COOPERATIVE EXTENSION SERVICE
University of Maryland System • Maryland Sea Grant Extension Program

Aquatic Plant Identification and Management Workbook, *Series 1*

The Aquatic Plant Identification and Management Workbook Series is designed to acquaint pond owners in Maryland with naturally-growing aquatic plants and the general means for managing their growth. Aquatic plants play an important role in the natural ecology of ponds: they provide food and shelter for many fish, aquatic animals and other wildlife, and they provide oxygen, which can benefit fish production.

Sometimes, however, growth gets out of hand and the plants become so numerous they interfere with the intended use of the pond, for example, fishing, swimming, boating—they are then called aquatic weeds. When this occurs, control measures often become necessary.

The suggested chemical controls in this workbook are intended as guidelines and must not replace directions on chemical labels. A separate fact sheet, in color, displays each of the aquatic plants in this series and is available from the Maryland Sea Grant Extension Program or your local Cooperative Extension Office.

A L G A E

Planktonic

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Plankton are one of several kinds of algae that occur in Maryland's fresh and brackish water ponds. While some algae such as plankton are not only beneficial but essential as a primary food supply for young fish, even these can become too plentiful. They can blanket the entire surface of a pond, creating severe water quality problems and noxious odors.

Because some vascular plants in ponds can have the same appearance as algae, it is important to first correctly identify whether you have algae or vascular plants before you chemically treat a pond as a chemical control is generally specific to each group. (Workbooks in this series describe other types of algae and noxious aquatic plants.)

PLANKTONIC ALGAE

These various types of single-celled microscopic plants (when joined together they are known as colonial plants) generally give a pond its color: they can be blue, brown, green, yellow or red. Usually this plant is found in the upper few feet of the pond and are generally free floating.

Planktonic algae are not as bad as they may appear. Without them, oxygen production in ponds would not be as plentiful. In the right quantities, plankton blooms can be an important management tool for controlling other unwanted vegetation through shading out the pond bottom, and in improving fish production in the pond. Plankton are the primary or secondary source of food for many different fish species. With a plankton population in the right balance, fish production can be improved dramatically.

When plankton become overabundant, however, they may cause severe oxygen problems and can even cause pH shifts if the pond is poorly buffered. Some plankton blooms can become so thick that the pond can take on a pea soup appearance. When a large bloom occurs (generally more than 500 plant cells per milliliter of water), there will also usually be an accompanying die-off of plants whose decomposition can cause complete oxygen depletion. If this occurs, there will probably be an associated fish kill. There are also some types of planktonic algae that release toxins into the water that can be detrimental to livestock or wildlife.

These algal blooms usually occur during the summer months when the water temperature is high, over 70° F. In the hot summer months, certain types of algae can have a foul odor associated with them. Some algae can also cause off-flavor in fishes. Among the more common types of planktonic algae are (1) *Anabaena* (blue-green), (2) *Chlorella* (green), and (3) *Scenedesmus* (green).

It is best to consult with your county Cooperative Extension Service Office to obtain more information on managing plankton blooms in a pond for fish production.

CONTROL

When chemicals are used to control aquatic vegetation, certain precautions must be followed. Always read the label and follow the directions. It is best to spot treat areas where the planktonic algae are first sighted instead of waiting until they take over a pond completely. Determine the water uses and any use restrictions associated with the chemical control. Obtain all of the

CHEMICAL CONTROL. The following is a table of chemicals labeled to treat planktonic algae. The table was compiled from information gathered from the aquatic chemical industry. *Inclusion in the table does not imply endorsement by the University of Maryland nor by the authors.* Omission of chemicals is a result of oversight on the authors part or of new label registration. The table is for comparison purposes only and is not intended to replace the chemical label. Labels are subject to change; therefore, always check the label for treatment sites, rates, and precautions before purchasing or applying any chemical. **Do not use the table for treating aquatic plant problems.**

Planktonic Algae

Chemical Name	Chemical Type	Application	Restriction Period	Comments
Mogul Ag-431	Elemental Copper 7.1%	0.75 gal/acre-ft dilute w/ 10-20 parts water for application	none	apply on sunny day, water temperature >60° F, if alkalinity is <50 ppm, toxic to fish
A&U-70 Plus	Elemental Copper 8.0%	0.625 gal/acre-ft dilute w/ 10-20 parts water for application	none	apply on sunny day, water temperature >60° F if alkalinity is <50 ppm, toxic to fish
K-TEA	Elemental Copper 8.0%	0.68-1.70 gal/acre-ft dilute w/ 10-20 parts water for application	none	apply on sunny day, water temperature >60° F, if alkalinity <50 ppm, toxic to fish
Cutrine-Plus	Elemental Copper 9 0%	0.6 gal/acre-ft dilute w/ 10-20 parts water for application	none	apply on sunny day, water temperature >60° F alkalinity <50 ppm, toxic to fish
Aquatrine	Elemental Copper 9.0%	0.6 gal/acre-ft dilute w/ 10-20 water for application	none	apply on sunny day, water temp >60°, if alkalinity <50 ppm, toxic to fish
Copper Control	Elemental Copper 8.5%	0.65-1.6 gal/acre-ft dilute w/ 10-20 parts water for application	none	apply on sunny day, water temp >60°, if alkalinity <50 ppm, toxic to fish
Copper Sulfate Monterey	Copper Sulfate Penthydrate	3-6 lb/acre-ft	none	if alkalinity <50 ppm, toxic to fish
Kocide	Copper Sulfate Penthydrate	0.67-5.32 lb/acre-ft	none	if alkalinity <50 ppm, toxic to fish
Solricin 135	Potassium Ricinoleate	1.9-9.5 gal/acre-ft depends on density of bloom	3-14 days harvest, irrigation, live-stock watering —14 days	selective for blue-green algae only
Aquashade	Blue & Yellow Dye	0.25 gal/acre-ft	not for human con-sumption	less effective within 2 feet of surface
Aquazine	Simazine	1.7-3.4 lb/acre-ft	swimming—4 hours, irrigation, livestock consumption —12 months	non-selective systemic herbicide

necessary permits. Make sure that you have properly identified the aquatic plant and have chosen the correct chemical control. Mix and apply the chemical according to the label directions. Keep the necessary records—they are required by law. Finally, monitor the water for dissolved oxygen and pH shifts after treatment to determine the effectiveness of the treatment and whether any fish kill occurs. Heavy plant die-off can cause oxygen depletion, while heavy growth can cause pH shifts on a daily cycle.

REFERENCES AND FURTHER READING

How to identify and control water weed and algae. 1976. Applied Biochemists, Inc., Mequon, Wisconsin.

Helfrich, Louis A., Garland Pardue and Diana Weigmann. 1981. Common water plants of Virginia. Publication Number 420-844. Extension Division Virginia Polytechnic Institute and State University, Blacksburg, Virginia.

Traver, David P., John A. Rodgers, Michael J. Mahler and Robert L. Lazor. 1978. Aquatic and wetland plants of Florida. Special Publication of Florida Department of Natural Resources, Bureau of Aquatic Plant Research and Control, Tallahassee, Florida.

Wellborn, Thomas L. 1985. Aquatic weed identification and control: Algae. Information Sheet Number 1035, Extension Service Mississippi State University, Mississippi State, Mississippi.

NOTE: Because of the ecological role and sensitivity of aquatic vegetation, as well as Baywide efforts to restore this important resource, the state does not permit the use of chemical control in tidal waters, and greatly restricts their use in nontidal, flowing waters. Acquaint yourself with all regulations governing plant control activities, and obtain all necessary permits. Non-chemical means should be utilized where practicable.

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