

# Calving Ease

October 2018

By Sam Leadley of Attica Veterinary Associates



## Is “Waste Milk” Good for Calves?

- What is “Waste Milk?”
- Quality characteristics of nonsaleable milk
- Strategies for getting the most growth from nonsaleable milk feeding
- Special considerations for weaning when feeding nonsaleable milk

### What is “waste” milk?

It is common to refer to this milk that cannot enter the market milk supply as either “waste” milk or “nonsaleable” milk. Its exclusion from the market milk supply is based on physical characteristics (e.g., bloody, unacceptable consistency) or biological content, most often the presence of prohibited antibiotics.

### Quality characteristics of nonsaleable milk

One characteristic of nonsaleable milk that shows up in every assessment is high levels of variability for every measure: total solids, fat level, protein level, bacterial contamination. Total solids levels in one study of milk at a calf ranch showed variation from day-to-day from 5.1 to 13.4 percent solids. Factors associated with this variation were (1) addition of flush water to the receiving tank before sanitizing the milking system, (2) poor/inconsistent agitation of the stored milk going into the pasteurizer, (3) wide variations in fresh cow vs. treated cow inventory in sick pens.

Other work focused on fat and protein variation among dairies in CA, WI and NY. They found fat levels as low as 1.2% and as high as 12.1%. Protein levels varied from 2.7% to 4.7%.

Survey data suggest average values for this milk:

- Fat (% of DM) 31%
- Fat (% whole milk) 3.9%
- Protein (% of DM) 28%
- Protein (% whole milk) 3.5%

Bacterial contamination can be an issue in the raw nonsaleable milk supply. The Wisconsin data show an average standard plate count of 8.8 million cfu/ml with the range from 6,000 to 72,000,000. Another study of 3 eastern dairies showed 2 with raw SPC counts in the neighborhood of 700,000cfu/ml and 1 with consistent counts over 50,000,000cfu/ml. However, other data show pre-pasteurization counts as low as 6,000cfu/ml. At one time in the dairy where I cared for and fed calves we transported waste milk in plastic milk cans (10 gallons). We added two gallon plastic jugs of ice to each can as the milk came from the plate cooler – the milk seldom warmed above 50° by the time it was warmed to feed calves. So,

it is probably possible to harvest and store waste milk with a low bacteria count but most dairies are likely to have very high bacterial contamination in their raw waste milk.

### **Strategies for getting the optimum growth from nonsaleable milk feeding**

First, test – don't guess. If the nonsaleable milk bacteria counts are above 5,000cfu/ml coliform bacteria and 50,000cfu/ml total plate count either feed milk replacer or pasteurize the nonsaleable milk before feeding.

Second, accept the fact that total solids content of nonsaleable milk will fluctuate daily, and even from batch to batch. Test – don't guess. Use a Brix refractometer to test for total solids. Work with your nutritionist (they sell milk balancer products) to develop a “test & supplement” guide or table. Keep a supply of supplemental product on hand in order to deliver a consistent total solids product every feeding.

Third, if pasteurizing nonsaleable milk, keep Murphy's law in mind – “if anything can go wrong, it will.” Survey results suggest industry-wide on-farm failure rates for pasteurization in the range of 10 to 15 percent.

Fourth, just because the milk comes out of the pasteurizer with a low bacteria count does not mean that the milk fed to the calves will be equally clean. Survey results show very high rates of post-pasteurization contamination. Milk handling after pasteurization can have a huge effect on bacterial contamination – I have seen bacteria counts go from <5,000cfu/ml directly from the pasteurizer to >100,000cfu/ml by the time the first calf was fed! Cleaning protocols are essential and compliance to protocols has to be high.

### **Special considerations for weaning when feeding nonsaleable milk**

If you look back on page one of this letter you will be reminded that the average fat content on a dry matter basis of nonsaleable milk is estimated around 31%. That is a lot higher than the average dry milk replacer on most dairies – often 20%. At high feeding rates (for example, 8 quarts of whole milk daily) this is a lot of energy. In my experience, effective weaning programs when feeding large volumes of nonsaleable milk include a longer than average “step-down” milk feeding schedule.

Usually milk volume fed is “stepped-down” rather than abrupt weaning. A common step down program drops one of two daily milk feedings (or when feeding 3 times daily, one feeding is dropped with a second feeding dropped a few days later). When this decrease in energy from milk is experienced by calves they almost always bump up their calf starter intake to make up the difference. I used 14 days for my intensively fed calves in order to get my calf starter intakes up in the 5 to 6 pounds daily range before complete weaning.

References: Moore, D.A. and Others “Quality assessments of waste milk at a calf ranch.” Journal of Dairy Science 92:3503-3509 Elizondo-Salazar, J.A. and Others “Evaluation of calf milk pasteurization systems on 6 Pennsylvania dairy farms.” Journal of Dairy Science 93:5509-5513 Jorgensen, M.A. and Others “Case Study: A field survey of on-farm milk pasteurization efficacy.” The Professional Animal Scientist 22:472-476. James, R. and C. Scott “Are you considering a milk pasteurizer?” Hoard's Dairyman November 2007.

Thanks to Trow Nutrition USA for supporting this issue.

More information on their products is at <https://www.lifestartscience.com/en/ruminants/nutrition-article-overview/> or click [HERE](#)