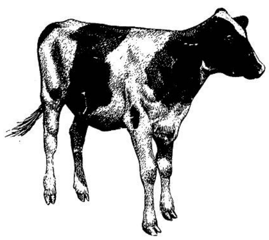

CALF SUCCESS

Timely Dairy Calf Topics to Help You Be Successful

HUBBARD DAIRY SERVICES

Extending Whole Milk

Introduction

The commercial availability of on-farm pasteurizers has allowed producers to manage the numerous risks associated with feeding non-saleable milk (i.e., waste milk) to preweaned calves. Pasteurized waste milk can be a high-quality feed for preweaned calves provided that proper pasteurization procedures are followed, some of which include regular monitoring of pasteurizer performance (reduction of bacteria count), maintenance of strict pasteurizer sanitation practices, and proper pre- and post-pasteurization milk storage practices to control bacterial growth prior to feeding. Additional challenges with implementing a pasteurized waste milk feeding program involve managing the daily variation in nutrient composition and waste milk supply short-falls.

Variation of Waste Milk Composition and Supply

The nutrient composition of waste milk can vary considerably over time due to the population of cows contributing to the waste milk supply; fresh cows (transition milk), cows with mastitis, and (or) cows being treated for illness may produce milk with markedly different composition compared with saleable milk. An additional source of variation may be milking parlor procedures for the hospital cows, which can result in the addition of water to the waste milk thereby diluting the nutrient concentration.

Protein and energy intake (fat and lactose) by calves fed pasteurized waste milk can differ a great deal due to the variation associated with waste milk composition. For example, Jorgenson et al. (2005) sampled pasteurized waste milk from 31 commercial dairy and calf rearing operations, and found that fat (22.3 to 37.6% of dry matter), protein (23.1 to 40.8%), and lactose (30.2 to 38.4%) concentrations varied considerably. Variation in fat intake may affect calf starter intake, whereas variation in total nutrient intake may affect the incidence of nutritional scours in young calves. Providing a consistent ration to young calves is ideal. Total solids can be measured quickly with a refractometer and appropriate adjustments can be made to maintain total solids intake. However, predicting, monitoring, and adjusting for the daily variations in fat, protein, and lactose content within the total solids component of waste milk is often impractical on-farm.

Waste milk supply may be inconsistent as well. The total supply of waste milk is influenced by factors such as herd health status (i.e., incidence of mastitis, metritis, etc.) and the number of cows calving. A field study conducted in North Carolina demonstrated that the waste milk supply fluctuated markedly; a fluctuation of 300 lbs/day in a 2 week span of time was common (James and Scott, 2006).

The amount of waste milk required varies among farms due to milk feeding rate and weaning age, whereas variation within farm is influenced by the number of calves on milk at a given time (Jones et al., 2008). While recognizing that a major goal of a dairy should be to decrease the supply of waste milk, it is essential to have an appropriate plan in place to deal with waste milk supply shortfalls in order to maintain as much consistency as possible for your calf nutrition program.

Options for Extending Waste Milk Supply

There are a number of options available for managing waste milk supply shortfalls. Here is a partial list of possible strategies:

Extend waste milk supply with saleable whole milk

Extending waste milk supply with saleable whole milk is generally not an economically-sound decision, because this milk will generate revenue if sold and milk replacer solids are typically less expensive than saleable milk solids. For example, if saleable milk is worth $20/cwt with a composition of 12.5% total solids, a pound of whole milk solids is worth $1.60/lb ($0.20/lb ÷ 0.125 lbs solids). Conversely, if a 50-lb. bag of 20:20 milk replacer costs $60, then a pound of milk replacer solids costs $1.23 [($60 ÷ 50 lbs)/97% dry matter). This calculation does not account for processor premiums paid for fat and protein, therefore the comparison may be even more favorable for using milk replacer in place of saleable whole milk to deal with waste milk supply shortfalls.

Increase waste milk supply by withholding milk from high somatic cell count (SCC) cows
Milking high SCC cows into the waste milk supply can make economic sense if bulk tank SCC drops enough to qualify for processor premiums, although careful analysis of production records is required to determine if this is a profitable approach to increase waste milk supply.

Phase feeding – feed milk replacer to younger calves (< 3 weeks of age) and feed waste milk to older calves (> 3 weeks of age)
Phase feeding offers several advantages, such as reducing the risk of exposing young calves to pathogens that may survive pasteurization as well as improving nutritional consistency. Using a high-quality milk replacer for the youngest calves improves biosecurity while allowing for more consistent nutrition. Older calves are more tolerant of nutritional inconsistency associated with waste milk and are less prone to develop infectious scours if there is a pasteurizer failure or if post-pasteurization storage practices allow for significant bacterial regrowth.

Extend waste milk supply with a nonmedicated milk replacer or a whole milk extender
Extending waste milk with a nonmedicated milk replacer or whole milk extender is a sound approach, both nutritionally and economically. This approach is convenient because these products can be stored for extended periods of time for use when necessary. However, milk replacer selection (protein/fat ratio and mixing characteristics) and mixing rate are important considerations when extending waste milk. According to the NRC (2001) calf submodel, a 20:20 milk replacer mixed at 1 lb powder per gallon of water results in declining protein and energy allowable gain as waste milk is replaced by an equivalent volume of milk replacer solution. Conversely, a 20:20 or 22:20 nonmedicated milk replacer mixed at a rate of at least 1.25 lbs (20 oz.) of milk replacer powder per gallon of water results in acceptable protein and energy allowable gain predictions compared with a 100% whole milk ration.

Take-Home Messages
Waste milk composition and supply can vary considerably from day-to-day or week-to-week depending on a number of factors.

A nutritionally-sound approach for dealing with waste milk supply shortfalls must be identified and implemented to maintain consistent nutrition for young calves.

Milk replacer is an economical source of nutrients with which to supplement pasteurized waste milk compared with using saleable whole milk. Milk replacer can be used in a phase-feeding system or used as a pasteurized waste milk extender.

If pasteurized waste milk is extended with milk replacer, a 20:20 or 22:20 nonmedicated milk replacer mixed at 1.25 lbs/gallon are appropriate products to use based on predictions of the NRC (2001) calf submodel.

References
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