

# Livestock Watering FACTSHEET



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## EVALUATING WATER QUALITY FOR LIVESTOCK

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Manitoba  
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### Evaluating Water Quality for Livestock

Water is the single most important nutrient for livestock. Animals, as well as humans, can live for long periods of time without food. Without water, however, death can occur in a matter of days. Unfortunately, both the quality and quantity of the water provided for livestock is often overlooked.

Water is involved either directly or indirectly in virtually every physiological process. Water is a medium for transporting nutrients, waste material, hormones and other chemical messengers, as well as food along the gastrointestinal tract. It also plays an important role in regulating body temperature, acts as a lubricant for skeletal joints and is a component of many basic chemical reactions.

Water quality is determined by analyses of water samples. A bacterial analysis indicates if water contains microorganisms, such as bacteria, which may be harmful. A chemical analysis determines the levels of various minerals present in water.

Evaluating the content of water is relatively straightforward. The major difficulty is establishing levels at which animal health, welfare and productivity may be impaired.

This factsheet outlines recommended levels and potential problems found during water analysis. Table 1 summarizes the water quality guidelines established by the 1987 Canadian Task Force on Water Quality.

### Interpretation of chemical analysis

#### pH (units)

The hydrogen ion concentration in water determines the pH level. A pH value of 7 indicates "neutral" water. Values less than 7 are increasingly acidic and values greater than 7 are increasingly alkaline. Most water falls within an acceptable range of 6.5 to 8.5. If the pH is lower than 5.5, acidosis and reduced feed intake may occur in cattle. A low water pH is unlikely to have any direct effect on swine because of the already acidic conditions of the stomach.

Water pH is an important factor in determining the effectiveness of various water treatments. Chlorination efficiency is reduced at a high pH. A low pH may cause precipitation of some antibacterial agents delivered through the water system. For example, sulphonamides are a particular concern as precipitated medication may leak back into the water after treatment has ended, contributing to potential sulpha residues in carcasses.

**TABLE 1: Canadian Water Quality Guidelines for Livestock**

ITEM	MAXIMUM RECOMMENDED LIMIT, mg/L
Major Ions	
Calcium	1,000.0
Nitrate and nitrite	100.0
Nitrite alone	10.0
Sulphate	1,000.0

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Website: <http://www.gov.mb.ca/agriculture/livestock/nutrition/bza01s06.html>