DISEASE RISK ASSOCIATED WITH STREAM WATER USED FOR IRRIGATION RUNNING THROUGH AREAS WITH SUDDEN OAK DEATH

Phytophthora ramorum is the pathogen that causes the disease known as Sudden Oak Death (SOD). This disease has killed thousands of oak and tanoaks in California and Oregon woodlands and is found extensively in the woodlands in Santa Cruz County. Streams run through many of these infested areas and *P. ramorum* can be detected in these streams.

Question: What is the risk of using stream water for landscape or crop irrigation?

Answer: We just completed an extensive research study conducted from 2001 and 2007 to answer this question. We were able to detect *P. ramorum* in all streams flowing through areas where sudden oak death occurred in Santa Cruz County. *P. ramorum* was found most frequently and occurred in highest concentrations in winter and spring, but could be found, less frequently and at lower concentrations, at other times of the year.

When the stream water was used for irrigating rhododendron nursery stock from 2004 to 2007, disease occurred only in three short periods of the two wettest springs (2005 and 2006) on sprinkler irrigated plants. In the spring, stream water can contain a sufficiently high *P. ramorum* concentration to cause disease and can coincide with the time that stream water may be needed for irrigation purposes. A summary of our findings are illustrated in the table.

Disease risk of using stream water containing *Phytophthora ramorum* for irrigation

Season	Pathogen in Stream	Favorable Disease Environment	Irrigation Need	Disease Risk
Winter	+++	++++	-	**None**
Spring	++++	++++	++	**High**
Summer	++	+	+++	**Low**
Fall	+	++	++	**Low**

- = none + = low ++++ = high

Question: Can the stream water still be used somehow for irrigation?

Answer: When *P. ramorum* is present, nursery operators or landowners would need to sanitize the water before using it for irrigation purposes or use non-infested sources of irrigation water such as well water. Drip irrigation would greatly reduce the risk of foliar infection, but we do not have sufficient knowledge to suggest that root infections would not occur. This might be important for the spread of the disease in potted plants that could be moved off the premises. Water sanitation is possible with sand filtration, UV radiation, ozone or chlorination.

The entire research paper gives more information on the research and is published in the November 2008 issue of Plant Disease and available from Steve Tjosvold.