

**Identification and
Control of**

**NON-NATIVE
INVASIVE
PLANTS**

**in the
Tampa Bay Area**

For Homeowners & Professionals

This guide is intended and designed to be used by both homeowners and professional pesticide applicators. Public and private land managers and other professionals working in utilities, parks and conservation programs will also find useful and educational information to aid in identifying and controlling non-native invasive plants in the Tampa Bay area. While there are more than 125 exotic species identified by the Florida Exotic Pest Plant Council (EPPC) as Category I or II pest plants, the Invasive Species Task Force of Hillsborough County, Florida, has selected 20 especially troublesome plant species found in the Tampa Bay region. This field guide provides the information necessary to identify and chemically treat pest plants and includes replacement suggestions for replanting once the targeted plants are controlled.

The Florida EPPC regards Category I plants as: “Invasive exotics that are altering native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives.” Sixteen of the 20 species in this booklet are Category I pest plants. The remaining four are Category II species—plants on their way to becoming Category I because of “increased abundance or frequency” in Florida plant communities.

A non-native invasive is a plant from somewhere other than Florida that spreads aggressively into natural areas. All non-native plants are not invasive. They become invasive when they outgrow and replace native plants in natural plant communities.

Non-native invasive plants threaten our natural plant communities and pose ecological and financial impacts. Millions of dollars are spent each year to fight these pest plants. Local, state and federal governments, farmers and ranchers, and other organizations play a role in the control of non-native invasive plants. Ecologically, these plants change the composition of natural plant and animal communities. Many animal species that co-exist and evolve with native plant communities cannot readily adapt to rapid changes made to their habitats by non-native invasive species. Invasive plants deplete the soil of nutrients and moisture, block sunlight to native plants, prevent access to water (for animal species), deprive animals of nesting areas and food sources, and provide ideal conditions for yet other non-native species to invade. Areas with non-native invasive species tend to become monocultures (areas where one plant species dominates) and greatly reduce habitat diversity.

4 Resources

Contact information of agencies and groups supporting the control of non-native invasive pest plants and encouraging native plant replacements.

5 Herbicide Application Techniques

This guide promotes three different treatment techniques especially suited for homeowners and professionals.

8 List of Herbicides

For the homeowner and the professional.

10 Plant Descriptions

Each of the 20 plants has:

Identifying characteristics

A brief botanical description; for example, leaf shape and color, flower color, and fruits.

Color photographs

All the photographs in this guide were taken in the Tampa Bay area!

Scientific and common name

The scientific name is in italics.

Habitat

A brief description of where the plant is found and most likely to thrive.

Growth habits

How the plant spreads; for example, are the seeds dispersed by birds or do the plants spread by roots?

Control methods

Tips on controlling and eradicating the plants.

Replacements

Florida native plant species are recommended.

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Cover photo: Air potato in Hillsborough County

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- Plants of Growing Concern:**
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papyrifera*

Resources

The Tampa Bay area has many resources available to assist with controlling non-native plant species and replanting native plants. Listed below are helpful names, numbers and/or Web sites of agencies and groups.

Native Plant and Non-native Invasive Plant Information

Invasive Species Task Force

Hillsborough County Parks,
Recreation and Conservation
Cockroach Bay Aquatic
Preserve, 3709 Gulf City Road,
Ruskin, Florida 33570
813-671-7754 or 813-672-7876

Tampa Bay Estuary Program

www.tbep.org

Southwest Florida Water Management District

www.watermatters.org
800-423-1476, ext. 4537

Hillsborough County Extension Service

hillsborough.extension.ufl.edu
Link to Florida's County
Extension Service Offices:
www.ifas.ufl.edu/extension
813-744-5519

Florida Department of Environmental Protection, Bureau of Invasive Plant Management

[www.dep.state.fl.us/
lands/invaspec](http://www.dep.state.fl.us/lands/invaspec)
850-245-2809

Florida Exotic Pest Plant Council

www.fleppc.org

U.S. Fish and Wildlife Service

[southeast.fws.gov/ea/
Fun_Facts/fun_index.html](http://southeast.fws.gov/ea/Fun_Facts/fun_index.html)

University of Florida Institute of Food and Agricultural Sciences, Center for Aquatic and Invasive Plants

plants.ifas.ufl.edu
352-392-9613

U.S. Department of Agriculture, Natural Resources Conservation Service

plants.usda.gov

Invasive and Exotic Species of North America

www.invasive.org

Environmental Protection Agency

www.epa.gov/oppt/labeling
[www.epa.gov/owow/
invasive_species/](http://www.epa.gov/owow/invasive_species/)

Florida Native Plant Society

www.fnps.org
772-462-0000

Florida Plants Online

www.floridaplants.com

Herbicide and Chemical Information

BASF Vegetation Management

www.vmanswers.com

UPM Corp.

www.vine-x.com
sales@vine-x.com
877-650-8463

www.roundup.com

[www.dupont.com/ag/vm/
products/escortxp.html](http://www.dupont.com/ag/vm/products/escortxp.html)

www.dowagro.com

www.ortho.com

Herbicide Application Techniques

Herbicide application is a control method in which a herbicide is applied directly to the targeted nuisance vegetation via one of several application techniques. Although there are many effective treatment methods, this field guide will describe three different application techniques suitable for homeowners and professionals. The three techniques are foliar, basal bark and cut-stump. The foliar method involves the application of the herbicide directly to the leaves of the plant, while the basal bark technique treats the bark of the plant at or near ground level. The cut-stump method requires the plant to be cut down and the herbicide applied immediately following and directly to the cut surface of the stump.

This guide indicates the most effective application technique(s) for each invasive plant species. Utilizing the appropriate method greatly increases the effectiveness of treatment and reduces the need for retreatment. However, it is important to note that with the aggressive nature of invasive plant species, repeated treatments are often necessary depending on the type and extent of an infestation, effectiveness of the herbicide, and proper technique selection and application. (Treatments presented in this guide indicate control techniques used by Invasive Species Task Force participants.)

The most effective time to apply herbicides is during the specific growing season of the plant being treated, particularly before seeds are fully developed and dispersed by wildlife. Generally, new vegetation is most vulnerable to herbicides and most readily absorbs the chemical. Please refer to the “Control” section of each species for specific eradication tips.

Foliar Applications

This technique involves applying water-based herbicide directly to the leaves and stems of a plant. Herbicides may be applied to the foliage of the plant using handheld spray bottles, pump sprayers and backpack sprayers. Wetting agents (surfactants) may be added to the mix to further enhance leaf coverage. This equipment is available at home improvement stores, garden centers or by mail order from companies specializing in gardening supplies. For small areas, products with wick or wipe-on applicators work well. Foliar treatment of large infestations utilizes power-driven ground sprayers with boom

attachments to ensure adequate coverage. It is important to remember that when using the foliar method, the herbicide may aerially drift and harm or kill non-target plants. Be sure to follow instructions on the herbicide label.

