



Extension FactSheet

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Planktonic Algae in Ponds

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Many pond owners are familiar with the problems caused by filamentous algae. The stringy, fast-growing algae can cover a pond with slimy, lime-green clumps or mats in a short period of time. Fortunately, products are available to assist the owner in controlling filamentous algae (Ohio State University Extension Fact Sheet A-3-98 *Controlling Filamentous Algae in Ponds*). Planktonic algae are another group of algae common to ponds. These algae are critical to a pond's food chain as they provide food for the microscopic animals that in turn are eaten by freshly-hatched fish fry. Occasionally, planktonic algae can "bloom" to nuisance levels which may necessitate using control methods.

What are Planktonic Algae?

These algae are microscopic free-floating plants. They are suspended in the top few feet of water of a pond or lake where light is bright enough for them to produce food by photosynthesis. The planktonic algae community in ponds is typically composed of green algae, blue-green algae, diatoms, and euglenas. Some species of planktonic algae, primarily blue-greens, can be toxic to animals and impart an odor or taste to the water.

Seasonal Abundance

Planktonic algae are least abundant in winter when cold water temperatures inhibit their reproduction and growth. This is why most ponds are their clearest in winter. As ponds warm in April, reproduction by algae increases greatly and the spring algae "bloom" occurs. The pond's water becomes distinctly less clear, with water color becoming greenish or brownish depending on the algae species present. In late April and May, reproduction by various microscopic animals (rotifers and daphnia, for example) creates large populations of these ani-

mals which begin to "crop" the algae bloom. The water becomes clearer. Once water temperatures reach about 72 degrees F, the microscopic animal population declines rapidly through decreased reproduction and predation by small fish fry. This allows the planktonic algae to rebound, but usually not to levels of April. In most ponds, planktonic algae levels remain stable throughout the summer unless there is a sudden, unexpected source of new nutrients to cause a "summer bloom." As ponds cool in fall, abundance slowly declines to winter levels. Many ponds become noticeably clearer during fall as algae abundance declines.

When are Planktonic Algae a Problem?

Planktonic algae blooms are rarely a problem for Ohio pond owners, but when they do occur the blooms cause considerable concern. Algae blooms cause the water to appear pea soup green or brown in color. Severe blooms often create the appearance of green paint being spilled on the pond's surface. For the pond owner who desires a clear pond for swimming or for aesthetic reasons, this situation is unacceptable.

Severe algae blooms can cause problems for fish. If the bloom dies-off suddenly, a fish summer kill can result due to oxygen depletion. Bloom die-off can be caused by weather changes, a sudden decrease in nutrient levels, or treatment of the pond with an herbicide. Additional information on fish summer kill can be found in Ohio State University Extension Fact Sheet A-8-01 *Winter and Summer Fish Kills in Ponds*.

What Causes a Nuisance Bloom?

Like all plants, algae require nutrients to grow and reproduce. Because algae are free-floating, they must get those nutrients from the water. They have no ability

to obtain them from the pond bottom. Thus, the higher the nutrient level in the pond, the more algae you will have. At slightly higher nutrient levels, the algae community is often dominated by filamentous algae. This is particularly true during summer. At very high nutrient levels, the algae blooms are typically composed of planktonic algae rather than filamentous algae. Fortunately, few Ohio ponds have very high nutrient levels unless they are receiving unwanted nutrients from the pond's watershed.

There are many possible sources of excess nutrients that might enter a pond and cause a nuisance bloom. Some of the more common sources are fertilizing grass around ponds, too many geese, run-off from livestock operations, and leaking septic systems. Another common cause of summer planktonic algae blooms is the sudden release of nutrients from dying aquatic vegetation or filamentous algae that has been treated with an herbicide. Again, the more excess nutrients added, the more likely the resulting bloom will reach nuisance levels.

Prevention and Treatment

Prevention—Preventing an algae bloom is always preferable to the expense of treating with an algaecide to eliminate it. If a pond owner wishes to avoid a nuisance bloom, he or she should investigate the pond's watershed and determine potential sources of excess nutrients. If sources are found, then a plan to eliminate the source should be developed and implemented. This may require working closely with neighbors.

If a pond is experiencing a severe nuisance algae bloom, the owner should perform the above investigation but may want to postpone implementation until winter if fish are important. As mentioned previously, the sudden depletion of nutrients to a pond with a severe ongoing algae bloom could cause a summer fish kill. In this case, it makes sense to allow cooler fall weather to decrease the algae bloom and then implement a plan to prevent new blooms the next year.

In some situations, it may be impossible to eliminate or substantially reduce unwanted nutrients from entering a pond. Uncooperative neighbors is a common reason for this. A preventative control method is the use of an aquatic dye, such as Aquashade, to prevent initial growth early in spring. The dye must be added by April 1 to insure prevention of that year's algae blooms. A drawback to the use of dyes is that reducing the production of planktonic algae impacts the pond's food chain. Less production at the bottom of the food chain can mean fewer pounds of fish in the pond. Many owners of very nutrient-rich ponds consider this an acceptable outcome when using the dyes.

Algaecide—A nuisance planktonic algae bloom can be quickly reduced with the use of liquid chelated copper compounds, such as Cutrine-Plus or Algae-Pro. Again, it is important to note that a sudden summer die-off of algae can cause a fish kill. Planktonic algae have a very high reproductive rate, so re-bloom may occur in just a few weeks following treatment. Several treatments may be necessary for seasonal control.

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