

UF/IFAS Florida Trees Tutorial¹

Ryan W. Klein, Larsen McBride, and Howard Beck²

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Introduction

The Florida Trees website contains a database of detailed information on over 1000 trees. The website's Tree Recommendation Tool presented in this publication can help the user do a thorough site analysis, identify important characteristics of that site, and then recommend trees for that site based on those characteristics. Likewise, the website's Tree Search and Identification tools can help a user search the database for trees matching characteristics that the user specifies. Overall, the information on the website can assist both homeowners and professionals with addressing species selection issues that may impact tree survivability and long-term performance.

Urban trees provide a multitude of benefits to people, infrastructure, and the environment. They can

- lower ambient temperatures during spring and summer months, offsetting energy consumption;
- intercept stormwater, mitigating flood concerns;
- lower stress levels and reduce the likelihood of respiratory and cardiovascular conditions in people;
- raise property values;
- promote consumer spending on tree-lined streets; and
- provide food and habitat for urban wildlife.

Because of these and other benefits, momentum and funding for urban tree planting initiatives have become widespread in recent years. However, trees planted in the landscape are not guaranteed to survive to maturity. Urban tree mortality is highest within the first five years after planting. Overall, most urban trees have a lower life expectancy than trees growing in more natural areas. Even if a tree is able to survive the first few years, its journey to maturity may also incur several costs or disservices, such as dropping limbs, roots lifting sidewalk panels or causing damage to other hardscapes, or conflicts with above- and belowground utilities. All of this has the potential to impact people and property negatively, as well as result in significant amounts of labor and associated expenses retroactively. Furthermore, proactive maintenance is generally the best way to assist newly planted trees during establishment and beyond.

One of the most assured ways to lessen or avoid these and other potential disservices is to select the right tree for the right planting site. Arboricultural and urban forestry professionals refer to this as "right tree, right place." These principles include carefully selecting planting sites with adequate space and resources for a tree to thrive without causing conflicts, as well as selecting trees that will reach maturity in a planting site while posing minimal risk to people, property, and activities. For example, a common practice of years past has been to plant shade trees, which are quite large at maturity in small, confined planting spaces near infrastructure and the flow of pedestrian or vehicular

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traffic. Many of us have tripped over sidewalk panels lifted by tree roots or perhaps had to drive around a tree fallen on the road. “Right tree, right place” principles advocate for planting large shade trees in planting spaces that can accommodate the size of the tree at maturity. Similarly, “right tree, right place” contends that small planting spaces in urban areas can be maximized by planting trees that reach a small or medium size at maturity and, therefore, will not cause the same disruptions a shade tree would.

While “right tree, right place” principles won’t prevent all disasters or accidents, it is the most sustainable way to integrate vegetation into the urban landscape. Eliminating all potential tree risks would mean removing all trees. This is wildly impractical and unpopular and would result in a significant reduction in the quality of life in urban areas. This issue will continue to present challenges as we adapt to the stresses of climate change and seek out ways to mitigate the potential impacts to our urban landscapes. Again, at the core of the concept, “right tree, right place” is about matching tree species to a site with future growth in mind. This way, tree-related disservices are avoided or minimized, and the associated benefits are maximized.

The Florida Trees website, which has tree selection tools developed by UF/IFAS, gives any user the ability to select the right tree for the right place. You can generate a list of trees for a particular site based on planting site conditions with the Tree Recommendation Tool. Also, you can generate a list based on the characteristics of trees you want to plant using the Tree Search Tool. Perhaps you have already identified a tree you like but do not know the species. You can use the Tree Identification Tool by inputting a range of characteristics and generating a list of potential species that your particular tree might be.

To access these tools, go to <http://floridatrees.ifas.ufl.edu/>.

Tree Recommendation Tool

To generate a list of trees based on characteristics of your desired planting site, use the Tree Recommendation Tool (Figures 2–12). This tool will ask a series of questions about your site. Then, your answers will be input into the tool to generate a list of suitable trees. Refer to Table 1 for clarity on what is inquired by each question.

Tree Search Tool

The Tree Search Tool can be used to generate a list of trees for a particular site depending on tree- and site-related factors (Figures 13–24). The user can select criteria from up to

five tabs: Environment, General, Uses, Attributes, and Size/Shape. You can select as many or as few characteristics in each of the five tabs as you like to generate a list of potential trees. Note that the Tree Search Tool will allow the user to leave out important characteristics, which may result in suggestions for some less-than-desirable species. Whereas the Tree Recommendation Tool walks the user through a thorough site evaluation before searching the database for desirable trees. For example, you can use the Tree Search Tool to find all trees that grow in a particular hardness zone or find trees with white flowers. However, they might not grow well at your site unless you consider other factors. That task is better suited for the Tree Recommendation Tool.

Tree Identification Tool

The Tree Identification Tool is useful for deducing what species a particular tree is. The Tree Identification Tool is similar to the Tree Search Tool in that both let you select characteristics that are useful in identifying a tree. If you know the traits of a particular tree but do not know the species or common name, you can input them into the Tree Identification Tool (Figures 25–29).

Conclusion

With all the tools provided on the Florida Trees website, a general rule of thumb is to avoid guessing. The Tree Search and Tree Identification tools can work without selecting a particular tree characteristic or site variable, and both features will generate a still suitable list of species based on the variables selected. Whereas the Tree Recommendation Tool requires an answer for every question to generate a list of suitable species. The Tree Recommendation Tool gives the best advice for selecting the appropriate trees for your site. The Tree Search and Tree Identification tools are useful for searching the tree database. Incorrect responses, no matter the tool, can render a list of species that might not be suitable for the site in question or result in the misidentification of a species.

Overall, the Florida Trees website can be a useful tool for both homeowners and green industry professionals who seek information regarding species selection and identification. Determining “right tree, right place” is crucial for ensuring the long-term survivability of urban tree plantings. Likewise, the ability to identify a species is the first step in being able to manage a given tree. Successful plantings that account for future growth promote tree benefits and minimize disservices, while species knowledge can assist decision-makers with many of the issues common to urban trees.