Basal Bark Applications

This technique consists of applying oil-based herbicides directly onto the bark. Herbicides used in this method are formulated to be absorbed through the bark of the tree. Apply herbicide around circumference of the stem/trunk up to 12 to 20 inches above the ground using a handheld spray bottle or pump sprayer. Old or rough bark may require more herbicide than smooth young wood. Spray to wet, but not to the point of run-off. Wind drift is less of a factor when basal bark spraying, but still should be a consideration.

Cut-Stump Applications

The cut-stump method is most effective for plants prone to resprouting. After mechanically cutting down the invasive plant, the herbicide is painted, sprayed or squirted directly onto the cut surface of the stump or stem on the circumference of the exposed cambium. The cambium is the layer just inside the bark that provides the tree/plant with new cells for growth. For smaller stems, simply coat the cut stem(s). The stump should be cut as level as possible to prevent herbicide run-off, and herbicide should be applied immediately following the cut to increase herbicide effectiveness—i.e. prevent resprouting. Be sure to remove the sawdust from the stumps before treatment. Low-pressure equipment, such as handheld spray bottles, pump sprayers or even a paintbrush, are appropriate tools for the cut-stump technique.

Herbicide Application Tips

- Consult your county extension service (see Resources on page 4) for more detailed information about best practices. *Using more is not better and can harm desirable plants.*
- **Always read the product label before use.** Before using any herbicide or chemical, read the label carefully, thoroughly understand all prohibitions and follow all directions. Remember, the label is the law!
- Always wear recommended protective clothing and equipment when handling herbicides.

- Buy the right amount for your needs. Some products may not work well if stored for long periods of time. A larger size might not be a good value if you can't use it.
- Prevent harm to the environment. Chemicals that run into ponds, creeks or other water can contaminate the water and kill fish and other wildlife. When working around water sources, be sure to use chemicals approved and labeled for such use.
- Never pour lawn and garden products down a drain. If you can't use the entire product, pass it on to someone who can. Contact your local Solid Waste Department for your community household chemical collection program.
- Use care when applying herbicides using spray equipment. Protect and/or cover all non-target plants from overspray or wind drift.
- The addition of a water-soluble dye can assist in tracking whether spray drift has reached non-target plants. This also helps determine complete coverage of target plants.
- When changing from a water-based mix to an oil-based mix in a sprayer, run a small amount of oil through the pumping system before filling with oil-based mix; otherwise a white "sludge" will clog the sprayer.
- Consult your county extension service or native plant nurseries for a list of native plants suitable for replacing invasive non-native plants. This guide has provided some suggestions.
- Do not wash work clothes with family laundry.
- Do not eat, drink, use tobacco products, or use the bathroom while using herbicides.
- Keep children and pets away from herbicides and treated areas.

Dilutions

- All dilutions of Garlon™ 4 applications (except foliar) are made with oil. Brush B Gon® and Pathfinder II™ may not need to be diluted.
- All dilutions of Rodeo®, Roundup®, Escort® XP, Plateau®, GroundClear®, Arsenal®, Garlon™ 3A or Renovate™ 3 are made with water. Always use clean water in a herbicide mixture and mix granular solutions in a bucket, not in the sprayer. Stir for several minutes before transferring to sprayer.

WATER-BASED HERBICIDES (FOLIAR APPLICATIONS)

Chemical Name	Product Name ¹	Comments
Glyphosate 53.8%	Rodeo®	May be applied in water, requires a surfactant. ²
Glyphosate 41.0%	Roundup® Super Concentrate Weed & Grass Killer	Discontinued; but still available. May not be applied in or over water.
Glyphosate 27.0%	Roundup® Poison Ivy & Tough Brush Killer Concentrate	May not be applied in or over water.
Glyphosate 25.0%	Roundup® Weed & Grass Killer Concentrate	May not be applied in or over water.
Glyphosate 5.0% Imazapyr .08%	Ortho® GroundClear® Complete Vegetation Killer Concentrate (Formerly Triox®)	May not be applied in or over water.
Imazapic 23.6%	Plateau®	May not be applied in or over water.
Imazapyr 28.7%	Arsenal®	May not be applied in or over water.
Metsulfuron methyl 60.0%	Escort® XP	Granular; mix in water, requires a surfactant. ² May be applied in or over water.
Triclopyr amine 8.0%	Ortho® Brush B Gon®	May not be applied in or over water.
Triclopyr amine 44.4%	Carlon™ 3A or Renovate™ 3	May be applied in or over water per label.

WATER-BASED HERBICIDES (CUT-STUMP APPLICATIONS)

Imazapyr 28.7%	Arsenal®	May be applied to trees in standing water per SLN label directions.
Triclopyr amine 44.4%	Garlon™ 3A or Renovate™ 3	May be applied to trees in standing water. May be applied in or over water per label.

OIL-BASED HERBICIDES (BASAL BARK AND CUT-STUMP APPLICATIONS)

Triclopyr ester 13.6%	Pathfinder™ II	May not be applied in or over water.
Triclopyr ester 13.6%	Vine-X™ Vine & Brush Control	See Resources for Web site and phone number. Packaged for easy application with brush attached. May not be applied in or over water.
Triclopyr ester 61.6%	Garlon™ 4	May not be applied in or over water.

This guide provides the most up-to-date and effective herbicides and treatment techniques for the non-native invasive plants in this guide. Chemical companies are continually improving herbicides targeting non-native invasive species. Listed here are some names of herbicide products available to the general public at home improvement stores, garden centers or farm supply stores, as well as products marketed to professionals. This is not an exhaustive list; there are many other products available. **Always read the product label before use. Always use personal protective equipment (PPE).**

¹This list is not necessarily an endorsement by any of the parties involved with this field guide.

²Surfactant: Wetting agent that allows the chemical to “stick” to foliage rather than run off.

Fruits and leaves of Air yam (right) are longer than those of Air potato (below). The fruits grow in the leaf axils. They have been placed on the leaves in these photos to show their shape, relative to the leaf.



Air potato
Air yam

Dioscorea spp.
D. bulbifera
D. alata

Identifying Characteristics

Herbaceous vines with stems up to 60 feet or more in length, twining counterclockwise and covering trees and shrubs. Leaves are alternate (*D. bulbifera*) or opposite (*D. alata*), heart-shaped, up to 8 inches or more in length; bright or dark green in color. Aerial tubers or bulbils (“potatoes”) are round, mostly smooth, but can be bumpy or rough; form in the leaf axils. Bulbils range from pea to golf ball to tennis ball size, but can grow to approximately 5 inches across. Some species, such as *D. alata*, produce underground tubers. Flowers are rarely seen and are small—in spikes to 4 inches long. Fruits are capsules with partially winged seeds.

