrum

Every newborn calf needs colostrum. It is important as the first feed to condition the digestive tract and to give the calf resistance to disease. Disease resistance is provided by the presence of immunoglobulins in the first milk of the dam and the ability of the calf to absorb these antibodies during the early hours of its life. This ability declines and disappears about 24 hours after birth. Consequently, the earlier the calf receives colostrum, the greater will be its benefit.

A calf should receive colostrum in an amount equivalent to 3 to 5 percent of its body weight within four hours following birth. If it cannot nurse its dam, it should be fed by nipple bottle or pail. Following this feeding, the calf should receive no more than 4 percent of its body weight per feeding, twice daily, preferably for 36 to 72 hours.

If milk from its dam is not available, colostrum from another cow freshening at the same time, or fresh, frozen colostrum stored for such an eventuality may be used. A blood transfusion from the dam and antibiotic treatments also have been used. But none of these will provide the degree of success achieved when colostrum is available, and a higher mortality rate also can be expected.

Table 1 provides a comparison of the composition of colostrum with that of normal milk. Antibody content, protein and milk solids decline rapidly after the first 12 hours. Milk produced after 36 to 48 hours approaches the composition of normal whole milk.

Table 1
Composition of colostrum and whole milk

	Water	Protein	Fat	Ash
Colostrum	74.5 percent	17.6 percent	3.6 percent	1.7 percent
Whole milk	87.0 percent	3.3 percent	4.0 percent	0.7 percent

Storing and feeding colostrum

Milk produced within 72 to 96 hours after freshening cannot be marketed. During this period most dairy cows and heifers produce more milk than the calf needs. Frequently, 70 to 150 pounds of milk is available. If stored, it can be used to provide half or more of the milk needed to raise a heifer calf to weaning age.

Colostrum can be allowed to sour, stored for up to four weeks and fed to a calf after the calf has received several feedings of fresh colostrum from its dam. Success with this system depends on following some simple rules.

Be sanitary

Success of the soured colostrum system depends on the formation of lactic acid by natural bacterial fermentation. Filthy milking practices, unclean containers and unsanitary storage conditions can cause undesirable bacterial contamination and sick calves. Start with clean utensils and storage containers. Wash and sanitize after each use.

Handling stored colostrum is somewhat messy. Don't add to the problem by following haphazard and sloppy methods.

Choose containers that are convenient

Old milk cans and 20-gallon garbage containers have been used satisfactorily. Using a plastic liner prevents corrosion in metal containers and reduces cleaning chores. Gallon plastic jugs marked with the date of filling can be easily handled and provide one feeding for three or four calves that are fed twice daily.

Don't use mastitic milk or milk from cows treated with antibiotics

Fermentation failure or undesirable fermentation will result. Milk from cows that have received dry treatment at least two weeks prior to freshening probably will ferment normally. (Colostrum from cows treated with antibiotics can be fed fresh or be used to extend fermented colostrum at time of feeding.)

Not all colostrum will ferment properly. Occasionally adding a clip of buttermilk to a fresh supply may be advisable to inoculate the batch. Then successive batches can be seeded from this supply.

Store in a cool dark place

Temperatures of 40 to 80 degrees Fahrenheit are ideal; protect from freezing. At higher temperatures, mold formations, decomposition of protein and higher acidity occur more rapidly. Calves may reject colostrum that is highly acid and has separation of whey and curd. The addition of some organic acids such as propionic and formic and low concentration of formalin show promise in preserving colostrum at higher temperatures.

Stir or mix daily

This prevents clotting or separation of the whey and curd. Use a clean wooden paddle. If you use plastic liners, stir gently or liners will split or tear. Keep containers covered. Gallon jugs can be agitated by shaking if a small amount of space is left at time of filling. A small amount of mold can be tolerated. However, dispose of any supply on which a large amount of mold growth occurs.

Don't store more than four weeks

In summer, be prepared to use the supply in less time. In summer the use of a colostrum preservative may be beneficial to limit and maintain the pH or acidity of the colostrum.

Colostrum from several cows can be mixed

The best practice is to use a different container every three days, or if you skip a day in adding to the supply, use another container.

Sour colostrum can be extended by adding milk or milk replacer at feeding time

If the supply is insufficient to feed the calf through weaning, blend whole milk or milk replacer with the sour colostrum for four to five days before switching to milk or milk replacer. Avoid abrupt changes in feeding habits and procedures.

When milk is stored in small containers, such as a gallon jug, there is less opportunity to blend the supply so that a greater variation in protein and dry matter content can occur from one container to another.

A mixture of two parts sour colostrum and one part warm water is normally fed each day in an amount equal to 6 to 10 percent of the birth weight of the calf. Warm water is preferred because it aids in the mixing. It is wise to feed the sour

colostrum water mixture at the same temperature and times, twice daily, although healthy calves can be fed on a once-a-day schedule if it results in a savings in time.

If scours occur, reduce sour colostrum feeding by one-half or discontinue feeding for a day. After a day, increase sour colostrum feeding gradually. Never force a calf to consume all that is offered. If part of a feeding is refused, don't feed more in an effort to catch up. It's better to reduce the next feeding slightly.

Once the calf is on sour colostrum, the amount fed need not be increased. Provide a palatable fresh calf starter containing 18 to 20 percent protein within a week after the calf is born. The calf can be weaned when at least 1-1/2 pounds of starter is consumed daily.

Water should be available or offered twice daily, although it is best not to water immediately following the feeding of milk. A calf that fills up with water immediately after a feeding of milk may not consume starter.

Occasionally a calf will refuse to accept sour colostrum feeding. Some dairy producers start feeding the fermenting colostrum as soon as the calf is removed from the cow. By doing this, the colostrum will contain less acid, and it is believed this helps teach the calf to consume the soured product.

Don't feed more calves than there are cows contributing to the sour colostrum supply. There simply won't be enough sour colostrum to justify starting the calf on sour colostrum and then having to switch to whole milk or milk replacer.

Steps in raising calves on sour colostrum

- The newborn calf must have adequate feeding of fresh colostrum.
- Continue feeding fresh milk from dam for at least three days.
- At each feeding, milk surplus from the cow and store it.
- Don't store bloody or mastitic milk or milk from cows receiving intramammary infusion of antibiotics. Dry cow treatment given more than two weeks prior to freshening will not adversely affect fermentation.
- Store in a milk can or 20-gallon plastic garbage pail. A disposable plastic bag to line cans or pails aids in keeping supply clean. This simplifies cleaning the container.
- Milk from one or more cows may be stored in the same container. Don't accumulate more than three day's production in one container. Or, if you skip a day in filling, start another container.
- Stir daily. Mix well before using.
- Use two parts sour colostrum with one part warm water.
- Start feeding this mixture at a rate of not more than 6 percent of the calf's birth weight daily, divided into two feedings. Once calf is on feed, some limit daily feeding of sour colostrum and water mixture to 8 percent of birth weight and encourage the calf to consume dry calf starter.
- Never force the calf to consume all that is offered. If part of the feeding is refused, feed slightly less at the next feeding.
- At seven to 10 days, healthy calves can be fed once a day. But check them at least twice daily. Be sure water is available.
- Wean when the calf is regularly eating at least 1-1/2 pounds of starter per day.
- Hay feeding may begin after the first week or be delayed until weaning.
- Keep colostrum clean; discard after 4 weeks or if heavy mold growth occurs.
- Thoroughly clean equipment after each feeding and containers after each batch.

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