

Head office
1805 Sawmill Road
Conestogo, On, N0B 1N0:
Tel: 519.664.2237
Fax: 519.664.1636



Mount Forest
Tel: 519.323.1880
Fax: 519.323.3183

Tavistock
Tel: 519.655.3777
Fax: 519.655.3505

Toll Free 1.800.265.2203

Volume 14, Issue 1

Conestogo, Mount Forest, Tavistock

FEB.—MAR. 2014

FEEDING AND MANAGEMENT TIPS TO COMBAT COLD STRESS IN NURSERY CALVES

If calves are not growing or losing body weight, then the start of first lactation is being delayed and potentially being compromised. Cold stress diverts energy away from growth and immune function. Nutrition and management are the keys enabling calves to : 1) grow during cold stress; 2) resist digestive and respiratory disease; 3) minimize stressors. The first goal is to meet the increased energy requirement for maintenance during cold stress and secondly to provide enough energy above maintenance requirements to keep calves growing at a rate of at least 1.0 to 1.5 pounds per day. Cold stress begins when temperatures drop below 60°F for calves less than 21 days of age and when temperatures drop below 42°F for calves greater than 42 days of age.

Cold Stress

Calves are born with limited body fat reserves. Even calves that are six weeks old still have less than 4% fat in muscle tissue. The ratio of external surface to internal mass is extremely important. The smaller the calf, the more important this relationship becomes. Jersey calves have a maintenance energy requirement 15% greater than large breed calves. Calves are equipped with a variety of mechanisms to keep themselves warm. Clean and dry hair coats provide greater insulation from heat loss. Calves can also shiver which generates heat when muscle fibers rub together. Muscle glycogen is in short supply in calves and the glycogen fuel tank is very shallow in a newborn calf; therefore, shivering is not a sustainable source of warmth in calves.

Nutrition

When feeding calves during cold stress, one goal is to provide adequate amounts of energy from fat and lactose. Calves can “burn” protein for energy, but priority use of protein should be for muscle and bone growth, not as a source of energy. How do we get more energy into calves through the liquid feeding program? I see three main ways to increase caloric intake from milk:

- 1) Add a third feeding. Feeding during the coldest time of the day will likely provide the biggest benefit. If you typically feed calves after the milking chores are completed, then consider feeding calves before milking when it is really cold. The warm milk and the energy from milk will have the greatest benefit if delivered when it is most needed. Feeding three vs. two daily meals will increase the amount of solids by 1/3, for example 1.5 lb per day to 2.25 lb per day.
- 2) Increase the feeding volume by 1/3 in two feedings. This will deliver the same amount of nutrients as adding a third meal. The challenge is, some young calves may not be able to consume that much milk and large meal size may predispose calves to digestive upset and reduce starter grain intake. (cont'd on next page)

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FEEDING AND MANAGEMENT TIPS...CONT'D

3) Add supplemental fat. Adding 1/4 pound of a 60% supplemental fat in a University of Minnesota trial increased calf growth rate during the first three weeks of life. Supplemental fat does tend to suppress starter grain intake, so only use fat for the first 14 days of life and slowly wean calves off of supplemental fat.

Starter intake is magical. Rumen development associated with starter intake will do wonders for cold stressed calves. Microbial fermentation produces a large amount of heat, which is of course a challenge during heat stress, and becomes an important ally for cold stressed calves. Make sure starter grain is palatable and fresh and within easy reach. Provide at least one gallon of fresh warm drinking water per calf per day for the first month and two gallons during the second month of life. If calves are not eating starter grain by day 10 or 14 of age, then something is wrong and it is time to start trouble shooting starter quality, calf health and feeding practices.

Management

Health during cold stress can be a major challenge. Be sure to maintain best management practices of feeding adequate amounts of colostrum, dipping the navel at least twice, drying calves thoroughly with towels, and keeping the environmental temperature above 50°F for newborns during the first 48 hours. Always use proper sanitation procedures when cleaning equipment. Proper sanitation procedures include warm water rinse, scrubbing with warm soapy water, and emersion in sanitizer followed by hot water rinse. Pathogens on dirty equipment such as cryptosporidium, which cause calf scours, actually prefer cold weather. Work with your veterinarian to develop a sick calf treatment protocol including identification of sickness symptoms, proper dosage and administration of treatments, and proper follow up to determine effectiveness of treatments. All employees should be trained to identify and treat calf hood sicknesses.

Calf jackets are a must. My rule of thumb is, if the ground has frozen and the calf is less than three weeks of age, then the calf must have a calf jacket (Noah Litherland—Dairy Cattle Extension specialist)

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