



***Applied
Biochemists®***



Keys to Effective **Aquatic Plant Management**

Keys to Effective Aquatic Plant Management



IDENTIFY

Properly identify the nuisance plant or algae. For more detailed identification, visit www.appliedbiochemists.com



SELECT PRODUCT

Choose a product labeled to control your plant or algae. Make sure all required application equipment and safety wear is available.



MEASURE

Measure the treatment area to know how much product is needed.



READ & FOLLOW LABEL

Before applying, fully read the label. Follow directions to prepare and plan application.

Water care is more than plant control. A complete plan often involves identifying critical plants and habitat, and assessing what threatens the water's uses.

We can help. Call us at 1-800-558-5106.

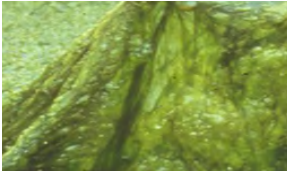


IDENTIFY

Plants shown are some of the more common plants in residential lakes and ponds. **(Recommended chemical treatment is shown after plant name.)**

Algae

Algae are primitive plants with no true leaves, stems or root systems.



Filamentous ('moss')

(Cutrine® Plus algaecide - liquid for top growth, Cutrine® Plus Granular Algaecide for bottom growth)

Thread-like, usually grows from bottom and rises to top as greenish surface mats.



Planktonic ('Pea Soup')

(Cutrine® Plus algaecide - liquid)

Microscopic plants cause green or brown tinge, algae blooms can cause odor, oxygen loss and fish suffocation.



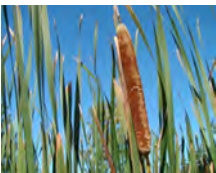
Chara (Muskgrass, Stonewort)

(Cutrine® Plus Granular Algaecide)

Leaf-like structures make this form of algae easily confused with submerged weeds, identify by musky odor when crushed, and bristly feel.

Emergent Plants

Emergent (Marginal) plants grow above water in shallow depths.



Cattail

(Shoreklear-Plus® Aquatic Herbicide in late season)

Up to 9 ft stalk with brown cigar-shaped 'flower'



Creeping Water Primrose

(Shoreklear-Plus® Aquatic Herbicide in late season)

Hollow red stem with many leaves and yellow flowers



Purple Loosestrife

(Shoreklear-Plus® Aquatic Herbicide)

2-7 ft tall, purple flowers



Phragmites

(Shoreklear-Plus® Aquatic Herbicide in mid to late season)

10-12 ft tall thick aggressive grass

Floating Plants

Floating plants can be divided into two basic categories: Plants rooted to the bottom with floating leaves and free-floating surface plants.



Duckweed

[Pond-Klear™ Aquatic or Weedtrine® D Aquatic Herbicide]

Small, oval-shaped plant smaller than a pencil eraser, root attached, common in quiet waters



Watermeal

[Pond-Klear™ Aquatic or Herbicide]

Smallest flowering plant, rootless, grain-sized



Salvinia

[Weedtrine® D Aquatic Herbicide with surfactant]

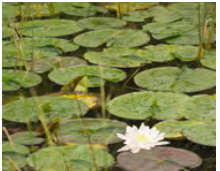
Rounded paired leaves 1/2" long with root-like hairs beneath



Watershield

[Shoreklear-Plus® Aquatic Herbicide in late season]

Oval-shaped leaves with slimy coating underneath and on stems of mature plants, purple flower in early summer



Water Lily

[Shoreklear-Plus® Aquatic Herbicide in late season]

Round notched leaves Similar to Spatterdock- heart shaped leaves with yellow flowers



Water Pennywort

[Weedtrine® D Aquatic Herbicide with surfactant]

Half-dollar sized, shiny, leathery leaves, long creeping stems can form dense mats



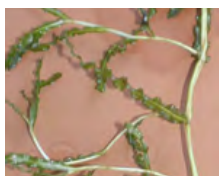
Water Hyacinth

[Weedtrine® D Aquatic Herbicide with surfactant]

Broad, lance-shaped leaves 8" long with blue flower. Common in (sub)tropical areas.

