



Index for *SustainablePlus* Urban Trees

INTRODUCTION

The purpose of the Index for ***SustainablePlus*** Urban Trees (ISPUT) is to increase awareness about the importance and responsibility of selecting ***SustainablePlus*** trees that will have the greatest potential to positively impact the urban environment.

"Trees are the only part of infrastructure that actually appreciates in value while the rest depreciates." - **Provenzano**

What are ***SustainablePlus*** trees?

With the expectation that trees are the only part of the infrastructure that appreciate in value - our concept of sustainability holds trees to a higher standard. So, ***SustainablePlus*** can define this higher expectation we have for trees as compared to other building materials. Sustainability criteria for trees should be focused on future benefit potential in addition to the traditional criteria used for other building materials that depreciate in value.

According to Arbor Day Foundation, "Over the course of 50 years, a single large shade tree can generate over \$160,000 in environmental benefits."

50 Year Benefits of One Large Shade Tree

\$31,250 worth of generated oxygen
\$62,000 worth of air pollution control
\$37,500 worth of recycled water
\$31,500 worth of soil erosion control

\$162,250 Total Environmental Benefits

In addition to the above, other appreciating benefits include shade, energy conservation, increasing property values, and enhanced quality of life.

"Making cities livable by installing trees that will last will contribute to regional and global sustainability." - **Henry Arnold, ASLA**



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Select Trees Group began evolving similar criteria to the ISPUT beginning about 1989, for the purpose of deciding which trees to select, evaluate, and grow at our nursery. Our original goal was simple; we just wanted our trees to thrive and to provide value for our customers. With the benefit of experience and much input from our customers and advisors, the ISPUT continues to evolve with focus on trees that will thrive in tough urban conditions for many years into the future.

We always welcome advice and comments on improving the effectiveness of this process and appreciate the efforts of all those that have been a part of our continuing education. We are aware that many factors affect the sustainability of urban trees and that we have not quantified all of these in this index. We also realize that the criteria and resulting scores in this exercise are obviously somewhat subjective, but hopefully this exercise will improve the tree evaluation and selection process.

Tough urban site conditions include such things as:

- Compacted soils with low oxygen and often very poor drainage.
- Increased temperatures due to heat from pavement and buildings.
- Restricted area for root growth.
- Poor air quality
- Less than optimum processes and resources for designing, installing, and caring for trees.

Enhancing root space, drainage and other soil conditions are important steps to help all trees achieve their genetic potential.

Hint: Observation of the oldest and healthiest trees with optimum canopy size growing in similar conditions to your proposed environment should lead you down the right road to selecting urban tough *SustainablePlus* trees.

Resources for Additional Information:

- *Manual of Woody Landscape Plants*, Dr. Michael Dirr
- *Trees in Urban Design*, Henry Arnold
- *Up by Roots*, James Urban
- "Brave New Ecology," Peter Del Tredici - Visit: http://www.gsd.harvard.edu/loeb_library/information_systems/projects/E_vue/files/PlantsFeb06.pdf
- *Modern Arboriculture: A Systems Approach to the Care of Trees and their Associates*, Alex Shigo
- *Horticopia*, Ed Gilman
- *An Illustrated Guide to Pruning*, Dr. Ed Gilman
- "Invasive Plants" - Visit: <http://www.fs.fed.us/r9/wildlife/range/weed/Sec3B.htm>
- "Large Tree Argument" - Visit: <http://www.urbanforestrysouth.org/resources/library/the-large-tree-argument-1-up/view?searchterm=large%20tree%20argument>

