

Water Gardening Care Instructions and Information

Water - the ace of elements. Always in motion, ever-flowing, rhythmic, dynamic, ubiquitous. The ongoing odyssey of water and its presence in the landscape is virtually irresistible. With a little imagination, the water garden can become the focal point of any landscape, providing beauty and entertainment throughout the year.

Among aquatic plants, **water lilies** are the universal favorite. They have a long blooming season and their fragrant blossoms come in a wide range of colors. The containers are placed in the pool with 6" to 18" of water over top of the pot. Water lilies differ in their culture and are divided into two groups:

Hardy Water Lilies - The 'Hardies' are treated as perennials. They become dormant in the fall and survive the winter as thick tuberous rootstocks. The flowers open at mid-morning and close at dusk.

Tropical Water Lilies - The 'Tropicals' are treated as annuals. They produce a solid black tuber about the size of a horse chestnut, but cannot survive the winter. The tubers must be collected in the fall and stored for replanting in the spring. The tropicals can be further separated into tropical day (flowers open at mid-morning and close at dusk) and tropical night (flowers open at dusk and close at mid-morning) blooming varieties.

Lotus - The lotus is another aquatic plant which has been admired, even revered, for its outstanding beauty. Their large, fragrant flowers stand high above the water and vary in color from white through pink to red and yellow. The leaves, blossoms, and unique seed pod offer a nice contrast to the floating water lilies. Like the hardy water lily, the lotus is treated as a perennial.

Marginal Plants - In addition to the water lilies and lotus, there is a wide variety of submersible and bog plants that complete the landscaping of water gardens. Marginal plants are containerized and planted at a depth of 0-12 inches. Check individual plant descriptions for specific depths. Flower time, height and texture are important considerations.

Lily-like Aquatics - Lily-like aquatics are floating leaf plants that are planted from 6-12 inches deep. They also serve as shade producing plants for the pool.

Floating Plants - As the name implies, floating plants are not potted but merely float on the surface of the water. They provide shade and the root system is often used as a place for fish to lay eggs. They also serve as an oxygenating system.

Submerged Aquatics - Submerged aquatics are also known as oxygenating plants. They are planted in pots and placed on the bottom of the pool. The plants generate oxygen which is important for fish.

Fish - Normally pools are stocked with goldfish or koi. Fish add to the excitement and mystery of the pool. Selection of goldfish or koi is a matter of personal taste. Koi sometimes are aggressive and bother plants.

Snails and Tadpoles - Scavengers perform a very useful function in the water garden. Snails eat decaying vegetation and algae. Tadpoles eat algae and also turn into frogs.

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1. **Location** - The ideal location for a water garden is in full sun. As a general rule, aquatic plants do not perform well in shade. A minimum of 6 hours of light is recommended.
2. **Depth** - The ideal depth for a garden pool is 18-24 inches. It is much easier to use blocks to adjust varying depths required for different plants than to build a pool of varying depths.
3. **Types of Pools** -
 - A. **Concrete** is the most expensive type of garden pool to install and requires the most maintenance because it is more vulnerable to winter weather damage.
 - B. **Pre-formed** pools come in many sizes, shapes and materials (fiberglass, plastic and aluminum). They are generally the most durable, but can be somewhat expensive.
 - C. **Plastic** (polyethylene) liners are relatively inexpensive and offer nice alternatives to those interested in creating their own shape. The liners are laid on a sand base, last for about 10-15 years, and are easy to replace. It is important that the plastic on the edge of the pond at water level be shaded since the polyethylene is sensitive to breakdown from the ultra violet rays of the sun.
 - D. **Almost any container** that holds water is a potential water garden. Ceramic pots, washtubs, horse troughs, or barrels can be used. Containers formerly used for beer, wine, vinegar, or olive oil should be well aged or lined to destroy bacteria that are harmful to plants and fish. New redwood or barrels that contained tar, oil, or wood preservatives should not be used.
4. **Containers** - Most aquatic plants are not deep rooting and surface area is more important than depth. The size and type of container will depend upon the plant, size of the pool, and your ability to handle them. As a general rule, the minimum amount of soil for hardy water lilies is 15-20 quarts and for lotus and tropicals 32 quarts (1 bushel).
5. **Soil** - A good, rich heavy garden soil is necessary to balance the tremendous amount of foliage and flowers produced. Any soil containing unrotted organic matter should not be used since the by-products of decomposition (carbonic acid and methane gas) are toxic to fish and will foul the water. Commercial potting mixes should not be used since they contain peat moss which floats and many additives not suited for aquatic plant culture.
6. **Planting** - Most aquatic plants are available already established, and can be placed in the pond as they are. For details of repotting, use a good reference like the Ortho book. Most aquatic plants do not like moving water and should not be placed in close proximity to fountains or waterfalls.
7. **Stocking the Pool** - Stocking the pool includes plants as well as other aquatic life such as fish and snails. An environmentally balanced pool is one in which the interaction of life in the pond creates an attractive pool. Remember, however, that crystal clear pools are not necessarily healthy. Plants absorb carbon dioxide during the day and produce oxygen. Fish use the oxygen and produce carbon dioxide. Algae growth is promoted by sunlight, so shade must be provided directly on the water surface to discourage the growth of algae. Floating foliage plants such as water lilies, water hyacinths and lily-like aquatics will accomplish this. Submerged aquatics provide oxygen, a food source, and a place for fish to hide and lay their eggs. Marginal plants take up excess nutrients in the water, inhibiting the growth of algae and other pollutants. Fish control mosquitoes by eating larvae. Snails and tadpoles are the scavengers of the pool, eating algae and decaying vegetation. All combine to create the naturally balanced environment of a good garden pool.

