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Brazilian Pepper-tree Control [1]

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Common Name: **Brazilian Pepper-tree**

Scientific Name: *Schinus terebinthifolius*

Family Name: Anacardiaceae, Sumac Family

Florida's natural ecosystems are being degraded by an invasion of non-native plants. This invasion is partially responsible for the declining numbers and quality of native biotic communities throughout Florida.

Brazilian pepper-tree is one of the most aggressive of these non-native invaders. Where once there were ecologically productive mangrove communities, now there are pure stands of Brazilian pepper-trees. Scrub and pine flatwood communities are also being affected by this invasion. Nearly all terrestrial ecosystems in central and southern Florida are being encroached upon by the Brazilian pepper-tree.

Land managers and home owners now are realizing the need to remove and stop the spread of Brazilian pepper-trees.

HISTORY

Brazilian pepper-tree is a native of Argentina, Paraguay, and Brazil. It is thought to have been introduced into Florida around 1842-1849 as a cultivated ornamental plant. *Schinus* is the Greek word for mastic-tree, a plant with resinous sap, which this genus resembles. The species name *terebinthifolius* is a combination of the genus name *Terebinthus* and the Latin word *folia*, leaf. It refers to the leaves of Brazilian pepper-tree that resemble the leaves of species in the genus *Terebinthus*.

HABITAT

Brazilian pepper-tree is sensitive to cold temperatures, so it is more abundant in southern Florida and protected areas of central and north Florida. Brazilian pepper-tree successfully colonizes native tree hammocks, pine flatlands and mangrove forest communities.

IDENTIFICATION

Seedlings

The cotyledons are simple with both the apex and the base having an obtuse outline. The margin is generally curved inward on one side. The first true leaves are simple with a toothed margin (Figure 1). The later leaves are compound (Figure 2).

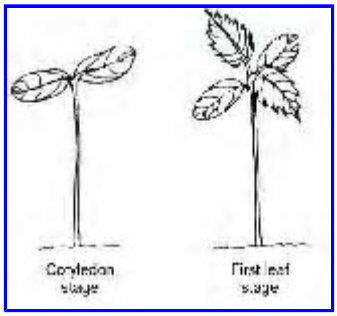

Figure 1. Brazilian pepper seedlings.

Mature Plant

Brazilian pepper-tree is a shrub or small tree to 10 m (33 ft) tall with a short trunk usually hidden in a dense head of contorted, intertwining branches. The leaves have a reddish, sometimes winged midrib, and have 3 to 13 sessile, oblong or elliptic, finely toothed leaflets, 2.5 to 5 cm (1 to 2 in) long (Figure 2). Leaves smell of turpentine when crushed. The plants have separate male or female flowers and each sex occurs in clusters on separate plants. The male and female flowers are both white and are made up of five parts with male flowers having 10 stamens in 2 rows of 5 (Figure 3). Petals are 1.5 mm (0.6 in) long. The male flowers also have a lobed disc within the stamens. The fruits are in clusters, glossy, green and juicy at first, becoming bright red on ripening, and 6 mm (2.4 in) wide. The red skin dries to become a papery shell surrounding the seed. The seed is dark brown and 0.3 mm (0.1 in) in diameter.

Figure 2. Leaves and fruits of mature Brazilian pepper-tree.

Figure 3. Male and female flowers of mature Brazilian pepper-tree.

Biology

Seedlings are flood-tolerant, but rapid change of water level up or down causes some

mortality. About 20 percent of seedlings exposed to fire resprout. Flowering occurs predominantly from September through November. Male flowers last only 1 day. Female flowers last up to 6 days and are pollinated by insects. Fruits usually are mature by December. Birds and mammals are the chief means of seed dispersal. Seed viability is 30 to 60 percent and can last up to 2 months, but declines to 0.05 percent at 5 months. Many native species have a lower percentage of germination than *Schinus.* The high seed viability combined with animal dispersing agents may explain colonization by Brazilian pepper-tree in our native plant communities.

Seedlings have a high rate of survival and some can be found all year. Any break in the tree canopy can be exploited by seedlings. Reproduction can occur 3 years after germination. Some trees can live for about 35 years.

CONTROL

Using Herbicides

Herbicides are available that aid in the control of Brazilian pepper-trees (Table 1). Only those herbicides that are recommended for Brazilian pepper-tree control should be used. They are safe and effective when used correctly. **It is illegal to use a herbicide in a manner inconsistent with the label's instructions; therefore, read the label carefully and follow the instructions.**

Herbicide Application to Cut-Stump

Brazilian pepper-trees can be controlled by cutting them down and treating the stumps with herbicide. A saw should be used to cut the trunk as close to the ground as possible. Within 5 minutes, a herbicide that contains the active ingredient glyphosate or triclopyr should be applied as carefully as possible to the thin layer of living tissue, called the cambium, which is just inside the bark of the stump (Figure 4).

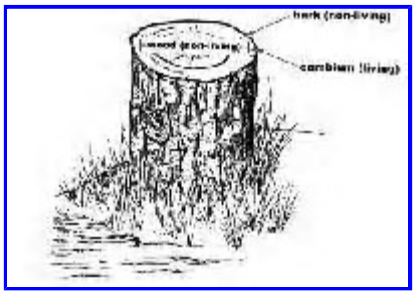

Figure 4. Brazilian pepper-tree stump showing location of the cambium layer.

