

Return of the King: Western White Pine

By CONSTANCE HARRINGTON

Western white pine can grow on a wide variety of sites. Its range extends from California to British Columbia and from the Pacific Coast east to Montana. It can grow on very wet sites (on the margins of bogs), fairly dry sites and everything in between. Its elevation range is from about sea level to more than 10,000 feet (in the southern part of its range); it grows better than many other species in frost pockets and is more resistant to damage from heavy snow than Douglas-fir or western hemlock.

Western white pine is classified as "tolerant" to laminated root rot (also known as *Phellinus* or *Poria* root rot) and its growth rate can equal, and on some sites surpass, that of Douglas-fir. It was one of the first species to seed in on recently glaciated sites and its ability to tolerate such low nutrient conditions make it a potential species for planting on problem sites such as land-fills or sites where the topsoil has been removed. Old-growth trees of western white pine were the basis of forest industry in many areas in the past—especially in the Inland Empire region of northeast Washington, northern Idaho, southeastern British Columbia and western Montana.

So, why don't we see western white pine on more sites and why isn't it more widely planted? The answer is that a very lethal disease—white pine blister rust—was introduced into British Columbia from France in 1910; this disease eventually resulted in the death of most western white pine. However, some pines were resistant to the disease, and after many millions of dollars and years of research, disease-resistant trees have been identified and seedlings from these resistant sources are available for planting.

Although seedlings were produced from disease-resistant trees 25 years ago, more recent testing programs have produced seedlings with more consistent resistance, and resistant seedlings have become more widely available (western white pine seedlings available from public agencies are blister-rust resistant; if you get white pine seedlings from other sources, be sure to ask if they are blister-rust resistant). For more information on the disease, breeding programs for

disease resistance, and some excellent pictures of what blister rust looks like, visit www.fs.fed.us/r6/dorena.

You have now obtained blister-rust resistant seedlings from a source appropriate to your area and are ready to help re-introduce this species back into its native range. There is one very important piece of information you need to know: Blister-rust resistance of western white pine is not complete—that is, some of the seedlings you plant will die of blister rust even though the stock comes from a program that has certified its resistance. Some of the lack of resistance is planned so the tree species has wide diversity and won't be killed if the fungus evolves to a strain that the testing programs haven't evaluated. And part of the lack of resistance is due to the impossibility of testing for all possible strains of rust (think of the different strains of flu and how the flu vaccines change every year) and the under-lying nature of the resistance available to this introduced pathogen. The level of resistance, infection and survival will vary depending on the site hazard.

But management can greatly improve the odds of these trees surviving. The key is to understand that the fungus gets into the tree through infected needles, generally on branches on the lower six feet of the stem, so branch pruning is very effective in preventing infections from reaching the stem (the disease can cause cankers on the stem that girdle the tree). At the time of planting, clip off any branches that are right at groundline—these are very important sources of early infection and hard to see later if they are partially buried and vegetation develops.

Next, three to five years after planting, remove all lower branches, retaining only the top three branch whorls. Then re-prune again two to four years later and continue to re-prune until you have removed branches up to six feet on the stem (probably three prunings).

Pruning prevents future infection from the needles and also removes branches that are already infected, but



This 16-year-old western white pine in southwest Washington has been pruned for blister rust protection. Inset photo: Cankers on western white pine.

the infection has not yet reached the main bole. You will still lose some trees, but at the time of your first thinning you can select to favor the disease-free trees. Once you have started pruning the trees for blister rust, you may decide to continue pruning to increase the future value of the lower log (or half log).

The disease has an alternate host, *Ribes* or currant, and some of you may have heard of the large-scale efforts by the CCC crews in the 1930s to pull or cut *Ribes* to save the pines. Those efforts were not very successful, but we can help keep inoculum levels low by not planting *Ribes* and by cutting or controlling it in the areas of plantings.

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PHOTO COURTESY OF CONSTANCE HARRINGTON. INSET: DORENA GENETIC RESOURCE CENTER

So, this sounds like a lot of work—finding disease resistant stock and then having to prune several times. Yes it is, and to obtain the best success on sites with moderate to high levels of rust hazard, you must commit to pruning when you plant western white pine. But the species' excellent growth rates, tolerance to root disease, resistance to frost and heavy snows, and ability to grow on a wide range of soil conditions make it an excellent choice for some problem sites. In many areas good markets exist for pine sawtimber.

In addition, the attractive blue-green foliage adds a different touch of color in our forests and the foliage may have

value for floral or holiday greens. Plus, you'll be able to take pride in helping bring this magnificent species back into our forested landscapes.

Contact your local state forestry office for more information on western white pine, or look online at www.na.fs.fed.us/spfo/pubs/silvics_manual/Volume_1/pinus/monticola.htm or type "western white pine" + silviculture into your browser. ■

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Western White Pine Cooperators Wanted

The Dorena Genetic Resource Center is looking for cooperators to host small tests on their land that would compare the growth and survival of the new, highest-resistance sources with some unimproved sources of western white pine. If you want to learn more, contact Richard Sniezko at 541-757-5716 or rsniezko@fs.fed.us.

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