

## WATERGARDENS AND PLANTS

A water garden is one of the most rewarding things you can make! As all other gardening it takes some planning, a little learning and some plain work. But, once established - it doesn't need weeding!

### LOCATION

**FIRST:** Before you begin to dig, call Digger's Hotline, Miss Utility, or your local utility companies! (Electric, phone, gas, water, any one who may have an underground line.

**Where?** From where would you most enjoy the sights and sounds of your water garden?

**Level area.** A low area looks most natural, but don't make it in a wet area where water might gather and undermine the liner and give spill over into the pond. If you know you will be using pesticides or herbicides in the area, you can choose to raise the water level an inch or so. With some effort it will look natural, and you won't have your pond poisoned.

**Sun.** If you want to grow water lilies there has to be a minimum of 5-6 hours of sun.

**Run off from the pond.** Make sure there is a way for the water to go if there is too much. You could make a bog bed to catch the spill over. Another option is to build in an overflow or drain.

**Where is the ground water?** Maybe you will have a natural pond.

**Trees.** Trees give shade and when the leaves fall they decompose in the water and give far too much fertilizer.

**Electricity.** If you want a pump running, think of an outlet.

### DESIGN

Do you want a naturalized pond to match your natural looking garden or do you want some formal lines? Let your imagination bloom!

From all water garden designers and -makers comes this advice: Make it as big as your space and wallet allow. There will be a lot of plants you want to put in there - and you still want to see a bit of the sky. The bigger the pond, the easier it is to maintain the ecology.

## MAKING A POND WITH A LINER

Line it out with a hose, rope, or chalk. Then walk around the garden and look at it from all sides. If possible, climb something and look at it from above.

**Depth:** If a pond is too shallow the water gets too warm and algae will thrive too well. It should be at least 15", 18" is recommended. >40 sq. feet: 18-24". >100 sq. feet: 24" is enough. If you want to keep fish, and over winter your waterlilies in the pond, make a hole big enough for them, so deep down that they don't freeze. In warmer areas that means about 3'. In our climate (zones 3-4) we have a hard time over wintering our goldfish. Our hardy water lilies do fine, but we recommend taking the fish in over winter in a container in a shed or garage. Be sure to level your pond's length and width so that you do not have one end exposed and water pouring over the other.

**Size of liner:** (Width + (2 x depth) + 2') x (Length + (2 x depth) + 2')

Make a ledge 9-12" down where you want shallow water plants and preferably a low ledge for the stones that will keep the liner down at the edge. The sides should slant about 20 degrees.

The liner will be easier to work with if you let it warm up in the sun for a short time, depending on the weather. Be sure not to lay the liner on the grass. Make sure there are no sharp stones or tree roots. Then line the hole with an inch of wet sand. To further protect the liner, you can add protection fabrics. Drape loosely over the pond frame, with an even overlap all around (6"-12"). Hold the liner in place with bricks, large stones, or cement blocks. Ease off as the water begins to take shape. Pull and straighten as you pour in the water. Bend the liner upward at the edge and only lower it where you want the spill over to go. Before you cut the surplus liner, have the edging finished.

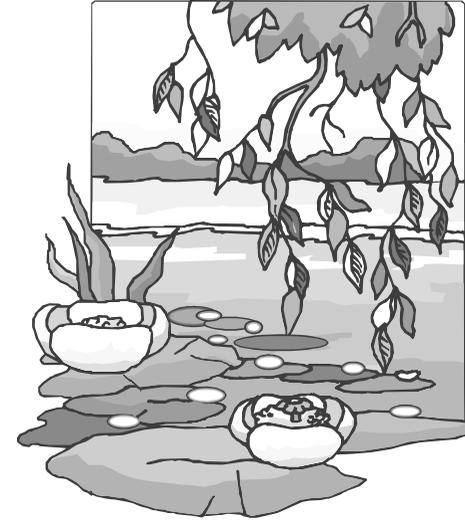
**PONDLINERS:** Come in different qualities and prices:

**PVC:** Is the most common and the cheapest. It deteriorates in sunlight and in our cold winters it gets brittle and breaks easily. We recommend rubber liners for this climate.

**EPDM:** Is a rubber liner, developed by NASA. It is thick and strong; and stays flexible in cold weather. It is guaranteed for 20 years. We have used it for our pond and highly recommend it. This type of liner is

sold 15 feet wide, and can be cut to the length you desire. We charge \$1.15/sq. foot.

**OTHER OPTIONS:** You can use preformed pools. Concrete is not recommended for our area, the winters are too hard and it is bound to crack.



