CORNELL Cooperative Extension South Central New York Agriculture Team

How to prevent and control algae in farm ponds

Algae are non-vascular plants (i.e. no vein-like tissues) that grow in all ponds. They are extremely important, being a major source of oxygen and food for other animals living in the pond. There are many forms of algae, ranging from the microscopic life forms that give pond water its green tint to wispy clumps of filamentous algae floating in the water. Some of the larger pond plants growing from the pond bottom are actually branched forms of algae.

Without algae, your pond would not be able to host fish, frogs, bugs, or other living creatures. They are essential to having a healthy pond. Algae can also indicate problems with your pond. Excessive growth of algae and discoloration may mean that the water quality is in trouble. Clumped algae can also interfere with fishing and swimming. If a lot of algae die suddenly in cold weather, their decay can rob oxygen from the water, making your pond unsuitable for fish and other animals. This article explains different methods for preventing alga blooms and for treating algae in your pond.

Prevention of algae

Most pond owners really begin to notice algae when it 'blooms'. An algae bloom is a rapid increase in algae growth. You might look out on your pond one summer day and notice a pea-soup look or blobs of green, slimy material, floating in many areas on the pond. By the time you see this amount of growth, it is usually too late to do anything preventative, but you have several options for removing the algae from the pond. However the best strategy for pond owners is to act preventatively to keep excess algae from growing in the first place.

The most common reason why ponds have excessive algae is nutrient pollution, which is similar to surplus plant food. Nitrogen, phosphorous, carbon, and potassium are the four nutrients that tend to give pond owners the most trouble. They are the chemicals pond plants use, combined with carbon dioxide and water, to grow and make new leaves. In a pond, these nutrients are invisible, dissolved in the water. Combined with bright sunlight on the pond surface and warm temperatures, algae can easily grow out of control.

All pond owners should limit the amount of nutrients flowing into their pond. Common sources of nutrients are fertilizer, farm runoff, septic systems, decomposing lawn clippings, and even rainwater flowing from roads and driveways. You can reduce nutrient flow into your pond by:

- Leaving a 10 – 20 foot strip around the pond unmown – the dense

thicket of woody plants and herbs will take up and remove the nutrients before they enter the pond.

- Restricting fertilizer use where runoff can enter the pond.
- Keeping ponds and septic systems widely separated and if possible prevent positioning the septic field on the "upstream" side of the pond.
- Constructing a long, narrow depression or mini-pond to catch and slow runoff before it enters the pond;
- Keeping livestock, geese, and large groups of ducks away from the pond water.
- Remove excess dead fish if a large-scale fish kill occurs.

Any attempt to eliminate algae from a pond will be thwarted if these common sources of nutrients are not reduced.

Control of algae

Pond owners have several options for controlling algae before and after it grows excessively. A certain level of algae will always be present in the pond. Your goal should be to keep it under control, while preserving its role of oxygen production and food for insects, and other invertebrates. Raking, barley straw, and chemicals are options worth considering.

Raking and hand-removal

The safest method for removing algae from a pond is to rake it off the surface or along the edge of the pond where it is growing. Plan your method ahead of time, so you do not waste time chasing errant clumps across the pond. Pond owners can use a leaf rake, pool-skimming tool, or screen to gather the clumps of algae together. It is easy to compost algae removed from the water, by mixing it with mulch or woodchips in a tall pile.

Barley straw

Barley straw has been publicized as an effective, organic remedy to algae problems. However, research shows that barley straw does not always solve algae problems. In particular, pond-scale tests show that mat-forming algae, floating on a pond surface, is seldom affected by barley straw. More research is being done, but pond owners should be wary of absolute claims regarding barley straw's effectiveness. When tested, barley straw has not held up as a reliable answer.

British researchers have found that barley straw controls algae through a complicated chemical reaction that is poorly understood. Since the US Environmental Protection Agency has determined that barley straw is not a legal pesticide, it may not be sold as an algae control product. Homeowners may apply it to their ponds, but only with the caution that it may not always work as expected.

If you plan to apply barley straw to a pond, follow these general recommendations:

- Apply barley straw to a pond by the end of June. The algae control properties of barley straw take several weeks to begin.
- Determine your pond's size in acres, then plan to apply 200 – 250 pounds of barley straw per acre (about 4-5 bales).
- When you get the bales, break them up and fluff up the stems so they make a big, loose pile. Stuff the barley straw loosely into several woven sacks, like 50# onion bags, shaped snow fencing, or netting. About seven to ten pounds will fit into a full-size onion bag, and up to 30 pounds can be stuffed into plastic snow fencing. Insert a buoyant object into the bag, fencing, or netting. The assembly should be able to float at the surface of the pond.
- Place the floating sack on the pond surface and anchor it to stay in place. The sacks should be spaced evenly around the pond to assure even coverage. Barley straw sacks should not be anchored near the edge of the pond, except near an inflowing watercourse. Make sure they never block the pond spillway.

Chemical control of algae

Numerous chemical algaecides are available to pond owners who desire quick and convenient eradication of algae. Only algaecides labeled for use in water can be used in private ponds. You can obtain information about the products by consulting a pond supplier or farm store. Active algaecide ingredients include copper, copper sulfate, endothall, simazine, or diquat dibromide*. It is illegal to use a chemical for pond plant control unless it is specifically labeled for that purpose. In the case of algae, the label should include the word "algae" or the term "algaecide." If you are in doubt, ask a qualified advisor or contact the manufacturer.

There are several constraints and limitations associated with algaecide use that should be considered beforehand. In many cases, aquatic algaecides contain restrictions regarding use of the pond for swimming, fishing, and watering livestock. Fish, swimmers, and other pond users can be seriously harmed if algaecides are used improperly. Most algaecides only work when they are present in specific concentrations in the water. As a result, ponds with high rates of flow-through or rainy weather conditions can rapidly dilute or flush away the herbicide, preventing it from being effective. There is some evidence that specific herbicides will interfere with amphibian egg development. They can be much more expensive than the other control options.

The amount of chemical algaecide to use, and directions for application are listed on the label of the product. In some cases, a non-ionic surfactant or spreader can be mixed to improve performance of the algaecide and reduce over application. Follow label directions regarding

personal protection, spray drift, and appropriate weather conditions for application.

In New York State, all aquatic chemical treatments require a NYS Department of Environmental Conservation permit, even if the pond is on private land. Contact your regional DEC office and ask for the "aquatic herbicide permit application." If your completed application is approved, you must show proof of having the permit before purchasing aquatic herbicides. You may wish to hire a professional pesticide applicator that is certified in the category "Aquatic Vegetation" to apply chemical herbicides according to your plans.

Less effective treatment options

Many different types of pond dyes are available for controlling pond algae. The only dyes that will be effective are those sold as algaecide dyes, which require a permit to purchase in New York. Dyes that do not claim to be algaecides will not be effective. They cannot block sunlight reaching the algae at or near the surface of your pond. Additionally, dyes become diluted if the pond has outflow, such as after a heavy rain or from a spring.

Grass carp sometimes eat algae, but it is uncommon. In the past, they have been seen eating plants coated with algae, but their mouth and gills are not positioned to eat algae effectively. Very young grass carp may consume algae, but not after the first year or so. Although grass carp can be used to control some aquatic weeds, they should not be stocked to control algae. In fact, grass carp can add to a nutrient problem and cause algae to multiply if they are not longer eating efficiently and discharging copious wastes.

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