

Water Use on Canadian Dairy Farms



Why is understanding water consumption important?

Demand for agricultural production is increasing, which is putting added pressure on water resources.

Research funded by the Dairy Farmers of Canada and Agriculture and Agri-Food Canada (under the Dairy Research Cluster 2) set out to perform on-farm measurements of water-use that provides both Canadian-relevant benchmarks, as well as more detailed understanding of water dynamics. This research can inform decisions and policies about how water use could be improved.



Where is water used in a dairy barn?

- Drinking water for cattle
- Cleaning the milking equipment and animal holding areas
- Plate coolers to cool milk
- Misting/cooling cows



Globally, the water used by the dairy industry makes up 19% of the water used by all animal production¹.

¹ Mekonnen, M.M., and A.Y. Hoekstra. 2012. A Global Assessment of the Water Footprint of Farm Animal Products. *Ecosystems*. 15:401–415. doi:10.1007/s10021-011-9517-8.

Milking systems consume water

Canadian researchers recently explored the differences in daily water use among automatic milking systems (AMS), parlour and tie-stall operations.

- AMS milking used ~75 litres/day/cow*
- Tie-stall milking used ~30 litres/day/cow
- Free-stall parlour milking used ~21 litres/day/cow

* Standard automatic milking systems are not normally set with water conservation as a primary objective (e.g. number of wash cycles, teat prep, flushing, floor and hoof wash).

The Bottom Line:

Water use can be made more efficient in all milking systems by checking and optimizing cleaning procedures. Making an effort to reuse water will also help with conservation.



How reducing water use can benefit your farm

Conserving water helps to maintain the environment and ensure sustainability. But it also benefits the farm!

Reducing water consumption helps you to:

1

Save electricity for pumping and heating water (for cleaning)

2

Save costs for treating water (depending on water quality, this could be a big factor)

3

Reduce amount of water that enters the manure storage or treatment system

- Less water in manure storage increases flexibility in the timing of manure application and reduces the need to expand manure storage as herd size increases (water inputs are recognized in manure tank sizing calculators, like NMAN3¹ in Ontario).
- Less water in manure storage means lower fuel costs and less time spent applying manure.

¹OMAFRA's Nutrient Management Planning Software, version NMAN3

Improving Water Use Efficiency

1

Manage heat stress to reduce drinking water consumption

Drinking water consumption is highly correlated with maximum air temperature. By managing heat stress, the water footprint is reduced by:

Reducing the amount of water consumed (cows that are more comfortable and cooler drink less!)

Increasing milk production

2

Control leaks

Leaks around the farm can lead to significant water losses – watch for overflowing water troughs/bowls and other areas (e.g. hoses around the milk house, leaky faucets etc.) where you might be losing water unintentionally.

3

Reuse water!

Plate-cooler water can be fully recuperated and reused to maximize water efficiency. Also, recycle milking system and bulk tank cleaning water for washing down holding areas/floors.



Video Resources

Learn more about water use and efficiency on Canadian dairy farms:

Importance of Water Use Efficiency for Ontario Dairy Farms: acerconsult.ca/portfolio/lric-water-use-efficiency

Video Series: Water Use Efficiency in Dairy Farms: youtube.com/playlist?list=PLDRWKXpspoalnN-fj6eSumnqTjyB3FoQe

Dairy Research Cluster YouTube Channel - Videos on Dairy Water Use Efficiency by type of barn:

Tie-stall barn: youtu.be/85bOQ00omNg

Rotary free-stall barn: youtu.be/el7SIH9YoMw

Free-stall barn: youtu.be/DmkdCDxzzRU

Flush free-stall robotic barn: youtube.com/watch?v=MEWBey7td24

Free-stall pond fed farm: youtu.be/Lw0zbQLQS_4

Dairy Research Cluster

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