Note: Often confused with Kudzu, but leaf shape is characteristic.

Habitat

Commonly found in residential areas, growing on fence lines and trees, especially in shady areas. Found in vacant lots, climbing high into trees and over the ground. Invades a variety of habitats including wetlands, pinelands, hammocks and even landfills.

Growth Habits

Reproduces prolifically from large numbers of aerial and underground tubers. Vines sprout even from small tubers. Bulbils float, aiding in dispersal. Has a dormant period in winter, dropping the bulbils which sprout in the spring.

Control Methods: Foliar or Cut-Stump

During growing season (spring to mid-summer), cut vines to waist high and apply triclopyr amine or glyphosate. Remove tubers during winter months when vines have died back. Carefully dispose of all plant material and tubers/bulbils in plastic bags; incinerate if possible. Follow-up applications of herbicide are necessary.

Replacements

In most cases, a replacement is not necessary or desirable. However, native vine replacements include:

Moonflower vine (*Ipomoea alba*)

Carolina jessamine (*Gelsemium sempervirens*)



Australian-pine
Suckering Australian-pine

Casuarina spp.
C. equisetifolia
C. glauca

Identifying Characteristics

There are two common species of Australian-pine and one less frequently found in Florida. Australian-pine (*C. equisetifolia*) is an evergreen tree to 150 feet. Usually has a single trunk with reddish-brown to gray bark. Although the tree resembles a pine, close inspection of the plant reveals branchlets (not needles) that are jointed, thin, grayish-green, needle-like and 4 to 8 inches long. Seeds form in woody, cone-like clusters about $\frac{3}{4}$ inch long and $\frac{1}{2}$ inch wide; produced year-round.

Suckering Australian-pine (*C. glauca*) grows to 70 feet tall with a pyramidal shape. Bark is dark gray-brown and scaly. Needle-like branchlets are 8 to 10 inches long and jointed, thin and sometimes waxy. Differs from *C. equisetifolia* in having separate male and female plants and 10 to 17 leaf scales per branchlet and smaller seeds.

There is a less common third species, *C. cunninghamiana*, the most cold hardy of the three species.

Habitat

Introduced to Florida in early 1900s and planted as windbreaks and shade trees. Found in abundance from Orlando throughout south Florida on sandy shores, pineland and sawgrass marshes. Colonizes in disturbed sites such as road shoulders and undeveloped lots.

Growth Habits

Grows extremely fast—5 to 10 feet per year. Creates dense stands that displace native plants and wildlife. Trees blow over easily in storms because of shallow root systems. Seeds are dispersed by birds, water and wind. Suckering Australian-pine (*C. glauca*) reproduces aggressively from widely spreading roots, especially when pruned.

Control Methods:

Cut-Stump or Basal Bark

Large trees should be cut and treated immediately with triclopyr ester. Basal bark applications are also effective.

Replacements

Longleaf pine (*Pinus palustris*)

Slash pine (*Pinus elliottii*)

Red cedar (*Juniperus virginiana*)



Identifying Characteristics

Brazilian pepper is a large, multi-trunked shrub or tree with arching and crossing branches; can grow to 40 feet tall, forming thickets. Leaves are evergreen, glossy green and alternate. Often toothed, leaves are compound with 3 to 11 (usually 7 to 9) leaflets. Leaflets vary in shape, but are generally found elliptic to oblong and 1 to 2 inches long. Crushed leaves smell peppery or like turpentine. Female plants form small white flowers almost every month of the year, but most profusely in the fall season, producing clusters of red berries.

Brazilian pepper is a relative of poison ivy and poison sumac. Sap may irritate skin and pollen may cause respiratory irritation.

Habitat

Will readily invade residential and urban landscapes. Invades undisturbed areas—hardwood hammocks, mangrove forests and pinelands, as well as disturbed areas such as roadsides, ditches, and fallow farmland.

Growth Habits

Found especially in moist, organic soils, but will grow in any soil type. Is salt-tolerant, able to withstand flooding, fire and drought. Sprouts easily from trunk and roots. Seeds spread by wildlife (bird and small mammals) consumption.

Control Methods: Cut-Stump or Basal Bark

Use gloves when working with Brazilian pepper. Avoid dropping berries—collect and dispose of in plastic bags. If possible, schedule removals in late summer or early fall before new berries have ripened. **Note:** Even the green berries will ripen after cutting the branch. If hand-cutting, dig up as much of the root system as possible. Larger trees should be cut to the ground and stumps treated immediately with triclopyr ester. Basal bark applications are also effective.

Replacements

Necklace pod (*Sophora tomentosa*)

Dahoon holly (*Ilex cassine*)

Walter's viburnum (*Viburnum obovatum*)

Wax myrtle (*Myrica cerifera*)



Identifying Characteristics

Usually a single-trunked tree, rapidly growing 30 to 35 feet tall. Outer bark is dark gray; inner bark often orange (carrot color). Leaves are evergreen, alternate and compound, shiny and leathery, up to 8 inches long with 4 to 12 oblong leaflets. Produces white to yellow-green flowers in clusters in late winter or early spring. Fruits are segmented capsules, about 1 inch and yellow to orange when ripe; brown when dry. Fruits split to reveal 3 seeds coated with a striking orange crust.

Habitat

Introduced as a landscape plant in the 1960s. Invades coastal sites including spoil islands, beach dunes, marshes, mangroves, cypress swamps, and coastal strands. Found established in various habitats on both coasts of Florida. Also invades upland sites including pinelands and scrub. Especially problematic to mangrove ecosystems.

Growth Habits

Grows in wet and dry areas, in any soil type, in full sun or full shade, and is salt- and freeze-tolerant. Seeds dispersed by birds and also seeds freely from plantings. Shades out native vegetation.

Control Methods: Cut-Stump or Basal Bark

Cut larger trees and apply triclopyr ester immediately. Basal bark applications of triclopyr ester are also effective. Dispose of seeds in plastic bags. May require follow-up treatments.

Replacements

Replacement trees should provide shade and food for wildlife.

