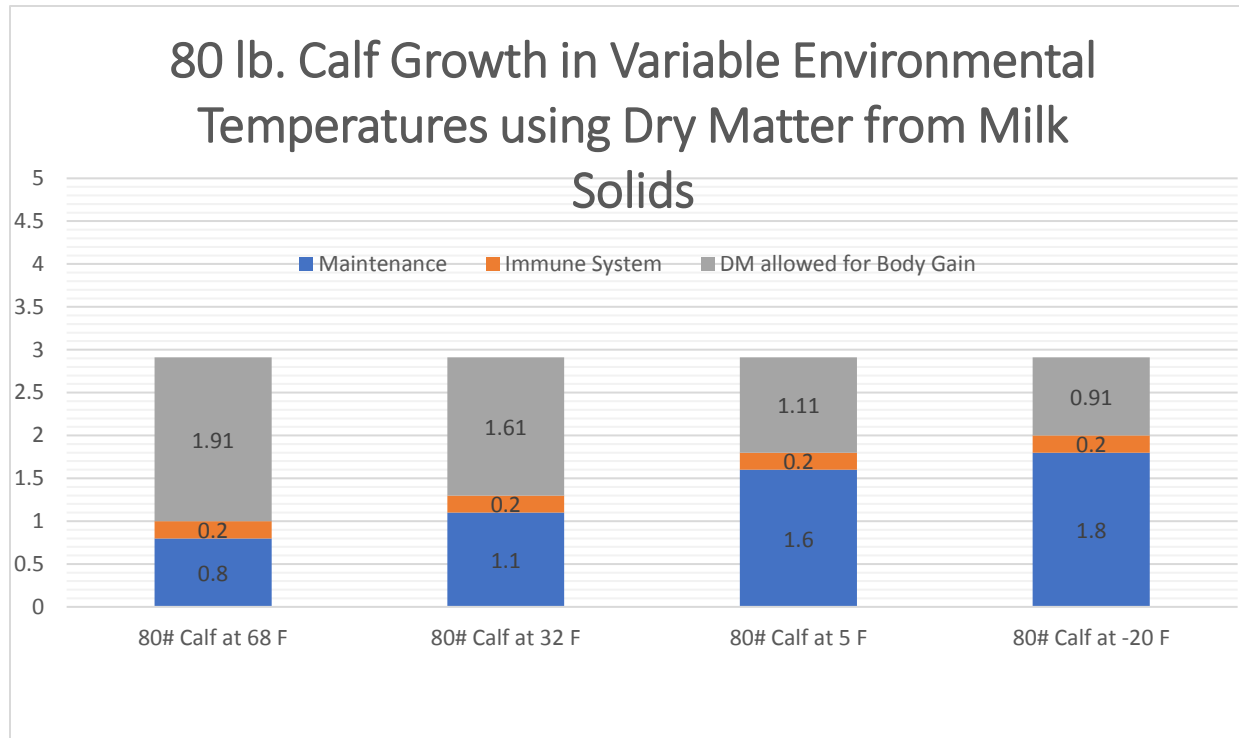


Standard Chart for an Individual Calf Milk Solids Dry Matter Requirement for Maintenance

Body Weight	Temperature Degrees F						
	68 F	50 F	32 F	15 F	5 F	- 5 F	-20 F
60	0.6	0.8	0.9	1	1.1	1.2	1.4
80	0.8	0.9	1.1	1.3	1.4	1.5	1.7
100	1	1.1	1.3	1.6	1.7	1.8	2
120	1.1	1.3	1.5	1.7	1.9	2	2.3





Maintenance is the amount of Dry Matter milk solids a calf needs for basic body function. This is for the animals' basic body function to live. In this number we can include any environmental challenges that may impact this. Maintenance is affected by the ***environment** the calf is exposed to.

