# Providing Winter Care for Calves

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We all agree that all animals need appropriate care during colder weather, especially the young ones who are more vulnerable than adults to chilly temperatures. After birth, calves require attention and protection during all seasons; however, we must be vigilant to the "future of the farm" under frigid temperatures. Thus, some measures are necessary to ensure calves' safety and health.

**For newborns**, it starts with adequate ingestion of colostrum (1 gallon/ 4L or approximately 300g of IgG in the first four hours after birth), but remember that under cold stress, the rate of colostrum IgG absorption can be delayed or reduced. Newborn calves depend on feed for heat production. Calves have only 3% body fat, and they are born with just 1.5% of a type of brown fat (BAT), the primary source of energy in the newborn prior to suckling colostrum. And without colostrum, BAT stores are depleted in less than a day (~18h).

**For calves under three weeks of age**, comfortable temperatures are between 59°F and 77°F (15°C and 25°C). The energy from their feed is used to grow and build a strong immune system. Under cold stress (below 59°F), the immune system can be impaired and unable to protect them from common diseases (e.g., pneumonia, scours).

**For unweaned calves older than three weeks**, cold stress begins at low temperatures (at 41°F or 5°C), which calls for a greater volume of milk or milk replacer delivered to ensure enough energy to keep them warm, healthy, and growing satisfactorily.

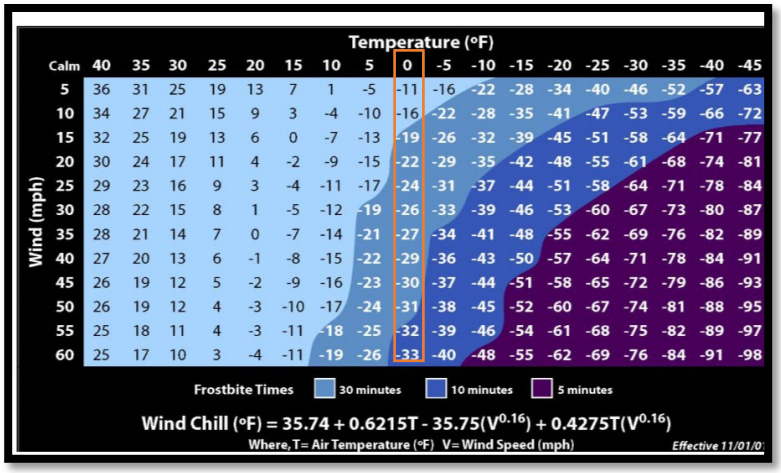
Daily basic management practices to improve survival and promote the calves' care and health will be discussed. Having an appropriate water source, food supply, and comfortable shelter is crucial to keep the calf's strength through severe winter weather.

- **Food -** provide as much as calves will eat. Keep animals chewing and ruminating by having food in front of them as much as possible. As they eat and ruminate, they produce body heat, which will help them to be warmer. Adding an extra evening feeding is also important to increase their ruminal activity until the next morning. A general guideline will be increasing the quantity of milk replacer by 2% for every degree the temperature falls below 5°C (41°F). The location of your feed container/buck is also something important to think about – keep it in a place that invites their visit – they will not voluntarily go outside to eat. Close to their water source should be considered.

- **Water -** remember to disconnect all hoses that you are not using – water inside hoses or pipes can freeze and rupture. Offering water to calves as much as necessary (warm it if needed - around 90°F or 32°C), and feed warm water after each milk feeding. If warming of the water is required, place a heater in your water tanks. If water freezes, break the ice so calves can drink. Always aim to provide calves with free-choice water – remember that snow or ice is not an acceptable water source. Water consumption will encourage starter intake.

- **Shelter and protection -** wet calves need to be dried off before putting calf jackets on them. Wet hair does not insulate the calf. As water evaporates, it takes heat with it; thus, taking energy from young calves. **Calf jackets** are recommended for calves under three weeks of age. Special attention should be taken to avoid calves sweating underneath the jacket (causing them to chill if temperatures drop) and make sure the jacket fits well (check every week to adjust and ensure there are no hidden injuries or illnesses). Another important strategy is the use of safe room warming strategies including heat lamps or red infrared bulbs.