The best time to cut Brazilian pepper-trees is when they are not fruiting, because seeds contained in the fruits have the capability of producing new Brazilian pepper-trees. If Brazilian pepper-trees that have fruits attached are cut, care should be taken not to spread the fruits to locations where they can cause future problems. Fruiting Brazilian pepper-trees can be controlled using a basal bark herbicide application. Information about basal bark herbicide applications is described in the next section.

Caution: Avoid touching the tree's cambium. A rash can result. Some individuals are very sensitive to touching only the leaves. Use proper protective gear when sawing the tree and applying the herbicides.

Basal Bark Herbicide Application

Brazilian pepper-trees can be controlled using basal bark herbicide application. An application of a herbicide product that contains triclopyr ester is applied to the Brazilian pepper-tree's bark between one half and one foot from the ground. Garlon 4® is diluted with a penetrating oil. Pathfinder II® is pre-mixed with a penetrating oil. The herbicide will pass through the bark. Therefore, girdling the tree's trunk is not necessary and may, in fact, reduce the effectiveness. Once the basal bark treatment has been completed, it may take several weeks before there is evidence that the tree has been controlled. Defoliation and the presence of termites is an indicator that the treatment has been successful.

Basal bark treatments are most effective in the fall when the Brazilian pepper-trees are flowering. This is due to the high level of translocation occurring within the tree. Fruiting occurs during winter, and Brazilian pepper-trees that have been controlled using a basal bark treatment may retain their fruit. This situation will require that the area be checked for seedlings on a regular basis.

Foliar Herbicide Application

Foliar herbicide application can be used on Brazilian pepper-tree seedlings. A herbicide containing triclopyr or glyphosate is applied directly to the tree's foliage. Results of a foliar application will be wilting of leaves. The herbicide will be translocated to other parts of the tree thus effectively controlling the Brazilian pepper-tree.

Caution: Foliar applications require considerably more herbicide to control Brazilian pepper-tree. Also, damage to nearby plants resulting from wind drift of the herbicide should be avoided.

Biological Control

Currently, there are no biological controls that have been released in the United States for Brazilian pepper-tree. Over two hundred insects have been identified that feed on Brazilian pepper-trees in the tree's native land. However, in order for them to be considered as possible biological control agents, scientists must prove that they are specific to Brazilian pepper-trees. Effective biological control agents must be able to reproduce after introduction into the United States.

University of Florida scientists have identified two insect species which may prove to be effective biological control agents, a sawfly and a thrips. The sawfly causes defoliation and the thrips feeds on new shoots. UF scientists expect authorization to release these insects in the future. However, their effectiveness for controlling Brazilian pepper-trees in Florida is as yet unknown.

For more information, see UF/IFAS EDIS publication ENY-820 Classical Biological Control of Brazilian Peppertree (*Schinus terebinthifolius*) in Florida at http://edis.ifas.ufl.edu/IN114 and EENY-270 Brazilian Peppertree Seed Wasp, *Megastigmus transvaalensis* (Hymenoptera: Torymidae) at http://edis.ifas.ufl.edu/IN453 .

Table 1. Herbicides and application methods for Brazilian pepper-tree control.

Active ingredient[1]	Products	Application Methods	Comments
Glyphosate		Cut stump	Available from agricultural

(4 lb/gallon)	Several products	Foliar	suppliers. May be applied directly to water.
Glyphosate (3.7 lb/gallon)	Roundup Weed & Grass Killer Super Concentrate	Cut stump Foliar	Available from retail garden suppliers. May **not** be applied directly to water.
Glyphosate (3 lb/gallon)	Several products	Cut stump Foliar	Available from agricultural suppliers. May **not** be applied directly to water.
Imazapyr (2 lb/gallon)	Arsenal, Habitat	Cut stump Foliar (low volume)	Should only be applied by licensed herbicide applicators.
	Stalker	Basal bark	
Triclopyr amine (3 lb/gallon)	Garlon 3A, Renovate	Cut stump Foliar	Available from agricultural suppliers. May be applied directly to water.
Triclopyr amine (0.59 lb/gallon)	Enforcer Brush Killer	Cut stump Foliar	Available from retail garden suppliers. May **not** be applied directly to water.
Triclopyr amine (0.54 lb/gallon)	Ortho Brush-B-Gon	Cut stump Foliar	Available from retail garden suppliers. May **not** be applied directly to water.
Triclopyr ester (4 lb/gallon)	Garlon 4	Cut stump Foliar Basal bark	Available from agricultural suppliers. May **not** be applied directly to water.

Triclopyr ester (0.75 lb/gallon)	Pathfinder II	Cut stump Basal bark	Available from agricultural suppliers. May **not** be applied directly to water.
	Vine-X	Cut stump Basal bark	Available on the World Wide Web. May **not** be applied directly to water.
[1] Based on the acid.			

Footnotes

1. This document is SS-AGR-17, one of a series of the Agronomy Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. First published: April 1997. Revised: February 2006. Please visit the EDIS Website at http://edis.ifas.ufl.edu.

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