

Research Update on Sudden Oak Death, Conifers, and Western North Carolina

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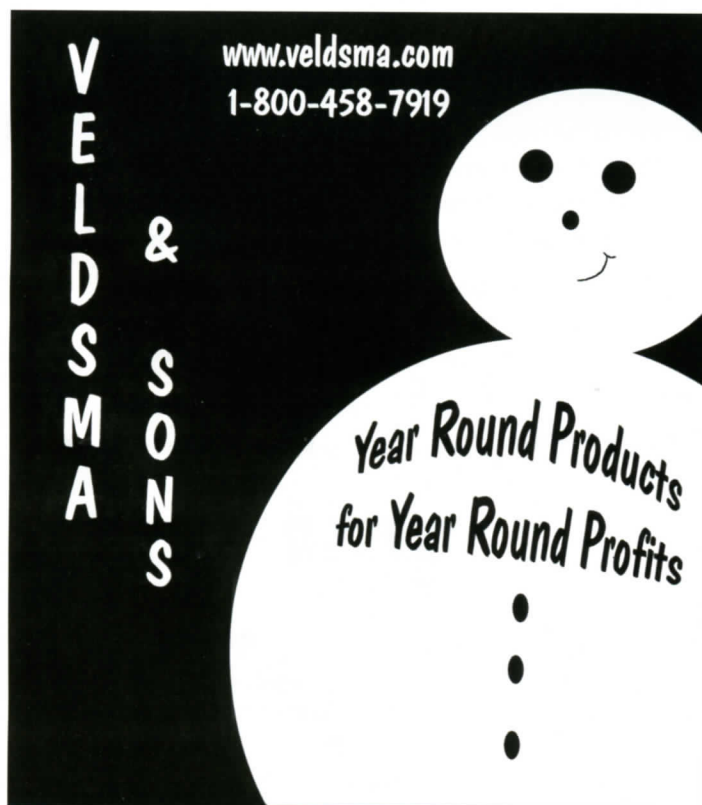
I recently attended the Sudden Oak Death Science Symposium III in Santa Rosa, CA and thought it would be good to update our WNC growers about the sudden oak death situation out west.

Phytophthora ramorum is the fungus-like pathogen that causes sudden oak death (SOD). The pathogen is only known to exist in forested areas along the California coast and in southern Oregon, and has already killed tens of thousands of trees. However, spread of the pathogen outside of the known infested areas does occur with the movement of infected plants from ornamental nurseries. Although the disease has not been found in natural settings in western North Carolina, this area has been identified by multiple models as a high risk location due to our favorable climate and concentration of susceptible hosts in our forests.

Currently there are over 100 species of plants that are known hosts for SOD. Because fir species have been identified as hosts, Christmas tree plantations on the west coast are regularly inspected and tested for the presence of this

pathogen. Sudden oak death was first detected in a Christmas tree farm on California red fir (*Abies magnifica*) at the end of 2005 in Los Gatos, CA. Since then, Dr. Gary Chastagner of Washington State University has been studying the spread of the disease at that farm and surrounding areas. His research has shown that Christmas trees growing on the edges of plantations, in close proximity to forested areas with infested hosts, have a higher chance of becoming infected with *Phytophthora ramorum*. More interestingly, Dr. Chastagner also discovered a few white fir trees (*A. concolor*) with the disease on another farm, but could not find any known hosts in the adjacent area. This curiosity led to the discovery that mistletoe can also be a host to *Phytophthora ramorum*, and apparently a vector too. Work is currently in progress in Dr. Chastagner's lab to determine what role mistletoe plants play in the spread of the disease to white fir.

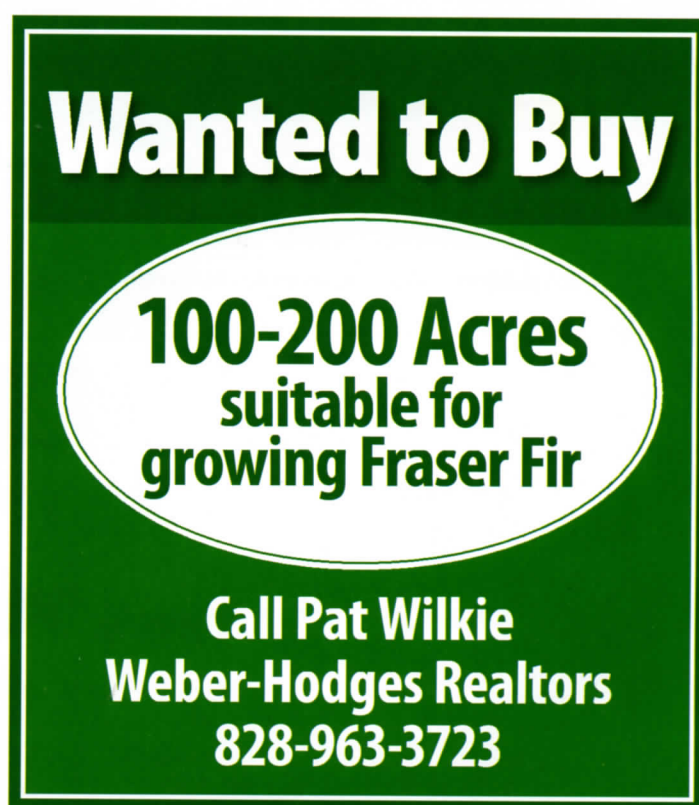
This new finding is a reminder to me, as well as other scientists, about the limited understanding we have of *Phytophthora* species in general and their interaction with specific plants. This lack of understanding has allowed *Phytophthora* to persist in our industry for decades. Just when you think you've figured it out, new shocking information is generated that creates new questions and more potential problems.



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You've heard me say it before, but it needs to be said again: The last problem growers need in North Carolina is another *Phytophthora* species, in particular *P. ramorum*. Investigate the source of all trees that you order from out of state. By ordering transplants from the west coast, you and your forested areas may unknowingly be getting more than what you have asked for.

I've included some newer pictures of this disease on fir species below (photos compliments of Dr. Gary Chastagner). Growers should be aware of what sudden oak death looks like. Although symptoms of sudden oak death are not very distinct, they include branch and tip wilting and/or dieback, as seen in the figures below. Often, not all of the branches will appear symptomatic on an infected tree. 🌲



Infected Grand Fir Tree in California

Clockwise from upper left: Shoot die-back on Douglas fir, caused by *Phytophthora ramorum*. Notice how it looks much like frost damage; Shoot-tip die-back on Grand fir, caused by *Phytophthora ramorum*; Leader shoot and top whorls of branches on Douglas-fir sapling infected with *Phytophthora ramorum*.

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