Submerged Plants

Submerged plants are usually rooted at the bottom and entirely under water.



Pondweed

[Weedtrine® D Aquatic Herbicide]

There are many species of pondweed including: Curly-leaf (upper left), American (top center) and Sago (upper right).



Coontail

[Weedtrine® D Aquatic Herbicide]

Rootless, leaves crowded at tip.



Eurasian Watermilfoil

[Weedtrine® D Aquatic Herbicide tank mixed with Cutrine® Plus algaecide - liquid]

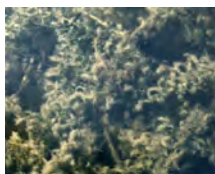
Leaves in whorls of 4 with up to 20 leaf divisions, stalk with tiny reddish flowers may extend above surface.



Naiad

[Weedtrine® D Aquatic Herbicide tank mixed with Cutrine® Plus algaecide - liquid]

Slender, branching stem with leaves <1" long that are wider at the base; spines on margins.



Hydrilla/Elodea

[Weedtrine® D Aquatic Herbicide tank mixed with Cutrine® Plus algaecide - liquid]

Long-stemmed branching plants with whorled leaves $\frac{5}{8}$ " long. Leaves toothed in Hydrilla, not toothed in Elodea



Bladderwort

[Weedtrine® D Aquatic Herbicide tank mixed with Cutrine® Plus algaecide - liquid]

Slender, branching stem with leaves <1" long that are wider at the base; spines on margins.

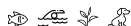


SELECT PRODUCT

Aquashade® Aquatic Plant Growth Control

More than a colorant! EPA registered dye controls underwater plants.

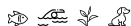
Wait one hour and water can be used to fish, swim, irrigate or water animals:



Aquashade® Plus

2.4x more concentrated than the original Aquashade® for powerful underwater weed control.

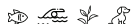
Wait one hour and water can be used to fish, swim, irrigate or water animals:



Bacti-Klear® Aquatic Microbial Blend

Beneficial bacteria reduce muck and odors, improving water clarity.

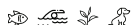
Water can be used immediately to fish, swim, irrigate or water animals:



Cutrine® Plus Algaecide

Fast algae control from top to bottom.

Water can be used immediately to fish, swim, irrigate or water animals:



Aquashade® Aquatic Plant Growth Control

Aquashade® Plus

Bacti-Klear® Aquatic Microbial Blend

Cutrine® Plus Algaecide



The algacides and herbicides recommended in this guide have been registered with the EPA and meet the federal safety standards put forth to protect human health and the environment. Make note that koi, hybrid goldfish/carp, and trout can be particularly sensitive to copper products. Seek expert advice when treating waters containing these types of fish. Waters that have an abundance of vegetation may already be low in dissolved oxygen and stressing fish. When treating, decaying vegetation consumes oxygen, putting fish at more risk. To reduce the risk to fish of oxygen depletion, treat only 1/3 to 1/2 of the pond at a time. Wait 1-2 weeks between treatments.

Call us at 1-800-558.5106 with any questions. We're here to help you and your fish.

Weedtrine® D Aquatic Herbicide



Weedtrine® D Aquatic Herbicide

Quickly kills many species of aquatic weeds.

Water can be used immediately to fish or swim. Wait 1 day to allow animals to drink the water. See label for potable water and irrigation restrictions:



Shoreklear-Plus® Aquatic Herbicide



Shoreklear-Plus® Aquatic Herbicide

Down-to-the-root kill of shoreline and floating vegetation.

Water can be used immediately to fish, swim, irrigate or water animals. See label for potable water restrictions:



Pond-Klear® Aquatic Herbicide



Pond-Klear® Aquatic Herbicide

Kills duckweed and watermeal in as little as 3 days!

Water can be used immediately to fish, swim, or water animals. See label for irrigation restrictions:



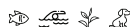
AB Brand Copper Sulfate Crystals



AB Brand Copper Sulfate Crystals

Crystals dissolve in water for algae control.

Water can be used immediately to fish, swim, irrigate or water animals:





MEASURE

Measure the treatment area to aid in purchasing the correct amount of chemical, avoid wasting product, and avoid over- or under-dosing the water.