Wax myrtle (*Myrica cerifera*)

Florida privet (*Forestiera segregata*)

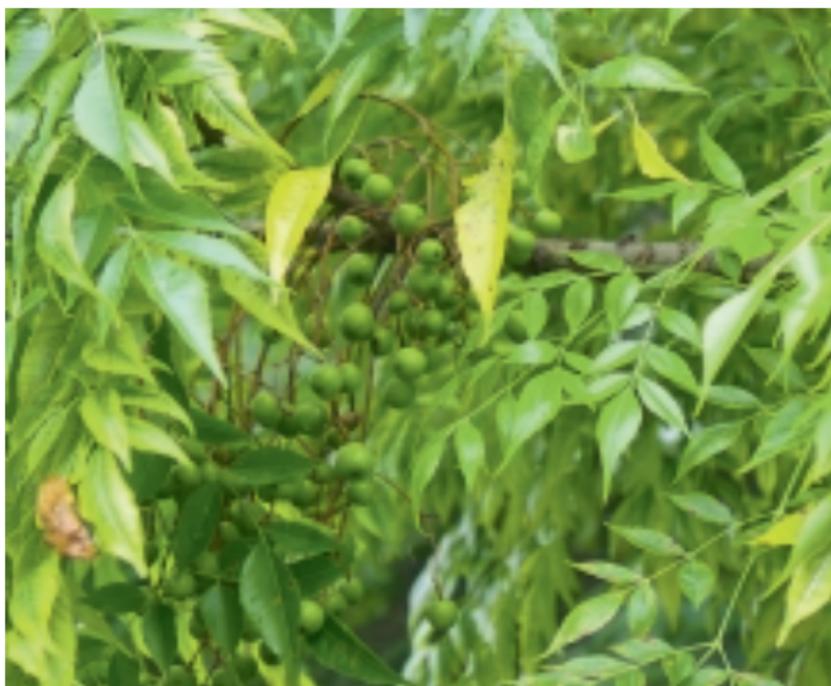
Gumbo-limbo (*Bursera simaruba*)

Green buttonwood (*Conocarpus erectus*)

Dahoon holly (*Ilex cassine*)

Yaupon holly (*Ilex vomitoria*)

Sweetbay magnolia (*Magnolia virginiana*)



Identifying Characteristics

Deciduous tree growing to 50 feet tall. Chinaberry is a multi-branched tree with dark, chocolate brown bark becoming increasingly fissured with age. Evident white lenticels (dots) mark the glossy brown stems. Leaves are alternate, two or three times compound, and grow up to 1½ feet long. Leaflets are dark green and lacy in appearance. Flowers are small and lilac-colored; fruits are round yellow to yellow-green and hang in clusters. Fruits are fleshy, single-seeded and ripen late summer.

Bark and leaves are poisonous to domestic animals and livestock, and fruits are poisonous to humans and some mammals, including livestock.

Habitat

Found primarily in disturbed areas such as roadsides and fencerows, but has also been found in marshes and upland woods. Most abundant in north and west Florida, but found as far south as the Keys.

Growth Habits

Spreads by seed drop and dispersal by birds. Sprouts from root collars, forming colonies from root sprouts. Shades out native vegetation.

Control Methods: Cut-Stump or Basal Bark

Large trees should be cut and treated immediately with triclopyr ester. Basal bark applications are also effective. Roots are very deep and difficult to pull up. Revisit site to pull seedlings.

Replacements

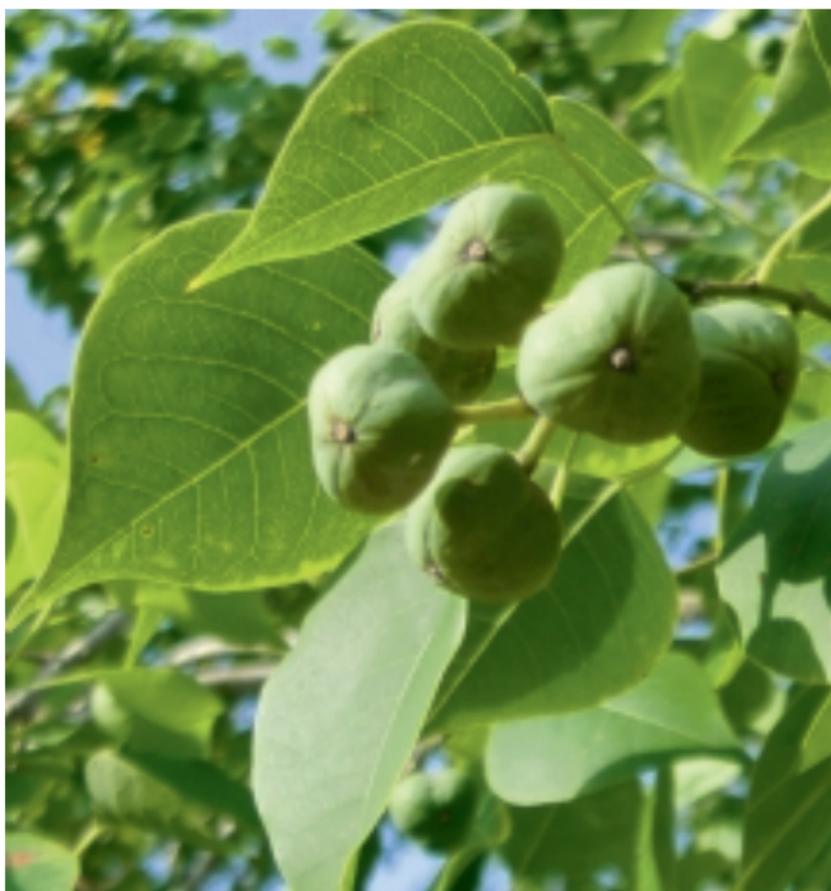
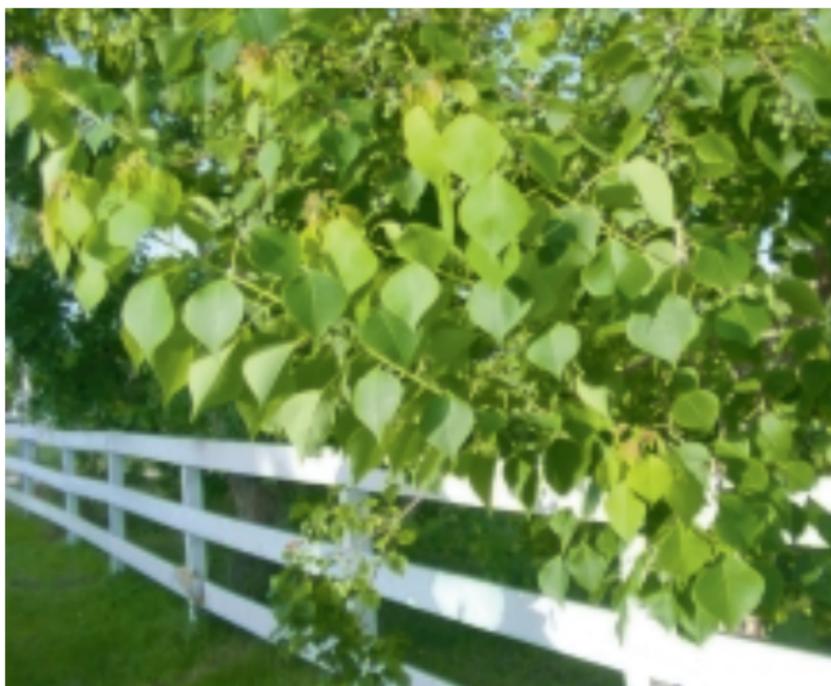
Laurel oak (*Quercus laurifolia*)

Bluejack oak (*Quercus incana*)

Flatwoods plum (*Prunus umbellata*)

Chickasaw plum (*Prunus angustifolia*)

Red mulberry (*Morus rubra*)



Identifying Characteristics

Deciduous tree with milky sap, growing to 60 feet tall. Leaves alternate and ovate with broadly rounded bases that taper to slender points, somewhat heart-shaped. Leaves turn yellow to red in fall. Flowers small, yellow, in spikes; occur in spring. Fruits are capsules, green turning brown and splitting open to reveal three white seeds in late summer to early fall. Seeds often remain attached throughout winter and resemble popcorn.

