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Balancing Milk: the "Liquid TMR"

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You've probably heard or read it 100 times or more – cows love consistency.

Numerous research studies and on-farm experiences show dairy cows perform better with day-to-day sameness in their care and routines – the way they are milked, the stalls they lie in, the number of hours they rest and even the number of times they drink water.

Probably the most often-cited call for consistency is in the dairy cow's diet. Ideally, every bite of TMR should taste the same, contain the same nutrients and be composed of the same particle sizes. Dairy managers and nutritionists go to great lengths to ensure this happens consistently. But what about the preweaned calf "TMR?" Does this diet deserve the same level of attention?

The "liquid TMR"

As it turns out, yes: calves need the same degree of consistency in their daily milk feedings. Considering their rapid growth and developing digestive systems, that day-to-day regularity might be even more important for calves. Think of their milk diet as a "liquid TMR." It contains a complete package of nutrients to deliver exactly what growing calves need, at every feeding, every day.

But if you're feeding whole milk, consistency can be more challenging to achieve. The very nature of whole milk can make it an inconsistent product. On any given day, it may contain a high level of solids if many fresh cows have contributed to it, or very low solids if flush water happens to be mixed in.

Here's how to evaluate calf rations and adjust them to deliver the same desired consistency as a lactating cow TMR:

Testing

Just as you should regularly test forages, commodities and byproducts for their nutrient value and moisture levels, every batch of whole milk should be tested and the ration balanced according to the results. A Brix refractometer is a handy, on-farm testing tool you can use to estimate solids content of whole milk in a matter of minutes. To create a consistent liquid ration containing the ideal level of nutrients for efficient calf growth, whole milk may require supplementation with the following:

- **Balancer –** Balancer products usually add a higher level of protein and minimal amount of fat to adjust the solids level in whole milk to help meet your nutrition goals. The addition of a balancer can be used to adjust the total solids level and volume of a batch of whole milk. Balancers also are fortified with vitamins and minerals, and may contain coccidiostats and/or larvacides for disease and pest control. As you likely make management changes to help your cows cope with cold and heat stress, balancers can be used to adjust rations to do the same for your calves.

- **Fortifier –** When compared to National Research Council (NRC 2001) nutritional guidelines for dairy calves, whole milk – even at correct solids levels – is deficient in a number of vitamins and trace minerals. Just like a mineral pack added to a TMR, adding a pasteurized milk fortifier can bring these nutrients up to NRC-recommended levels. And, like balancers, fortifiers also can add a coccidiostat and/or feed-through larvacide to the liquid ration.

- **Extender –** Sometimes the supply of whole milk you have available is not enough to feed all your calves, especially when providing a full-potential diet. Whole milk extender products are used to increase the volume of balanced whole milk. They also provide a minimal level of vitamins and trace minerals, but are not typically used to change the solids content or the protein-to-fat ratio of the whole milk supply.

A balancer type of product can achieve the objectives of a fortifier and an extender in one powder. Using the Brix refractometer to test every batch of whole milk is recommended. Be sure to evaluate for solids levels *before* pasteurization and add enhancer products *after* pasteurization.

Monitor performance

You routinely monitor herd milk production and component levels to measure the success of your lactating cow ration. So, why wouldn't you do the same for calf performance?

The Dairy Calf and Heifer Association's Gold Standards for calf and heifer development provide benchmarks for replacement heifer weight gain and stature growth. Among them are calves doubling their birth weight and growing 4 to 5 inches in stature by 56 days of age. Routinely weighing and measuring calves can help you assess whether your nutrition program is allowing you to reach the growth benchmarks established for the industry and your own calf program goals.

Adjust accordingly

You change your lactating herd TMR when milk or component production is disappointing. If you find your calves are not hitting your growth and/or weight-gain benchmarks, changes to the "liquid TMR" may be in order. If, for example, heifers are hitting weight goals but not stature targets, the milk diet may be too high in fat. In that case, the protein level should be raised, and the fat content lowered, to promote lean tissue growth.

Mix and deliver

Finally, remember much attention in TMR feeding is put on proper mixing and delivery of the carefully balanced ration. The same is true for liquid calf rations. Be sure to establish and monitor protocols to ensure every batch of pasteurized and enhanced milk is thoroughly mixed, fed at the correct temperature and delivered according to a consistent feeding schedule.

The most successful herds rely on the advice of a nutritionist to help them create, deliver and monitor rations for their cows. That same expertise is equally as important to effectively feed and grow your calves. Together, you and a nutritionist can establish and monitor a feeding program for calves to be every bit as successful as the TMR fueling the lactating herd they will soon enter.