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Information for Today's Agri-business Professional

The importance of the protein-to-fat ratio

Imagine walking a tightrope in the circus. It's a lot like feeding whole milk to your preweaned calves. If any components are out of balance, your calves could fall short on your performance goals.

Whole milk's performance varies; balancers may help

Many dairies and calf ranches report show-stopping results for growth and health when raising calves on whole milk. In fact, nearly half of all dairy calves raised in the U.S. are fed a ration containing whole milk during at least part of the preweaning stage.

Whole milk is an excellent feed source, made by Mother Nature and intended for calves. However, it does have its shortcomings. Bacterial contamination is a major concern, which many farms have addressed by implementing calf milk pasteurization systems.

Sourcing whole milk to consistently meet calves' sensitive and specific needs can also be a challenge. Some reasons for inconsistencies in whole milk may include:

- Whole milk from fresh cows and treated cows tends to fluctuate in milk quality. For example, first-milking colostrum averages about 24-28 percent solids, compared to about 12.5 percent solids for standard whole milk. Transition milk will fall somewhere in between, but it is still higher in solids than whole milk.
- Conversely, a large percentage of cows with mastitis or other illnesses contributing to a batch of whole milk could result in the milk being lower in solids than standard whole milk.
- On-farm parlor management or pasteurization procedures could result in flush water being added to whole milk.
- Whole milk may not be agitated as frequently as salable milk, resulting in inconsistent solids distribution.

Calves thrive on consistency and highly inconsistent solids levels in whole milk could result in inconsistent starter intake, growth and performance.

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In addition to varying solids levels, we're also learning more about calf growth when protein is fed at higher levels than standard whole milk contains. On a dry matter basis, whole milk usually contains about 25 to 28 percent protein and 28 to 30 percent fat.

The more we study calf performance with higher protein rations, we learn elevating the protein level above the fat level in calves' liquid rations results in:

- Greater lean tissue development and less fat deposition
- More efficient utilization of nutrients

These results help achieve:

- Higher average daily gain
- Lower cost per pound of gain
- Maximized return on investment (ROI)

Much of this knowledge is the result of evaluating accelerated feeding programs for preweaned calves. These programs are most successful when they contain more protein than fat. If fat levels are too high, the result is shorter, fatter calves that do not consume starter as well. Excess fat in the liquid ration is an important consideration because consumption of dry feed can boost total nutrient intake, aid in rumen development and help calves transition to weaning more successfully. A good guideline is to maintain a protein to fat ratio higher than 1. In other words, the ration should contain more protein than fat. Higher feeding rates will require more protein than lower feeding rates, which will also vary in cold weather. Consult with your calf nutritionist to evaluate the right level for your calf growth goals.

Balancers bring consistency

Whole milk balancer products are made to effectively regulate consistent solid levels and achieve an ideal protein to fat ratio in liquid calf rations. Most balancers contain a much higher level of protein than fat, which makes it easy to elevate the protein level in the overall ration.

Balancers can be added to pasteurized whole milk, usually in conjunction with some supplemental water. Choosing the proper level of balancer supplementation requires measuring whole milk solids, with a tool like a Brix refractometer, then adding balancer powder and water accordingly.

If the solids content measures below 12 percent, you will want to add balancer to normalize solids levels. Balancers also can be used to elevate protein levels with a goal of increasing growth performance and feed efficiency. Water added to whole milk will dilute both fat and protein, therefore adding a high protein balancer achieves your desired ratio. Be sure to evaluate solids *before* pasteurization, but add balancer and water *after* pasteurization. It is advised not to exceed 15-16 percent total solids to protect digestive health in calves unless abundant fresh water is always available.

Your nutritionist, veterinarian or feed supplier can help create an easy-to-follow chart for calf feeders to determine the correct amount of supplemental balancer and water to use based on solids evaluation and your nutrition program goals. Many feed suppliers even have an app that works on a smartphone or tablet to help with these calculations.

Balancer products also contain supplemental vitamins and trace minerals, since whole milk is deficient in many of these substances according to National Research Council (NRC) guidelines for preweaned calves. These can include iron, manganese, copper, iodine, cobalt, selenium, vitamin D and vitamin E. Some balancer products contain additional additives, such as coccidiostats to help control coccidiosis and feed-through larvacides for fly control.

By consistently delivering the correct level of solids in your calves' liquid ration and boosting protein content above fat levels, your future herd replacements stand an excellent chance of delivering a commanding performance. They are more likely to enter the milking string as a uniform group, at an efficient age and be poised for outstanding production in the milking parlor.

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