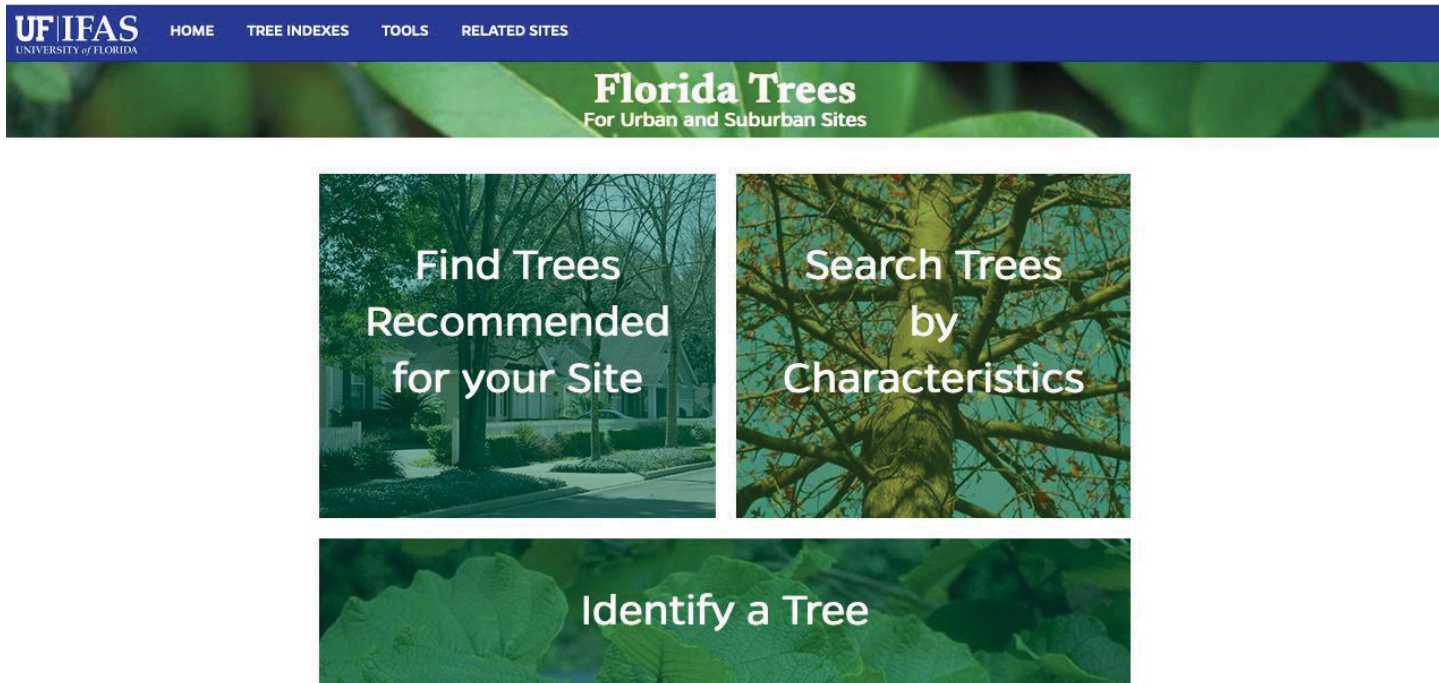


Figure 1. Home page.
Credits: UF/IFAS Florida Trees

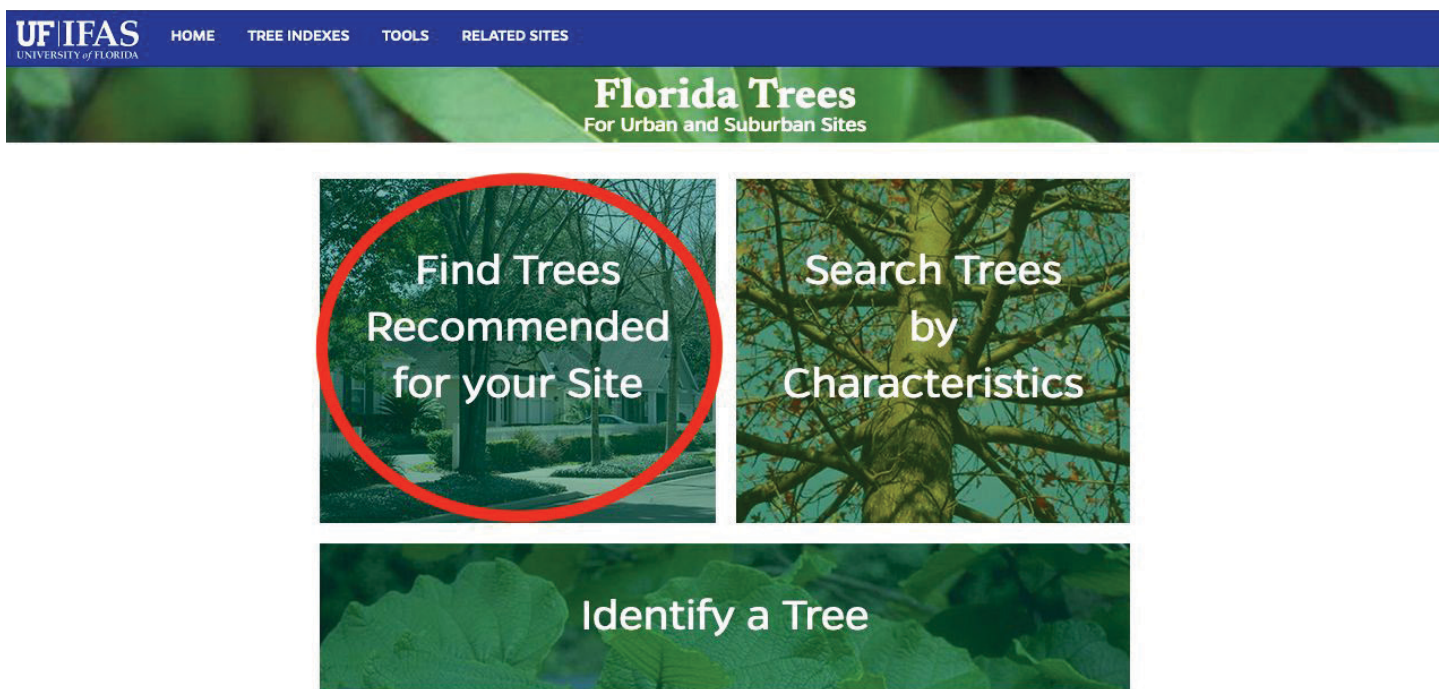


Figure 2. To start using the Tree Recommendation Tool, click the square that reads "Find Trees Recommended for your Site."
Credits: UF/IFAS Florida Trees

Tree Recommendation Tool

Press **START** to begin.

START

Help

Figure 3. Click the Start button to begin.
Credits: UF/IFAS Florida Trees

Tree Recommendation Tool

What USDA hardiness zone is the site located in?

2a	6a	10a
2b	6b	10b
3a	7a	11
3b	7b	DO NOT KNOW ?
4a	8a	
4b	8b	
5a	9a	
5b	9b	

Help

Figure 4. Answer each question as it pertains to your site. For example, if your USDA Hardiness Zone is 8b, then click 8b when prompted.
Credits: UF/IFAS Florida Trees