**OUR POND:** Is 500 sq. feet (app.), 2-2½' deep, and holds about 7000 gallons. It is lined with 45 mil EPDM.

To calculate the amount of water in your pond in gallons: length x depth x width x 7.5

## MAINTENANCE

A pond is a low maintenance area, once established. The key to a clear pond is ecological balance and once it is found, it will take care of itself.

Algae is the main problem. There is no mystery to them, they are just small plants, floating in the water. And as all other plants they love: sunlight, nutrition, and CO<sub>2</sub>, - and they prefer warm water. So the key to controlling them is competition-not chemicals!

They will start to grow in the spring when the water starts heating up and in a new pool filled with fresh water rich in minerals. It will pass in a couple of weeks, as you start adding plants bacteria and oxygenating plants. Changing the water will only postpone the problem.

In recent years pond builders have increasingly started covering the pond liner with small rocks and gravel to make a more natural bottom as well as more surface for the algae to settle.

### To Prevent algae:

- ❖ Have plants cover 40-50% of the surface of the pond to give it shade.
- ❖ Avoid surplus fertilizer in the water; Clean out dead leaves in the spring.
- ❖ Grow oxygenating plants. 2 bunches of 10/sq. ft.
- ❖ Keep the water cool - by making the pond deep enough.
- ❖ Don't stir the water, it will promote algae growth.
- ❖ Add bacteria designed to balance the algae growth.
- ❖ Keep fish, snails, tadpoles and others that eat the algae. If this doesn't work you can buy algacides that are safe for plants and fish.

You also have many options for filtering systems. They come in a number of sizes and designs. If you decide to purchase a filter, choose one that fits your needs. Take into consideration the size of your pond and if you would like to have fish or not.

### As a rule of thumb, you need to have per square yard of surface:

- ❖ One medium to large water lily, every 10-12 square foot is recommended.
- ❖ Two bunches of oxygenating plants
- ❖ One dozen snails and one-two fish, 4-5"



**PLANTING THE POND:** Unless your pond is natural, you should grow all plants in containers. Plastic is the best.

Use wide and shallow containers that will catch debris and waste. To get the right level of water above the plants, you may need to raise the container. Use plastic or bricks, concrete blocks will disturb the pH of the water. (See illustration on the next page.)

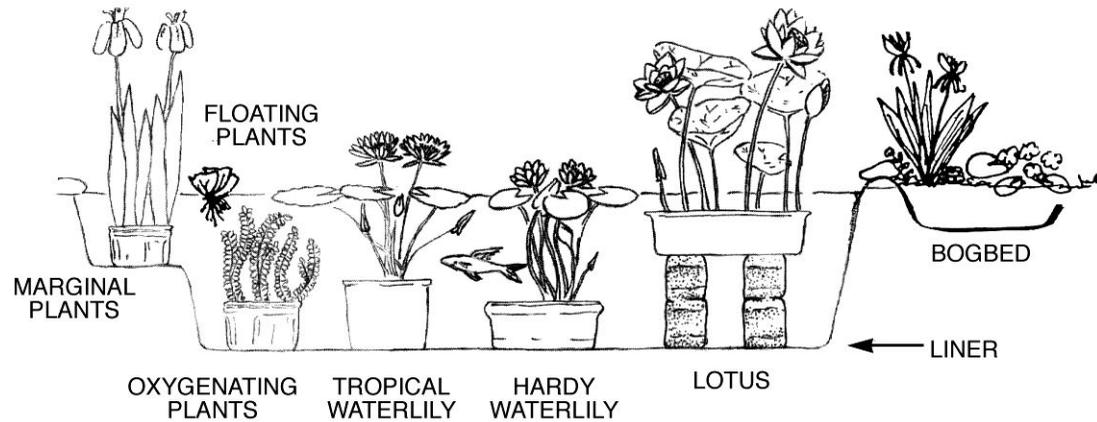
## PLANTS FOR THE POND

**Hardy water lilies:** Come in a multitude of varieties and sizes. The plants grow from tubers and sometimes we are under the impression that water lilies require a lot of care. Actually, once established, the hardy water lily thrives with little attention.

Most of them need 6-10 hours of sunlight to bloom properly, but some will do with 3-4 hours.

Most need 6-18" of water above the crown, some can grow in deeper water. To get them started in spring, put them close to the warm and sunny surface and lower them gradually as they grow.