Useful Formulas

1. Rectangular Pond/Lake **Surface Acres** =
$$\frac{\text{Length (ft)} \times \text{Width (ft)}}{43,560}$$
2. Circular or Oval Pond/Lake **Surface Acres** =
$$\frac{\text{Length (ft)} \times \text{Width (ft)} \times 0.8}{43,560}$$
3. **Average Depth** =
$$\frac{\text{Sum of the Depth Measurements Taken}}{\text{Number of Depth Measurements Taken}}$$
4. **Acre-Feet** = Surface Acres x Average Depth
5. **Converting Gallons to Acre-Feet:** Acre-Feet =
$$\frac{\text{Gallons of Water}}{325,869}$$

Acreage Calculation Chart

WIDTH (in feet)	AREA (in surface acres)															
	LENGTH (in feet)															
30	0.02	0.03	0.03	0.04	0.05	0.06	0.06	0.07	0.10	0.14	0.17	0.21	0.24	0.28	0.31	0.34
40	0.03	0.04	0.05	0.06	0.06	0.07	0.08	0.09	0.14	0.18	0.23	0.28	0.32	0.37	0.41	0.46
50	0.03	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.17	0.23	0.29	0.34	0.40	0.46	0.52	0.57
60	0.04	0.06	0.07	0.08	0.10	0.11	0.12	0.14	0.21	0.28	0.34	0.41	0.48	0.55	0.62	0.69
70	0.05	0.06	0.08	0.10	0.11	0.13	0.14	0.16	0.24	0.32	0.40	0.48	0.56	0.64	0.72	0.80
80	0.06	0.07	0.09	0.11	0.13	0.15	0.17	0.18	0.28	0.37	0.46	0.55	0.64	0.73	0.83	0.92
90	0.06	0.08	0.10	0.12	0.14	0.17	0.19	0.21	0.31	0.41	0.52	0.62	0.72	0.83	0.93	1.03
100	0.07	0.09	0.11	0.14	0.16	0.18	0.21	0.23	0.34	0.46	0.57	0.69	0.80	0.92	1.03	1.15
150	0.10	0.14	0.17	0.21	0.24	0.28	0.31	0.34	0.52	0.69	0.86	1.03	1.21	1.38	1.55	1.72
200	0.14	0.18	0.23	0.28	0.32	0.37	0.41	0.46	0.69	0.92	1.15	1.38	1.61	1.84	2.07	2.30
250	0.17	0.23	0.29	0.34	0.40	0.46	0.52	0.57	0.86	1.15	1.43	1.72	2.01	2.30	2.58	2.87
300	0.21	0.28	0.34	0.41	0.48	0.55	0.62	0.69	1.03	1.38	1.72	2.07	2.41	2.75	3.10	3.44
350	0.24	0.32	0.40	0.48	0.56	0.64	0.72	0.80	1.21	1.61	2.01	2.41	2.81	3.21	3.62	4.02
400	0.28	0.37	0.46	0.55	0.64	0.73	0.83	0.92	1.38	1.84	2.30	2.75	3.21	3.67	4.13	4.59
450	0.31	0.41	0.52	0.62	0.72	0.83	0.93	1.03	1.55	2.07	2.58	3.10	3.62	4.13	4.65	5.17
500	0.34	0.46	0.57	0.69	0.80	0.92	1.03	1.15	1.72	2.30	2.87	3.44	4.02	4.59	5.17	5.74



READ & FOLLOW LABEL

Use these formulas to help calculate how much product you need. (See 'Measure' section for help with measuring your pond.)

Aquashade® Aquatic Plant Growth Control

For control where plants are not within 2 feet of the water surface.

_____ acre-ft x 32 oz./acre-ft = _____ oz. to use

Aquashade® Plus

For control where plants are not within 2 feet of the water surface.

_____ acre-ft x 13 oz./acre-ft = _____ oz. to use

Bacti-Klear® Aquatic Microbial Blend

For first time applications to reduce pond muck and organic matter

Pellets: _____ acres x 20 lb./acre = _____ lb. to use

Liquid: _____ acre-ft x 3 gal./acre-ft = _____ gal. to use

(See container label for amounts to use for maintenance application. Use maintenance application amount once desired appearance is reached.)