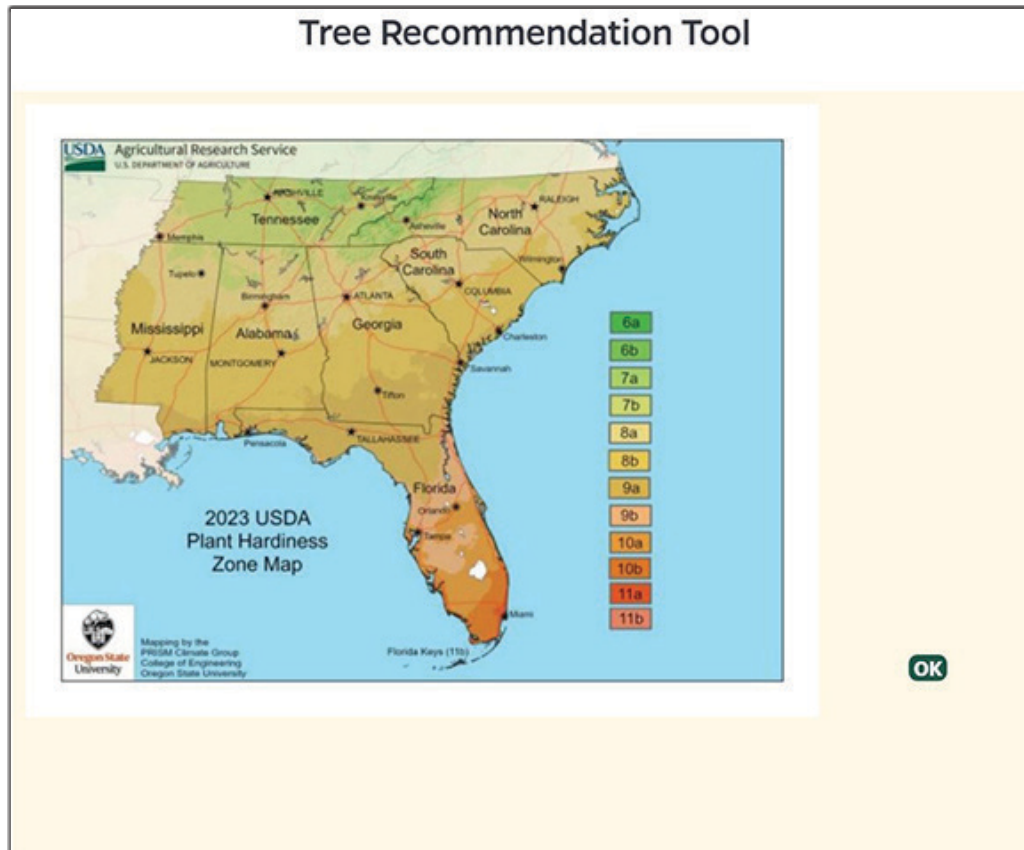


Figure 5. Some questions will have a “?” appear alongside the potential selection of responses. For example, when you click on the “?” in the Hardiness Zone question, the USDA Hardiness Zone map appears.
Credits: UF/IFAS Florida Trees

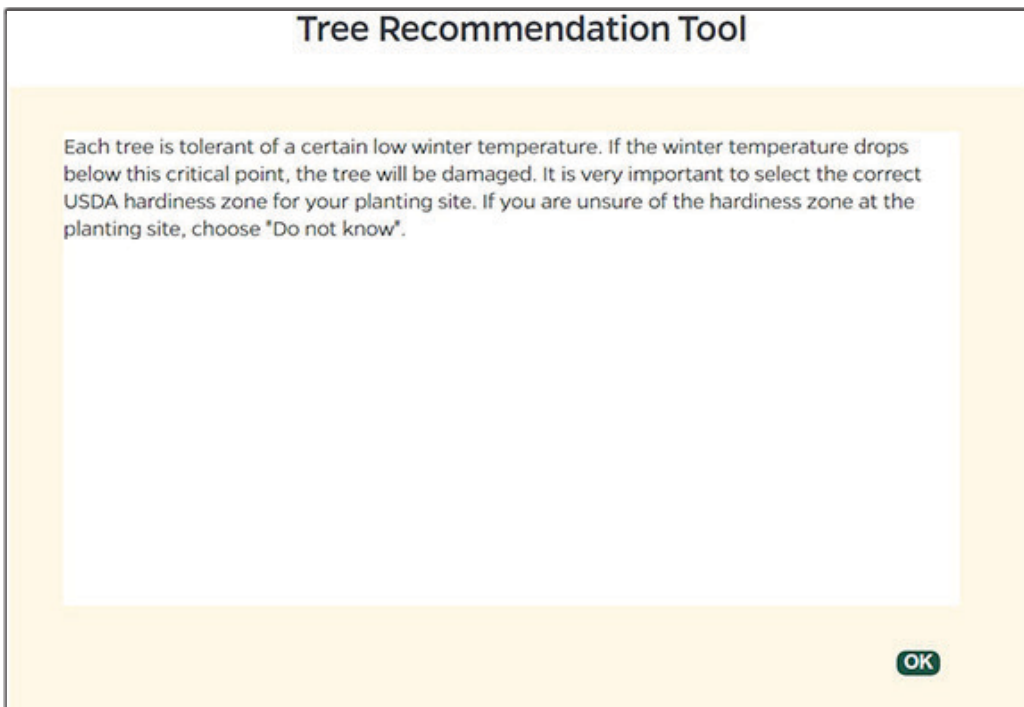


Figure 6. Similarly, when you click on Help in the question pertaining to the Hardiness Zone, an explanation of hardiness appears. Both the information associated with the “?” and the Help button provide context to the potential responses for the current questions.
Credits: UF/IFAS Florida Trees

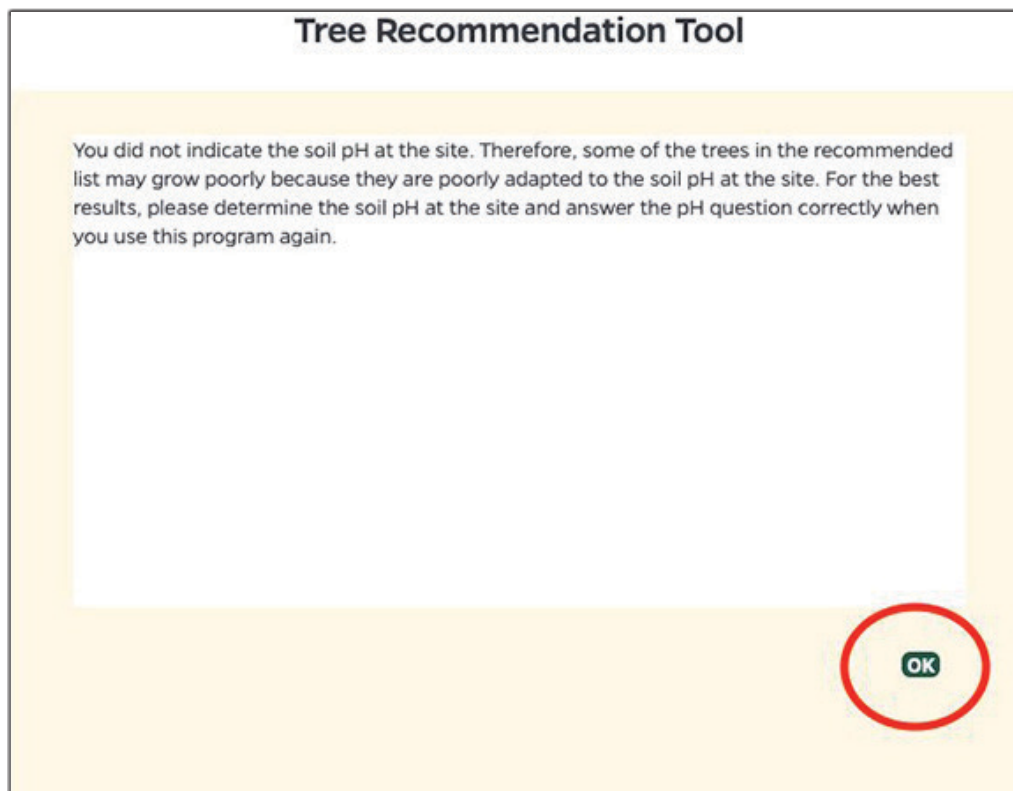


Figure 7. A message may occasionally appear on your screen advising about a selection that you have previously made. Click OK when you have finished reading the message to return to the Tree Recommendation Tool.

