

Relative Tolerance of Tree Species to Construction Damage

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Each tree species, and each unique individual, will respond to the stress and strain of construction activities in different ways. Some species vary widely in their response to mechanical injury, pest attack, soil modifications, and micro-climatic changes associated with construction. As more tree tissues, physical space and essential resources are disrupted, the more a tree must effectively react to these changes to insure survival.

The variability of general tree reactions to construction damage represents a range of tolerances. Some trees tolerate damage well -- others tolerate damage poorly. The relative tolerance differences between native species are given in this table as are the primary limiting factors. This list represents only broad expectations of tree reactions and cannot show specific reactions to specific sites changes and circumstances. It is assumed each species is being evaluated within their home range.

The key to symbols in the third column of this table, entitled "tolerance" are the relative value of "g" for good, "m" for medium, and "p" for poor. These are broad recognitions of species' reactions to activities around construction sites within one-and-one-half times the drip line distance from the tree. For example, a poor tolerance rating signifies a tree which will have difficulty reacting well to construction damage.

The fourth column of this table, entitled "limitations," symbolizes critical constraints governing species tolerances on construction sites. The key to symbols of poor tree reactions includes: physical injury (compartmentalization and decay) "I"; pest complications (chronic and acute attacks) "P"; soil constraints (aeration and water availability attributes) "S" limited climatic tolerances (native range, hardiness, and micro-climatic change) "C"; and, all of these reactions combined "A."

Table 1: A list of relative tolerances to construction damage for native species of trees. (key to symbols in text above)

scientific name	common name	tolerance	limitations
<u>Acer barbatum</u>	Florida maple	m	IS
<u>Acer leucoderme</u>	chalk maple	p	A
<u>Acer negundo</u>	boxelder	g	
<u>Acer pensylvanicum</u>	striped maple	m	IC
<u>Acer rubrum</u>	red maple	g	
<u>Acer saccharinum</u>	silver maple	p	A
<u>Acer spicatum</u>	mountain maple	m	IC
<u>Aesculus octandra</u>	yellow buckeye	p	IS
<u>Aesculus pavia</u>	red buckeye	m	I
<u>Alnus serrulata</u>	hazel alder	g	



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scientific name	common name	tolerance	limitations
<u>Fraxinus americana</u>	white ash	m	IS
<u>Fraxinus caroliniana</u>	Carolina ash	g	
<u>Fraxinus pennsylvanica</u>	green ash	g	
<u>Gleditsia aquatica</u>	waterlocust	g	
<u>Gleditsia triacanthos</u>	honeylocust	g	
<u>Gordonia lasianthus</u>	loblolly-bay	g	
<u>Halesia carolina</u>	Carolina silverbell	m	ISC
<u>Halesia diptera</u>	two-wing silverbell	m	IS
<u>Halesia parviflora</u>	little silverbell	m	IS
<u>Hamamelis virginiana</u>	witch-hazel	m	IS
<u>Ilex ambigua</u>	Carolina holly	g	
<u>Ilex cassine</u>	dahoon	g	
<u>Ilex coriacea</u>	large gallberry	g	
<u>Ilex decidua</u>	possumhaw	g	
<u>Ilex montana</u>	mountain winterberry	gm	C
<u>Ilex myrtifolia</u>	myrtle dahoon	g	
<u>Ilex opaca</u>	American holly	g	
<u>Ilex verticellata</u>	common winterberry	g	
<u>Ilex vomitoria</u>	yaupon holly	g	
<u>Juglans nigra</u>	black walnut	p	IS
<u>Juniperus virginiana</u>	Eastern redcedar	m	IS
<u>Kalmia latifolia</u>	mountain laurel	g	
<u>Liquidambar styraciflua</u>	sweetgum	g	
<u>Liriodendron tulipifera</u>	yellow-poplar	p	IS
<u>Magnolia acuminata</u>	cucumbertree	m	I
<u>Magnolia fraseri</u>	Fraser magnolia	p	IC
<u>Magnolia grandiflora</u>	Southern magnolia	m	I
<u>Magnolia pyramidata</u>	pyramid magnolia	p	IC
<u>Magnolia virginiana</u>	sweetbay	g	
<u>Malus angustifolia</u>	Southern crabapple	m	ICP
<u>Malus coronaria</u>	sweet crabapple	m	ICP
<u>Morus rubra</u>	red mulberry	g	
<u>Myrica cerifera</u>	Southern bayberry	g	
<u>Myrica heterophylla</u>	evergreen bayberry	g	
<u>Nyssa aquatica</u>	water tupelo	g	
<u>Nyssa ogeche</u>	Ogeechee tupelo	m	IS
<u>Nyssa sylvatica</u>	blackgum	g	

