

Livestock Watering FACTSHEET





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ALGAE, CYANOBACTERIA AND WATER QUALITY

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INTRODUCTION

Algae and cyanobacteria are tiny organisms that occur naturally in saltwater and freshwater. Individual organisms can often only be seen under a microscope, although with some species, individuals can join together to form colonies visible to the naked eye. It is important to understand the similarities and differences between algae and cyanobacteria as both groups can have distinct impacts on surface water quality.

ALGAE

Algae belong to a large group of organisms called eukaryotes - a Latin word meaning 'true nucleus'. They store their genetic material in a tiny, membrane-bound structure called a nucleus. Algae are divided into groups that reflect the colour most commonly exhibited by members, although not all will be the definitive colour. For example most green algae are green, but some are brown, red, orange, or yellow. Although there are many types of algae, only some groups are important in terms of the impact they can have on freshwater supplies.

Table 1. Groups of algae commonly occurring in freshwater systems:


Scientific Name	Common Name
Chlorophytes	Green algae
Cryptophytes	Cryptomonads
Dinophytes	Dinoflagellates
Euglenophytes	Euglenoids
Bacillariophytes	Diatoms
Chrysophytes	Yellow-green algae

CYANOBACTERIA

Cyanobacteria are members of a group known as eubacteria or true bacteria. For a long time they were not recognized as bacteria, more often being referred to as blue-green algae. All bacteria belong to a group of organisms known as prokaryotes, a Latin word meaning 'before nucleus'. Bacteria have no organized nucleus. Cyanobacteria are classified as bacteria, not algae, since their genetic material is not organized in a membrane-bound nucleus. Unlike other bacteria, they have chlorophyll and use the sun as an energy source. They are often referred to as 'blue-greens', since the first cyanobacteria identified were blueish-green in colour. However, not all members are this colour. Some are olive or dark green, and others are even purplish in colour.

WHY ARE THEY IMPORTANT?

As mentioned, both algae and cyanobacteria occur naturally in surface waters. Although their size is usually microscopic, when conditions are ideal, both can undergo a phenomenon known as **bloom**. This results when the algae reproduce rapidly and the individuals form clumps visible to the naked eye. Heavy blooms can overtake water bodies, and even choke out portions of streams or rivers. It is difficult to predict when a bloom will occur. However, all blooms require light, nutrients, and oxygen. Some species bloom only in spring, others more frequently in the fall. These organisms can bloom in flowing or standing water. Blooms may even occur under ice in the middle of winter. Large, nuisance blooms commonly form following periods of hot, calm weather when the water is warm. They



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This publication contains excellent information which may be of assistance to you. It is available in [PDF format](#) as a free download directly from the Prairie Farm Rehabilitation Administration (PFRA) website. PFRA is a branch of Agriculture and Agri-Food Canada. An [html version](#) is also available on the website.