Sap is milky and poisonous.

Habitat

Invades stream banks, roadside ditches and wet areas, but also grows in upland areas. Shade- and salt-tolerant.

Growth Habits

Introduced as an ornamental and as a potential oil crop species. Early growth is very rapid, with onset of flowers and fruit when the tree reaches approximately three feet in height. Young trees establish a taproot system that allows the tree to withstand extended periods of drought. Seeds dispersed by birds and by water. Suckers from stumps.

Control Methods: Cut-Stump or Basal Bark

Apply triclopyr amine to freshly cut stump or triclopyr ester as basal bark or cut-stump treatment in late spring or early summer after mature leaves have developed, and before seeds have developed. Reapplications may be necessary. Pull seedlings by hand. Dispose of seeds in plastic bags.

Replacements

Black gum (*Nyssa sylvatica* var. *biflora*)

Red maple (*Acer rubrum*)

Persimmon (*Diospyros virginiana*)

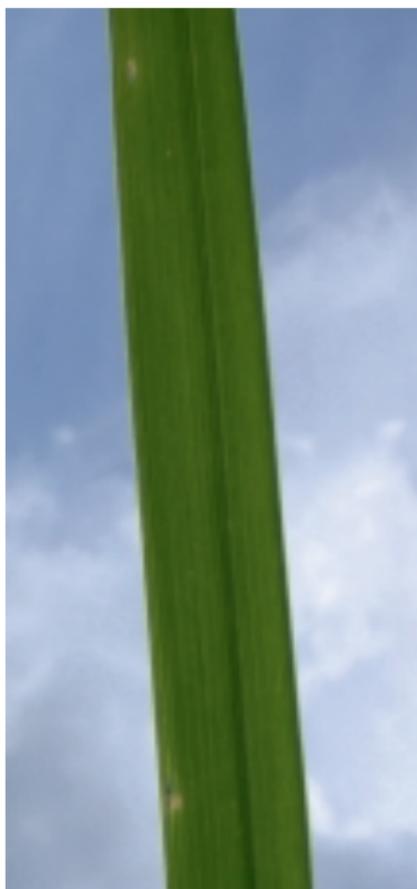
Cedar elm (*Ulmus crassifolia*)

Turkey oak (*Quercus laevis*)

Post oak (*Quercus stellata*)



The midvein is off-center in Cogon grass leaves (right).



Identifying Characteristics

Aggressive perennial grass, growing in tufts from extensive rhizomes. Considered one of the top 10 worst weeds in the world and a pest in 73 countries. Erect, narrow leaves, up to 5 feet tall, with whitish, noticeably off-center midvein. Leaves are yellow-green, sharply pointed and hairy at the base. Leaf blades also have scabrous (rough to the touch) margins. Flowers are white silky plumes up to 8 inches long, found year-round in south and central Florida.

Habitat

Introduced for forage and soil stabilization. Commonly found in open forests, fields, pastures and along transportation and utility corridors. Thrives in areas of minimal tillage.

Growth Habits

Fast-growing. Grows in full sunlight to partial shade in any area without standing water. Disperses by windborne seeds and by extensive rhizomes. Often spread by fragmentation on farm and roadway machinery. Highly flammable and aggressively invades after fire.

Control Methods: Foliar

Control in late fall when leaves are bright green. Mow before seed heads have set, then wait until grass grows to 6 inches to apply glyphosate or imazapyr. Repeat applications may be necessary. Landowners may need a cover crop if treating large areas.

Replacements

Eastern gamma/Fakahatchee grass

(Tripsacum dactyloides)

Love grasses

(Eragrostis elliottii or E. spectabilis)



Identifying Characteristics

Originally from Africa; introduced agriculturally as animal fodder. Leaves are long and narrow, flat and bright green, fine and soft. Hairy leaves, $\frac{1}{2}$ to $1\frac{1}{4}$ inches wide, can grow 5 to 39 inches long. Margins are glabrous (smooth or hairless). Tiny flowers are on inflorescent spikelets and are green or tinged with purple. Plants can grow 3 to 9 feet tall.

Habitat

Grows naturally in open grasslands. Usually forms colonies under or near trees and shrubs on abandoned cultivated land, fields and wastelands.

Growth Habits

Considered an invasive weed because the grass suppresses or displaces local plants. This tufted perennial grass usually grows in large bunches from short stout rhizomes and grows on a wide variety of soils, in both sun and shade. Can survive long, dry periods, as well as fire. The underground rhizomes are not harmed by fire and may therefore dominate after a fire. Responds quickly to watering and fertilizer. Seeds are dispersed by wind, birds and flowing water.

Control Methods: Foliar

Mow, then wait until grass grows to 6 inches to apply glyphosate or imazapyr. Reapplications will be necessary.

Replacements

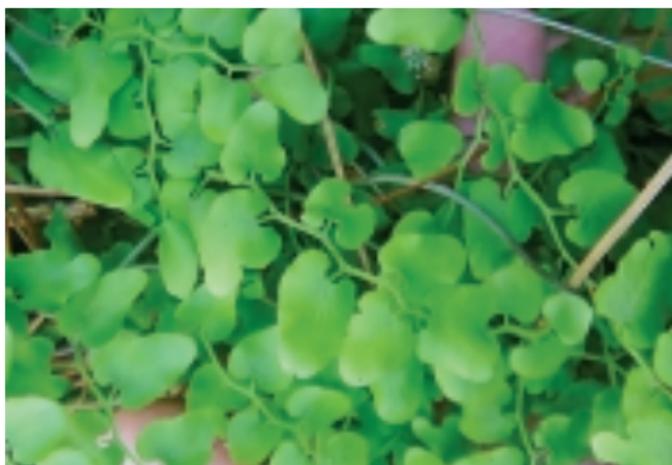
Muhly grass (*Muhlenbergia capillaris*)

Love grasses

(*Eragrostis elliottii* or *E. spectabilis*)

Eastern gamma/Fakahatchee grass

(*Tripsacum dactyloides*)



Leaves of Old World climbing fern (top) grow more finely divided as they mature (facing page).



Leaves of Japanese climbing fern (left) are “lacy.”