scientific name	common name	tolerance	limitations
<u>Osmanthus americana</u>	devilwood	m	I
<u>Ostrya virginiana</u>	Eastern hophornbeam	m	S
<u>Oxydendrum arboreum</u>	sourwood	p	A
<u>Persea borbonia</u>	redbay	g	
<u>Pinckneya pubens</u>	pinckneya	m	I
<u>Pinus echinata</u>	shortleaf pine	gm	P
<u>Pinus elliotii</u>	slash pine	g	
<u>Pinus glabra</u>	spruce pine	g	
<u>Pinus palustris</u>	longleaf pine	gm	C
<u>Pinus pungens</u>	table-mountain pine	gm	C
<u>Pinus rigida</u>	pitch pine	g	
<u>Pinus serotina</u>	pond pine	g	
<u>Pinus strobus</u>	Eastern white pine	m	A
<u>Pinus taeda</u>	loblolly pine	g	
<u>Pinus virginiana</u>	Virginia pine	g	
<u>Planera aquatica</u>	planer-tree	g	
<u>Platanus occidentalis</u>	American sycamore	g	
<u>Populus deltoides</u>	Eastern cottonwood	g	
<u>Prunus americana</u>	American plum	m	IS
<u>Prunus angustifolia</u>	chickasaw plum	m	IS
<u>Prunus caroliniana</u>	Carolina laurelcherry	g	
<u>Prunus pensylvanica</u>	fire cherry	m	I
<u>Prunus serotina</u>	black cherry	m	I
<u>Prunus umbellata</u>	flatwoods plum	m	I
<u>Ptelea trifoliata</u>	hoptree	m	I
<u>Quercus alba</u>	white oak	gm	S
<u>Quercus coccinea</u>	scarlet oak	g	
<u>Quercus durandii</u>	Durand oak	g	
<u>Quercus falcata</u>	Southern red oak	g	
<u>Quercus falcata</u> var. <u>pagodaefolia</u>	cherrybark oak	g	
<u>Quercus incana</u>	bluejack oak	g	
<u>Quercus laevis</u>	turkey oak	g	
<u>Quercus laurifolia</u>	laurel oak	g	
<u>Quercus lyrata</u>	overcup oak	g	
<u>Quercus marilandica</u>	blackjack oak	g	
<u>Quercus michauxii</u>	swamp chestnut oak	g	
<u>Quercus muehlenbergii</u>	chinkapin oak	g	
<u>Quercus nigra</u>	water oak	g	
<u>Quercus phellos</u>	willow oak	gm	S

scientific name	common name	tolerance	limitations
<u>Quercus prinus</u>	chestnut oak	gm	S
<u>Quercus rubra</u>	Northern red oak	gm	SC
<u>Quercus shumardii</u>	Shumard oak	g	
<u>Quercus stellata</u>	post oak	g	
<u>Quercus velutina</u>	black oak	g	
<u>Quercus virginiana</u>	live oak	gm	C
<u>Rhamnus caroliniana</u>	Carolina buckthorn	m	IS
<u>Rhododendron catawbiense</u>	catawba rhododendron	m	I
<u>Rhododendron maximum</u>	rosebay rhododendron	m	I
<u>Rhus coppalina</u>	shining sumac	m	I
<u>Rhus glabra</u>	smooth sumac	m	I
<u>Robinia pseudoacacia</u>	black locust	g	P
<u>Salix caroliniana</u>	Coastal Plain willow	g	
<u>Salix nigra</u>	black willow	g	
<u>Salix sericea</u>	silky willow	g	
<u>Sambucus canadensis</u>	American elder	p	A
<u>Sassafras albidum</u>	sassafras	g	
<u>Staphylea trifolia</u>	American bladdernut	g	
<u>Stewartia malacodendron</u>	Virginia stewartia	g	
<u>Stewartia ovata</u>	mountain stewartia	g	
<u>Styrax americana</u>	American snowbell	m	IS
<u>Styrax grandifolia</u>	bigleaf snowbell	m	IS
<u>Symplocos tinctoria</u>	common sweetleaf	g	I
<u>Taxodium distichum</u>	baldcypress	g	
<u>Taxodium distichum</u> var. <u>nutans</u>	pondcypress	g	
<u>Tilia caroliniana</u>	Carolina basswood	p	A
<u>Tilia heterophylla</u>	white basswood	p	A
<u>Toxicodendron vernix</u>	poison sumac	m	I
<u>Tsuga canadensis</u>	Eastern hemlock	p	A
<u>Ulmus alata</u>	winged elm	g	
<u>Ulmus americana</u>	American elm	m	P
<u>Ulmus rubra</u>	slippery elm	m	P
<u>Vaccinium arboreum</u>	tree sparkleberry	m	A
<u>Viburnum nudum</u>	possumhaw viburnum	g	
<u>Viburnum obovatum</u>	Walter viburnum	g	
<u>Viburnum rufidulum</u>	rusty blackhaw	g	
<u>Zanthoxylum clava-herculis</u>	Hercules-club	m	I