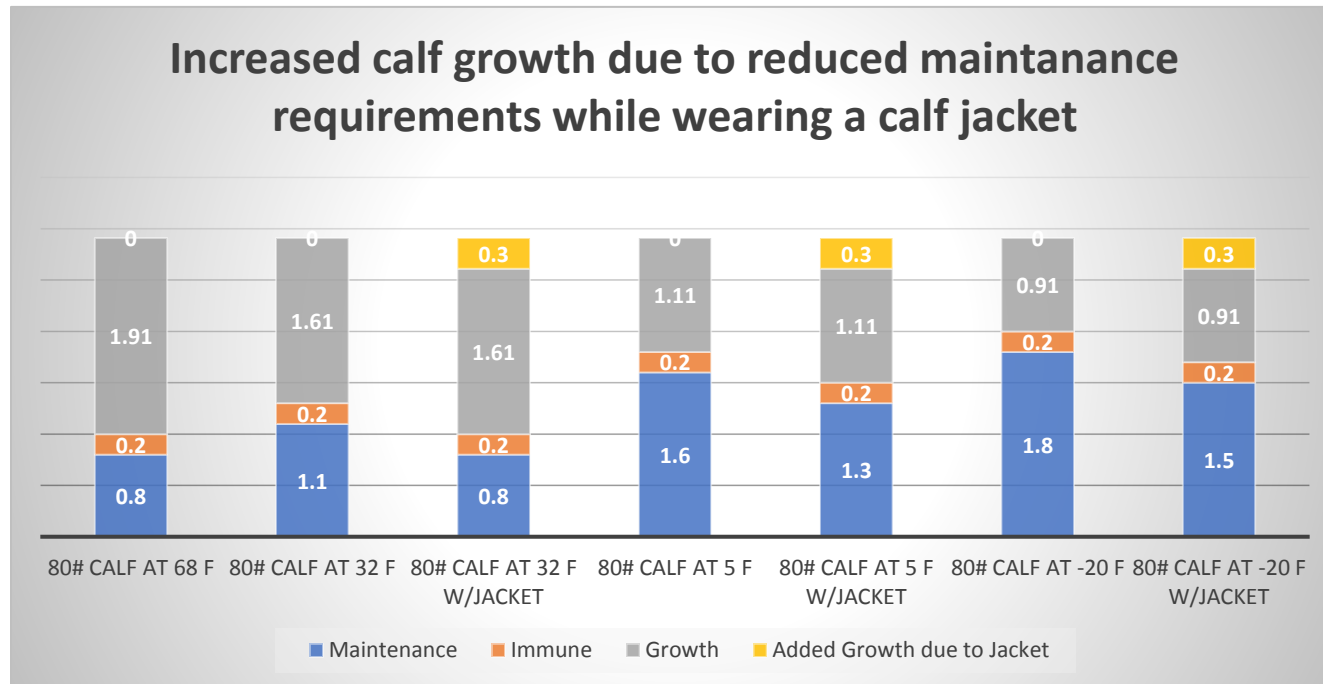
Immune system is the amount of Dry Matter milk solids needed to support immune function. The immune system requires 3X the amount of energy of basic body maintenance during a challenge. Dry Matter required to support the immune system above maintenance will be dependent on the challenge.

Growth is the amount of Body Gain the calf gains after the body maintenance and immune system are provided for.

Chart demonstrates change in temperature only and the estimated impact on total growth of the calf. This graph uses the same 80 lb. weight calf in 4 different situations where the only difference is outside environment temperature. The number in Grey represents the projected DM milk solids left for allowable gain for the same 80 lb. calf in different environments.

***Environment** if a calf is laying in a dirty, wet, or drafty environment this exposure to undesirable living conditions can cause a major increase in the DM needed for body maintenance above what is listed in the chart above.

Now let's take the same calf and put a jacket on the calf when it is less than 68 F



Calf Jackets allow a calf to convert more Dry Matter into Growth. Growth will occur if the maintenance and immune system requirements are met. The chart above 80# calf listed above has not had an immune system challenge in this demonstration above. An immune challenge will increase the amount of DM needed to support the immune system and reduce growth/gains.

Dry Matter Used in the chart above is all pasteurized milk with current DM @ 15% solids (12.5% solids whole milk + Pasteurized milk balancer) feeding 3 quarts 3X per day. This comes to approximately 2.9 lbs. of DM from milk solids at a 1:1 protein to fat ratio.

If feeding is reduced to 3 quarts 2X per day DM milk solids, (at current 15% solids) The total DM would be reduced from 2.91# of milk solids DM to 1.94#. Calves in a 2x feeding program will need to have increased quantities above 3 quarts when the weather is cold to maintain target growth rates. The feed efficiency and conversion to growth of grain is .3 or 3.3lbs of grain to gain 1lb of body gain. This efficiency is only achieved after the calf is on grain consistently for a minimum of 10-14 days.

The University of Wisconsin Madison Diagnostics Laboratory shows the number one cause of death, in the winter, in calves, submitted to the lab for diagnosis, is starvation. Many of these calves also have pre-rumen compartments which are full of grain. Grain is the key component of rumen development but we need to make sure we have feeding programs in place on farm to ensure proper rumen development and still maintain growth and the health of calves. Calves are not born with a rumen that can effectively convert grain to energy. We must develop the rumen to become effective. It is a lot like a newborn human baby. We don't feed a human baby milk and then introduce them to whole vegetables at 6 months. Diet changes must be done in steps through a process.

2x per day feeding can be done successfully in the winter and still maintain good growth rates, the amounts of DM milk solids fed to the calves need to be increased when the environmental temperature decreases or if there are other challenges that may increase the energy needs of each calf.

Proper Nutrition, Pre-Weaning weight gain, is directly correlated to future milk production potential of each animal. Whatever the program, make sure it is in line with the future goals of the dairy.