Compaction Tolerant Trees

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Soil compaction is a complex set of physical, chemical, and biological constraints on tree growth. Principle components leading to limited growth are the loss of aeration pore space, poor gas exchange with the atmosphere, lack of tree available water, and mechanical impedance of root growth. There are significant genetic differences between tree species for tolerating various levels of soil compaction.

This publication provides a select list of compaction tolerant trees. Tolerant species were selected for their effectiveness in reacting to mechanical damage quickly, in surviving anaerobic soil conditions, and in adjusting their root systems to new conditions. This is not a comprehensive list and is only provided to show average species examples. Chronic and severe compaction will kill any tree. Some species, varieties, and individuals may tolerate various compacted soil conditions better than others.

scientific name	common name	scientific name	common name
Acer negundo	boxelder	Pinus elliottii	slash pine
Acer rubrum	red maple	Pinus taeda	loblolly pine
Acer saccharinum	silver maple	Platanus spp.	sycamore / planetree
Alnus spp.	alders	Populus spp.	cottonwood / aspen
Betula nigra	river birch	Quercus bicolor	swamp white oak
Carya aquatica	water hickory	Quercus falcata	Southern red oak
Carya illinoensis	pecan	Quercus imbricaria	shingle oak
Celtis laevigata	sugarberry	Quercus laurifolia	laurel oak
Celtis occidentalis	hackberry	Quercus lyrata	overcup oak
Cercis canadensis	redbud	Quercus macrocarpa	bur oak
Crataegus spp.	hawthorns	Quercus michauxii	swamp chestnut oak
Diospyros virginiana	persimmon	Quercus nigra	water oak
Fraxinus spp.	ash	Quercus nuttallii	Nuttall oak
Gleditsia triacanthos	honeylocust	Quercus palustris	pin oak
Ilex spp.	holly	Quercus phellos	willow oak
Juglans nigra	black walnut	Quercus rubra	red oak
Juniperus virginiana	Eastern redcedar	Quercus shumardii	Shumard oak
Liquidambar styraciflua	sweetgum	Robinia pseudoacacia	black locust
Magnolia virginiana	sweetbay	Salix spp.	willows
Nyssa spp.	tupelo / black gum	Taxodium distichum	baldcypress
Persea borbonia	redbay	Ulmus spp.	elms

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