The floating aquatic plants discussed in this article are frequently found in and around ditches, canals and ponds in or near citrus groves. These emergent aquatic weeds may need to be treated with herbicides to maintain adequate water flow in ditches and canals, thereby minimizing potential for grove flooding or elevated water tables that will impact citrus root growth.

An additional article on submersed aquatic weeds is planned for the November issue of *Citrus Industry* magazine. An article on emerging aquatic plants was published in the May issue of *Citrus Industry*.

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**Duckweed**

*Nymphaea odorata*

Leaves: alternate; long-stalked; blades floating, nearly round, lying flat on the water, deeply notched, lobes pointed, 6 to 18 inches in diameter; green on top and green tinged with red or purplish-red on the bottom

Stem: a horizontal, thick, branched rhizome

Flowers: solitary; on long stalks; white, consisting of 25 or more petals that are ovate-lanceolate; petals are 3 to 4 inches in length

Fruit: depressed globe-shaped fruit that is approximately 1 inch in size; ripens under water

Seeds: oblong-oval, grayish olive to orange, less than one-tenth inch

Height: grows underground (rhizome); can be rooted at depths to 8 feet; leaf stalks will reach surface

Life cycle: perennial herb

Growth characteristics: rooted, floating-leaved plant with branched rhizomes; leaf stalks attached near center of floating blade at top of split; can grow in water that is up to 8 feet deep; flowers from April to December in Florida; reproduces by seeds and branching rhizomes

Distribution: throughout Florida; common; mostly in ponds, lakes, slow streams, canals and ditches

Origin: native

Comments: can grow in densities that affect water flow and use

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**AMERICAN LOTUS**

*Nelumbo lutea*

Leaves: alternate; long-stalked; blades bluish-green, circular, 12 to 24 inches in diameter; may be floating or up to several feet above the water; floating leaves are flat whereas the emerged leaves are funnel-shaped; leaf stalk (petiole) attached to the leaf center (umbrella-like); blade veiny below, no split in the blade, which quickly distinguishes it from water-lilies and spatterdock

Stem: a long, thin, cylindrical rhizome with tubers

Flowers: solitary; on a thick, long stalk; pale yellow, up to 10 inches across with more than 20 petals

Fruit: cone- or shower-head shaped with multiple circular openings

Seeds: nutlike, hard, up to one-half inch in diameter

Height: grows underground (rhizome); can be rooted at depths of 6 to 8 feet; leaf stalks will reach surface and above

Life cycle: perennial

Growth characteristics: rooted, floating- or erected-leaved plant with thin rhizomes and tubers; reproduction by seeds and tubers; flowering May to August

Distribution: central peninsula north and west in Florida; occasional; margins of ponds and lakes and in prairies and slow-flowing streams

Origin: native

Comments: sometimes forms huge populations; dried seed heads are commonly used in flower arrangements

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**FRAGRANT WATER-LILY**

*Nymphaea odorata*

Leaves: alternate; long-stalked; blades floating, nearly round, lying flat on the water, deeply notched, lobes pointed, 6 to 18 inches in diameter; green on top and green tinged with red or purplish-red on the bottom

Stem: a horizontal, thick, branched rhizome

Flowers: solitary; on long stalks; white, consisting of 25 or more petals that are ovate-lanceolate; petals are 3 to 4 inches in length

Fruit: depressed globe-shaped fruit that is approximately 1 inch in size; ripens under water

Seeds: oblong-oval, grayish olive to orange, less than one-tenth inch

Height: grows underground (rhizome); can be rooted at depths to 8 feet; leaf stalks will reach surface

Life cycle: perennial herb

Growth characteristics: rooted, floating-leaved plant with branched rhizomes; leaf stalks attached near center of floating blade at top of split; can grow in water that is up to 8 feet deep; flowers from April to December in Florida; reproduces by seeds and branching rhizomes

Distribution: throughout Florida; common; mostly in ponds, lakes, slow streams, canals and ditches

Origin: native

Comments: can grow in densities that affect water flow and use
**MOSQUITO FERN**  
*Azolla caroliniana*

**Leaves:** bilobed, overlapping, less than one-sixteenth inch wide and long, green (especially in winter), with reddish margins, or reddish; young plants are green; maturing plants turn red to dark brown by fall or winter, especially in full sun

**Stem:** short with forked branching, one-quarter to 1 inch long, with thin roots

**Flowers:** male and female spores are borne in separate containers (sporocarps) in the axils of the leaves; sporocarps are miniscule