Credits: UF/IFAS Florida Trees

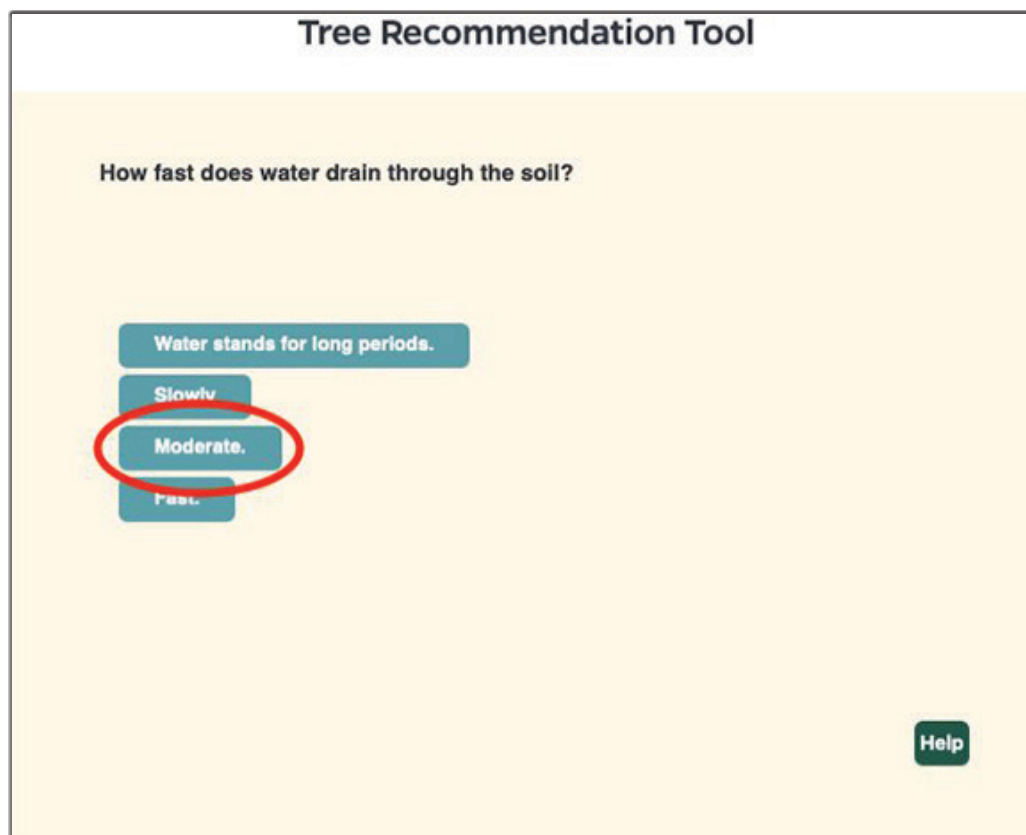


Figure 8. As you progress through the Tree Recommendation Tool, your answers will determine what questions get asked next. For example, in a question about soil drainage, additional follow-up questions may appear to better assess soil drainage and the size of your planting.

Credits: UF/IFAS Florida Trees

Tree Recommendation Tool

Would you like to:

Select trees that will not interfere with wires? (highly recommended)

Select from a broader list knowing that some trees could grow into the wires?

Help

Figure 9. By selecting that you are interested in trees that will not interfere with utility wires, the tool will exclude trees that could interfere with wires from its recommended tree list.
Credits: UF/IFAS Florida Trees

Tree Recommendation Tool

The following short reports were generated to help you remember how you answered the questions in the program. They also contain planting recommendations and other useful information. The following tree list was generated to match the specific conditions that you indicated were present at the planting site. The trees included in this recommended tree list suit the conditions outlined in the reports which follow. If you will be planting at a site which has conditions that are different in any way from those specified in these reports, run the program again to generate an appropriate list for that new site. The planting site is in USDA hardiness zone 8B. Trees in this recommended list are tolerant of the expected low temperature during the winter. The planting site is in full sun with at least 6 hours of direct sun. You indicated that trees will be planted in the ground. You did not indicate the pH of the soil at the site. Therefore, some of the trees in the recommended list may grow poorly because they are poorly adapted to the soil pH at the site. Please determine the soil pH at the site and answer the pH question correctly when you use this program again. You indicated that soil at the planting site has a sandy texture. You indicated that the soil is not compacted so soil compaction should not be an obstacle to planting trees. Install trees so the point where the top-most root meets the trunk is even with, or slightly higher than the surrounding landscape soil. Create a mound of soil to cover the sides of the root ball for a couple

OK

Figure 10. Once you have answered each question, the tool will generate a report and list of recommended trees based on your answers. The report will detail choices made by the Tree Recommendation Tool based on your answers to the questions. It will explain why a particular set of values was selected as a basis for choosing the right tree for a given site.
Credits: UF/IFAS Florida Trees

Florida Trees

For Urban and Suburban Sites

Find Trees
Recommended
for your Site

Search Trees
by
Characteristics

Identify a Tree

Figure 13. To start using the Tree Search Tool, click the box on the home page that reads, "Search Trees by Characteristics."
Credits: UF/IFAS Florida Trees

Tree Search Tool

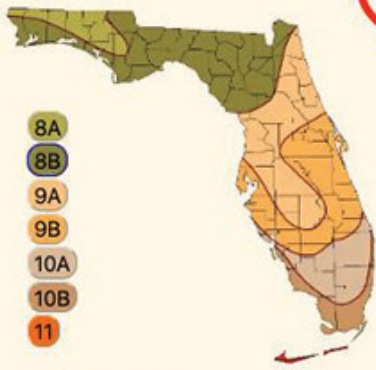
Environment	General	Use	Attributes	Size/Shape
<p>Select Hardiness Zone</p>  <p>8A 8B 9A 9B 10A 10B 11</p>		<p>Recommended for Dry Climates</p> <p><input checked="" type="radio"/> Yes <input type="radio"/> No</p>	<p>Drought Tolerance</p> <p><input type="checkbox"/> High <input type="checkbox"/> Moderate <input type="checkbox"/> Little</p>	
		<p>Light Requirements</p> <p><input type="checkbox"/> Full Sun <input type="checkbox"/> Part Sun <input type="checkbox"/> Shade Tolerant</p>		
		<p>Salt Spray Tolerance</p> <p><input type="checkbox"/> High <input type="checkbox"/> Moderate <input type="checkbox"/> Low <input type="checkbox"/> None</p>		
		<p>Soil pH Tolerance</p> <p><input type="checkbox"/> Acidic <input type="checkbox"/> Slightly Alkaline <input type="checkbox"/> Alkaline</p>	<p>Soil Salt Tolerance</p> <p><input type="checkbox"/> Good <input type="checkbox"/> Moderate <input type="checkbox"/> Poor</p>	
		<p>Soil Texture Tolerance</p> <p><input type="checkbox"/> Clay <input type="checkbox"/> Loam <input type="checkbox"/> Sand</p>	<p>Soil Drainage Tolerance</p> <p><input type="checkbox"/> Well-Drained <input type="checkbox"/> Occasionally Wet <input type="checkbox"/> Extended Flooding</p>	
<p>Search Reset This Tab Reset All Tabs</p>				

