Phenotypic Variation among Phytophthora ramorum Isolates From California and Oregon

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Phytophthora ramorum is a pathogen that threatens California's coastal forest ecosystems and has also been isolated from nurseries and gardens in several European countries. Microsatellite and AFLP analysis has shown there is little genetic variation in populations of *P. ramorum* from California and Oregon, while there is more variation in Europe. To manage and control *P. ramorum*, it is important to know the amount of phenotypic variation in California and Oregon. Morphological and pathological phenotypic variation was measured for 12 isolates with different AFLP profiles and 45 isolates from three regions in California. Characters assessed included growth rates on V-8 and corn-meal agar at different temperatures, tolerance to fungicides, sporangia and chlamydospore size, and ability to form lesions on detached leaves of Umbellularia californica and stems of *Quercus agrifolia* seedlings. Significant variation was found among the isolates in some of the characters measured. Inoculation of both *Q. agrifolia* and *U. californica* with a range of isolates of *P. ramorum* found that pathogenicity varied by up to 10 fold. Isolates that were highly pathogenic on *U. californica* were also highly pathogenic on *Q. agrifolia*.