A mass of Japanese climbing fern is shown below.



Japanese climbing fern
Old World climbing fern

Lygodium spp.
L. japonicum
L. microphyllum

Identifying Characteristics

Climbing and twining perennial viney ferns that grow to 90 feet. Vines arise from underground, widely creeping rhizomes. Wiry stems may be green to orange, turning dark brown or black. Leaves are finely divided/dissected when mature and bright green in color. Leaves vary in appearance according to the number of divisions in the leaflet and species. *L. japonicum* leaves have a “lacy” appearance. Leaves are 2 to 6 inches long and 2 to 3 inches wide.

Habitat

These ferns occur in disturbed areas such as alongside bridges, roadside ditches and fence lines. Also commonly found along stream and swamp margins and open forests.

Growth Habits

Will grow in shady or sunny areas. Flooding will not kill the ferns; will also thrive in shallow water, as well as dry areas. The ferns form mats up to 4 feet thick on trees and shrubs, smothering trees and native vegetation. The vines are mostly deciduous by late winter—or turn dark to tan in winter. Vines that have died back provide a trellis for next season’s growth. Reproduce by millions of spores spread by wind and other physical carriers.

Control Methods: Cut-Stump or Foliar

Cut to knee- or waist-high then apply glyphosate immediately or foliar spray using glyphosate and metsulfuron methyl with care if treating around desirable plants. Care should be taken to remove upper fronds, as spores may still be viable. Dispose of dead material in plastic bags. For best results, control this plant from July to October during its active growth. Reapplications will be necessary.



Replacements

Cinnamon fern (*Osmunda cinnamomea*)
Royal fern (*Osmunda regalis*)
Chain fern (*Woodwardia virginica*)



Identifying Characteristics

A deciduous, twining, trailing, mat-forming vine with rope-like brown woody stems. Kudzu can grow 35 to 100 feet long. Pinnately compound leaves have three leaflets and are alternate and bright green. Tips of leaflets are pointed and usually slightly lobed (unless growing in the shade). Each leaflet is 3 to 7 inches long and 2¹/₂ to 8 inches wide with fine hairs on leaf margins. Young stems and leafstalks are hairy. Flowers are 2- to 12-inch-long racemes of pea-like flowers, opening from the base to the top. Petals are lavender to wine colored with yellow centers; flowers June to September. Fruits are clustered, dry, flattened, wide bean pods. Pods are 1 to 3 inches long and up to 1/2 inch wide. Immature pods are green, ripening to tan and covered with stiff golden-brown hairs. The pods split on one or two sides to release a few seeds.

Note: Often confused with Air potato, but leaf shape is usually the identifying characteristic.

Habitat

Occurs along streams, rights-of-way, along roadsides and anywhere else it can twine around.

Growth Habits

Kudzu is drought-tolerant, and forms dense mats over the ground, debris, shrubs and trees by twining on objects less than 4 inches in diameter. Can kill a tree by blocking out all sunlight. The vine produces roots at its nodes. Spreads by wind, birds and mammals, and water-dispersed seeds.

Control Methods: Cut-Stump or Foliar

Use foliar method with care if treating around desirable plants. Cut vine to waist level and apply glyphosate immediately. Best results occur after Kudzu has flowered and/or when vine has eight leaves or more, from July to the first killing frost. Reapplications may be necessary.

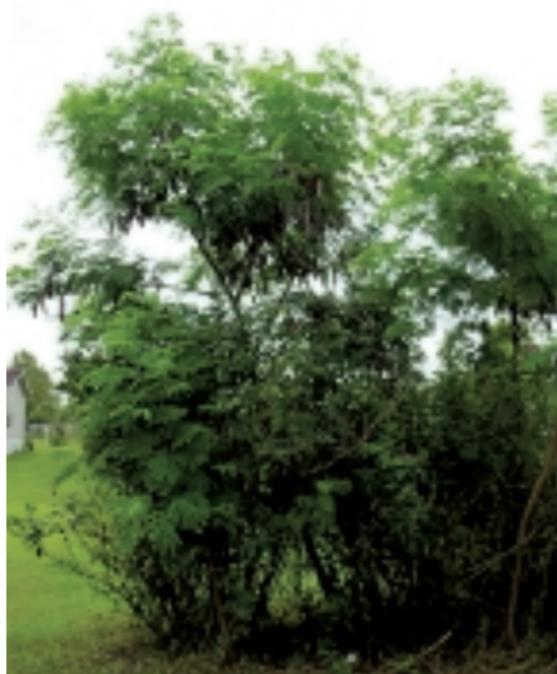
Replacements

In most cases, a replacement is not necessary or desirable. However, native vine replacements include:

Moonflower vine (*Ipomoea alba*)

Coral honeysuckle (*Lonicera sempervirens*)

Carolina jessamine (*Gelsemium sempervirens*)



Identifying Characteristics

Rapidly growing shrub or tree from the legume family that grows to 60 feet. Leaves are Mimosa-like with 11 to 24 (usually about 15 pairs) elliptic, light green leaflets that are about $\frac{1}{2}$ inch long. Leaves are bipinnately compound, and grow to 5 to $7\frac{1}{2}$ inches long. Bark is fissured with abundant lenticels (distinct white dots) on trunk. Flowers are yellowish-white in round “puffs,” blooming in the summer. Large, flat, reddish-brown bean pods hang in clusters (4 to 10 per leaf). Each pod contains at least 15 oval, glossy brown seeds.

Habitat

Found in disturbed sites, pinelands and hammocks along the coastal zone. Has become a nuisance tree due to its ability to out compete native species.

Growth Habits

Prefers alkaline soils, full sun and warm temperatures. Lead tree will die back with mild frosts, but will rapidly regrow from deep roots. Highly drought-tolerant once established, but will not stand water-logged conditions.

Control Methods: Cut-Stump, Basal Bark or Foliar

Cut trees and apply triclopyr ester immediately. Basal bark applications are also effective. Foliar spray small trees (less than 4 feet tall) with glyphosate and metsulfuron methyl.

Replacements

Saffron plum (*Sideroxylon celastrinum*)

Yaupon holly (*Ilex vomitoria*)

Sweet acacia (*Acacia farnesiana*)

Hercules' club (*Zanthoxylum clava-herculis*)



Identifying Characteristics

Melaleuca is a rapidly growing tree that can reach 100 feet. Identified by its white, many-layered peeling bark. Narrow, grayish-green, lance-shaped leaves are 2 to 8 inches long and $\frac{1}{2}$ inch wide; smell of camphor when crushed. Flowers year-round in creamy white “bottle brush” spikes that are 6 inches long. Fruits are small, brown, woody cone-like clusters that surround young stems. Each cone-like cluster may hold up to 300 tiny seeds.

May cause headaches, rashes, asthma attacks and respiratory irritation in certain people.

