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Compiled for the Colorado Water Garden Society by Rebecca Nash and Cyndie Thomas using the following sources:

Nash, Helen, and Steve Stroupe, *Aquatic Plants and Their Cultivation*, New York: Sterling Publishing Company, Inc. 1998

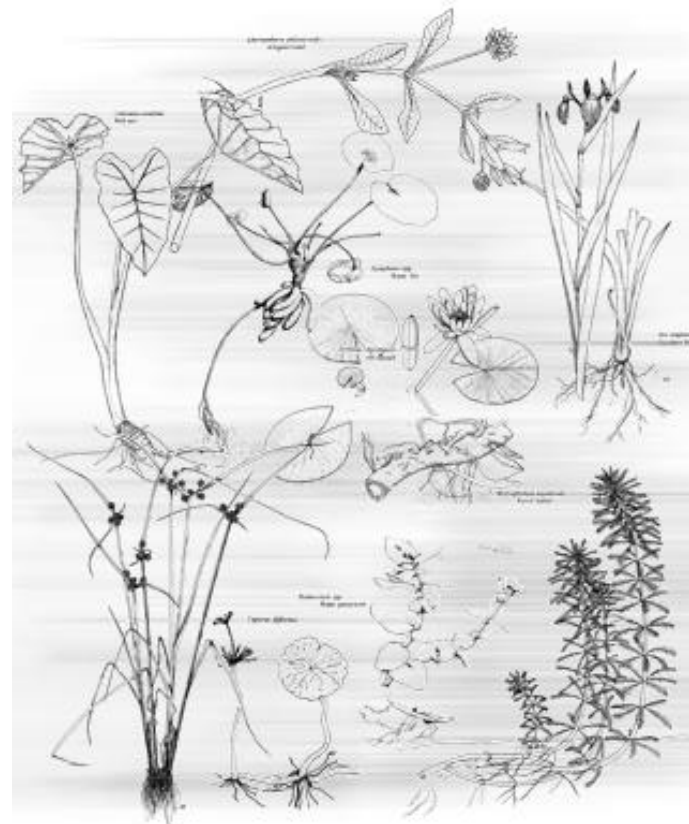
Hartmann, Hudson T. and Dale E. Kester, *Plant Propagation Principles and Practices*, New Jersey: Prentice-Hall, Inc. 1983

Slocum, Perry D. and Peter Robinson, with Frances Perry, *Water Gardening Water Lilies and Lotuses*, Portland: Timberline Press 1996

Cover drawing an adaptation from illustrations presented by IFAS Center for Aquatic Plants, University of Florida, Gainesville.

# Aquatic Plant Propagation

Rooted floating leaved  
and  
marginal/emergent plants



**Colorado Water Garden Society**

# Aquatic Plant Propagation

Propagation is the making of more plants to keep a plant variety going. Propagation is also done to improve the health of a plant. Dividing and repotting a plant stimulates growth. Most aquatic plants need dividing every two years, some more often.

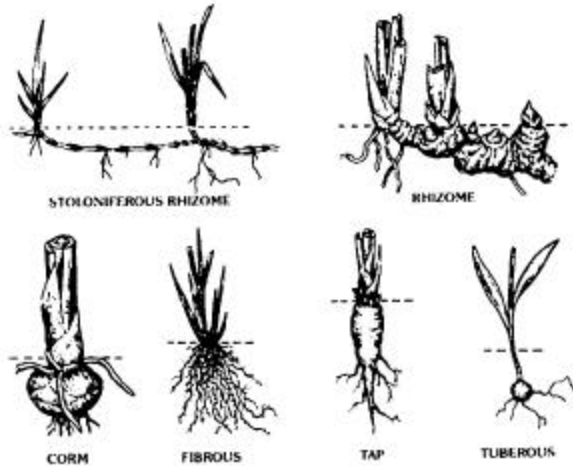
## Common Types of Propagation

- **Vegetative propagation** is when the plant is propagated using a part of the plant itself. A stem cutting, corm, tuber, or other part of the plant is used to grow a new plant. This is the most widely used method and normally the easiest. Most aquatic plants are propagated this way.
- **Sexual or seed propagation** is when a new plant is grown from a seed or spore that the parent plants have produced. This is the traditional means of propagation. Plants like *Samolus* and *Cyperus* species propagate easily this way. Hybrids often revert to less desirable parents, unless propagated under controlled conditions.

## Floating/Marginal-Emergent Plants



Aquatic floating leaved and marginal-emergent plants vary in their growth habit, culture (care) and root structure. This also determines planting methods and type of container best suited to the plant.

Most of these plants have a root type like the ones listed below:







Planting Methods	
<b>Tropical Water Lilies and Upright type Mexicana Hardy Water Lilies.</b>	Mexicana/upright type rhizomes should be prepared for planting in the same way as other rhizomes. Placement of the plant in the new pot will be centered, with the growing tip above the soil level.
<b>Planting Methods for small growing "eyes"</b>	
Small growing "eyes" should be potted in 4" pots in the same manner as larger rhizomes and grown to flowering size. This may take a couple of years.	

