

UI Extension Forestry Information Series

Shade Loving Trees?

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Idaho is blessed with one of the widest varieties of conifer species in the United States. Tree species have evolved unique strategies to compete with other trees and vegetation according to many different environmental factors. One of those factors is shade from overstory trees. Each tree species differs in its ability to tolerate shade. The graphic below illustrates the relative shade tolerance of common Idaho species (see Figure 1).

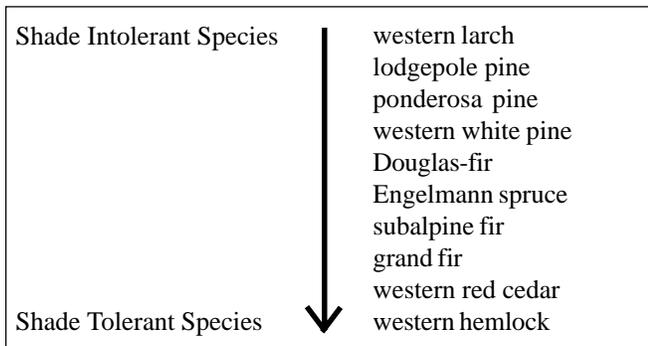


Figure 1

Shade Intolerant Tree Species. As the name implies, shade intolerant species grow poorly in shade. They tend to be “pioneer” species, which “sprint ahead” of the competition, by growing rapidly in full sunlight to fully occupy a site after some kind of disturbance (historically, fire). Examples of relatively shade intolerant species include western larch, lodgepole pine, ponderosa pine, and western white pine.

Shade Tolerant Tree Species. Shade tolerant species survive under shade better than other species. Their strategy is to “outlast” the competition. Shade tolerant species tend to grow slower than shade intolerant trees, but they are in it for the long haul and often “release” (grow faster) after shade intolerant trees have died, eventually taking their place in a process called succession.

Note, I said *shade tolerant*, not *shade loving*. There is no such thing as a shade loving tree (at least not in north Idaho), but there are shade *tolerant* trees. All trees struggle to capture as much sunlight as they can. You may see western red cedar in a shaded understory, but that is not because it “loves shade”. Cedar out-competes other tree species in a shady environment. A shade tolerant tree will do as well (usually better) under full sunlight as it does under a canopy. Where heavily shaded cedar gets “burned” after an overstory is removed, it is more due to the abrupt change in conditions than to any affinity cedar has for shade.

Why is Shade Tolerance Important? Understanding the relative shade tolerance of tree species has important implications, particularly when choosing between harvest systems. If you rely on harvest/regeneration methods that leave more trees, such as shelterwood or selection systems, you tend to create shadier environments that favor more shade tolerant species. Is this what you want? It may be, if you are on a relatively wet site that can support grand fir, cedar, and other shade tolerant species over the long term.

However, if you are on a drier site, or for other reasons want to favor shade intolerant species, such as larch or white pine, you may want to use clearcuts or seed-tree harvest methods which allow more sunlight to reach the understory. Or, you may want to modify selective harvests and thinnings to take out a higher percentage of shade tolerant trees to counterbalance the competitive advantage you are creating for them.

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