Control of Aquatic Plants

Robert C. Hiltibran
Aquatic Biology Section
Illinois Natural History Survey
Urbana, Illinois 61801

Many persons, including golfers, have seen bodies of water with thick infestations of aquatic vegetation which appear to be so dense that a golf ball at the water hazard could not penetrate the mats. The superintendents have had their frustrations when the vegetation infestation clogs the water intake. There is the body of water strategically located in a beautiful setting which has its beauty marred by the ussightly appearance of aquatic plant infestations. The question, therefore, is can anything be done to prevent or control these infestations? Or is it doomed to be this way from this time forward?

At the present time there are several herbicides available which, when used at the recommended rates against the aquatic species known to be susceptible to the various herbicides, will eliminate many of the existing stands of common aquatic weeds. It is the purpose of this paper to present some of these suggestions.

There are three general methods which can be used to control the aquatic plants. These are: (1) Mechanical methods such as removing the infestation by some mechanical device such as the dragging of chains, underwater cutters, etc. (2) Biological methods such as the introduction of plant-feeding carp or other bottom-rooting fish into the pond or the use of fertilizer. Biological methods can also result in another problem; for example, using fertilizer could help produce a dense mat of filamentous algae which could be more troubelsome than the other aquatic vegetations. (3) The use of chemical preparations.

Since a general-purpose herbicide is not currently available, it is necessary to select a suitable herbicide preparation which will control the aquatic plant infesting the body of water.

The first step in any weed control program is to identify the plant. To facilitate the identification, the various common aquatic plants have been grouped into five categories based on their distribution in water. The submersed aquatic plants are further subdivided based on the attachment of the leaf to the center stem. Therefore, by placing the aquatic plant in the appropriate group, selecting a suitable herbicide preparation is made easier.

Group 1 — Free Floating Aquatic Plants

Members of this group float on the water surface and drift with wind and water currents. A common, well-known example is duckweed **(Lemna minor)** which can be controlled by using either liquid Aquathol or diquat cation at a rate of 1 cup per 4 gallons of water and applied as a fine spray to the water surface.

Group 2 — Emergent Aquatic Plants

Plants of this group have their roots in the pond bottom and the stems and leaves extend above the surface of the water. Usually these plants do not grow in water over three or four feet deep. Common examples are cattail **(Typha latifolia)** and arrowhead **(Sagittaria latifolia).**

Group 3 — Submersed with Alternate Leaf Attachment

The various plants in this group are members of the genus **Potamogeton** and have either slender, round, or pointed leaves, or thin membranous, grass-like leaves. Some have leaves with wavy margins. Leaves are all attached to the center stem in an alternate arrangement, i.e., with one leaf from one side of the stem, alternating with the next leaf above or below on the opposite side. These plants have flowers and fruiting bodies of rather similar appearance and location.

Common examples of this group in Illinois are curlyleaf pondweed **(Potamogeton crispus),** leafy pondweed **(P. foliosus),** sago pondweed **(P. pectinatus),** and small pondweed **(P. pusillus).** These species can be controlled with Aquathol (Pennsalt Chemical Co.) at a rate of one part per million, or diquat cation (Chevron Chemical Co.) at 0.5 ppm.

Group 4 — Submersed Plants with Whorled or Opposite Leaf Attachment

These plants have either two leaves attached to the same point on the center stem (opposite) or four leaves attached to the same point on the center stem (whorled). The leaf structure will vary greatly and may include grass-type leaves or leaves with very delicate structure. The important point is the manner of leaf attachment. Common representative species are coontail **(Ceratophyllum demersum),** water milfoil **(Myriophyllum spp.),** and southern naiad **(Najas guadalupensis).** Coontail and water milfoil can be controlled with granular 2,4-D or liquid silvex at 2 parts per million (ppm), whereas all three species can be controlled with diquat cation at a rate of 1 ppm.

Group 5 — Floatingleaf Aquatic Plants

Although the plants which constitute this group come from several families, they all have leaves that float upon the water surface. These vary from small oval ones to one which are long and narrow. Leaves vary in length and/or diameter from ¾-inch to several inches. Common examples of this group are American pondweed **(P. nodosus),** which can be controlled by Aquathol at a rate of 1 ppm or an application of ½ cup of liquid Aquathol (2 lbs./gal.) diluted to one with water and applied to the floating leaves, and water lily, which can be controlled by granular 2,4-D at a rate of 2 lbs. of 20% formulation per 440 square feet.

Algae, both the filamentous species and those that resemble true plants, such as **Chara** spp. and **Netella** spp., can be controlled by using copper sulfate.

It is not possible in a short article to discuss all the weed problems and the various control techniques. For additional help in indentification, the reader is referred to the series of mimeographed leaflets, "The Chemical Control of Some Aquatic plants," distributed by the Illinois Natural History Survey or Fishery Bulletin No. 4, "Aquatic Weeds," distributed by the Division of Fisheries, Department of Conservation. The above publications have identification aids and control recommendations. "Aquatic Plants of Illinois" available from Illinois State Museum Popular Science Series, Vol. VI, is available from the State Museum and contains only indentification techniques.

L. B. J. wants $20,000,000.00 for a war on rodents. Now that's what we call one h - - - of a better mouse trap!