

# Good Growth in Cold Weather

(Part one of two)

When the temperature drops below freezing it provides good calf growing conditions. Heat stress is absent. Pathogen survival and growth in freezing conditions is poor. In cold weather conditions calves have a great opportunity to grow without these stresses. And, they are eager to eat every day. When I was raising calves I had my best growth rates in winter weather year after year.

Older calves and heifers are basically cold weather creatures. The temperature at which they use no energy either to warm or to cool themselves is called “thermoneutral.”

For newborns the lower thermoneutral threshold temperature is about 60°F. At 1 month of age this thermoneutral value drops to between 30° and 40°. Thus, as they mature in the weeks up to weaning they become more capable of maintaining their core body temperature with freezing weather.

## The Need for Energy

Two limiting conditions for wintertime growth are adequate water and energy. As she begins to eat starter grain in addition to milk or milk replacer, providing ad lib warm water that goes into the rumen is ideal for efficient growth.

Energy is the other major limiting factor. Energy used for keeping the calf alive increases as the calf grows and as temperatures go down. In an chart below, the orange bars to the left show the amount of maintenance energy needed by a 100 pound calf.

## Maintenance needs

Look at the orange (maintenance) bars in the chart. Note that as soon as near freezing temperature arrives, she lacks enough energy from the 4 quarts a day feeding to meet even maintenance needs.

That means she will start losing weight as she uses energy from her body tissues to keep warm. And, note that this assumes that she is dry and housed in a draft free place with dry bedding.

### **Growth needs**

The amount needed for this calf to grow 1 pound a day in addition to maintenance is shown in the blue bars on the right. Even at 60° when fed just 4 quarts of 20-20 milk replacer daily this 100 pound calf isn't going to gain even close to 1 pound a day. [Total energy needs: (maintenance=3.4) + (growth of 1 lb./day = 2.5) for a total of 5.9 quarts at 60°.]

In rough winter weather, this is one of the calves that is likely to lose a lot of weight and have pneumonia. These calves respond poorly to antibiotic treatment for respiratory illness because they have no body reserves to combine with the medicine to mount a defense against the bacteria.

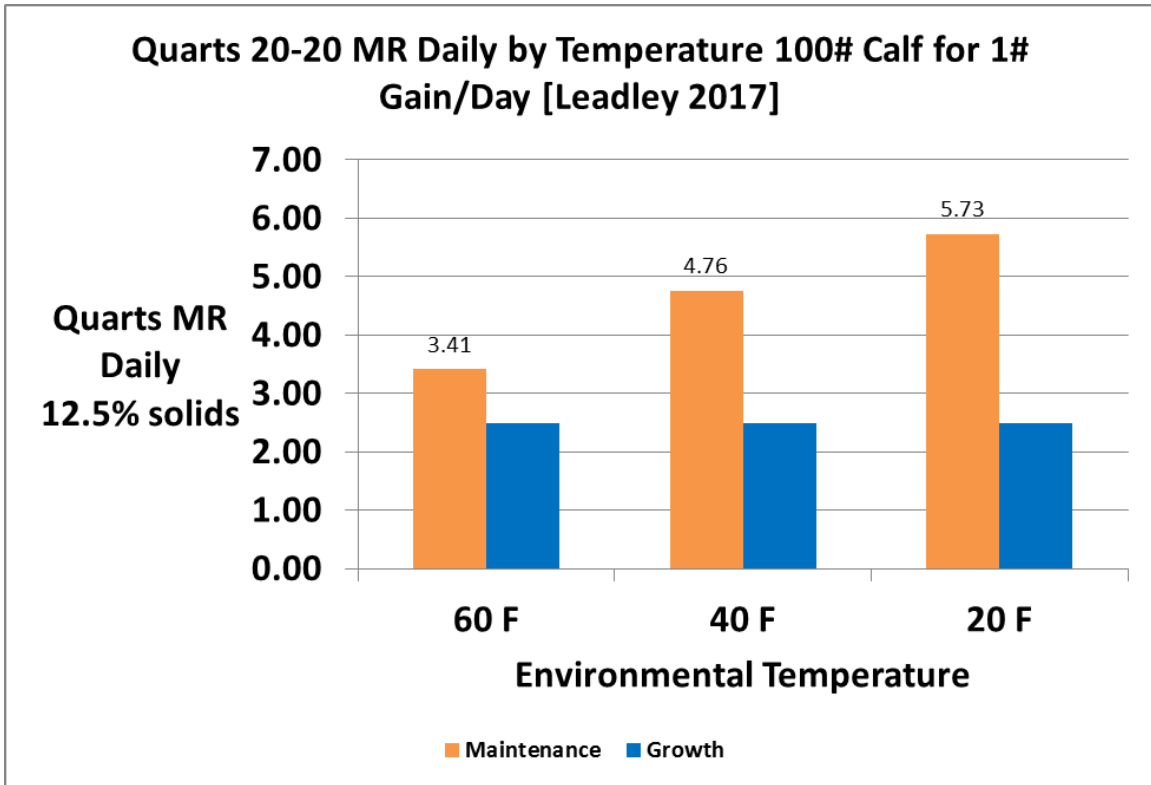
The bars in the graph tell us the plain facts about cold weather feeding and gains.

Feed too little and calves not only will not gain, they will have trouble surviving.

Feed enough and calves will thrive like no other season of the year.

A second paper entitled, “Good Growth in Cold Weather – Part 2” presents 5 different ways to feed more energy in cold weather.

\* 20-20 milk replacer contains on a dry matter basis 20 percent protein and 20 percent fat and for this graph was mixed at 8 ounces powder makes 2 quarts as-fed.



Sam Leadley, Calf & Heifer Management Specialist  
[smleadley@yahoo.com](mailto:smleadley@yahoo.com) [www.atticacows.com](http://www.atticacows.com)  
For Calves with Sam blog go to [dairycalfcare.blogspot.com](http://dairycalfcare.blogspot.com)  
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