Citrine® Plus Algaecide

Liquid: For most mild cases of "pea-soup" or string algae
_____ acre-ft x 0.6* gal./acre-ft = _____ gal. to use

Granular Dosage: 60 lb per surface acre (1 lb. treats 720 sq. ft)

_____ acres x 60 lb./surface acre = _____ lb. to use

❗ Koi, hybrid goldfish/carp and trout are sensitive to copper products. Call us for help at 1-800-558-5106.

AB Brand Copper Sulfate Crystals

For basic algae control, dissolve and spray

_____ acre-ft x 0.67* lb./acre-ft = _____ lb. to use

❗ Koi, hybrid goldfish/carp and trout are sensitive to copper products. Call us for help at 1-800-558-5106.

Weedtrine® D Aquatic Herbicide

For submerged weeds

_____ acres x 5 (up to 10) gal. = _____ gal. to use

For emergent weeds make sure you add a surfactant

_____ acres x 5 gal. = _____ gal. to use

For floating weeds make sure you add a surfactant

_____ acres x 2.5 (up to 3.75) gal. = _____ gal. to use

Pond-Klear™ Aquatic Herbicide

For duckweed, watermeal and other floating and underwater weeds

_____ acre-ft x 17.6 oz./acre-ft = _____ oz. to use

(Mix with aquatic herbicides and algaecides at recommended dose.)

Shoreklear-Plus® Aquatic Herbicide

For spot treatment of annual plants

Dilute 3.5 fl.oz. per gal. of water and spray to wet plant

For spot treatment of perennial plants

Dilute 3.5 - 6.7 fl.oz. per gal. of water

(Shoreklear-Plus® Aquatic Herbicide already contains a non-ionic surfactant and needs no other additives.)

Apply the product according to label instructions.

Call us at 1-800-558.5106 with any questions.

Frequently Asked Questions

I spilled some dye product; how do I clean it up?

Don't add water. Soak up as much as you can with absorbent cloths. Scrub stain with oxygenated cleaner or mild bleach solution. Contact Applied Biochemists at 1-800-558-5106 for additional assistance.

Why use Cutrine® Plus Algaecide instead of Copper Sulfate Crystals?

Citrine® Plus Algaecide is chelated, which protects the copper from binding with carbonates in the water. This allows the copper to stay active against algae longer. The chelated formula is more effective and longer lasting, especially in hard water.

What is a non-ionic surfactant? And do I need it?

A non-ionic surfactant is a necessary additive when applying certain products to emergent or floating plants. The surfactant helps the chemical "stick" to the plant and penetrate the waxy leaf coating.

When will I see results?

Planktonic algae should subside in 1 to 2 days. Filamentous algae often turn pale yellow or white in 3 to 4 days. Plants take longer, typically wilting or showing discoloration in up to 2 weeks.

How long will control last?

Many weeds can be controlled for an entire season with one properly timed treatment. However, herbicides do not kill seeds and some do not get into root systems, which can result in regrowth. Algae often require treatments every 3 to 6 weeks because they are able to rapidly reproduce. If the plants/algae start to grow back or turn green again, check your dose and reapply. If fish are present, follow the wait times for re-dosing in section 5, 'Apply the Product'.

Need more help?

Call us at 1-800-558-5106. We have trained aquatic specialists that can help with product recommendations, dosing and application, plant identification, and any other pond questions.

Conversions

AREA	WEIGHT	DISTANCE
1 acre = 43,560 ft ² 4,047 m ² 0.405 ha.	1 pound = 453.6 gr. 16 oz. 0.45 kg.	1 foot = 0.305 m.
VOLUME		
1 oz = 29.6 mL. 6 tsp. 2 tbsp. 0.125 c.	1 acre-foot = 325,869 gal. 43,560 ft ³ 1233 m ³	1 gallon = 3785 mL. 128 oz. 16 c. 8 pt. 4 qt. 3.78 L.



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