

Calving Ease

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Thirty Minutes to Feed or Chill Colostrum

- **Growing bacteria in colostrum is easy.**
- **Cleaning is not easy but it hammers inoculation.**
- **Within 30 minutes after colostrum comes out of the cow our goal should be to either feed it to a calf or chill to 60°.**
- **Chilling in ice-water works well especially for containers of 4 quarts or less.**
- **Chilling with containers of ice directly in the colostrum works well at the ratio of one part ice to four parts of colostrum.**

Growing bacteria in colostrum is easy

Start with warm Colostrum directly from the cow. It has most of the ideal characteristics for growing bacteria – an ideal temperature, lots of available nutrients and an appropriate pH level.

Do an inadequate job of cleaning off the fresh cow teats – leave behind plenty of coliform, Staph species and Strep species bacteria when wiping off the teats. Then, use a collection bucket with a scum on the inside surface – lots of bacteria live in that scum, ready to inoculate the fresh colostrum.

Within about 30 minutes after we collect colostrum (technically a “lag phase” where bacteria accommodate themselves to a new growth medium) the bacteria are ready to grow, grow and grow.

Cleaning is not easy but it hammers inoculation

The most obvious route to take to avoid high bacteria counts in colostrum is to minimize inoculating it at collection time. Sure, we all know about the teat preparation protocol for a fresh cow: dip, wait 30 seconds, wipe, dip second time, wait, wipe, scrub teat end. But are we being careful to minimize collection bucket contamination? Cleaning buckets is good but a “pre-use” sanitizing step is also a best management practice.

Putting the brakes on growth if we are not going to feed immediately

Take advantage of an inexpensive procedure to arrest the rapid growth of bacteria in colostrum – lower the temperature. For colostrum that we do not intend to feed within 30 minutes after it is collected our goal should be to lower the temperature from cow body temperature (about 102°) to 60° within 30 minutes after it comes out of the cow.

No chemicals to purchase, store and measure. No issues with palatability of “treated” colostrum. Just suck the heat out of it. Recall that at cow body temperature coliform bacteria double in numbers about every 20 minutes.

However, at 60° this doubling takes roughly 150 minutes – two and one-half hours – giving a refrigerator lots of time to chill it.

How NOT to rapidly chill colostrum

Placing warm colostrum into a refrigerator or freezer will NOT chill colostrum rapidly enough to significantly slow down bacteria growth. In a series of trials I documented the time required to chill 90° colostrum to 40° using household refrigerators. One gallon of colostrum required 11 hours to go from 90 to 40. Three gallons took 18 hours and five gallons took a whopping 23 hours to chill to 40.

Remember, our goal is to chill colostrum to 60° in the 30 minutes before bacteria begin to grow. Rapid chilling is the name of the game.

Ice-Bath Method

Sounds pretty simple. Get large container for bath, water, ice and containers of colostrum. There are a few tips that will help make this successful.

1. Always use water – just placing colostrum containers in a tub with ice is less effective than ice water.
2. Maintain some ice in the water all the time – that will hold the solution just above freezing for effective chilling.
3. Some folks report freezing big “hockey pucks” of ice using containers they make by cutting off the bottom two inches of gallon jugs.
4. Smaller containers for colostrum (for example 2 quarts) will speed up chilling compared to one large five-gallon plastic bucket.
5. If available, metal containers transmit heat more rapidly than plastic ones.

Ice-Bottles Method

Use the ratio of one part ice to four parts of colostrum. One quart of ice in a clean plastic bottle placed directly into four quarts of colostrum. Using clean plastic bottles (for example, empty bottles from chocolate milk or soft drinks) fill them $\frac{3}{4}$ full of water and freeze. Immediately after collecting colostrum estimate volume and add the appropriate volume of ice bottles. A few tips to make this work well:

1. It is easier to keep the outside of bottles clean if they are not used too many times.
2. Always remove any plastic wrappers on the outside of the bottles – it’s impossible to keep outsides clean with them in place.
3. Only fill $\frac{3}{4}$ full of water – more water will expand and burst bottles in the freezer.
4. If you have a large collection bucket consider placing 2 or 3 quarts of ice in the bucket before collecting the colostrum – that way you don’t have to remember to add ice later when other tasks often divert our attention.

If you know of someone that doesn’t currently receive Calving Ease but would like to, tell them to WRITE to Calving Ease, 11047 River Road, Pavilion, NY 14525 or to CALL 585-591-2660 (Attica Vet Assoc. office) or FAX (585-591-2898) or e-mail calvingease@rochester.rr.com with Subscribe as the subject. Back issues may be accessed on the Internet at either www.atticacows.com or www.calfnotes.com and clicking on the link, Calving Ease.

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Remember to search for “Calves with Sam” blog for profit tips for calf rearing.