

Pond Facts #21 Planktonic Algae

Description of Planktonic Algae

- Microscopic algae that float in the water column
- Cause the water to look green, brown, or reddish
- Can sometimes be confused with muddy water
- Plankton algae grow very quickly when conditions are optimum, often resulting in a “bloom” where the pond water becomes colored within a day or two
- Blooms of plankton algae usually crash in early fall around the first frost, causing the pond to clear up very quickly (often overnight)
- Ponds with plankton algae typically have clear water during the winter but cloudy water during summer



Value and Concern to the Pond

- Planktonic algae are at the base of the food chain in the pond or lake.
- They are fed on by zooplankton (microscopic animals) which, in turn, become food for fish.
- Ponds with abundant planktonic algae are often able to support larger populations of fish that grow more quickly.
- Excessive growth of planktonic algae will cloud the water, making it less aesthetically pleasing.
- Overabundance of planktonic algae can lead to fish kills in the late summer and fall. This occurs when the large number of algae dies suddenly due to colder air temperatures.

Prevention

- Large blooms of planktonic algae grow in response to excessive nutrients (phosphorus and nitrogen) in the pond water from barnyards, crop fields, septic systems, lawns, and golf courses.
- Control of overabundant algae is best accomplished by reducing or redirecting nutrient sources from the pond. This can be accomplished by reducing fertilizer applications near the pond, maintaining septic systems properly, redirecting nutrient-rich runoff away from the pond, and maintaining vegetative buffer strips around your pond.
- If you fail to address the underlying nutrient causes of planktonic algae growth, you will probably encounter a perpetual need to control algae blooms in the summer.
- Installation of aeration devices may reduce planktonic algae growth during the summer.

Physical Control

- Planktonic algae are too small to be effectively controlled with any physical or mechanical methods.

Biological Controls

- There are no fish that eat enough planktonic algae to make them viable control options.
- Relatively new products composed of bacteria and/or enzymes are available to control algae growth. The bacteria and enzymes feed on nutrients in the water, making them unavailable for algae growth.
- Bacteria/enzyme products have specific requirements and can be pricy but very effective.

Chemical Controls

- The table below lists several aquatic herbicides that are effective in controlling planktonic algae. When used appropriately following the label instructions they can be safe and effective management tools.

Trade Name	Active Ingredient	Dosage Rate	Notes
Aquashade (Dyes)	Acid blue 9 dye: 23.6% Acid yellow dye: 2.4%	1 quart/acre-ft	Dyes will not be permitted for ponds with a significant outflow to a surface stream; dyes should be used early in the growing season
Copper Sulfate	CuSO ₄ : 99%	0.68 to 1.36 lbs/acre-ft	Water hardness should be measured to determine proper dose; toxic to many fish species; cannot be used on ponds that overflow into a stream
Citrine-Plus, Citrine Ultra, Earthtec, K-Tea	Various percentages of elemental copper	Citrine Plus: 0.6–1.2 gal/acre-ft Citrine Ultra: 0.6–3 gal/acre-ft Earthtec: 0.22 gal/acre-ft K-Tea: 0.7–1.7 gal/acre-ft	Should not be used in ponds with trout, carp, koi, channel catfish, or other sensitive fish
GreenClean	Sodium carbonate peroxyhydrate	30 to 170 lbs/acre-ft	No water-use restrictions

Here are some tips for properly using an aquatic herbicide to control planktonic algae:

- Keep in mind that chemical control is often necessary every year or even multiple times during a year.
- Positively identify the problem in your pond as planktonic algae before proceeding with chemical control.
- Carefully measure the pond area and/or volume to determine the amount of herbicide needed. Consult the fact sheet *Pond Facts 4: Measuring Pond Area and Volume* for more information.
- Before applying a herbicide to your pond, you must submit a completed two-page application form titled *Application for Use of an Algaecide, Herbicide, or Fish Control Chemical in Waters of the Commonwealth* to the Pennsylvania Fish and Boat Commission (PFBC) to obtain a permit. The permit application can be obtained from your local PFBC office, extension office, or online at water.cas.psu.edu/ponds.htm.
- Aquatic herbicides can be purchased from some home and farm supply stores, hardware stores, or various online suppliers. Costs can range from less than \$100 to over \$1,000 to treat a one-acre pond.
- Follow the herbicide label carefully.** It gives specific instructions on when and how to apply the chemical.
- Herbicide treatments should be done early in the growing season before the plants cover a large portion of the pond. Treatment of severe infestations may cause a fish kill due to reduced dissolved oxygen.

Additional Resources

For further information and publications on pond management, visit our Web page at water.cas.psu.edu/ponds.htm or contact your local cooperative extension office.

Prepared by Bryan R. Swistock, senior extension associate, Penn State; and Heather Smiles, fisheries biologist, Pennsylvania Fish and Boat Commission.

Penn State College of Agricultural Sciences research, extension, and resident education programs are funded in part by Pennsylvania counties, the Commonwealth of Pennsylvania, and the U.S. Department of Agriculture.

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