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POND STOCKING GUIDE:

1. Floating Foliage - Cover 40-60% of pool surface. (Water lilies, floating, and lily-like aquatics)
2. Oxygenating Plants - One bunch per two square feet of surface area.
3. Fish - One inch of fish per 1-2 gallons of water.
4. Snails and Tadpoles - One per sq. foot of bottom surface area.

NOTE: These stocking factors are suggested. The larger the pool, the less applicable they are.

8. **Maintenance** -

- A. **Fertilizing** - Most aquatic plants are heavy feeders and produce flowers and foliage in proportion to the nutrients available. The amount of fertilizer to use will depend upon the container size and condition of the plants. If flowers and foliage become sparse and faded, fertilizer should be added at monthly intervals. Care should be taken not to over fertilize, as excessive nutrients not used by the aquatic plants could encourage algae.
 - B. **Pruning** - Removal of old blossoms and older leaves as they become unsightly will help keep the pool clean and free from debris.
 - C. **Division** - Depending on the size of the container, most aquatics will need to be divided every 1-3 years. In the case of hardy water lilies, reduced vigor, reduction in spread, small flowers and leaves held above the water are symptoms of overcrowding.
 - D. **Pests** - When aquatic plants are well maintained, they are relatively free from pests, however, they do have their associates. Larvae and aphids can sometimes be a problem. Submerging the plants for 24-48 hours or hosing the aphids off will assist the fish in controlling the pests. In most instances, fish will afford good control. Use insect control products very carefully.
9. **Pond Balance** - The water garden is a myriad of microscopic organisms. However, there are those organisms that we cannot fail to notice that discolor the water, creating aesthetically displeasing ponds. Green water is caused by single-celled, free swimming algae that, when present in large numbers, create green 'pea soup' water. These are not to be confused with the filamentous algae which grows on the sides of the pond and is actually desirable. The answer to preventing green water is patience and the addition of the right ingredients to ecologically balance the pond.
- A. **Fish** - are aesthetically pleasing and add life to the pool year round. They are an important part of the pond's ecology as they control insect pests and mosquito larvae. They also produce carbon dioxide and nutrients for the plants. There are many kinds of fish (Koi, Goldfish, Shubunkin, Comets and Japanese fantail are the most popular) that are capable of surviving year round in an outside pool. In areas where the pond may be frozen solid for a long period of time, it may be necessary to keep the ice open to allow the escape of harmful gases. Failure to do so could result in the death of all fish in the pool.

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- B. Oxygenating grasses - are essential if fish are to be kept in the pond as they liberate oxygen. The oxygenation grasses also provide a nice area in which the fish can spawn and help control algae by competing for carbon dioxide and nutrients.
- C. Snails - are the housekeepers of the pool. They feed mostly on dead plant material and algae covering the pool surfaces. Physa and Lymnae are readily available and considered good scavengers.
- D. Surface foliage plants - provide shade for the fish and block out sunlight, thereby helping to control algae. Some feel that this function is more important than that of the oxygenating grasses in helping to control algae.

The above ingredients plus patience are the answer to preventing green water. Many variables are involved - water chemistry, size of the pond, season, plant density, etc. - and it may take 3 weeks or 3 months to achieve the proper balance. Once the balance is achieved, it should stay that way for years, except for a brief outbreak that may occur in early spring. There is always an accumulation of mineral-rich sediment on the bottom. In the winter the water layer becomes cold, sinks and forces the richer bottom layer of water upwards. The presence of nutrients in the upper water layer when warm weather occurs can encourage an outbreak of algae, however, it lasts only until the new season's growth of oxygenators and lilies get going. Some people do not have the patience and choose to use an algaecide for an instant solution. It should be noted that the algaecide will not change the basic conditions which encourage algae, and their effect is temporary and has to be repeated to maintain clear water. Care should be taken with all algaecides for if the conditions are not right, all the fish in the pond can be killed.