



SONORAN WATER GARDENS

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PLANTING YOUR AQUATIC PLANTS

The following guidelines apply to all aquatic plants and water gardening applications:

SOIL: *(The following applies to waterlilies, lotus, and the vast majority of bog and marginal plants, but does not apply to floating plants or oxygenating grasses/submerged plants.)*

Use clean garden topsoil, or a soil / potting medium specifically for aquatic plants. DO NOT use potting soil, mulch or peat moss as these will float, discolor the water and they offer very little in nutrition for aquatic plants. DO NOT use soil that has been exposed to pesticides, fungicides or herbicides, or any other potentially toxic residue.

Waterlilies and other aquatic plants adapt well to most soil types. A clay/loamy soil with some sand worked in is ideal for most aquatic plants. Sandy soil is fine, but it lacks sufficient organic matter and minerals so supplementary fertilization is essential. Clay soil has a high mineral content and works fine for aquatic plants, especially if sand is mixed in to keep it from compacting.

FERTILIZER: *(The following applies to waterlilies, lotus, and the vast majority of bog and marginal plants, but does not apply to floating plants or oxygenating grasses/submerged plants.)*

Fertilize waterlilies and lotuses every 30-45 days during their growing season for best blooming and growth.

Fertilize bog plants and marginals during their growing season as needed for good growth and blooming.

TABLETED FERTILIZER—We recommend two types of fertilizer tablets and have these for sale at our nursery and by mail order. Both are ideal for all types of aquatic ornamental plants. Tablets make fertilizing simple and straightforward. Both are solid tabs and will not crumble and dissolve the instant they get wet. Both are 10 gram tablets; use 1 tablet for each gallon of soil.

'LilyTabs' (20-10-5) all purpose aquatic plant fertilizer & **'Prolifica'** (12-24-10) Bloom-boosting formula (waterlilies & lotus)

Please visit our nursery or visit us online at sonoranwatergarden.com for fertilizer tablets and other planting essentials.

OTHER FERTILIZERS—Many water gardeners report great success with a variety of fertilizers other than those labeled for waterlilies and aquatic plants. Actually, aquatic plants can handle almost any fertilizer you throw at them, it's the fish you need to watch out for. Many commercial fertilizers are extremely poisonous to fish, even in small concentrations. We recommend the tablets because they are convenient and very effective. However, we have also had satisfactory results with these alternatives:

Manure (Steer)—DO NOT USE FRESH, OR DIRECTLY OUT OF THE BAG. Manure is high in nitrogen and accelerates growth in plants. It is not a complete fertilizer, and it should be supplemented with bone meal (*below*) at the very least. It works fine for waterlilies and most bog and marginal plants but we don't recommend using it for lotus. For best results mix the manure with moist soil at least a week ahead of planting and do not use fresh out the bag. Mix 1 or 2 cups of manure into each gallon of soil (*see above 'Soil'*). Moisten the soil and turn it over every few days for 7-10 days before using it for planting. When potting, only use the manure mix to fill the pots about halfway and then use plain topsoil to fill to the top of the pot. Manure right out of the bag (or using too much of it) will almost certainly cause an algae bloom.

Manure (Bat) 'Bat Guano' - A small amount of this mixed into the soil is a perfect supplement for waterlilies and most aquatic plants. Unfortunately, Bat Guano is quite a challenge to find in most parts of the US and it's also expensive. Just like with regular manure, you should also mix some bone meal into the soil mix. Unlike regular manure, you can use it right out of the bag and it won't turn the water green. Mix 1/4—1/3 cup of Bat Guano into each gallon of soil. For best results use plain topsoil (without the Bat Guano) to top off each pot. This will prevent algae blooms, especially if you are filling many pots with a bat manure mix.

Bone Meal—This supplement provides phosphorus which promotes blooming. Mix about 1/4 cup of bone meal into each gallon of soil when potting your plants in the spring. This extra boost of phosphorus will last throughout most of the growing season. You can feed established plants with bone meal by putting a tablespoon or so in a coffee filter and twist it up into a tight wad. Push one of these (or two for large waterlilies and lotus) finger deep into the soil as you would a fertilizer tablet.

Liquid Fertilizers: 'Miracle-Gro', 'Schultz', 'Peter's' and others—Many water gardeners swear by water soluble powder simply added to the pond water. If it's used correctly it can be almost perfect in some situations, especially if there are many plants to feed. Unlike manure and bone meal, these fertilizers are complete (like the tablets) and provide a full complement of trace elements and minerals. Dosage is the only tricky part. Added directly to the water too much can produce an algae bloom and poison fish. The secret is to use a tiny amount (no more than 1/2—1 teaspoon/100 gallons of pond water) every week or two.