Index for Sustainable Urban Shade Trees in Southern Piedmont to Mid Atlantic

Plant Symbol	Scientific Name	Common Name	Growth Rate	How many years is this tree likely to thrive in urban conditions?		Approx. Potential Canopy Size in Urban Conditions		Cost for Pruning, Maintenance, Removal and Replacement (relative to size and age) over 40 years:				Total Sustainable Score	Notes	
			Fast	40+ years	35	> 35x35x35	35	Low	20	AORC=Appropriate Own Root Cultivar	10			
				30-40 years	20	30x30x30	20	Medium	10	ORC=Own Root Cultivar	0			
			Medium	20-30 yrs.	10	20x20x20	10	High	5	ASSDG=Appropriate Selected Seedling	5			
				10-20 yrs	5	10x10x10	5	Very High	0	SDG=Seedling	0			
			Slow	< 10 yrs	0	< 10x10x10	0			ASGFT=Appropriate Selected Grafted Cultivar	5			
		GFT=Grafted Cultivar						0						
CANOPY TREES														
	<i>Acer rubrum</i> 'October Glory'	October Glory Red Maple	M		5		10			10	ORC	10	35	October Glory is a good own root cultivar red maple. Must have adequate water, well-drained soil and large root space to perform well. Not a long-lived shade tree in parking lots and other restricted root spaces. Built to Last Red Maple a fairly new selected own root cultivar and is a branch sport from October Glory. Built to Last is very similar to October Glory Maple but is more vigorous and more heat tolerant.
	<i>Acer rubrum</i> 'Built to Last'	Built to Last Red Maple	M		10		20			20	ORC	10	60	Built to Last Red Maple a fairly new selected own root cultivar and is a branch sport from October Glory. Built to Last is very similar to October Glory Maple but is more vigorous and more heat tolerant.
	<i>Quercus shumardii</i> (seedling)	Shumard Oak	M		10		10			5	SDG	0	25	A good oak for urban areas but made even better with a strong performing own root cultivar such as Panache or Prominence.
	<i>Quercus shumardii</i> (selected seedling)	Shumard Oak	F		20		20			10	ASSDG	5	55	A good oak for urban areas but made even better with a strong performing own root cultivar.
	<i>Quercus shumardii</i> 'Panache'	Panache Shumard Oak	F		35		35			10	ORC	10	90	Strong, performing, dependable, urban tough oak cultivar with good fall color.
	<i>Gleditsia triacanthos inermis</i> 'Halka' and other cultivars	Halka Honeylocust	S		5		10			5	GFT	0	20	Although there are some exceptions, grafted Honey Locust selections are often not consistent long lived performers in tough urban conditions.
	<i>Taxodium distichum</i>	Bald Cypress	M		10		10			5	SDG	0	25	A strong performing native tree in urban areas. Doesn't cast as much shade as other large maturing shade trees, but can tolerate very difficult situations including dry & wet sites. An own root cultivar such as Autumn Gold will dramatically increase success because of predictability and dependability.
	<i>Taxodium distichum</i> (selected seedling)	Bald Cypress	F		20		20			10	ASSDG	5	55	A strong performer and dependable native tree in urban areas. Doesn't cast as much shade as other large maturing shade trees, but can tolerate very difficult situations including dry & wet sites. An own root cultivar such as Autumn Gold will dramatically increase success because of predictability and dependability.
	<i>Taxodium distichum</i> 'Sofine'	Autumn Gold Bald Cypress	F		20		20			10	ORC	10	60	A strong performer in urban areas. Doesn't cast as much shade as other large maturing shade trees, but can tolerate very difficult situations including dry & wet sites.
	<i>Betula nigra</i> 'Dura-Heat'	Dura-Heat River Birch	M		5		10			5	ORC	10	30	Dura-Heat is a consistent and dependable performer. While it is a native River Birch and is tougher in urban conditions than other birch, it is not a long-lived shade tree; single-trunk trees will likely be longer lived.

Note: Research on bacterial leaf scorch and other disease and pest issues are frequently updated and should be reviewed and considered always in the tree selection process.

