AERATION OPTIONS

A technology to address water quality issues
Research Factsheet COHA7-C

What kinds of aeration are available?

Aeration is one of the most common treatments for ponds, and many farms use diffuser airstones to generate small bubbles that help turn over and de-stratify ponds. These stones can be powered by either wind or electricity, although wind-powered systems tend to be less effective. However, newer technology uses nano-sized bubbles that are less visible to the eye but can be far more effective in deeper water as there are billions of them generated, resulting in a significantly greater air-water interface area per unit volume.

Traditional aeration using a diffuser airstone.

Nanobubbler aeration (Moleaer Clear 150).

When is aeration useful?

Older ponds with a build-up of sediment and organic matter benefit from aeration. Aeration essentially brings additional oxygen to the bottom of the pond, which is usually fairly low in oxygen. Despite the obvious turbulence caused by adding bubbles, long-term, aeration will support the degradation of organic matter in the sediment and prevent anaerobic digestion (which results in that dirty water smell). Increased oxygen at the bottom of ponds also supports a healthy zooplankton habitat (zooplankton consume phytoplankton, a group of organisms that cause blooms). Preventing a pond from having 'layers' with differing water quality is important. Note that aeration is still recommended for new ponds to help keep them healthy.

The aerated pond on the right has oxygen throughout the water column (images courtesy of Algae Control Canada).

What are the drawbacks?

Aeration does not solve all pond water quality issues, although it is an important tool in pond management. The deeper the pond, the more challenging it is to have effective aeration. However, using nanobubblers can offset this issue. It is critical to keep the equipment in good repair – regular cleaning and maintenance is needed to ensure the proper generation of bubbles. Time is another factor – long term improvements to sediment quality will take more than one summer!

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