

Herbicides, algaecides and colorants can combat aquatic weed overgrowth

Cattails, waterlilies and other aquatic plant life are always welcome in small quantities. But too many can be a control challenge.

by Terry McIver

■ If there's a body of water on any of the landscapes you manage, sooner or later you'll encounter aquatic weeds or algae.

Whether or not aquatic plants are a problem depends largely on the amount of growth present in the pond or lake. Several hundred native plants grow in low numbers and serve as food sources and protection for fish and wildlife. Such plants should ideally cover up to 40 percent of a pond or lake.

If allowed to grow wild with no control at all, aquatic plants can lower the quality of drinking water, clog natural waterways and man-made systems, reduce game fish populations, and throw cold water on water sports.

And nothing looks worse on a golf course than an algae-choked pond.

Control methods— Drastic weed problems require drastic measures.

In weed-choked waterways in Florida, for example, controlled burns are often used to reduce massive weed acreage (see sidebar).

For much smaller weed problems, there



A worker applies Rodeo to brush growing in a roadside canal.

Photo courtesy of Monsanto

are two kinds of aquatic herbicides: systemics and contacts. Systemics enter the plant and disrupt growth or metabolic functions. Contact herbicides create chem-

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Great balls of fire!

■ Aquatic weeds thrive in Florida. Control measures include harvesting, chemical control and—when you want to remove acres of weeds quickly—controlled burning.

Joe Hinkle, environmental specialist with the Florida Department of Environmental Protection, Lake City, Fla., often oversees burns of these marshy areas. In one recent project, 350 acres of sawgrass, maidencane and hardwood were burned out of Orange Lake.

"Existing airboat trails and a natural creek on the lake's east side were used as firebreaks," explains Hinkle. "Some firing was conducted from an airboat to enhance firebreaks in thick areas of vegetation and to act as a visual guide for the aerial ignition of the rest of the burn area."

"Aerial ignition was conducted using the Delayed Aerial Ignition Device, or ping-pong ball system."

It might sound like fun, but it's serious business. Small, plastic spheres containing potassium permanganate are injected with ethylene glycol and jettisoned from the copter. By the time the balls touch down,



combustion has begun inside, which then ignites the weeds. According to Hinkle, the aerial drops cut the time needed for the burn and reduces the amount of smoke.

They've got all kinds of toys for battling aquatic weeds in Florida. Another is what Hinkle calls a "cookie cutter," an airboat equipped with blades which clear a path through the water. Harvesters are another popular control device.

"Floating islands in Lochloosa Lake continually move around in the lake," says

Hinkle. "These large mounds of weeds block public boat ramps and impede access to the public." In a trial project, the weeds were pushed to the public boat ramp, removed, and deposited to an upland site. The majority of these islands consisted of two exotic species of wild taro, alligatorweed and a native pennywort.

—T.M. (Photo by Terry Sullivan)

AQUATIC ALGAECIDES AND HERBICIDES

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ical imbalances, disrupt energy flow or cause physical damage to the plant surface.

Another chemical approach is to use dyes or colorants, which interrupt photosynthesis by acting as aquatic sunblocks.

You might choose to add an adjuvant to the herbicide mix, depending on the circumstances. These products are designed to improve the sinking, confinement and contact properties of aquatic herbicides. Ed Miller, owner and president of Southern Weed Control, Deerfield Beach, Fla., has had good luck with Terra's Subcide adjuvant. "I use it for drift control when using Rodeo on submerged grasses, with copper algaecides and Diquat," he notes.

"You want to keep the chemical where you put it, for as long as possible; that's my philosophy," says Miller, who has also been having success recently with the Aquashade dye, after "giving it time."

Biological control agents include two weevils (*Neochetina*), a fungus (*Cercospora*) and the water-hyacinth mite

Four types of aquatic weeds:

Emergent: These plants grow above the water in shallow areas. Many are not true aquatic plants, and could survive out of the water. Examples: cattails, arrowhead; spikerush; waterlily, bulrush.

