

Aquaculture

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Herbicides and Grass Carp Can Control Pondweed

A person called us one day describing a weed problem in a 1/2- acre pond near his house. The pond was infested with a submersed plant with small narrow leaves that grew from the pond bottom to the surface. Once the stem reached the water surface, small nearly oval shaped leaves would develop and float on the surface like a micro lily pad. The weed grew all around the pond's edge, covering half the surface area.

The pond owner wanted to be able to fish from the bank without getting caught in the weeds, to go swimming on a hot summer day, and to have a nice-looking pond. The owner wanted to know the options available to control this weed. Below we describe the process we used to answer that question and the tools we used to make the decision.

We identified the weed as a member of the genus *Potamogeton*, also known as pondweed. Two similar plants are *Chara* and *Najas*. (You can see photos of aquatic plants on our Web site (www.wvu.edu/~agexten/aquaculture/gallery.htm)).

There are many types of pondweed—sago pondweed, leafy pondweed, curly leaf pondweed, small pondweed, flat-stemmed pondweed, American pondweed, Illinois pondweed, and others. All live in fresh or brackish water and produce rhizomes from which arise long, submersed stems bearing submersed alternate leaves. Leaves of *Najas* and *Chara* are opposite, not alternate. Some species of *Potamogeton* have floating oblong leaves. Two species occurring in West Virginia are American pondweed (*Potamogeton nodosus*) and small pondweed (*P. pusilus*). (Pat: photos here)

A program called the Aquatic Plant Information System (APIS) on CD-ROM*, is a useful tool for identifying aquatic weeds and choosing the best herbicide treatment. Other sources of information are available through your county's WVU Extension agent or on our Web site (www.wvu.edu/~agexten/aquaculture).

In this situation, the pond was not used for irrigation or as a drinking source for people or livestock. Herbicide recommendations included Diquat, Endothall, and Fluridone. They are safe to use with fish in ponds when label instructions are followed.

Diquat: Diquat is the active ingredient in the aquatic herbicide Reward and in Weedtrine-D, available as a liquid. This nonselective herbicide kills living tissues it comes into contact. It is applied directly to exposed leaves or mixed with water to form a dilute solution that kills the submersed plant organs. It is best to treat the weeds before they reach the surface. Diquat will not, however, reach the roots to kill the underground storage organs. Regrowth can be expected. Because this herbicide also binds irreversibly with charged soil particles like clay, it should not be applied in muddy water.

Endothall: Endothall is the active ingredient of the herbicides sold commonly under the trade names Hydrothal, Aquathol, and Accelerate. It is found in both liquid and granular formulations as amine, disodium, or potassium salts. The amine formulation can be toxic to fish. This herbicide is selective although it provides a broad spectrum of weed control and is most effective if applied to water above 65 degrees F. Endothall also does not control the underground storage organs, so regrowth can be expected.

Fluridone: is the active ingredient of the herbicide ‘Sonar’ available as Liquid or Slow Release Pellet formulation. Fluridone is selective herbicide but most species of pondweeds are susceptible to this herbicide. It is systemic and can provide a more thorough kill of the weeds including the underground organs. However, it is typically slow-acting and takes one to three months to notice complete activity. It has to be applied in early spring as soon as the weeds begin to grow to obtain optimum control.

We checked the local farm supply store, which had Diquat in stock. Products containing Diquat included Weedtrine-D and Reward. A 1-gallon container of Weedtrine-D cost \$57.10. According to the label, we needed 5 gallons to treat a 1/2-acre pond. A 1-gallon container of Reward cost \$133.30, and 1 gallon was needed to treat the pond. . A pint of Sonar can be ordered through the local farm supply store for \$300 and is sufficient to treat this pond. Because Endothall (Aquathol K) was not available at the local farm supply, we called the manufacturer (800-275-3325). Granular Aquathol Super K was available in a 10-pound pail for \$196.50, and its treatment rate is 4.4 pounds per acre-foot, or a total of 8.8 pounds of granules.

Grass carp is another option for controlling pondweed. They are a different species from the common carp found in West Virginia’s rivers and streams. Grass carp, also called White Amur (*Ctenopharyngodon idella*), are sold in West Virginia only as sterile fish by vendors approved by the West Virginia Division of Natural Resources (DNR). They will not reproduce and are compatible with other fish. A pond owner must obtain a free permit from the DNR before stocking

grass carp in a pond. Grass carp are a good option if the pond owner wants complete long-term control of tender-rooted, submersed vegetation like pondweed.

For this 1/2-acre pond, we recommend that seven grass carp (10 inches or larger) be stocked. If this pond remained cold enough to hold trout over the summer, grass carp would not be recommended. Grass carp need warm water to develop a good appetite and take a season or more to provide control. They also reduce the use of herbicides and fits well with the Integrated Pest Management (IPM) philosophy. Stocking in the spring before the weeds jump out is a good idea. The fish cost about \$15 each, including delivery, for a total of \$105.

If cost is the deciding factor in controlling pondweed, grass carp is a good choice. If immediate control is desired or if control is required only in certain parts of the pond, then herbicides may be preferred. Your costs may vary from those described in this article. Treatment prices do not include tax. This article provides educational information and does not endorse a specific product or company.

| Treatment | Cost/treatment |
|-----------------------|-----------------------|
| Weedtrine D | \$285.50 |
| Reward | \$133.30 |
| Sonar | \$300.00 |
| Aquathol K (granular) | \$196.50 |
| Grass Carp | \$105.00 |

*The Aquatic Plant Information System CD ROM available free from the U.S. Army Corps of Engineers CEERD-EE-A, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199; e-mail: grodownm@wes.army.mil .