

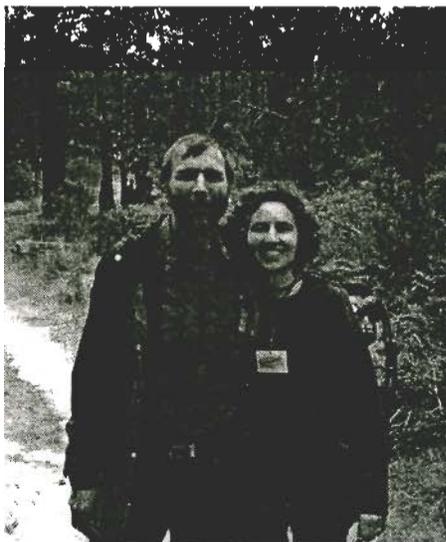
**Breeding for resistance to *Phytophthora lateralis* in Port-Orford-cedar : Current Status (2001) and Considerations for Developing Durable Resistance**

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Port-Orford-cedar (*Chamaecyparis lawsoniana*) is an important component of the forest ecosystems of southwestern Oregon and northwestern California. The presence of a non-native root disease caused by *Phytophthora lateralis*, is causing widespread mortality throughout the range of Port-Orford-cedar. In 1997, the Forest Service and BLM in collaboration with Oregon State University initiated a operational breeding program for resistance. Including a few selections made prior to 1997, a branch dip test has been used to evaluate over 9700 field selections through 2000. Over 1000 candidates ranked high in the branch lesion test are being evaluated further using rooted cuttings in a root dip test or in field tests. Although the branch dip test appears only weakly correlated with other tests many of the highest surviving parents also are highly ranked in all tests. The frequency of resistant candidates is low, and depends on the criteria used to define a candidate as resistant. Large differences in family survival occur, sometimes varying from 0% to 100%. The oldest field tests indicate good survival through 12 years for rooted cuttings and seedlings of top parents. Some results from crossing suggest a major gene for resistance, but some minor conflict exists among the different types of tests. The number and types of resistance mechanisms are unknown, and may be difficult to discern without diagnostic races of the pathogen. Current evidence suggests there is relatively little genetic variability in this introduced pathogen. Breeding in Port-Orford-cedar can be done at a very early age which favors the development of increasing levels of resistance. Management activities that reduce the spread of the pathogen, the size of the pathogen population, or the introduction of new strains will aid in developing effective resistance.



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