Submerged: Rooted at the bottom and are completely underwater. Submerged weeds are usually "flaccid" and lack rigid cellular tissue. Flowers, if present, may extend above the water surface. Examples: pondweeds (sago/small/curly-leaf/American); widgeon grass; southern naiad; coontail; hydrilla.

Floating: Plants with leaves that float on the surface and are rooted on the bottom, as well as free-floating plants. These require water to live. Examples: duckweed; water hyacinth; common salvinia; water lettuce; yellow and white water lilies.

Algae: Algae has no true leaves, stems or root systems. The most common type found in golf course ponds is filamentous algae, also referred to affectionately as "pond scum." Other examples: planktonic algae, which resembles pea soup, and pithophora, which grows in clumps and resembles steel wool. —T.M.

SUPPLIER	PRODUCT	SPECIFICATIONS
ABI, Inc. Circle No. 311	Gel Pac	Algae control product the company describes as "environmentally friendly." Use one packet per week for every 10 acre-feet of pond water. Results seen within three weeks.
Applied Biochemists Circle No. 312	Various	Marketers of a line of algae and aquatic weed control products, including Aquashade aquatic dye; Cutrine-Plus liquid algaecide with chelated copper; Weedtrine-D for emerged, submerged and floating plants; and Aquashade OA, a dilute formulation for garden ponds and fountains. The company has struck a marketing agreement with Rhone-Poulenc to market Aqua-Kleen granular aquatic herbicide.
Bonide Products Circle No. 314	herbicides	Bonide copper sulfate pentahydrate; diquat.
Clean-Flo Circle No. 315	C-Flo 6	Formulation of beneficial microorganisms; bacterial enzymes; nutrients and synergists. Microorganisms feed on nitrogen and phosphorus, making it unavailable for algae.
Enviro-Reps International Circle No. 316	Bio-Restoration	Preventive and corrective bio-formulas for pollution control; consists of bacteria-enzymes.
Great Lakes Biochemical Circle No. 317	algaecides	Algimycin PLL-C chelated copper, available in liquid or slow-release tablet; Algimycin GLB-XII wetttable powder.
Lakemaster Circle No. 318	Lakemaster	Complete unit, including air compressor and regulator; kills algae by reducing the amount of phosphorus in the water. Backup system kills residuals with copper low-dose electrodes and algaecide injections if needed.
Lesco Circle No. 319	HydroBlock	Filters wave lengths of sunlight to control weeds and algae in natural and manmade contained lakes and ponds, including ornamental, recreational fish rearing and fish farms.
Monsanto Circle No. 320	Rodeo	Controls a wide range of emergent-type plants growing in and around aquatic sites. Begins to show results two to seven days after treatment.
Parkway Research Circle No. 321	Algae Rid	New liquid aquatic algaecide, effective on a broad range of aquatic algae. Compatible with the company colorants, Blue Lagoon and Blue Lagoon WSB. Also markets Di-Quatic for ponds, lakes and drainage ditches where there is little or no outflow of water; also Consan Triple Action 20 algaecide.
SePro Circle No. 322	Sonar	Vegetation management in lakes, ponds and rivers.
Systematic Irrigation Controls Circle No. 323	algaecides	Ultra-Violet compound, an inorganic nucleic acid.
Terra International Circle No. 324	Subcide	Adjuvant designed to help herbicide cling to aquatic weed surfaces for longer lasting weed control. The company's Riverside line includes 2,4-D Amine 4 to control a large variety of broadleaf weeds in lakes.
Zeneca Circle No. 325	Reward	Diquat dibromide for use on both turf and aquatic areas, along the edges and non-flooded areas of ponds, lakes, drainage ditches and canals. Controls submersed, floating and marginal weeds; controls algae when used in conjunction with an approved algaecide.
Whitmire Research Laboratories Circle No. 326	PT 2000 Green Shield	Biodegradable compound to control algal, fungal, bacterial and viral plant pathogens in pools, fountains and water displays. Also has non-aquatic applications.

(*Orthogalumna*).

Fertilizers—Inorganic fertilizers can control underwater vegetation in the southeastern U.S. The theory is that the fertilizer will produce a "bloom" of microscopic algae which will shade out rooted submersed vegetation.

