



On-Farm Water Supply Management

Beneficial Categories



Background

Cattle production can have negative environmental consequences without good management practices. For example, water is an essential nutrient for cattle, and water systems are vital to a thriving ecosystem but without proper management, contaminants related to cattle management such as organic livestock waste, salt and minerals can enter surface and groundwater. If not properly contained or managed, contamination could reduce water quality, cause water erosion, and restrict the suitability of water for uses such as drinking water for humans and/or livestock, stock water, irrigation, fishing or other recreation activities. It is also worth noting that cattle can impact riparian areas; for more information on how to properly manage riparian areas, refer to the [information sheet](#) on our website.

Water supply and water quality are also important for raising cattle. Feed intake in cattle is related to water intake, and water is involved in every physiological process. It is important that cattle get enough water, and that the water is good quality. Not all water sources are created equal, and naturally available water supply can vary from year to year so it is important to ensure cattle will always have access to good quality water.

Water Quality

Depending on the water source, water quality can vary significantly. Cattle are able to tolerate poor water quality better than humans, but if concentrations of certain compounds get too high, cattle can be negatively affected and their performance will suffer. Water quality problems can be associated with surface water, groundwater, taste and odour and is caused by issues like temperature and pH. The most common water quality issues are:

- Blue-green algae
- Sulphates
- Dissolved solids (TDS)
- Nitrates
- Salinity

- Bacteria, viruses, and parasites

Certain environmental conditions can intensify water quality issues that may already be present such as:

- Low rainfall/drought conditions
- High temperatures
- High rainfall causing runoff and water contamination by manure or fertilizer

Environmental conditions can cause water quality to change year over year, making it important to test water quality at least yearly. Most water quality issues can only be determined by having water tested at a laboratory. If water is poor quality, cattle may not show clinical signs of illness, but growth, lactation, reproduction and feed intake may be affected and could cause economic losses. The Beef Cattle Research Council website has a [recorded webinar](#) with more information about water quality and its effects on cattle.

If available, check with your provincial government livestock extension specialists to see if they provide water testing or water test results interpretation. They can help recommend solutions and opportunities to improve water quality for cattle. For example, the Government of Saskatchewan has information on parameters of mineral levels in water and their consequential effects on cattle [on their website](#).

Water Systems and Sources

If water quality or availability is a concern for you, developing an off-site or remote water system can be a good solution. Installing a remote pasture water system has a variety of benefits, including:

- Improved herd health and reproductive performance
- Potential increase in cattle gains
- Improved pasture utilization
- Protecting the quality of water sources
- Riparian habitat protection
- Increased longevity of water source(s) during drought conditions
- Encouraging cattle distribution away from the farmyard in the winter, spreading manure and reducing manure hauling costs

Installing remote water systems also helps protect natural water sources on your operation and downstream in the area. Off-site water systems are setups that pump water from the source (dugout, pond, dam) into a trough for cattle to use. These systems can work using a variety of power sources depending on what is available and most economical for an operation. Options for water pumping systems include using solar or wind power, gravity or animal power. For a producer perspective on various watering systems, Ducks Unlimited Canada has put together a document based on the experiences of Saskatchewan producers that can be accessed [on their website](#).

Potential Economic Costs/Benefits

While there are expenses associated with water quality testing and installing remote water systems, there can be a number of production costs related to using direct watering that need to be considered as well, including:

- Increased exposure to bacteria, viruses and other water-transmitted disease

- Blue-green algae
- Foot rot
- Leg injuries
- Decreased rates of gain
- Death by drowning, risk of injury or death from falling through the ice, getting stuck in mud
- Overgrazing near the water source

Depending on your location, your provincial agriculture extension offices may offer free water testing. The Beef Cattle Research Council has also created a [water systems calculator](#) to help determine the most economically efficient water system to adopt on your operation. The calculator helps compare the costs between different systems including set up and maintenance, estimates potential economic benefit from additional weight gain, and calculates the time it will take to pay off the system. For more in-depth information about the economics of water systems, Canfax has an information sheet on their [website](#).

Financial Incentives

Canada Wide

Canadian Agricultural Partnership (CAP)

The water program through CAP is accepting applications until March 2023. The water program supports the enhancement of agricultural water management through two streams, on-farm irrigation projects and on-farm water supply projects. Eligible expenses will be cost shared, 25 percent through the grant and 75 percent by the applicant. [Visit the website](#) to find out if you are eligible and to apply.

For more specific information about on-farm water management, visit the links below:

[Government of Alberta – Beneficial Management Practices: Environmental Manual for Alberta Cow/Calf Producers](#)

[Government of Alberta – Remote Pasture Systems for Livestock](#)

[Government of Saskatchewan – Livestock Water Quality](#)

[Government of Saskatchewan – Dugout Development and Site Selection Tool for Livestock Watering](#)

[Government of Ontario – Water Management](#)

[Beef Cattle Research Council – Water Systems for Beef Cattle](#)

[Beef Cattle Research Council – What Does it Cost \(and Save\) to Set up a Livestock Water System?](#)

[Beef Cattle Research Council – What’s in your \(Stock\) Water?](#)

[Ducks Unlimited Canada – Livestock Watering Systems in Saskatchewan: Producer Experiences](#)

[Agriculture and Agri-food Canada – Water Quality and Cattle](#)

[Canfax Research Services – Economics of Water Systems](#)