



River Valley Veterinary Clinic

November 2015 Newsletter

Cold Calves Need Calories

As we head into the cold half of the year, it becomes especially important to remember that calves are being fed not just to keep them alive, but to grow and thrive! They need enough milk or milk replacer not just to meet their regular maintenance needs but also to meet or go beyond their desired growth rates. To determine that growth rate, look to where they should be at weaning: double their birth weight. An average Holstein calf that weighs 90 lbs at birth should weigh 180 lbs at the start of weaning 6 weeks later. To achieve this, she needs to gain 2 lbs per day, no matter what time of the year it is, no matter what the temperature.

When a calf is with a cow, she will drink 16-24% of her body weight in milk per day spread over 6-10 feedings, which is about 1.7-2.5 gallons of milk per day. If offered milk free choice, she will drink 1.9-2.8 gallons/day which equates to 2-3 lbs milk solids per day. But offering fresh, warm milk free choice is impractical. So the calf is limited to 2-3 feedings per day, but how much to feed is a never ending question. The answer is simple: it depends.

It depends on the age of the calf, her size and most importantly the weather. As all animals do, a calf will put a portion of the energy she acquires from eating toward maintaining life (called maintenance energy) which includes maintaining a regular body temperature. Only after maintenance energy has been accounted for will the remaining energy from a calf's meal go toward growing. It then follows that the more energy she consumes, the more leftover there will be for growth after maintenance.

But the maintenance energy required will vary, mostly in relation to the weather and environmental temperature. Every animal has an upper and lower critical temperature range, inside of which they are not using any energy to warm or

cool themselves. If the temperature is above the upper critical temperature, the animal has to work to cool itself, which is why humans sweat and cows appreciate sprinkler and fan systems. Below the lower critical temperature, additional maintenance energy is required to create warmth, and for a calf, it means less energy is going toward growth. While cows are comfortable in cooler weather, calves become cold quickly. A calf less than 3 weeks old begins using energy to stay warm at 59°F, and a 30 day calf is cold at 50°F. At a certain temperature, 100% of the energy from feeding goes straight toward staying warm and alive, and growth becomes an afterthought.

So much depends on what we do about the 5 C's of Calf Care: colostrum, comfort, cleanliness, consistency, and calories. The first is easy: with 4 quarts of good quality **colostrum** within 6 hours of birth, the calf's immune system will be able to fight infections so she can stay healthy and grow. **Comfort** is especially important in the winter. A calf needs deep, dry bedding so she can snuggle for warmth while her urine and manure sink away from her nose and mouth. With deep bedding, a calf can raise her surrounding temperature by 7°F. Calf jackets are excellent at providing additional warmth, but shouldn't replace deep bedding.

Cleanliness comes into play here as well, because wet bedding loses 3 times more heat than dry, so it's imperative that calves have dry bedding to nest in. **Consistency** is just what it sounds like: calves should be fed the same volume with the same amount of milk solids, at the same time and as close to body temperature as possible. Providing proper comfort, cleanliness and consistency during the winter does become more difficult, but since the added difficulties are predictable, we can plan now how to accommodate for them later, instead of scrambling to adjust.

Providing the correct **calories** is full of daunting choices: feeding whole milk versus milk replacer, two or three feedings per day, and

offering water and grain. But remember the goal: we are feeding them to not only stay alive, but to grow! And at 2 lbs/day. At this point, it becomes a math problem based on the calf's diet, weight and the environmental temperature. A 100 lb calf fed 3 quarts of whole milk twice daily will be able to gain 1.6 lbs/day at 60°F. However, the same calf can gain only 1 lb/day when it's only 30°F. That could mean only 1 lb of growth per day or less from October through March or April, if extra steps aren't taken. In January or February, when it's often 0°F or below, the calf might gain 0.5 lbs/day at most and possibly start losing weight. However, if she were to be fed an additional 3 quarts/day, she could gain over 2 lbs/day even at 30°F. It's difficult for a calf to gain any weight at 0°F, but she could still gain 1.77 lbs/day with the additional feeding. While 3 quarts of whole milk, three times daily seems great, it's a lot of milk to provide. On the other side of the spectrum, feeding only 2 quarts/day is inadequate below 60°F; a calf could be starving for the entire time she is on milk.

New research suggests a compromise of feeding calves 2 gallons of whole milk/day. This starts right on Day 1 with no need to increase the amount offered over a few days, which decreases confusion over which calves get what amount. If calf grain is offered in small amounts starting at Day 3, the calves getting 2 gallons/day are better

prepared to make the switch to solid food more quickly when weaning time comes.

To increase the calories a calf receives in the winter, there are multiple approaches. With whole milk, add another feeding of the regular amount or add a quart to each of the existing feedings. The same can be done with milk replacer, or use a replacer with a higher fat content. If you plan on feeding more replacer, a good rule of thumb is to increase the amount of replacer by 2% for every degree below 41°F.

Providing grain and water ensures additional calories, even if a calf eats only a handful every day. Starting Day 3 and older, offer a handful of fresh grain daily and a few pints of clean, warm water after feeding milk. Calf grain provides more calories than milk, and offering water after feeding milk will increase the amount of grain a calf will consume. When it's below freezing, offer water for 30 minutes, three times daily. Free choice water at such a young age can result in water toxicity, so be conscientious about not offering too much.

The chart below includes examples of the daily weight gain of a 100 lb calf fed various diets at different temperatures. The combinations of variables are endless, so if your calf feeding program isn't in the chart, let us know and we'd be happy to do the calculations. We can work together to maximize your calves' weight gain this winter.

	Feeding Schedule	Environmental Temperature			
		0°F	30°F	50°F	60°F
Whole Milk Max.Avg. Daily Gain (lbs/day)	3 qts, 2x/day	0.52	1.00	1.31	1.6
	3 qts, 3x/day	1.77	2.17	2.44	2.69
	4 qts, 2x/day	1.37	1.79	2.07	2.33
Milk Replacer 20%/20% Max. Avg. Daily Gain (lbs/day)	3 qts, 2x/day	weight loss	0.5	0.84	1.15
	3 qts, 3x/day	1.13	1.57	1.85	2.12
	4qts, 2x/day	0.77	1.30	1.53	1.81

Don't Forget!

Our customer appreciation day is on November 12th from 11:30am-1:30pm at the Plain clinic. There will be food, fun and door prizes! See you there!!