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			Medium	20-30 yrs.	10	20x20x20	10	High	5	ASSDG=Appropriate Selected Seedling	5		
				10-20 yrs	5	10x10x10	5	Very High	0	SDG=Seedling	0		
Slow	< 10 yrs	0	< 10x10x10	0			ASGFT=Appropriate Selected Grafted Cultivar	5					
	<i>Nyssa sylvatica</i>	Blackgum	S		5		10		5	SDG	0	20	Native tree that will tolerate some urban conditions, but there is no cultivar available on the market on it's own root. All cultivars are grafted leading to varied performance and overall vigor.
	<i>Nyssa sylvatica</i> (selected seedling)	Blackgum	M		10		10		10	ASSDG	5	35	Native tree that will tolerate some urban conditions but there is no cultivar available on the market on it's own root. All cultivars are grafted leading to varied performance and overall vigor.
	<i>Platanus occidentalis</i>	Sycamore	M		10		10		10	SDG	0	30	Sycamore is not generally tolerant of urban conditions and not long-lived in many cases. Affected by a variety of diseases in the urban landscape Platanus. Cultivars are grafted.
	<i>Platanus occidentalis</i> and <i>Platanus acerifolia</i> (selected seedling)	Sycamore	F		20		20		10	ASSDG	5	55	Although there are some exceptions, plane tree and Sycamore selected seedlings are not generally consistently long lived trees in tough urban environments.
	<i>Liriodendron tulipifera</i>	Tulip Poplar	M		5		10		5	SDG	0	20	Tulip Poplar is a great shade tree in its native habitat; BUT NOT long-lived in urban conditions.
	<i>Liriodendron tulipifera</i> (selected seedling)	Tulip Poplar	F		10		20		10	ASSDG	5	45	Tulip Poplar is a great shade tree in its native habitat; BUT NOT long-lived in urban conditions.
	<i>Ulmus americana</i> 'Princeton'	Princeton Elm	F		20		20		0	ORC	10	50	Princeton is Dutch Elm Disease resistant, but (like most elms) will need significant structural pruning. Jefferson American Elm is a better selection based on better branching angles, better structure and less need for pruning.
	<i>Ulmus americana</i> 'Jefferson'	Jefferson Elm	F		35		35		10		10	90	The parent Jefferson American Elm is growing on the National Mall in Washington D.C. Compared to Princeton American Elm, Jefferson has less acute branch angles thus resulting in stronger structure and less included bark. Overall, Jefferson requires less pruning than Princeton.
	<i>Quercus nuttallii</i> 'QNFTA'	Highpoint Nuttall Oak	F		35		35		10	AORC	10	90	Dependable, strong, performing, urban tough native tree with good fall color.
	<i>Quercus nuttallii</i> 'QNSTC'	Esplanade Nuttall Oak	F		35		35		10	AORC	10	90	Dependable, strong, performing, urban tough native tree with good fall color.
	<i>Quercus nuttallii</i>	Nuttall Oak (selected seedling)	F		20		20		10	ASSDG	5	55	Good, urban tough native tree.
	<i>Quercus nuttallii</i>	Nuttall Oak (seedling)	M		10		10		5	SDG	0	25	Good, urban tough native oak.
	<i>Quercus phellos</i> 'QPSTA'	Hightower Willow Oak	F		35		35		10	AORC	10	90	Dependable fast growing and strong performing native tree for urban sites. "Habit is moderately upright."

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				10-20 yrs	5	10x10x10	5	Very High	0	SDG=Seedling	0		
Slow	< 10 yrs	0	< 10x10x10	0			ASGFT=Appropriate Selected Grafted Cultivar	5					
	<i>Quercus phellos</i> 'QPSTJ'	Ascendor Willow Oak	M		35		35		10	AORC	10	90	Dependable fast growing and strong performing native tree for urban sites. "Habit is moderately upright."
	<i>Quercus phellos</i>	Willow Oak (selected seedling)	M		20		20		10	ASSDG	5	55	Good, urban tough native tree.
	<i>Quercus phellos</i>	Willow Oak (seedling)	M		10		10		5	SDG	0	25	Good, urban tough native tree.
	<i>Quercus lyrata</i> 'QLFTB'	Highbeam Overcup Oak	F		35		35		10	AORC	10	90	Superior selection of dependable fast growing and strong performing native tree for urban sites. "Overcup is very likely the most tolerant of low oxygen soils of all urban tough native oaks." Highbeam is cold hardy to Baltimore, NY (Mets Stadium) and Oklahoma City.
	<i>Quercus lyrata</i>	Overcup Oak (selected seedling)	F		20		20		10	ASSDG	5	55	Good native tree for urban sites. "Overcup is very likely the most tolerant of low oxygen soils of all urban tough native oaks." Seedling Overcups vary widely in growth rate, habit, and leaf-out time. Leaf-out can occur as much as two months apart among groups of seedling trees.
	<i>Quercus lyrata</i>	Overcup Oak (seedling)	M		10		10		5	SDG	0	25	Good native tree for urban sites. "Overcup is very likely the most tolerant of low oxygen soils of all urban tough native oaks" Seedling Overcups vary widely in growth rate, habit, and leaf-out time. Leaf-out can occur as much as two months apart among groups of seedling trees.
	<i>Quercus alba</i>	White Oak (seedling)	S		10		10		5	SDG	0	25	One of the greatest long lived native oaks but, extreme root pruning and planting sites with good drainage and plenty of root space are required for good success.
	<i>Quercus alba</i>	White Oak (selected seedling)	M		20		20		10	ASSDG	5	55	One of the greatest long lived native oaks but, extreme root pruning and planting sites with good drainage and plenty of root space are required for good success.

MIDCANOPY TREES

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