**Planting:** Use a 4-7 gallon container, shallow and at



least 16" wide. Fill it half with really heavy garden soil, no manure. Place the tuber near the edge of the container at a slight angle with the growing tip pointing towards the center. Fill in more soil, but take care not to cover the growing tip! Pack it well. On top, add 1" of sand and 1 1/4" pea gravel, still staying free of the crown - to hold down the soil. Water well. Hold the container slanting and lower it into the water real slowly, allowing bubbles to escape.

**Fertilizing:** Waterlilies are heavy feeders! The easiest way to feed them is to use special fertilizer tablets. Put 2-3 in when planting it. Every 3-4 weeks during the summer insert the same amount into the soil. This will really keep the lilies blooming.

**Over wintering:** There are several options here. If your pond is deep enough you can take the chance of leaving them right in the pond. You can also choose to take your waterlilies up in the winter. Cut off remaining leaves and take the tubers out of the soil, wrap them in damp moss or newspaper. Keep them moist and cool (40°F) in a place that won't freeze. Or you can just leave them in the container and place a black plastic bag around it to keep them moist - or cover them with wet newspaper. Check them during the winter. Wait until water temperatures are above 55°F before placing in your pond.

**Tropical waterlilies:** Best treated as annuals here.

They differ from the hardy waterlilies by bearing their flowers above the water. There are day blooming and night blooming varieties, many of them fragrant. Their color range is even wider than the hardy lilies; they also come in blue. They can be grown in tubs too and overwintered in a frost free garage/basement. Need water temperatures of at least 65°-70°F before moving into the pond.

**Oxygenating plants:** Plants that grow totally submerged in water, called oxygenating because their main job is to clean the pool by growing from waste and adding oxygen. Fish love to eat them and hide in them. They are essential to a clean pond. You will need 2-3 bunches per each sq. yard. Need water temperatures of 55°F.

**Floating plants:** Plants that don't need to be potted, they have their roots in the water. They shade the water (prevents algae growth) and add interesting shapes to the surface. Many are not hardy here, but they multiply quickly, so you don't have to buy many. Water Hyacinths produce 800,000 off springs in half a year in the South, and therefore it is forbidden to let them out in natural waters where they are hardy (zone 9-10). Need water temperatures of 60°-65°F.

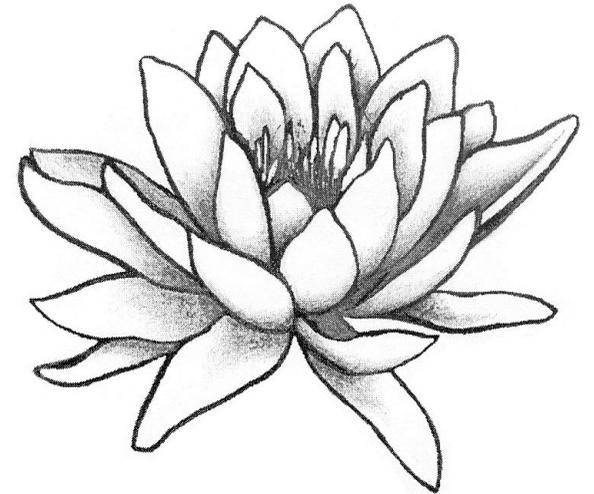
**Marginal plants:** Plants that grow in pots, in shallow water. Their roots need to be under water - with 0 to several inches of water above them. Most thrive with 2-4" some can take more. They should be planted in heavy garden soil, with a layer of gravel or sand on top to keep the soil in place, and fertilized with fertilizer tablets. They can be over wintered at the bottom of the pool, if they are hardy. Plant only one kind of plant in a container, 2 gallons for one, 5-10 gallons for three. You can inhibit their growth by planting them in smaller containers. They should be divided every 1-3 years. Hardy varieties need water temperatures of 55°F. Non-hardy needs temperatures at least 65°F before planting out.

**Bog plants:** Plants that grow in wet to moist soil. It is easy to make a bog bed at your pond: dig out the soil to a depth of 9", put a liner in the bottom and 6" up the sides. The liner does not have to seal perfectly. Then add a layer of about 2" of gravel. Then, add the soil. You can mix in manure.

It is important, though, that the water from the bog bed does not run into the pond. Make an edge to separate them. You can make the spill over from the pond run into the bog bed. During dry spells, water the bed.

You can winter over non-flowering tropical bog plants by placing them in decorative pots inside the house. A bright room is best, keep them well watered. They will reward you with lush tropical growth all winter long. Hardy bog plants need water temperatures of 55°F. Non hardy varieties need at least 65°F before planting out. Please check our catalog for the varieties that are available this year.

## A GUIDE TO WATER GARDENING



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