Figure 14. The Environment tab includes descriptions of external site factors, such as hardiness zone, light requirements, and soil characteristics. You can respond to as many or as few of the descriptions as you like. Categories with a circle next to each response contain either/or criteria. For example, in response to whether you want trees recommended for dry climates, you must select either Yes or No—you cannot select both.
Credits: UF/IFAS Florida Trees

Tree Search Tool

Environment	General	Uses	Attributes	Size/Shape
<div> <div> Select Hardiness Zone </div> <div> Recommended for Dry Climates <input checked="" type="radio"/> Yes <input type="radio"/> No </div> <div> Drought Tolerance <input checked="" type="checkbox"/> High <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Little </div> <div> Light Requirements <input type="checkbox"/> Full Sun <input type="checkbox"/> Part Sun <input type="checkbox"/> Shade Tolerant </div> <div> Salt Spray Tolerance <input type="checkbox"/> High <input type="checkbox"/> Moderate <input type="checkbox"/> Low <input type="checkbox"/> None </div> <div> Soil pH Tolerance <input type="checkbox"/> Acidic <input type="checkbox"/> Slightly Alkaline <input type="checkbox"/> Alkaline </div> <div> Soil Salt Tolerance <input type="checkbox"/> Good <input type="checkbox"/> Moderate <input type="checkbox"/> Poor </div> <div> Soil Texture Tolerance <input type="checkbox"/> Clay <input type="checkbox"/> Loam <input type="checkbox"/> Sand </div> <div> Soil Drainage Tolerance <input type="checkbox"/> Well-Drained <input type="checkbox"/> Occasionally Wet <input type="checkbox"/> Extended Flooding </div> </div>				
<div> <input type="button" value="Search"/> <input type="button" value="Reset This Tab"/> <input type="button" value="Reset All Tabs"/> </div>				

Figure 15. Categories that have boxes next to their responses contain some or all criteria. That is, you can select as many or as few responses as you prefer. For example, if you want your list to include trees that are both highly and moderately tolerant of drought, you can select both High and Moderate in response to Drought Tolerance.

Credits: UF/IFAS Florida Trees

Tree Search Tool

Environment	General	Uses	Attributes	Size/Shape
<div> <div> Native to Florida <input type="radio"/> Yes <input type="radio"/> No </div> <div> Plant Type <input type="checkbox"/> Tree <input type="checkbox"/> Palm <input type="checkbox"/> Shrub </div> <div> Growth Rate <input type="checkbox"/> Slow <input type="checkbox"/> Moderate <input type="checkbox"/> Fast </div> <div> Life Span <input type="checkbox"/> Less Than 25 Years <input type="checkbox"/> 25-50 Years <input type="checkbox"/> More Than 50 Years </div> <div> Surface Rooting <input type="radio"/> Can Form Large Surface Roots <input type="radio"/> Not a Problem </div> <div> Pest Resistance <input type="checkbox"/> Free of Serious Pests and Diseases <input type="checkbox"/> Resistant to Pests/Diseases <input type="checkbox"/> Sensitive to Pests/Diseases </div> </div>				
<div> <div> Select Trees Native To: Click Map to Select County </div> <div> Availability <input type="checkbox"/> Generally Available <input type="checkbox"/> Somewhat Available <input type="checkbox"/> Rarely Available </div> </div>				
<div> <input type="button" value="Search"/> <input type="button" value="Reset This Tab"/> <input type="button" value="Reset All Tabs"/> </div>				

Figure 16. Once you have filled out your desired criteria for Environment, you can click the General tab to select general criteria for your tree list.

Credits: UF/IFAS Florida Trees

Tree Search Tool



Environment | **General** | Uses | Attributes | Size/Shape

Native to Florida
☒ Yes ☐ No

Plant Type
☒ Tree ☒ Palm ☐ Shrub

Growth Rate
☐ Slow ☐ Moderate ☒ Fast

Life Span
☒ Less Than 25 Years
☒ 25-50 Years
☒ More Than 50 Years

Surface Rooting
☐ Can Form Large Surface Roots
☒ Not a Problem

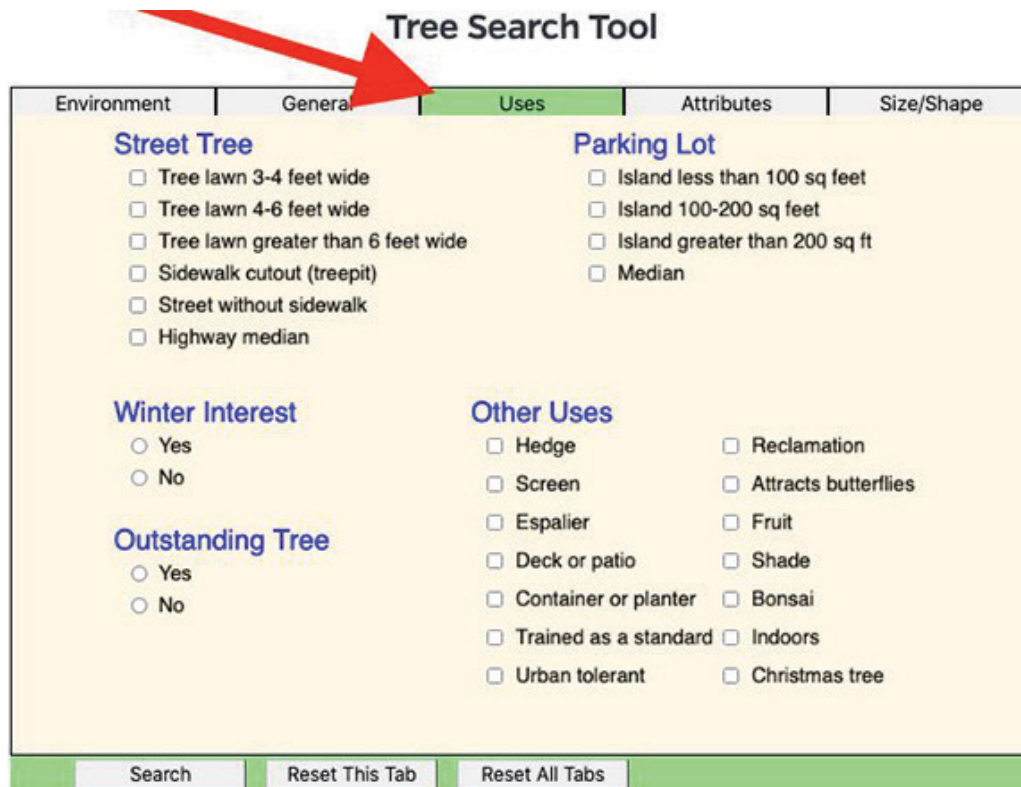
Pest Resistance
☒ Free of Serious Pests and Diseases
☒ Resistant to Pests/Diseases
☐ Sensitive to Pests/Diseases