POTS: *(The following does not apply to floating plants.)*

Pots should be durable construction. Your pots don't need to be fancy, in fact you probably won't see them once your plants get growing. They do need to be strong enough to hold up filled with heavy mud, both in and out of the water. The plastic nursery pots landscape plants come in are fine, and they're free. Some water gardeners prefer to use clay pots because they are permeable and allow better exchange of nutrients and by-products with the water. There are also pots made especially for waterlilies and aquatic plants without drainage holes.

If you are using pots with drainage holes, line them with thin plastic sheeting (grocery store bags) to prevent soil from oozing out the bottom of the pot. For smaller pots (6 inch or 1 gal) coffee filters are ideal to line the drainage holes.

FLOATING PLANTS:

Floating plants don't need to be planted. Duckweed, azolla, salvinia, frogbit and similar tiny floating plants can be introduced right into the pond water. Water hyacinth and water lettuce can also be placed inside floating plant hoops (kid's hula-hoops work well) and then anchored to help keep them where you want them in your pond, instead of floating all around.

PLANTING INSTRUCTIONS:

HARDY WATERLILIES:

Hardy waterlilies grow from a rhizome, much like an iris. In most cases these rhizomes grow horizontally across the soil, and therefore hardy waterlilies do best planted in containers that are wide and shallow. Plastic dishpans available at dollar stores are perfect for most S-M hardy varieties. Containers of similar shape, only larger (18 inches or more in diameter and 8 to 12 inches in depth) are ideal for the larger M-L hardy waterlilies.

Fill planting container halfway with soil and add fertilizer tablets. Position the dormant end of the rhizome against the inside wall of the pot with the growing end pointing across the container (*see diagram*). Spread the roots out carefully and continue to **add soil until the roots are covered and the crown is slightly exposed.** Cover soil with a 1/2 inch layer of pea gravel if desired. Gently submerge planted waterlily into pond until the leaves are just at the surface. If your pond is significantly deeper than 2 feet, place the potted plant on bricks or an inverted pot until it gets well rooted in and established, and gradually lowered to the bottom. As a general rule, hardy waterlilies prefer 10-20 inches of water over the roots. Some are perfectly happy in water as deep as 3 feet. Please see our website for more information on individual varieties preferred depth.

TROPICAL WATERLILIES:

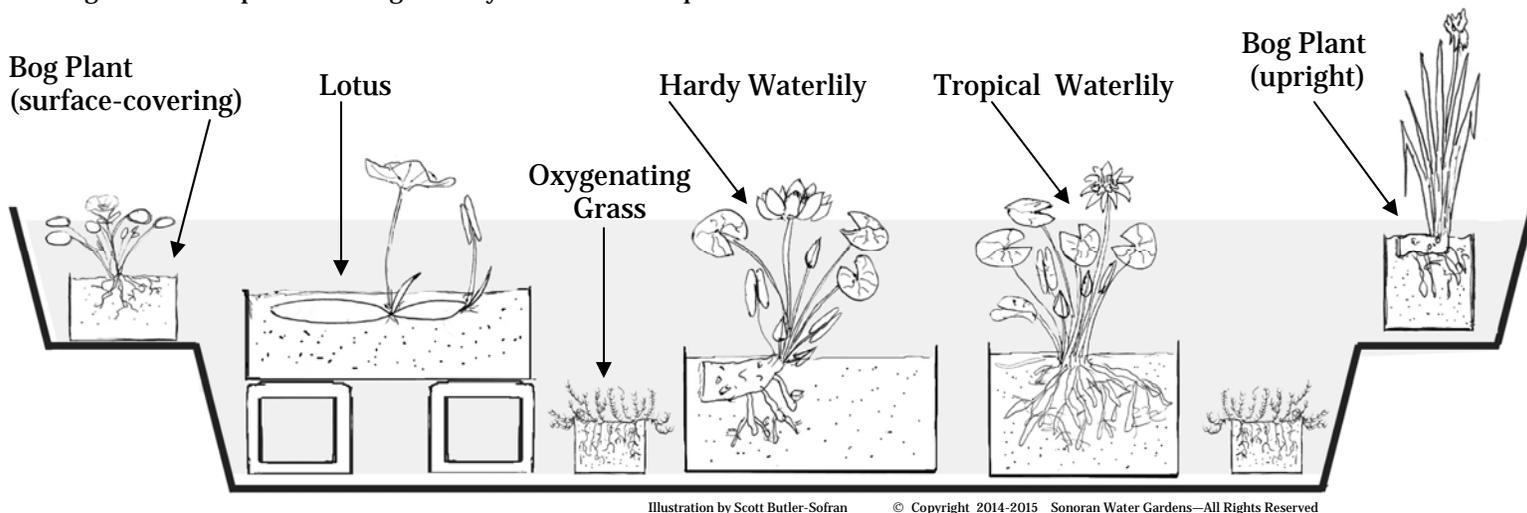
Tropical waterlilies grow from a fibrous root system, much like a houseplant. The roots of tropical waterlilies need room to grow and to acquire nutrients for the plants, and therefore tropical waterlilies do best planted in large soil containers. 1 gallon and 2 gallon landscape pots are perfect for most S-M tropical varieties. Larger pots (14 inches or more in diameter and 10 to 12 inches in depth) are ideal for the larger M-L tropical waterlilies. If you have a large pond and plenty of room, give your tropical waterlilies extra large pots and they will reward you with huge leaves and incredibly prolific, fragrant and beautiful blooms.

