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Controlling Pond Algae with Barley Straw

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Algae are microscopic, free-floating plants which comprise a critical component of a lake's food web. They are fed upon by tiny animals called zooplankton which are an important food source for fish. Algae color the water green or brown, and uncontrolled growth can lead to nuisance surface scums, poor water clarity, noxious odors and an overall reduction in the lake's recreational value. Excessive levels or "blooms" of algae occur when nutrients, especially phosphorus, are abundant. After taking steps to reduce the amount of phosphorus entering a lake, it may be desirable to control the algae growth directly. Typically this is accomplished by treating the lake with copper-containing compounds such as Cutrine Plusr or copper sulfate. These treatments are effective short-term controls of algae, but they are also toxic to nontarget organisms that are important food sources for fish such as zooplankton and insect larvae. Re-application of these chemicals is usually necessary several times each year and the long-term buildup of copper in the lake sediments is an environmental and health concern.

The Centre for Aquatic Plant Management (CAPM) in the United Kingdom is promoting a method of controlling algae that involves the application of barley straw to lakes. As the straw decomposes in the lake, it releases a chemical which inhibits algal growth. This method may be a good alternative to using copper-containing compounds since it is not known to have toxic effects on rooted aquatic plants, zooplankton, insect larvae or fish. It appears to be a cost-effective and environmentally acceptable way to control algae in ponds and lakes.

When to Apply the Straw

The decomposition process is temperature dependent and occurs faster in warmer water. When the water temperature is below 50°F, it takes approximately six to eight weeks for the decomposing straw to produce enough of the growth inhibiting chemical to effectively control algae. However, it only takes one to two weeks when the water temperature is above 68°F. Once the straw begins to produce sufficient amounts of the chemical, it is likely to control algae for four to six months. Therefore, straw should be applied in mid-late April in order to control summer algal growth in Nebraska ponds and lakes.

Amount of Straw to Apply

The amount of straw required to control algal growth depends on the surface area of the lake. Lakes with a history of algae problems should be treated at a rate of 225 pounds of barley straw per surface acre.

This rate is equivalent to about 0.8 ounces of straw per 10 square feet of surface area. Lower doses can be tried, but should not fall below 90 pounds of straw per acre or 0.3 ounces per 10 square feet.

The effectiveness of the straw is reduced by sediments suspended in the water (i.e. "muddy" water). Therefore, a higher dose may be required in "muddy" lakes or lakes with extremely severe algae problems. In these types of lakes, apply 450 pounds per acre (1.7 oz per 10 square feet), but do not exceed 900 pounds per acre (3.3 oz per 10 square feet). The decomposition of the straw requires oxygen, and applying excessive amounts (greater than 900 lbs per acre) of straw could reduce the oxygen content of the water to levels that stress or kill fish.

Example: Determining the amount of straw required to treat a 5-acre pond.

1. The surface area of the pond is 5 acres.
2. The selected dose is 225 pounds of straw per acre.
3. Multiply the area of the pond (in acres) by the amount of straw required per acre to calculate the total amount of straw required to treat the whole pond (5 acres x 225 lbs/acre = 1125 lbs).
4. To calculate the number of bales needed to treat the pond, divide the total amount of straw required to treat the whole pond by the weight of a single bale of barley straw. For this example, assume one bale weighs 45 pounds. However, the size and weight of bales can be highly variable. It is recommended that the approximate weight of the bales be determined at the time of purchase (1125 lbs, 45 lbs/bale = 25 bales).

How to Apply the Straw

1. The straw bales must first be broken apart. Bales are packed too tightly and do not allow adequate water movement through the straw.
2. The loose straw should be placed in some form of netting. In larger lakes and ponds, CAPM suggests wrapping the straw in the cylindrical netting commonly used for wrapping Christmas trees. This netting can be used to construct straw-filled tubes up to 65 feet long which contain about 110 pounds of straw. Loose woven sacks (e.g., onion sacks) can be used in small ponds that require low doses.
3. Use floats to suspend the straw-filled netting in the upper 3 to 4 feet of the pond. The straw will lose its effectiveness if it sinks below this depth. Water movement near the surface will keep the straw well oxygenated and distribute the growth inhibiting chemical throughout the upper portion of the pond. This ensures that the chemical is produced where the majority of the algae are growing and away from the bottom sediments which will inactivate the chemical. Therefore, it is recommended that floats be inserted inside the netting at the same time the netting is filled with straw. The netting is then anchored into place using rope attached to bricks or concrete-filled buckets.

Where to Apply the Straw

In order to improve the distribution of the growth inhibiting chemical, CAPM recommends placing several small quantities of straw around a pond. Place each net of straw roughly equidistant from other nearby nets and the shore. The placement of the nets does not need to be exact and practical

considerations such as corridors for boating and angling may influence the location of the nets. In small ponds where only one net of straw is required, place the net of straw in the center of the water body.

Sources of Barley Straw

Large Ponds and Lakes

University of Nebraska Agricultural Research and Development Center
Located approximately 25 miles north of Lincoln near Ithaca, Nebraska
Contact Lannie Wit or Jeff Witkowski at (402) 624-8087

Tim and Kris Cada
Clarkson, NE
(402) 892-3138

Dale Fattig
Brady, NE
(308) 584-3451
www.Fattigfish.com

Small Garden Ponds

Aquatic Eco-Systems, Inc.
Apopka, FL
(407) 866-3939

Plantabs
Baltimore, MD
(800) 227-4340

Pond Solutions
www.pondsolutions.com

Mellingers
Ohio
(800) 321-7444

Sources of Netting

Aquatic Eco-Systems, Inc. (Standard netting)
Apopka, FL
(407) 866-3939

The Campbell Company, Inc. (Christmas tree netting)
Wautoma, WI
(800) 242-2019

Kelco Industries (Christmas tree netting)
Milbridge, ME
(800) 343-4057

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For Further Information Contact:

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University of Nebraska
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Lincoln, NE 68583-0814
(402) 472-7783

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