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COLORADO STATE UNIVERSITY EXTENSION SERVICE

Controlling aquatic vegetation

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Quick Facts

In moderate amounts, aquatic vegetation is beneficial to the natural ecosystem of most lakes and ponds.

Aquatic vegetation should be reduced if it interferes with fishing, boating or swimming.

Proper plant identification is necessary when considering aquatic vegetation control.

Aquatic plant classification is based on growth form and location in the pond.

Three methods of vegetation control are mechanical, biological and chemical.

Aquatic vegetation is found in most lakes and ponds and is beneficial to the natural ecosystem in moderate amounts. Vegetation is needed for food production and cover for fish. Aquatic plants produce oxygen, stabilize bottom sediment, protect the shoreline from wave erosion, and serve as feeding and nesting habitat for waterfowl.

Aquatic vegetation can become so abundant it interferes with recreational use. When fishing, boating or swimming is seriously impeded, aquatic vegetation should be reduced. Periodic die-offs of dense vegetation also occur after periods of cloudy weather, long winter ice and snow cover, or the end of their growing season. Oxygen is consumed by bacteria that decompose dead plants. Microscopic bacteria can be so abundant that they can lower oxygen levels, inhibit fish from feeding, growing and possibly cause death.

Identification

Probably the most essential thing to know in aquatic vegetation control is the type of plant causing the problem. Aquatic plants are classified into simplified, general categories based on their growth form and location.

Algae are primitive plants with no true leaves or flowers. They have three main classifications: planktonic, filamentous and attached-erect forms. Planktonic algae (often called phytoplankton) gives the water a green to greenish-brown tint, but individual plants cannot be seen without a microscope. Filamentous algae, often referred to as "moss," float freely and form greenish mats on the surface. The attached-erect forms are often mistaken for higher plants. The best way to identify these advanced algae is by the musky odor and gritty feel. Common examples of algae are spirogyra, cladophora and chara.

Floating plants include those that have leaves floating on the surface and roots hanging down into the water not connected to the bottom. Their leaves usually are smaller than the end of a wooden match stick with hairlike roots. Duckweed is the most common floating plant, seldom creating problems.

Submerged plants usually are rooted to the pond bottom and grow to the surface. Submerged weeds usually consist of long flexible stems with clumps of narrow leaves around the stem. Flowers, if present, may extend above the surface. Common examples of submerged plants are potamogeton, coontail and elodea.

Emergent plants are rooted in the pond bottom with extensions above the water's surface. Shoreline plants are included in this group. Many are not truly aquatic, but can live in saturated soils or submerged in water for considerable time. Common examples of emergent plants are cattails, bulrush, smartweed and arrowhead.

Control

Three methods of reducing or eliminating nuisance aquatic vegetation are: mechanical, biological and chemical.

Mechanical control involves physically removing plants from the pond. Hand pulling is effective for controlling cattails, willow trees and cottonweed trees while they are small. Raking removes algae and submerged vegetation from the pond, especially around a swimming area.

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Submerged vegetation also can be removed by pulling a chain or cable through the pond between two tractors located on either side of the pond.

Mechanical control is temporary and normally affects a portion of the pond's vegetation. It is the least effective method and may aggravate the problem because some aquatic plants may spread through broken fragments, becoming new plants.

Biological control includes the most effective control for Colorado warmwater ponds—the grass carp, a herbivorous fish. The carp requires large rivers for spawning and will not reproduce in ponds. The Colorado Division of Wildlife requires a special permit before the fish can be stocked. These permits are not granted to pond owners on Colorado's Western slope because of interstate agreements on the Colorado River.

Grass carp are expensive but can provide several summers of vegetation control with one stocking. Little evidence of control will be seen the first summer but change will appear the second. Fingerling grass carp (3 to 4 inches) should be stocked at 10-25 fish per-acre vegetation. If adult bass are present, grass carp of at least 8 inches should be stocked to avoid predation. After several years, additional small grass carp will have to be stocked when consumption of vegetation by large grass carp declines.

Duck, geese and crayfish have been used to control aquatic plants. They have produced inconsistent results and some pond owners object to the mess waterfowl can make.

Fertilization can be used to discourage other types of aquatic vegetation and promote phytoplankton. This method has produced inconsistent results, causes oxygen depletion and is not recommended.

Chemical control: No single all-purpose chemical that controls all aquatic weeds exists. Proper plant identification is important for selecting the best chemical for a specific vegetation problem.

Generally, chemical applications are most effective when weeds grow rapidly and have not yet gone to seed. One to two treatments usually are sufficient to control submerged vegetation, whereas one to four treatments may be needed to control algae for a season. Chemicals should not be applied in strong winds where drift might occur. Chemicals should be applied early in the day under sunny conditions and water temperature above 60F. Regrowth or belated appearance of dormant weed species will require retreatment.

After the nuisance plant has been identified, the proper chemical should be selected and the label read carefully. Next determine the area to be treated. Application of the chemical can be done by hand, pressure tank sprayer, or by ladling the chemical from a bucket. Dilute the chemical tenfold with water to insure uniform coverage over the area to be treated. Mix only as much chemical as is needed for the job.

Usually plants show signs of weakness, discoloration or drooping within two weeks; plants may even die. Filamentous algae often turn a pale green or yellow. When large masses of plant materials decay, nutrients are released and can lead to plankton or filamentous algae growth. Bacteria that multiply to take advantage of the rotting vegetation consume oxygen. At the same time, demand for oxygen is increasing, production of oxygen by green plants has disappeared or been greatly reduced. Oxygen levels may be reduced to levels that fish die. Reduction of plants in the spring or early summer before large growth occurs usually prevents oxygen depletion. If treatment is not done until heavy growth has occurred, the pond can be treated in sections with at least two weeks between treatments.

Failures may be due to one or more of the following reasons; not reading and following directions on the label; misidentification of the weed, or miscalculation of treatment volume. Other things to consider prior to treatment to prevent failures are adverse weather conditions or high water exchange in the pond.

Chemicals are registered for specific uses and few are cleared for aquatic use. Aquazine and Cutrine are effective on algae. Submerged plants can be controlled with Aquathol; the potassium formulation is more effective in Colorado than the sodium formulation. Dalapon works very well on cattails, which is the most common emergent aquatic plant in Colorado. Many chemicals have restrictions on the use of water for a period of time after application. Follow the directions on the label and read restrictions on fishing, swimming, use of water for livestock and irrigation.

Names and addresses of most major herbicide manufacturers and distributors in Colorado can be obtained by contacting the CSU Cooperative Extension office in your county.

References

How to Identify and Control Water Weeds and Algae, Applied Biochemists, Inc., 5300 West County Line Road, Mequon, WI, 53092. Fee required.