## Methods of Propagation for Tropical Water Lilies

Tuber	
	Tropical water lilies may produce tubers when water temperatures drop below 70°, or when the plant is extremely stressed. Tubers are produced at the base of the leaves in the soil. Day blooming tropical lilies will produce a single walnut sized tuber and night blooming tropical lilies produce several small tubers. In cold climates tubers can be stored over the winter in water-filled zip-lock bags or in pots with damp sand. These will need to be kept where surrounding temperatures are around 55-60°. In early spring tubers can be placed in 75° water to produce new plants. New plants emerge from the apex of the tuber on a small modified stem. When the plant has roots it can be removed from the tuber and planted centered in a small pot, graduating it to a larger pot as it continues to grow.
Viviparous	
	Viviparous reproduction occurs on a number of Tropical species and hybridized water lilies. Generally these tiny plantlets grow from the point where the stem meets the leaf, near the sinus opening. As the leaf begins deterioration the plant grows and develops roots. This can be artificially induced by removing a leaf with a swollen "nub" (upper left). By weighting the leaf down, placing it on a sand bed in a growing tank, a plantlet will generally grow. After the appearance of roots, these plants can be potted in the center of a small pot, graduating pot size as it continues to grow.
A few hardy water lilies will also experience vivipary reproduction, but all are from the flower. Plant and care for these in the same manner as other viviparous plants.	

## Hardy Water Lilies

Hardy Water Lilies have several rhizome types. Hybrid lilies may exhibit characteristics of more than one rhizome type.

Marliac type rhizome	Odorata type rhizome	Tuberosa type rhizome
		
<p>Leaves and flower stems develop at growing tips. These rhizomes are fleshy and knobby. They are not as aggressive in horizontal growth, more clumping. Growth "eyes" should be cut off with a sharp knife for propagation</p> <p>Finger type rhizome - This is a miniature version of the Marliac type rhizome.</p>	<p>Leaves and flowers are developed at growing tips. These are thick, fleshy horizontal rhizomes. New growth "eyes" are produced along the rhizome, mimicking thick braches if allowed to grow.</p>	<p>Leaves and flower stems develop along the entire (spindly) rhizome, without a primary growing tip. New growing "eyes" are thin and grow horizontally along the rhizome. They have minimal attachment and can be easily removed for propagation.</p>
<b>Upright (Pineapple)</b>	<b>Planting Methods</b>	
	<p>Remove plants from the old pot and wash off all dirt. Marliac, Oderata, and Tuberosa rhizomes should be examined for decaying root stock that needs to be removed. Growing "eyes" (also referred to as bud cuttings) can be removed and set aside for planting. Cut off excess leaves and any black or soggy roots. Leave several inches of rhizome and a few roots to anchor the plant in its new pot. Pots should be wider than they are tall, with or without holes (cover holes with newspaper to hold dirt). Pot size will determine the frequency required for repotting, also the size of the plant and flowers. Prepared rhizome should be placed in the pot with well firmed dampened soil. Rhizomes should be placed in the pot at a 30-40° slant with the growing point or tip just at the soil level and the backside of the rhizome under 2" of soil, touching the pot wall. Spread any roots over the soil surface and fill in remaining space with soil and firm down. Top with pea gravel or small river rock, leaving tip exposed. Return to the pond closer to the surface, lowering it when new growth begins and several new leaves have appeared. (continued on next page)</p>	
<p>Leaves and flower stems develop at generally only one growing tip. This is also referred to as a Mexicana type rhizome. The rhizome structure looks like a small pineapple. New plants form from tubers that develop under or next to the plant. Tropical Hybrid water lilies have an upright rhizome.</p>		

**Stoloniferous** - having stolons (horizontal running stem which often roots at the nodes).

**Stolon** (L. stole, stolonis, a twig, shoot) a modified stem which grows horizontal from a crown above the ground, taking root at the tip, and ultimately developing a new plant. Strawberries make stolons  
A stem that grows flat along the top of the ground is also called a runner.

**Runner** - n. (AS. rinnan, to run) a stolon consisting of a prostrate stem rooting at the node and forming a new plant, which eventually becomes detached from the parent plant as in the *Echinodorus* "Marble Queen" and many others.

**Rhizome** - (Gr. rhiza, a root) a subterranean, horizontal, root-like stem sending out leaves and shoots from its upper surface and roots from its lower surface. This one grows flat, or horizontally under the ground. Some grasses grow like this and then along the stem leaves will come up. Iris is a rhizome.

**Corm** - a solid, bulb-like part, usually subterranean (gladiolus, crocus, and *Liatris spicata*).

**Taproot** - primary central downward growing root. Salt Cedar has a taproot.





**Tuberous** - having the character of a tuber (any thick fleshy enlargement of the rhizome or stolon).




**Tuber** – this is a modified stem found underground, but is fat. It is a food storage stem. A common tuber is the potato. Tropical water lilies and lotus make tubers.

