

# Managing calves in cold weather

In cold weather calves require more energy to keep warm. Calves must be fed enough milk and concentrate to provide them with extra energy to maintain their body temperature, grow and remain healthy.

## Lower Critical Temperature (LCT)

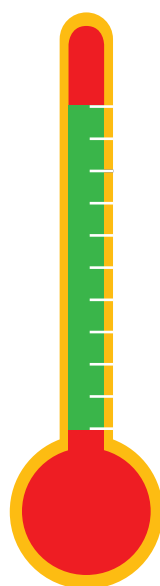


Temperature below which a calf needs extra energy to keep warm.

**Feed is directed away from growth and the immune system to keep warm.**

### Newborn to 3 weeks of age

- Calves less than 3 weeks of age are the most vulnerable to changes in temperatures
- The lower critical temperature for calves less than 3 weeks of age is between 10-15°C and is highly dependent on air speed
- Feed an extra 50g of milk replacer or 0.33l of whole milk per day for each 5°C drop below 15°C.



### Calves older than 3 weeks of age

- The lower critical temperature for calves over 3 weeks of age is between 6-10°C and is highly dependent on air speed
- Feed an extra 50g of milk replacer or 0.33 l of whole milk per day for each 5°C drop below 10°C
- Calves should have continuous access to starter feed.

## Feed more energy

Additional milk replacer or whole milk required, regardless of body weight, to achieve optimal growth with a growth rate target of 0.75kg/day.

Environmental Temperature °C	g/d of additional milk replacer*		l/d of additional whole milk +	
	Birth to 3wk	3wk to weaning	Birth to 3wk	>3wk
20	0	0	0	0
15	0	0	0	0
10	50	0	0.33	0
5	100	50	0.67	0.33
0	150	100	1.00	0.67
-5	200	150	1.33	1.01
-10	250	200	1.67	1.33

\*Based on a basic diet of 6 litres (900g) of milk replacer with 18% fat and 22% protein containing 18.5MJ/kg of ME mixed at a rate of 150g made up to 1 litre with water.  
+Based on a basic diet of 6 litres of whole milk containing 4.03% fat and 3.28% protein, 22.3MJ/kg of ME on a DM basis.

## To maintain desired growth rates during periods of cold weather

### Housing

- Monitor temperature daily in the calf shed
- Dry newborn calves to reduce heat loss
- Watch out for calves shivering or with raised hair



- Supply plenty of dry bedding material to allow the calf to nest

- Even in cold weather, calves need plenty of fresh air but avoid draughts at calf level
- Reduce damp by providing adequate drainage
- In the presence of draughts or damp, calves will use more energy to keep warm.

### Feed and water

- Increase volume of milk or milk solids
- Use a milk replacer with a fat content of at least 18%
- Do not mix over 160g of milk replacer made up to 1 litre with water as this will result in excessive mineral intake
- Provide fresh water at all times.

## Environment

Even in cold weather, calf housing needs plenty of fresh air. Draughts must be avoided at calf level.

Air speed at calf level	
0.15m/s	Stale air – increases bacteria survival and pneumonia
0.2m/s	Draught-free
0.3m/s	Draught on calf – calf will become chilled

m/s = metres per second

The temperature the calf feels is a combination of temperature, airspeed and humidity.

Lower critical temperature °C at air speeds of:		
	0.2m/s (draught free)	2.0m/s
Newborn (35kg)	+9	+17
One month (50kg)	0	+9

Webster, 1981

## Timing of feeds



Consider feeding milk to calves 3 times a day. Interval between milk feeds should not exceed 12 hours.

For more information on calf management, please visit the web: [dairy.ahdb.org.uk/calves](http://dairy.ahdb.org.uk/calves)

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Produced in association with the Royal Veterinary College as part of the AHDB Dairy Animal Health, Welfare and Nutrition Research Partnership.

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