Availability
☒ Generally Available
☐ Somewhat Available
☐ Rarely Available

Select Trees Native To:
 Alachua

Search | Reset This Tab | Reset All Tabs

Figure 17. In addition to selecting whether a tree is native to Florida or not, you can also select trees native to specific counties.
 Credits: UF/IFAS Florida Trees



Environment | General | **Uses** | Attributes | Size/Shape

Street Tree
☐ Tree lawn 3-4 feet wide
☐ Tree lawn 4-6 feet wide
☐ Tree lawn greater than 6 feet wide
☐ Sidewalk cutout (tree pit)
☐ Street without sidewalk
☐ Highway median

Parking Lot
☐ Island less than 100 sq feet
☐ Island 100-200 sq feet
☐ Island greater than 200 sq ft
☐ Median

Winter Interest
☐ Yes
☐ No

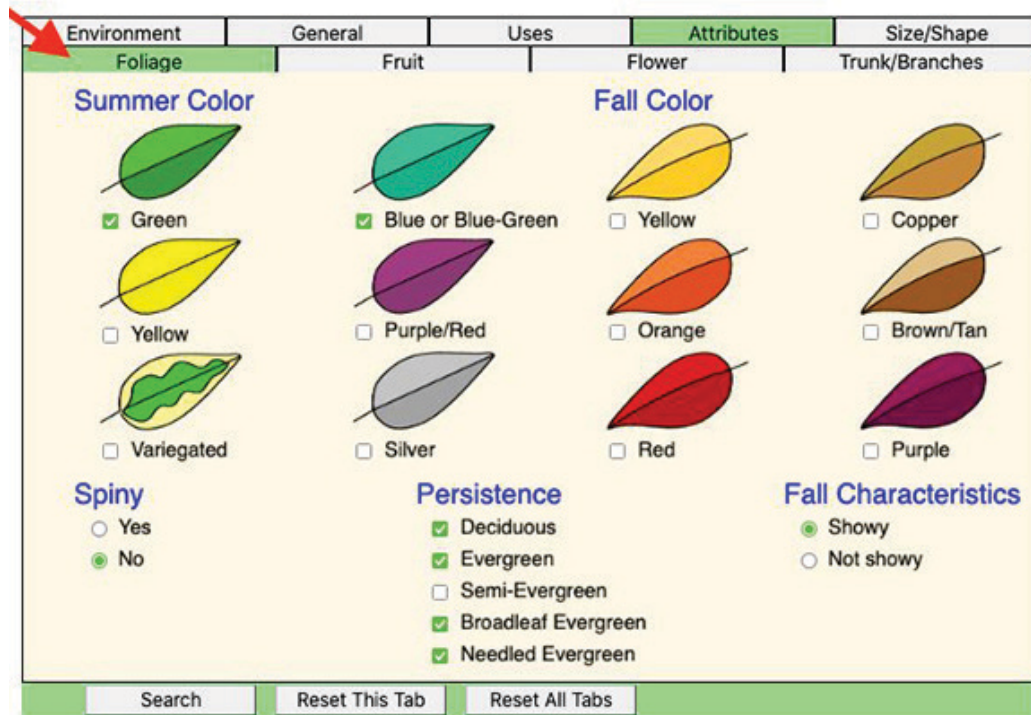
Outstanding Tree
☐ Yes
☐ No

Other Uses
☐ Hedge ☐ Reclamation
☐ Screen ☐ Attracts butterflies
☐ Espalier ☐ Fruit
☐ Deck or patio ☐ Shade
☐ Container or planter ☐ Bonsai
☐ Trained as a standard ☐ Indoors
☐ Urban tolerant ☐ Christmas tree

Search | Reset This Tab | Reset All Tabs

Figure 18. You can then move through the Uses tab, inputting criteria regarding the desired use of the tree for the site.
 Credits: UF/IFAS Florida Trees

Tree Search Tool



Attributes

Foliage

Summer Color

- ☒ Green
- ☐ Yellow
- ☐ Variegated

Fall Color

- ☒ Blue or Blue-Green
- ☐ Purple/Red
- ☐ Silver
- ☐ Yellow
- ☐ Orange
- ☐ Red

Spiny

- ☐ Yes
- ☒ No

Persistence

- ☒ Deciduous
- ☒ Evergreen
- ☐ Semi-Evergreen
- ☒ Broadleaf Evergreen
- ☒ Needled Evergreen

Fall Characteristics

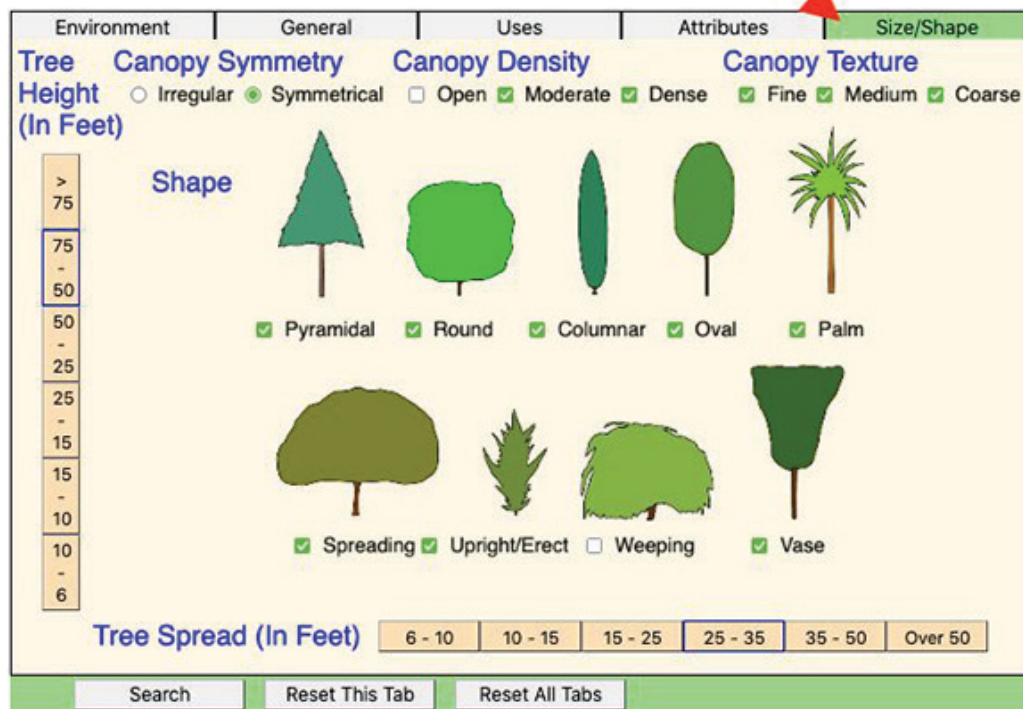
- ☒ Showy
- ☐ Not showy

Search Reset This Tab Reset All Tabs

Figure 19. Next, the Attributes tab has four subtabs: Foliage, Fruit, Flower, and Trunk/Branches. In each subtab, you can select specific, desirable attributes of your trees. As with previous tabs, you can respond to as many or as few categories as you like. Some categories allow you to select more than one response.