Habitat

Prefers wet sites such as lake shores, swamps and wetlands, but also flourishes in standing water. Will survive in well-drained uplands such as residential yards. Mature trees can survive frost damage and fire damage. Melaleuca will displace native vegetation with its rapid colonization.

Growth Habits

Sprouts easily from stumps and roots. Spreads rapidly, creating thickets. Produces up to 20 million windborne seeds per year per tree; tends to release seeds when stressed.

Control Methods: Cut-Stump

Large trees should be cut and stumps treated immediately with triclopyr ester or imazapyr. Pull seedlings by hand. Retreatments may be necessary.

Replacements

Pignut hickory (*Carya glabra*)
Water hickory (*Carya aquatica*)

In wetland areas:

Pop ash (*Fraxinus caroliniana*)
Sweetbay magnolia (*Magnolia virginiana*)

In upland areas:

Southern magnolia (*Magnolia grandiflora*)



Mexican petunia

Ruellia tweediana

Mexican bluebell

Ruellia brittoniana

(sometimes listed as **Britton's wild petunia**)

Identifying Characteristics

Perennial herb with a white, pink or lavender to purple flower on an erect green stem. May grow to 3 feet tall, although there are dwarf or compact varieties. Leaves are opposite, linear-lanceolate to linear-elliptic, up to 1 inch wide and up to 10 inches long. Veins are prominently raised on the underside of the leaf, margins are smooth or wavy and tips are pinched to a point. Light pink to bluish-purple flowers are solitary or in clusters and flower throughout most of the year in Florida. Fruit is a cylindrical capsule containing 4 to 20 tiny seeds.

Habitat

Presumably introduced as an ornamental plant; now found from Louisiana down the peninsula of Florida. Forms invasive, dense rhizome colonies in marshy or wet areas. Tolerates a wide variety of soil types. Grows well in both shade and sun, and tolerates heat and drought, therefore dominates creek beds, pine flatwoods, hardwood hammocks, prairies, rivers and pastures; excludes native groundcover wherever it invades.

Growth Habits

Plants spread readily from seeds, rhizomes, stem sprouts and cuttings. Each plant can produce thousands of viable seeds each season. May freeze back in winter, but will resprout from the roots.

Control Methods: Foliar

Use foliar method with care if treating around desirable plants. Cut larger plants down and apply glyphosate. Pull seedlings up by hand.

Replacements

Wild petunia (*Ruellia caroliniensis*)

Blue curls (*Trichostema dichotomum*)

Butterflyweed (*Asclepias tuberosa*) for dry areas

Swamp milkweed (*Asclepias perennis*) for wet areas



Identifying Characteristics

A high climbing (10 to 20 feet), twining or trailing woody vine with slender green branches. Leaves are alternate, 2 to 5 inches long, even-pinnately compound with 5 to 15 pairs of leaflets. Each leaflet is oval to oblong and less than 1 inch long. Flowers are shaped like pea flowers; small and white to pink to reddish in color. Prolific flowers and fruits in the summer. The fruit is a short, oblong pod that splits before falling, revealing 3 to 8 shiny, hard, scarlet red seeds with black bases. Each red seed is about $\frac{1}{4}$ inch in diameter.

Seeds are extremely poisonous to humans, cattle and horses.

Habitat

Invades pinelands and hammocks. Naturalized in roadside areas, waste areas and along fencerows of south and central Florida; typically a problem in old citrus groves.

Growth Habits

In sunny locations, may form a smothering blanket. Roots grow very deep and are difficult to eradicate. Fires tend to encourage growth. Seeds are dispersed by birds.

Control Methods: Cut-Stump or Foliar

Cut large woody vines down and apply triclopyr ester immediately. For foliar method, apply triclopyr amine or glyphosate with care if treating around desirable plants. The roots of this plant are deep and difficult to pull up.

Replacements

Leather flower (*Clematis crispa*)

Carolina jessamine (*Gelsemium sempervirens*)



Identifying Characteristics

Twining vines from woody rootstock; stems can grow to 23 feet. Most identifying characteristic is the pungent (“skunky”) odor that the vine emits when leaves and stems are crushed. Leaves are opposite, oval to linear-lanceolate and 1 to 4 inches long. They are often lobed at the base and are deep green in color. Leaves may drop in winter months. Flowers are small, cream to grayish-pink with lilac-colored centers in clusters. Flowers and fruits in late summer and fall. Fruits are shiny, golden brown round globes about $\frac{1}{3}$ inch wide and persist through winter.

Habitat

Both species occur in tree gaps and disturbed areas, as well as sandhill habitats, floodplains, and upland mixed forests. May withstand flooding. Skunk vine is most commonly found in west and central Florida but has been found northward.

Growth Habits

Paederia spp. are rapidly growing plants. Dense canopies may form, leading to damage or death of native vegetation. They are spread by the transport of rooted fragments and seeds. Adapts to varying salt, soil and light conditions.

Control Methods: Cut-Stump or Foliar

Cut vines to waist-high then apply triclopyr amine or triclopyr ester immediately. Destroy seeds and stem fragments (as they will root) by disposing of in plastic bags. Use foliar method with care if treating around desirable plants. Reapplications will be necessary.

Replacements

Coral honeysuckle (*Lonicera sempervirens*)

Carolina jessamine (*Gelsemium sempervirens*)





Identifying Characteristics

Perennial grass growing to 3 feet tall. White or brownish rhizomes often thick as a pencil, with hard torpedo-like tips that creep along the ground or float; may be several feet in length. Aerial stems are wrapped in sheaths, which are rough to the touch and hairy near the top. Leaf blades are less than 1/4 inch wide and pale green with hairs on upper surface. Blades are often rolled inward but may also be flat. The inflorescence is branched and open; about 3 to 9 inches long and 2 to 5 inches wide; flowering year-round.

Habitat

Found in citrus groves, golf courses, and near water. Occurs in marshy areas and shallow fresh water and will form floating mats on water.

Growth Habits

Considered one of the most serious weeds because it quickly dominates and displaces native vegetation. Thrives in moist sandy or organic soils, but tolerates heavy upland soils. Will also tolerate drought and partial shade. Spreads primarily by aggressive rhizomes, but may spread by seed. Fertilizer and tilling may also stimulate spreading.

Control Methods: Foliar

Avoid tilling and cultivation, as this stimulates grass growth. Apply glyphosate in late fall when leaves are bright green. Reapplications are necessary.

