

## Algae Problems in Water Gardens

Algae problems in water gardens are generally caused by the action of the sun and excess nutrients in pond water. If ponds are established properly and are properly balanced with the correct ratios of plants, fish and scavengers, algae control and algae problems are not difficult. When first establishing a water garden, a green water condition will exist for approximately three weeks but will clear as the water equalizes between plant nutrient uptake and the introduction of nutrients from fish. The general cause of algae in ponds is excess nutrients from either the overstocking and overfeeding of fish, or the lack of nutrient uptake by plants caused by planting too few plants in a pond. A general rule for stocking fishponds is: for a square-yard surface of the pool, stock six 4- to 6-inch goldfish or koi and one water lily. Feed fish a specified amount of food per day, and only if necessary. Most fish can thrive on naturally occurring foods within balanced garden ponds.

General methods for reducing algae in ponds include the reduction of nutrients causing the algae problems. To reduce nutrients, reduce the feeding of the fish, the level of fish stocked in the ponds or the fertilization of aquatic plants. Other methods to reduce algae problems are flushing the pond and adding new water; adding additional aquatic plants to allow as much as 50 percent of the water surface to be covered with plants; and adding to the pond's mechanical and/or biological filters.

The final and most radical method of controlling algae in ponds is an application of an EPA-approved aquatic herbicide. The aquatic herbicide

of choice would be a copper compound. At certain levels in low alkalinity water, copper compounds can be toxic to fish and to plants. Chelated copper compounds are less toxic than elemental copper sulfate.

Copper rates can be applied at one part per million (ppm) when the water in the water garden is one hundred ppm alkalinity. If the alkalinity is 50 ppm, the copper application would be 0.5 ppm copper. Below 50 ppm alkalinity, copper applications are extremely risky and exact calculations need to be applied. Proper management of your system is the best method of maintaining and controlling algal blooms in ponds, and copper herbicides should be used only as a last resort. If copper compounds are used, aeration must be available to avoid low dissolved-oxygen problems. Continuous use of copper compounds over a long period of time can lead to poor health and possible death of aquatic plants and fish in the system.

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