Credits: UF/IFAS Florida Trees

Tree Search Tool



Size/Shape

Tree Height (In Feet)

- ☐ > 75
- ☐ 75 - 50
- ☐ 50 - 25
- ☐ 25 - 15
- ☐ 15 - 10
- ☐ 10 - 6

Canopy Symmetry

- ☐ Irregular
- ☒ Symmetrical

Canopy Density

- ☐ Open
- ☒ Moderate
- ☒ Dense

Canopy Texture

- ☒ Fine
- ☒ Medium
- ☒ Coarse

Shape

- ☒ Pyramidal
- ☒ Round
- ☒ Columnar
- ☒ Oval
- ☒ Palm
- ☒ Spreading
- ☒ Upright/Erect
- ☐ Weeping
- ☒ Vase

Tree Spread (In Feet)

- ☐ 6 - 10
- ☐ 10 - 15
- ☐ 15 - 25
- ☒ 25 - 35
- ☐ 35 - 50
- ☐ Over 50

Search Reset This Tab Reset All Tabs

Figure 20. The final tab is Size/Shape, where you will input criteria regarding the tree's physical characteristics, such as height, canopy density, shape, and crown spread. As with previous tabs, you can respond to as many or as few categories as you like. Some categories allow you to select more than one response.

Credits: UF/IFAS Florida Trees

Tree Search Tool

The screenshot shows the 'Tree Search Tool' interface with five tabs: Environment, General, Uses, Attributes, and Size/Shape. The 'Size/Shape' tab is active, displaying options for Tree Height (In Feet) and Tree Spread (In Feet). The 'Tree Height' section has a vertical slider with values from 6 to 75. The 'Tree Spread' section has a horizontal slider with values from 6-10 to Over 50. The 'Shape' section shows eight tree icons with corresponding labels: Pyramidal, Round, Columnar, Oval, Palm, Spreading, Upright/Erect, Weeping, and Vase. The 'Search' button is circled in red.

Figure 21. Once you have selected all your desired criteria across the five tabs, you can generate a tree list by clicking Search.
Credits: UF/IFAS Florida Trees

Tree Search Tool

The screenshot shows the results page of the 'Tree Search Tool'. It features two columns: 'Scientific Name' and 'Common Name'. The 'Scientific Name' column contains the text 'Taxodium distichum' and the 'Common Name' column contains the text 'Baldcypress'. At the bottom, the 'Refine Search' and 'New Search' buttons are circled in red.

Figure 22. The tool will then generate a list based on all selected criteria. If you want to change your search by altering, adding, or eliminating criteria, you can click Refine Search to edit (add or remove) the characteristics you selected for whatever tab was last worked on. If you want to start over, click New Search.

Credits: UF/IFAS Florida Trees

Tree Search Tool

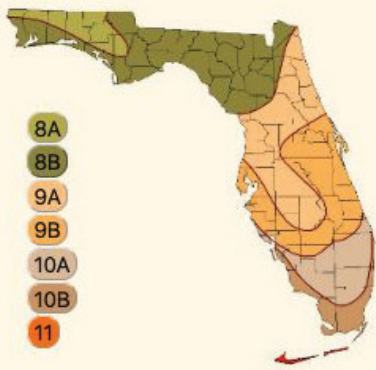

Environment	General	Uses	Attributes	Size/Shape
Select Hardiness Zone  8A 8B 9A 9B 10A 10B 11		Recommended for Dry Climates <input type="radio"/> Yes <input type="radio"/> No	Drought Tolerance <input type="checkbox"/> High <input type="checkbox"/> Moderate <input type="checkbox"/> Little	
		Light Requirements  <input type="checkbox"/> Full Sun <input type="checkbox"/> Part Sun <input type="checkbox"/> Shade Tolerant		
		Salt Spray Tolerance <input type="checkbox"/> High <input type="checkbox"/> Moderate <input type="checkbox"/> Low <input type="checkbox"/> None		
		Soil pH Tolerance <input type="checkbox"/> Acidic <input type="checkbox"/> Slightly Alkaline <input type="checkbox"/> Alkaline		
		Soil Salt Tolerance <input type="checkbox"/> Good <input type="checkbox"/> Moderate <input type="checkbox"/> Poor		
		Soil Texture Tolerance <input type="checkbox"/> Clay <input type="checkbox"/> Loam <input type="checkbox"/> Sand		
		Soil Drainage Tolerance <input type="checkbox"/> Well-Drained <input type="checkbox"/> Occasionally Wet <input type="checkbox"/> Extended Flooding		
		<input type="button" value="Reset This Tab"/> <input type="button" value="Reset All Tabs"/>		

Figure 23. If you want to erase your selections and start over in just one tab, click Reset This Tab.
Credits: UF/IFAS Florida Trees

Tree Search Tool

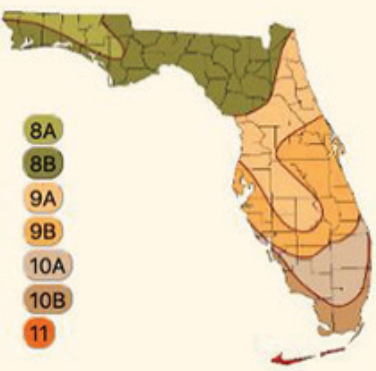

Environment	General	Uses	Attributes	Size/Shape
Select Hardiness Zone  8A 8B 9A 9B 10A 10B 11		Recommended for Dry Climates <input type="radio"/> Yes <input type="radio"/> No	Drought Tolerance <input type="checkbox"/> High <input type="checkbox"/> Moderate <input type="checkbox"/> Little	
		Light Requirements  <input type="checkbox"/> Full Sun <input type="checkbox"/> Part Sun <input type="checkbox"/> Shade Tolerant		
		Salt Spray Tolerance <input type="checkbox"/> High <input type="checkbox"/> Moderate <input type="checkbox"/> Low <input type="checkbox"/> None		
		Soil pH Tolerance <input type="checkbox"/> Acidic <input type="checkbox"/> Slightly Alkaline <input type="checkbox"/> Alkaline		
		Soil Salt Tolerance <input type="checkbox"/> Good <input type="checkbox"/> Moderate <input type="checkbox"/> Poor		
		Soil Texture Tolerance <input type="checkbox"/> Clay <input type="checkbox"/> Loam <input type="checkbox"/> Sand		
		Soil Drainage Tolerance <input type="checkbox"/> Well-Drained <input type="checkbox"/> Occasionally Wet <input type="checkbox"/> Extended Flooding		
		<input type="button" value="Search"/> <input type="button" value="Reset This Tab"/> <input type="button" value="Reset All Tabs"/>		

Figure 24. If you want to erase your selections and start over in all tabs, click Reset All Tabs.
Credits: UF/IFAS Florida Trees