**Seeds:** does not have seeds, but reproduces by spores

**Height:** one-sixteenth to one-eighth inch, low growing, at water surface

**Life cycle:** a small free-floating fern, reproduction by spores

**Growth characteristics:** grows equally well rooted in mud or free-floating; floating plants can propagate rapidly by spores and plants breaking apart

**Distribution:** throughout Florida, mainly from north-central into southern Florida; frequent; ponds and swamps

**Origin:** native

**Comments:** reproduces very rapidly, forming large floating mats that impair navigation, water flow and recreation

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**SPATTERDOCK**  
**YELLOW COW-LILIES**  
**YELLOW WATER-LILIES**  
*Nupha advena*

**Leaves:** alternate; long-stalked; blades heart-shaped, deeply notched, with rounded lobes; usually more long than wide, up to 16 inches long and up to 10 inches wide; light green to transparent in color; leaf blades extend above the water or float below or on the surface

**Stem:** thick, horizontal branching rhizome

**Flowers:** solitary; on long stalks; at or above water surface; green to yellow petal-like sepals; six to nine very small, yellow, cup-shaped petals

**Fruit:** stalked, flat-topped, yellow to greenish in color; usually borne at or above water surface.

**Seeds:** 30 or more seeds per seed head

**Height:** grows underground (rhizome); can be rooted at depths to 8 feet; leaf stalks will reach surface and above

**Life cycle:** perennial herb

**Growth characteristics:** floating- or erect-leaved plant with large spongy rhizomes; reproduction by seeds and branching rhizomes; flowering from spring into fall

**Distribution:** throughout Florida; common; mostly in ponds, lakes, slow streams and ditches

**Origin:** native

**Comments:** can grow in densities that affect water flow and use
Floating aquatic plants

**WATER FERN**

*Salvinia minima*

- **Leaves**: occur in threes, two-paired and floating, and one is finely dissected and dangling underneath; floating leaves expanded and show a folded appearance down the center, bluish-green in color, broadly rounded; bases notched, three-quarter inch in size, arising from stem beneath, upper surface covered with stiff, branched hairs and dark hairs on the under surface
- **Stem**: tiny, rootless, hairy
- **Flowers**: hard, nutlike pods on the dissected, trailing rootlike leaves
- **Seeds**: does not have seeds, but reproduces by spores
- **Height**: a few sixteenth of an inch, low growing at water surface
- **Life cycle**: a small free-floating fern; reproduction by spores, but leaves breaking away the axis portion multiply rapidly
- **Growth characteristics**: free-floating fern that can grow into extensive mats
- **Distribution**: throughout Florida, primarily north-central to southern Florida; common, ponds and swamps
- **Origin**: South America
- **Comments**: free-floating in still or sluggish water, lakes, ponds and ditches; does not have roots; in protected areas, it can form extensive mats that can impair navigation, water flow and recreation

**WATER SPANGLES**

*Eichhornia crassipes*

- **Leaves**: clustered in rosettes; stalked, stalk to 12 inches long, inflated and more or less ovoid; filled with spongy air tissue; blade subcircular to 6 inches wide, ovate to broadly elliptic
- **Stem**: very short, clusters of leaves are produced at the nodes of a runner (stolon)
- **Flowers**: inflorescence a showy spike to 12 inches long; several flowers from each bract; six petals, blue or white, light lavender to pinkish with a bright yellow marking on the upper petal, somewhat two-lipped, six stamens, of two sizes
- **Seeds**: many, found in three-celled capsule
- **Height**: ranges from a few inches to 3 feet
- **Life cycle**: herbaceous, aquatic perennial reproduces primarily by vegetative means; seeds sink and remain dormant until drought period when they can germinate
- **Growth characteristics**: rapid reproductive potential with as few as 10 plants able to cover an acre of surface area; flowering in spring, summer and fall
- **Distribution**: throughout Florida; common, ponds, lakes, sloughs, canals, streams and ditches
- **Origin**: South America
- **Comments**: floating aquatic herb; flower-bearing year-round in Florida; although seeds are important for reproduction and dispersal, primarily reproduces by vegetative offshoots formed on short runners (stolons)
- **Growth characteristics**: very rapid growth, primarily vegetative from fragments, budding, and runners (stolons)
- **Distribution**: throughout Florida; common, ponds, lakes, lagoons, ditches, drainage canals and swamps
- **Origin**: unclear, but it is a non-native plant in the United States
- **Comments**: floating aquatic herb with masses of feathery roots; reproduces primarily by budding from the main plant or producing plants at nodes on stolons; can form huge mats

**SELECTED SOURCES**

- *Identification & Biology of Non-Native Plants in Florida’s Natural Areas*. K.A. Langland, H.M.

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