Replacements

For dry areas:

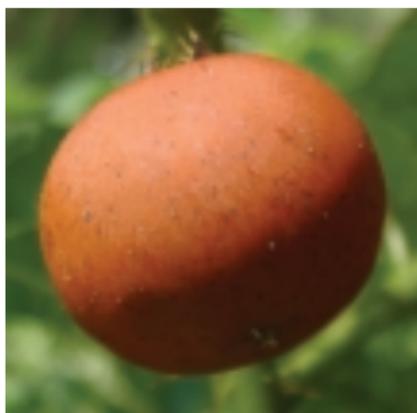
- Muhly grass (*Muhlenbergia capillaris*)
- Purple love grass (*Eragrostis spectabilis*)
- Elliott's love grass (*Eragrostis elliottii*)
- Sand cordgrass (*Spartina bakeri*)

For wet areas:

- Maidencane (*Panicum hemitomon*)
- Seashore paspalum (*Paspalum vaginatum*)



The fruits of Tropical soda apple are green (right). Native soda apple has reddish-orange fruits (below).



Identifying Characteristics

This prickly, herbaceous perennial grows to 6 feet tall, but is usually found about 3 feet tall. Most obvious identifying characteristic is the small (one inch to golf ball size) round fruit resembling a tiny watermelon. When immature, the fruits are green with dark veining; they turn a dull, medium yellow when ripe. Fruits are apparent on plant year-round, as the plant flowers all year in Florida. Flowers are white and five-petaled.

Note: Native soda apple (*Solanum capsicoides*) is non-invasive and has reddish-orange fruits.

Stems have hairs and straight or downward pointing prickles up to $\frac{3}{4}$ inch long. Leaves also have prickles, are alternate, simple and clearly petioled. Leaf shape is oval-triangular, nearly as broad as long at 4 to 8 inches long and 2 to 6 inches wide. Tops of leaves are covered with fine hairs, giving them a velvety sheen.

Habitat

Found in pastures and other open, disturbed areas such as groves, roadsides, retention ponds and edges of pineland and hammocks.

Growth Habits

This plant is a major agricultural concern, as the seeds are spread by contaminated hay seed, mowers and other machinery. Most common vectors of the seeds are feral hogs and cattle, but other animals such as birds and raccoons also aid in the spread of this invasive plant. One fruit has 200 to 400 seeds.

Tropical soda apple does not always freeze back and can regenerate shoots from the extensive root system.

Control Methods: Foliar

Prior to fruiting, apply glyphosate, triclopyr amine or triclopyr ester to leaves. Fruit will ripen after plant is treated with herbicide. Collect fruit and dispose of in plastic bags to prevent reestablishment. Pull seedlings by hand (use gloves!).

Replacements

Rouge plant (*Rivina humilis*)

Adam's needle (*Yucca filamentosa*)

Wild coffee (*Psychotria* spp.)

Grows 9 to 12 feet tall. Leaves are green and reddish, slightly serrated and palmately lobed (have pointed finger-like lobes) with prominent central veins.

Identifiable by the noticeable 3-lobed green fruits that are about 1 inch long and have a soft spiny exterior. Fruits bear smooth, mottled seeds (from which castor oil is obtained); many are green, but may be reddish, purplish or brown-tinged. One large seed develops in each lobe. Persists around gardens, building sites and old, fallow fields. Also found along road shoulders and edges of cultivated land. Control with triclopyr amine or triclopyr ester using basal bark, foliar or cut-stump method. Can pull seedlings by hand (wear gloves!).

Seeds are poisonous to people, animals and insects.



Most identifiable characteristic is odor of the leaves and stems when crushed or broken. Both give off strong odor of camphor. Leaves are glossy green, simple, alternate and mostly ovate. Leaves may have wavy margins and are light green. Leaf length is 1½ to 4 inches long and ½ to 2 inches wide. Twigs, leaves, and petioles are the same color. Flowers are small, greenish-white to cream in color and produce small, black round drupes. Each black berry contains one seed; berries are abundant on mature trees. Camphor trees may grow to 65 feet; produce a dense canopy of shade, shading out native plant species.

Camphor tree is found all over Florida, and is still sold as a shade tree or for wind breaks. Trees are found primarily in drier, disturbed areas such as roadsides and fencerows, but also found in upland pine woods, edges of wetlands and scrubland. Control with triclopyr ester using basal bark or cut-stump method. Pull seedlings by hand.



Paper mulberry

Broussonetia papyrifera

The tree's common name comes from its bark, which has been used in making paper. Fast-growing deciduous tree, growing 40 to 50 feet tall. Simple leaves are alternate or opposite or whorled on same plant, and very hairy. Leaves grow 2 to 7½ inches long and 2 to 6 inches wide. Margins on leaves are toothed and sometimes lobed. Flowers and orange to red fruits hang in clusters.

Forms dense shade, shading out native species. Found in disturbed sites and near homes. Control with triclopyr ester using basal bark or cut-stump method.



The Invasive Species Task Force

The Invasive Species Task Force (ISTF) is a multi-agency partnership with 4 main goals: **1)** remove existing non-native invasive plants on public lands and stem the spread of invasives to other sites, **2)** facilitate citizen involvement and volunteerism with the control and removal of invasive plants, **3)** create awareness and educate the public about the existence and the harm of invasive plants to Florida's plant and wildlife, and **4)** educate the public on invasive plant control, eradication techniques and native plant replacements on private properties.

Participants of the ISTF include citizens, non-profit organizations and government agencies, including:

Hillsborough County:

- Parks, Recreation & Conservation—Resource Management & Maintenance
- Public Works—Specialized Services & Mosquito Control
- Planning & Growth Management
- Environmental Protection Commission
- Extension Service
- Solid Waste Management
- Real Estate Department

City of Tampa Parks Department

Ruskin Community Development Foundation (RCDF)

Pepper Patrol

Wildlife Fellowship Inc.

Tampa Bay Estuary Program

Tampa Electric Company

Florida Department of Environmental Protection:

- Division of Recreation and Parks
- Bureau of Invasive Plant Management

Southwest Florida Water Management District:

- Surface Water Improvement and Management (SWIM) Program
- Community Education Grant Program

How can YOU get involved?

- Contact the Invasive Species Task Force (page 4) or your local county extension office.
- Participate in Task Force invasive removal work days. These weekend work days are held several times a year.
- Remove invasive plants from your yard and property to eliminate the seed source.
- Purchase and landscape your yard and property with native plants. Refer to the Resources section on page 4 for native plant information.
- Support invasive removal; encourage your neighbors, local businesses, families and friends to remove invasives from their yards.

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Parks, Recreation and Conservation

Southwest Florida
Water Management District

Alafia Basin Board



Hillsborough County Invasive Species Task Force

Printed with the support of the 2003 Community Education Grant Program through the Alafia River Basin Board of the Southwest Florida Water Management District. Produced with the support of the Tampa Bay Estuary Program, Hillsborough County Invasive Species Task Force and the Hillsborough County Parks, Recreation and Conservation Department.

Edited by Wendy Valle.

Photos by Bryon Chamberlin, Mike Collins,
Ross Dickerson, and Wendy Valle.

Graphic design by Mariella Johns Smith.

INSIGHT
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