Florida Trees

For Urban and Suburban Sites

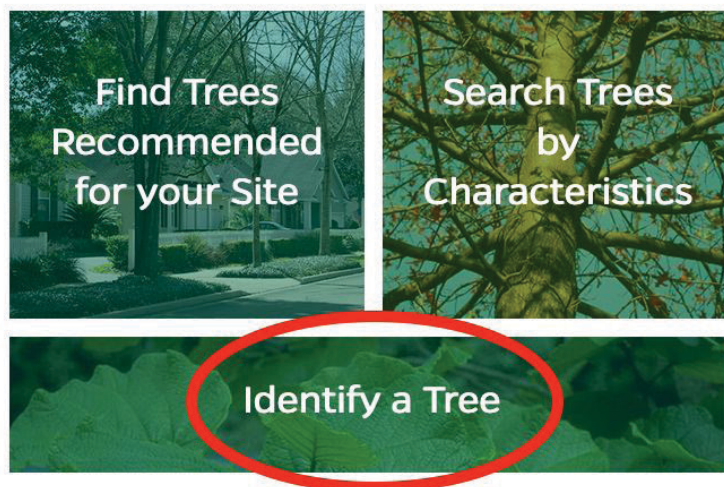


Figure 25. Start using the Tree Identification tool by clicking the square on the home page called “Identify a Tree.”
Credits: UF/IFAS Florida Trees

Tree Identification Tool

Environment
Foliage
Flower

Tree Spread (In Feet)

6 - 10	10 - 15	15 - 25	25 - 35	35 - 50	Over 50
--------	---------	---------	---------	---------	---------

Tree Height (In Feet)

> 75
75 - 50
50 - 25
25 - 15
15 - 10
10 - 6

Select Hardiness Zone

8A

8B

9A

9B

10A

10B

11

Thorns on Trunks/Branches

☐ Yes ☒ No

Search Reset This Tab Reset All Tabs

Figure 26. As with the Tree Search Tool, there are several tabs—Environment, Foliage, and Flower—in which you can choose different responses to different categories of tree and site characteristics. By starting in the Environment tab, you can respond to questions about a tree’s size, thorniness, and hardiness zone. You can respond to as many or as few categories as you like.
Credits: UF/IFAS Florida Trees

Tree Identification Tool

Environment		Foliage		Flower	
General	Type	Color	Margins	Shape	
Arrangement					
<input type="checkbox"/> Alternate		<input checked="" type="checkbox"/> Opposite		<input checked="" type="checkbox"/> Whorled	
<input type="checkbox"/> Spiral					
Venation					
<input checked="" type="checkbox"/> Nearly Invisible		<input checked="" type="checkbox"/> Parallel		<input checked="" type="checkbox"/> Bowed	
<input checked="" type="checkbox"/> Pinnate		<input checked="" type="checkbox"/> Brachidodrome		<input type="checkbox"/> Palmate	
<input type="checkbox"/> Reticulate					
Search		Reset This Tab		Reset All Tabs	

Figure 27. The Foliage tab has five subtabs relating to leaf characteristics: General, Type, Color, Margins, and Shape. You can click through each subtab and respond to as many or as few categories as you like.
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Tree Identification Tool

Environment		Foliage		Flower	
Color		Season			
<input type="checkbox"/> Yellow		<input type="checkbox"/> Flowers in Spring			
<input type="checkbox"/> Red		<input type="checkbox"/> Flowers in Summer			
<input type="checkbox"/> Blue		365			
<input type="checkbox"/> Pink		<input type="checkbox"/> Flowers Year-Round			
<input type="checkbox"/> Lavender		<input type="checkbox"/> Flowers in Winter			
<input type="checkbox"/> Orange		<input type="checkbox"/> Flowers in Fall			
<input type="checkbox"/> White/Cream/Gray		Fragrance			
<input type="checkbox"/> Purple		<input type="checkbox"/> Pleasant			
<input type="checkbox"/> Green		<input type="checkbox"/> Unpleasant			
<input type="checkbox"/> Brown		<input checked="" type="checkbox"/> No Fragrance			
		Showiness			
		<input type="checkbox"/> Very Showy			
		<input type="checkbox"/> Showy			
		<input checked="" type="checkbox"/> Not Showy			
Search		Reset This Tab		Reset All Tabs	

Figure 28. The Flower tab features categories related to a tree's flowers and flowering habits. You can respond to as many or as few of these as you like. Once you have selected all relevant criteria for your tree, click Search to generate a list of potential species.
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Tree Identification Tool

[illegible]

Figure 29. The Tree Identification Tool will generate a list of trees fitting the criteria you selected in your search. To go back and alter, add, or remove criteria, click Refine Search. To start over, click New Search.

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Table 1. Descriptions of general tree and site categories that the user will encounter when using the Tree Recommendation Tool. For a complete list of site conditions that need to be considered prior to planting, visit <https://floridatrees.ifas.ufl.edu/FloridaTrees/site-analysis.html>.

Tree or Site Variable	Description
Start	Begin compiling your tree recommendation list.
USDA Hardiness Zone	A categorization of geographical areas in the United States based on the average annual extreme minimum winter temperature, displayed as 10°F zones and 5°F half zones. USDA Hardiness Zone map for Florida: https://planthardiness.ars.usda.gov/system/files/FL150_HS.png
Rain	The annual amount of precipitation each year (including snow and ice).
Salt	The annual use of de-icing salts on roadways and sidewalks.
Crime	Trees that are likely to be damaged, vandalized, or stolen after planting have a significantly lower chance of surviving in the urban environment than those that are not damaged.
Sunlight exposure	The amount and type of sun exposure a site receives on average throughout the year. A tree's shade or sun tolerance will be considered.
Planter	The type of planting site the tree will be located in. Entails whether the tree will be planted in the ground or in an above-ground container.
Soil texture	Soil texture refers to the proportion of sand, clay, and loam that the site's soil contains. Some sites may have little soil because the bedrock is exposed.
Soil density	Compacted soil is very dense and difficult for trees to grow their roots in. Soils near highly trafficked areas tend to be compacted. Soil with little to no compaction may be found in places such as parks, yards, or medians.
Soil drainage	How quickly water drains at a site impacts the type of trees that can be planted. Sites where water drains slowly or not at all may require trees with a high flood tolerance. Sites where water drains quickly may require trees with high drought tolerance.
Water table	The proximity of the water table at a site may indicate whether the site floods during high rain events.
Irrigation	Irrigation is recommended for establishment. In Florida, the establishment period for a newly planted tree is 3–6 months. This can vary depending on the geographical location of the site.
Infrastructure	Trees planted close to hardscapes, such as sidewalks and curbs, have the potential to damage or lift pavement as their roots grow.
Wires	Trees that grow into utility wires have the potential to damage the wires, causing power outages and posing an electrical hazard to people.
Lights	Streetlights that are obscured by tree limbs cannot provide adequate light to streets and sidewalks at night, posing potential safety issues.
Buildings	Trees that grow large enough to conflict with buildings may damage the building's exterior.
Check height and spread	A tree's height or spread can be estimated based on specific species characteristics. For scale, a typical sidewalk flag is 5 feet wide, and a typical primary line utility pole is 30 feet tall.
Maintenance	Refers to pruning requirements, potential mess caused by leaf or fruit drop, or susceptibility to breakage.
Pests	Refers to a tree's resistance to pests.
Native trees	Refers to whether a tree species evolved into the species it is today on the North American continent.