- **Air quality –** Ensure there is proper airflow passing through, even during cold weather. The air inside should always be warmer than outside to rise and mix with the outside air.
- **Wind chills (WC)** – it should be considered as a combination of wind speed (mph) and air temperature (°F). From the chart, you can see how wind chills differ considering the same air temperature at 0°F; with calm winds around 5 mph (WC feels like -11F), moderate breeze around 15 mph (WC -19°F) or strong winds at 55 mph (WC -32°F).



| Wind (mph) \ Temperature (°F) | Calm | 40 | 35 | 30 | 25 | 20 | 15 | 10 | 5 | 0 | -5 | -10 | -15 | -20 | -25 | -30 | -35 | -40 | -45 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | | 36 | 31 | 25 | 19 | 13 | 7 | 1 | -5 | -11 | -16 | -22 | -28 | -34 | -40 | -46 | -52 | -57 | -63 |
| 10 | | 34 | 27 | 21 | 15 | 9 | 3 | -4 | -10 | -16 | -22 | -28 | -35 | -41 | -47 | -53 | -59 | -66 | -72 |
| 15 | | 32 | 25 | 19 | 13 | 6 | 0 | -7 | -13 | -19 | -26 | -32 | -39 | -45 | -51 | -58 | -64 | -71 | -77 |
| 20 | | 30 | 24 | 17 | 11 | 4 | -2 | -9 | -15 | -22 | -29 | -35 | -42 | -48 | -55 | -61 | -68 | -74 | -81 |
| 25 | | 29 | 23 | 16 | 9 | 3 | -4 | -11 | -17 | -24 | -31 | -37 | -44 | -51 | -58 | -64 | -71 | -78 | -84 |
| 30 | | 28 | 22 | 15 | 8 | 1 | -5 | -12 | -19 | -26 | -33 | -39 | -46 | -53 | -60 | -67 | -73 | -80 | -87 |
| 35 | | 28 | 21 | 14 | 7 | 0 | -7 | -14 | -21 | -27 | -34 | -41 | -48 | -55 | -62 | -69 | -76 | -82 | -89 |
| 40 | | 27 | 20 | 13 | 6 | -1 | -8 | -15 | -22 | -29 | -36 | -43 | -50 | -57 | -64 | -71 | -78 | -84 | -91 |
| 45 | | 26 | 19 | 12 | 5 | -2 | -9 | -16 | -23 | -30 | -37 | -44 | -51 | -58 | -65 | -72 | -79 | -86 | -93 |
| 50 | | 26 | 19 | 12 | 4 | -3 | -10 | -17 | -24 | -31 | -38 | -45 | -52 | -60 | -67 | -74 | -81 | -88 | -95 |
| 55 | | 25 | 18 | 11 | 4 | -3 | -11 | -18 | -25 | -32 | -39 | -46 | -54 | -61 | -68 | -75 | -82 | -89 | -97 |
| 60 | | 25 | 17 | 10 | 3 | -4 | -11 | -19 | -26 | -33 | -40 | -48 | -55 | -62 | -69 | -76 | -84 | -91 | -98 |

Frostbite Times: 30 minutes | 10 minutes | 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph) Effective 11/01/0

https://www.weather.gov/grb/windchill

- **Bedding** - make sure you have enough straw (you should not see the calf's legs when it is lying down). Also, ensure dry bedding (kneel in the straw for 20 seconds, if wet, replace or add more).

- **Other risk factors** - Calves at greater risk to become cold are those abandoned at birth possibly due to dystocia or low birth weights. Typically, hypothermic calves will have a weak suckle reflex and unwillingness to get up and start moving. That, combined with inadequate colostrum intake, will lead to fewer energy reserves, physical weakness, depression, and cold extremities. Warming up those calves with a dry towel, hairdryer, or bathtub with warm water; and offering warm colostrum orally or intravenous fluids therapy can save their life.

Simple management adjustments during colder weather can significantly impact your calves' health and performance. Their energy intake should aim to make them grow healthy and profitable. Consider revising water, food, and some practices to help keep your calves warm. Being prepared to address these topics can help safeguard your livestock during this challenging period. In case you need assistance or more information, please contact us at: **Luciana da Costa:** da-costa.2@osu.edu **and Maristela Rovai:** maristela.rovai@sdstate.edu