Fill planting container halfway with soil and add fertilizer tablets. Cover tablets with an inch of soil. Spread the roots out carefully and continue to **add soil until the roots are covered and the crown is slightly exposed.** Cover soil with a 1/2 inch layer of pea gravel if desired. Gently submerge planted waterlily into pond until the leaves are just at the surface. If your pond is significantly deeper than 2 feet, keep the potted plant on bricks or an inverted pot. As a general rule, tropical waterlilies prefer 8-18 inches of water over the roots. Some can grow in water as deep as 3 feet, but most prefer shallower water which is warmer around the root zone. Please see our website for more information on individual varieties preferred depth.

LOTUS: LOTUS TUBERS ARE VERY FRAGILE—HANDLE WITH CARE!

Lotus grow from tubers that resemble bananas. The growing points emerge from the ends of the tubers. These growing points are very fragile so use care when handling and planting the tubers. Like hardy waterlilies, lotus roots spread horizontally and should be planted in large, wide soil containers. 15-18 inches wide and 6-8 inches deep is ideal for (S) and (S-M) types. The larger lotus should be planted in containers twice that size for maximum growth and blooming.

Fill planting container halfway with soil and add fertilizer tablets. Continue to add soil until the pot is filled to within a few inches of the top. Place the tuber flat on the soil with the growing tip(s) pointed up. (*see diagram*) **Cover the tuber with soil leaving the growing points exposed.** It may be necessary to temporarily place a small flat rock over the tuber (away from the growing points) to keep it from floating until the roots sprout. Cover soil with a 1/2 inch layer of pea gravel if desired. Gently submerge planted lotus into pond. Keep the potted lotus in shallow water (6-10 inches of water over soil line) until it has several floating leaves. The plant can be gradually lowered to a depth of 12-15 inches of water over the roots.



BOG & LOUISIANA IRIS / UPRIGHT BOG PLANTS:

Water irises and upright bog plants grow in shallow water or mud. Most of these plants are best planted in 6 inch or 1 gallon pots; use larger pots for the taller and larger types (i.e. common & narrowleaved cattails, thalia, canna, papyrus, etc.) Add fertilizer tablet(s) when planting for best growth. Cover roots with soil and leave the crown (where stems/leaves emerge) exposed. Gently lower the potted plant into the pond to desired depth. (*See our website for detailed depth preferences for each type plant.*)

SURFACE-COVERING BOG PLANTS:

Surface-covering bog plants grow in shallow water. These plants do best with 6-18 inches of water over the soil. They are best planted in 4 or 6 inch pots with clean topsoil and tableted fertilizer. Cover the roots with soil, leaving the crown exposed. Cover with a thin layer of pea gravel if desired and gently lower the potted plant into the pond until the leaves are just at the surface.

OXYGENATING / SUBMERGED PLANTS:

Planting these plants is different than the other aquatic plants. For example, some oxygenating grasses, such as Hornwort (*Ceratophyllum sp.*) never grow roots, so planting in a pot of any kind is unnecessary. Weighing the stems down with a small rock, or tucking them under the potted plants usually works fine. Other submerged plants, such as Anacharis (*Elodea sp.*) grow small hair-like roots which really only serve to anchor them into the soil, and are not relied on to absorb nutrition since that is done by the foliage. This is how these submerged plants starve out the algae by claiming the nutrients algae needs to grow. Oxygenators are best planted in sandy soil, or even gravel. Submerged plants should never be fertilized. Spreading types like Mini Sagittaria (*Sagittaria sp.*) and *Vallisneria sp.* are best potted in wide and shallow tubs or pans for a natural looking underwater turf effect.