

# Snow as a Water Source for Wintering Beef Cattle



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Using snow as the sole water source can extend the grazing season and reduce costs associated with water bowls, pipelines, and heating systems. It also lowers manure hauling and feed transport expenses. However, careful management is essential to maintain animal health and welfare.

### Research Findings

- University of Alberta studies found no negative impact on cow performance when snow was the only water source compared to continuous or restricted access to liquid water.
- Trials showed:
  - No differences in weight, fat depth, urine chemistry, or body temperature.
  - Cows consuming snow exhibited no signs of physical stress or increased energy requirements.

### Snow Feeding vs. Water Feeding results:

A University of Alberta study evaluated the long-term effects of snow feeding on pregnant beef cows and calf growth. Four cows were provided only snow (snow cows), while four had access to heated water (water cows). The trial ran from December to March.

### Cow Performance

Metric	Water Cows	Snow Cows
Body Mass (kg) – Start	471.5	479.0
Body Mass (kg) – End	505.0	501.0
Metabolic Heat Production (kJ/kg <sup>0.75</sup> )	465.45	463.7
Rectal Temperature (°C)	38.1	37.8
Ave. Milk Yield (kg/day)	6.4	7.6
Calf ADG (kg/day)	0.70	0.74

## Key Findings:

- No significant differences in body weight, metabolic heat, rectal temperature, milk yield, or calf growth between groups.
  - Snow-fed cows consumed 12–20 kg of snow daily and drank 11–12 kg of water per day when available.
  - Energy demand for melting snow did not negatively impact performance.
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## Calf Performance

A second study assessed 10-month-old calves fed snow vs. water.

Metric	Snow Calves	Water Calves
Days on Test	98	98
Weight (kg) – Start	206.4	200.9
Weight (kg) – End	265.2	269.6
ADG (kg)	0.60	0.70
Feed Intake (kg)	10.2:1	8.8:1

## Key Findings:

- Water-fed calves had slightly higher ADG and final weight, but differences were not statistically significant.
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## Conclusions

- Snow can serve as the sole water source without negatively impacting cow or calf performance.
  - No evidence of increased energy demand or reduced feed efficiency.
  - Adequate nutrition and snow availability are essential for success.
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## Management Guidelines

- **Not Recommended For:** Lactating cows, animals in poor body condition (BCS < 3), those on suboptimal diets, or sick cattle.
  - **Backup Plan:** Always have an alternate water source available if snow becomes inaccessible.
  - **Snow Quality:** Must be clean and easily accessible. Avoid ice-crusts, wind-blown, or trampled snow; break ice layers if necessary and provide traction to prevent injuries.
  - **Snow Quantity:** Approximately 10 cm of snow equals 1 cm of water. Evaluate snowfall and field conditions—open, windy areas may reduce snow availability.
  - **Monitor Feed Intake:** Consistent intake (2–2.5% of body weight) indicates adequate water consumption. Drops in feed intake may signal insufficient water.
  - **Nutrition:** Provide a balanced ration to prevent rumen compaction.
  - **Cows in pens or small paddocks** will most likely not have a sufficient source of clean snow
  - **Learn from Experience:** Consult experienced producers before adopting this practice.
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## Behavioral Considerations

- Eating snow is a learned behavior; adaptation may take 4–5 days. Expect restlessness and bellowing initially.
  - Persistent distress signals a problem—investigate promptly.
  - Feeding patterns may change; snow-fed cattle often alternate feed and snow intake throughout the day.
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## Key Conclusions

- Snow can serve as the sole water source without harming performance.
- Animal welfare must remain a priority.
- Ensure adequate, accessible snow and proper nutrition.
- Always maintain a contingency plan for water supply.

## Contact Us

This fact sheet was developed by the Manitoba Agriculture Livestock Specialist.

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