



Extension FactSheet

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Algae Control with Barley Straw

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Filamentous algae is the most common aquatic weed problem in Ohio ponds. Its “sudden” appearance as it floats off the bottom causes consternation to pond owners as it degrades the aesthetic and recreational value of their ponds. Additionally, large amounts of filamentous algae can lead to a fish kill if specific climatic conditions occur (see Ohio State University Extension Fact Sheet A-8-01, *Winter & Summer Fish Kills*). A number of mechanical, biological, and chemical control measures are available, each with their own advantages and disadvantages. A review of these measures can be found in Ohio State University Extension Fact Sheet A-3-98, *Controlling Filamentous Algae in Ponds*.

Barley straw has received considerable attention as an algaecide based on research done in England. Results showed that barley straw prohibits the growth of many types of algae, but not all. **However, recent research in the United States has not yielded conclusively positive results.** While research results are inconclusive, the use of barley straw to control pond algae has grown. The purpose of this fact sheet is to provide pond owners with application guidelines *should they decide to try barley straw as an algae control technique*.

How Barley Straw May Work

The decomposition of barley straw in water produces and releases many compounds, one of which *may* control algae populations. The chemical compound does not eliminate existing algae cells but interferes with and prevents the growth of new algae cells. As “old” algae cells naturally die off, few new algae cells are produced and the algae population is controlled as long as the compound is being produced.

There are a number of other types of straws available, including wheat, linseed, and oil seed. However, research in England has shown that barley straw is the most effective straw and provides control for a longer period of time.

Note: pond owners should use dried straw, not barley hay or fresh barley. The addition of those materials actually releases nitrogen and phosphorus into the water which promotes algae growth. These fresher materials also decompose very quickly and can cause low oxygen problems in ponds.

How Much to Apply

The amount of straw to apply is based on pond surface area rather than volume (for calculation tips, see Ohio State University Extension Fact Sheet A-2-98, *Pond Measurements*). It is generally recommended that about 0.025 pounds of straw be used for every square yard of pond surface area. In a small ornamental pond of four square yards (about 100 square feet), only 0.01 pounds is needed. In a one-acre pond, the amount required would be about 107 pounds of straw or 2-3 standard bales. In a pond with a history of algae problems, a higher initial amount of 225 pounds per surface acre may be warranted.

How and Where to Apply

The production of the critical compound during straw decomposition must occur in the presence of oxygenated water. In small ornamental ponds, simply place the small amount required loosely in a mesh bag and place in the water. A weight of some sort should be added so the bag is on the pond bottom.

In larger ponds, more effort is needed. Each bale should be broken up as much as possible so that nearly all decomposition will occur in the presence of oxygen. About 1/3 of a bale should be placed in a large, weighted permeable bag of some sort. If an intact bale is placed in the pond, only the decomposition occurring along the outside of the bale will occur in the presence of oxygen. Decomposition inside the “tight” bales will occur in the absence of oxygen and will not produce the chemical. In a one-acre pond, this will result in 6-9 loosely filled separate

bags. These bags containing loose straw should be placed around the perimeter of the pond in water no deeper than 6 feet. Most algae production occurs in shallow water so the bulk of the control compound needs to be located there. Attaching a rope to each bag is advisable in order to retrieve the bags and replace the decomposed straw with fresh straw as needed.

When to Apply

Barley straw appears most effective when used to inhibit development of algae, but is apparently not effective in controlling existing algae. For this reason, barley straw should be placed in the pond in April for best results. As the pond water warms in May, filamentous algae growth and reproduction along the bottom can be explosive. Treatment after this period may not yield the desired control results. April treatment helps control algae growth during this critical May period.

Barley straw will fully decompose in about 4-6 months in Ohio's warm summers. If the barley straw decomposes completely before the end of July, substantial algae growth can still occur and may lead to an undesirable late summer situation. Therefore, in ponds with a history of algae problems, old straw should be replaced with fresh in mid-July. This may result in total seasonal control.

Advantages

Although the decomposition of barley straw produces a chemical to effect control, the chemical has not resulted in any documented ill effects to fish, waterfowl, or humans. The chemicals produced during this process are naturally occurring and are produced by the decomposition of any plant material in water. Many pond owners are reluctant to use manufactured chemicals in their ponds to control algae. Barley straw provides them with an alternative.

Another advantage is the slow decomposition process which provides for long-term control. Quite often, mechanical removal or herbicide control may have to occur frequently during the growing season. This can become physically exhaustive or expensive.

Disadvantages/Possible Remedies

Barley straw is not a "cure-for-all" to controlling filamentous algae in ponds. Several pond management concerns associated with barley straw need to be considered prior to its use.

- Barley straw will not control aquatic plants, such as pondweeds. In fact, barley straw may actually promote aquatic weed growth to nuisance levels. Barley straw may also control single-cell algae (phytoplankton) populations. This results in very clear water which allows for more sunlight to reach submerged plants, resulting in lush growth.
- Adding additional organic material to ponds carries the risk of a fish kill. Decaying vegetation, whether it be barley straw or aquatic plants, requires large amounts of oxygen. While the risk may be small, it could pose a problem for some ponds. In these situations, the pond owner may wish to consider installing an aerator to reduce this risk.

Regulatory Concerns

It is unlawful to sell barley straw if the seller claims that barley straw "controls" algae. This is because the words "controls algae" makes barley straw a pesticide from a legal perspective according to the U.S. EPA and is therefore subjected to all the rules associated with unregistered pesticides. Certified commercial applicators, lake management companies, and garden/nursery companies cannot legally sell barley straw if algae control claims are made.

The private pond owner is under no such regulatory obligation. In these instances, barley straw is considered to be a home remedy and is not subject to EPA regulations. People living along public lakes cannot use barley straw in front of their house as the lake is considered "public water" and falls under EPA regulations.

Reference

Newman, J. 1997. Control of Algae with Barley Straw. Information Sheet No. 3. Institute of Arable Crops Research, Center for Aquatic Plant Management. Berkshire, UK.

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