**Viviparous** – (L. vivus, alive; parere, to produce) A phenomenon when seeds/embryos are produced that germinate while still attached to the mother plant producing a seedling with roots; multiplying by vegetative means such as buds or bulbils in the position of flowers.

**Crown** - A crown on a plant is that part at the surface of the ground marking the general transition zone between stem and root.

Awareness of the various root types provides vital information on planting methods for improved cultural growth and control of a plant. When planting, remember plant size will be synonymous with pot size – the bigger the pot, the bigger the plant.

Root Photo	Type and Examples	Planting Method
	<p><b>Rhizome</b> – roots at new growth points. Usually growth tips extend from previous year's growth.</p> <p><i>Canna</i>, <i>Thalia</i>, Giant Variegated Reed (<i>Arundo donax</i> 'Variegata')</p>	<p>In the fall, clean rhizome. Divide rhizome maintaining a visible growing tip; two or more are preferred, with root growth on the underside.</p> <p>Place with growing tip about 2 inches below the pot top edge and cover with potting medium.</p>
	<p><b>Horizontal Rhizome</b>-grows and roots on surface of soil.</p> <p><i>Acorus</i> spp, Cattails (<i>Typha</i> spp.), <i>Iris</i> spp.</p>	<p>Cut off areas that are not solid, and without any leaf growth. Divide rhizome into rooted sections. Repot in a wide container with the cut-off end against the side of the pot. Proper placement will allow the plant to grow across the pot.</p>
	<p><b>Creeping Rhizome</b>-shallow rooting at nodes.</p> <p>Watercress, Water Forget-me-not, Four leaf clover (<i>Marsilea</i> spp.), Creeping Jenny (<i>Lysimachia</i> spp.), Water Mint* (<i>mentha</i> spp.), <i>Bacopa</i> spp, Alligator Weed (<i>Alternanthera</i> spp.)</p> <p>Repens - prostrate, creeping along the ground, rooting as it grows; typically applying to plants which root at the nodes.</p>	<p>These plants can be invasive. Clean and cut at points between nodes of rooted sections. Plant in shallow, wide pots. Soil line should be about 1" below the pot edge to discourage growth escaping the pot.</p> <p>*Plant in shallow, holeless containers.</p>
	<p><b>Stoloniferous Rhizome</b></p> <p>Stolons grow a short distance horizontally from the crown and take root at the tip to develop a new plant.</p> <p>Star Grass (<i>Dichromena colorata</i>), Cotton Grass (<i>Eriophorum angustifolium</i>), Pennywort (<i>Hydrocotyle</i>), Rush (<i>Juncus</i> spp.), Lavender Musk (<i>Mimulus ringens</i>), Common reed (<i>Phragmites</i> spp), Pickeral Weed (<i>Pontederia</i> spp.), Taro (<i>Colocasia</i> spp.).</p>	<p>Divide into sections with portions of erect stems and roots. Plant in the center of a deep pot. Soil line should be about 1" below the pot edge to discourage growth escaping the pot.</p>

Root Photo	Type and Examples	Planting Method
	<p><b>Tuber, Corm</b> – at the apex a terminal shoot develops, generating leaves and flowering shoot. New corms (Axillary buds) are naturally generated at each of the nodes.</p> <p>Arrowhead (<i>Sagittaria</i> spp.), Calla Lily (<i>Zantedeschia</i> spp.), Chinese Water Chestnut (<i>Eleocharis dulcis</i>), Water Hawthorne.</p> <p>See also: Tropical Water Lily</p>	<p>Naturally-generating plants can be separated and planted in a one-gallon or larger pot.</p>
	<p><b>Clumping rhizome</b></p> <p><i>Cyperus</i> family: Umbrella palm, Papyrus, Umbrella grass, Bull Rish (<i>Scirpus</i> spp.), Sedge (<i>Carex</i> spp.) Horsetail Rush (<i>Equisetum</i> spp.), Cardinal Flower (<i>Lobelia</i> spp.), Arrow Arum, Lizards Tail (<i>Saururus cernuus</i> spp).</p>	<p>Divide clumps, maintaining live stems and roots. Discard dead material. Repot in the center of the pot.</p>
	<p><b>Sprawling running rhizome</b> – runners often may travel several feet or more.</p> <p>Marsh Betony (<i>Stachys</i> spp.), Floating Heart, Water Snowflake (<i>Nymphoides</i> spp.), Water Poppy (<i>Hydrocleys nymphoides</i>), Bog Bean (<i>Menyanthes trifoliata</i>), Parrot Feather (<i>Myriophyllum aquaticum</i>), Variegated Manna Grass (<i>Glyceria</i> spp.), <i>Houttuynia</i>.</p> <p>Decumbent - Trailing along the ground but with the new plant growing at the summit of the stem, ascending or erect.</p>	<p>These plants can be invasive. Plants that grow at the end of runners can be separated and potted in the center of a deep pot. Remove running stem back to main plant. Soil line should be about 1" below the pot edge to discourage growth escaping the pot.</p>