Excellent results have been obtained with this method in relatively infertile impoundments in southern Illinois, by the addition of a triple superphosphate. The fertilizer is applied before the growing season, and additional applications are made to maintain a "bloom" of algae so numerous that your hand can't be seen when submerged to elbow depth. This method is not recommended for all bodies of water, as it could make the problem worse, and will make the water unfit for human consumption.

Inspect first—The most important first steps in a management program are to learn the most common species of nuisance plants and regularly inspect the entire body of water. Your next move is based on what you find.

Stage of plant growth, water temperature and weather conditions are the three main factors to consider before you apply products.

Initial treatments to control aquatic weeds work best when applied before weeds are fully grown. This is about May 1st in southern areas and June 1st in northern areas.

One exception to this is Rodeo, which is best applied to aquatic plants "at or beyond early-to-full-bloom stage of growth." The application of Sonar is an other exception. Apply "prior to initiation of weed growth or when weeds begin actively growing."

For best results, most chemicals should be applied early in the day under sunny conditions. Water temperatures above 60°F are recommended. Check all product labels for further information regarding water temperature and weather factors, and for further application suggestions.

—Sources: "How to Identify and Control Water Weeds and Algae," edited by James C. Schmidt. The book is well-organized, with information on various types of aquatic weeds, treatment options and diagrams. Cost is \$6.95; call Applied Biochemists at (800) 558-5106.

Illinois Department of Conservation's Department of Fisheries: "Aquatic Plants, Their Identification and Management."

POND AND LAKE COLORANTS

SUPPLIER	BRAND NAMES	DESCRIPTIONS
Applied Biochemists Circle No. 327	Aquashadow Lake & Pond Colorant	Blended formulation of water soluble dyes packaged in convenient water soluble packets. Beautifies murky, cloudy or off-colored water with a pleasing natural aqua-blue tint. Complete, even dispersion occurs within hours.
Becker Underwood Circle No. 328	Lake Colorant WSP	Concentrated blend of dry-flowable colorants in easy-to-use water soluble packets (each treats one acre-foot of water) which eliminate need for measuring or any applicator contact. No mess. No stained hands or clothing ruined. No plastic jugs for disposal.
Clean-Flo Laboratories Circle No. 329	Sky Blue Lake Dye, Sky Blue Green Lake Dye	Organic dyes that enhance natural beauty of your pond or lake. Can be used to hide submerged plants from view and to speed up removal of nutrients when used with Clean-Flo Multiple Inversion. Compatible with chelated copper algicides and most other chemicals used in aquatic environment.
Lesco Circle No. 330	Lake and Pond Colorant	Concentrated blend of dry colorants in pre-measured water-soluble packets. Clean, convenient to use. Transforms pale or off-color water into a natural-appearing deep blue. Treated water is non-staining and may be used for recreation and turf irrigation.
Parkway Research Circle No. 331	Aqua Clear Products	3 choices: liquid concentrate, super concentrate or water soluble bags. Adds natural beauty to ponds, lakes, fountains and lagoons by coloring them beautiful blue shade. Will not stain birds or fish. Once dispersed, will not disrupt fishing, swimming, irrigation.
Precision Laboratories Circle No. 332	True Blue Lake & Pond Dye	Available in one-gallon containers or water-soluble packets (SoluPak) for easy tossing. Highly concentrated. Odorless and biodegradable. Non-toxic to fish, birds and animals. Long-lasting natural, dark aqua blue coloring to ponds, water hazards, lakes and fountains.
Terra International Circle No. 333	Terramark Lake Colorant	Concentrated blend of dry flowable colorants in pre-measured water soluble packets. One packet colors one acre foot of water. Transforms pale, dirty, or off-color water into a natural-appearing blue. Fish, waterfowl and animals not harmed. May be applied to areas used for irrigation.
United Horticultural Supply Circle No. 334	Turfgo Aquablue	Available in one gallon liquid containers or water soluble packets which are clean and easy to use. No container disposal problems. Harmless to fish and wildlife. Swimming and other recreational sports approved following use.

Chart compiled by Ron Hall