

Environmental Limits to Infection by *Phytophthora ramorum* in Tanoak and California Bay Laurel¹

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Abstract

Very little is known about conditions that might limit infection of *Phytophthora ramorum*. This study examines two factors hypothesized to limit both infection rates and the extent of disease caused by *P. ramorum* in intermediately resistant tanoak (*Lithocarpus densiflorus*) and California bay laurel (*Umbellularia californica*). Six trees of each species were sampled in the fall of 2004 at Samuel P. Taylor State Park, in Marin County. To find the maximum and minimum temperatures that result in zoospore infection of leaves we inoculated leaves of each species for one day at five temperatures. After this inoculation period, we incubated the leaves at ideal growth conditions (19° C) for ten days. To determine the maximum and minimum inoculum zoospore concentrations for leaf infection we inoculated leaves of each species at five concentrations, and incubated them at 19° C. To determine how lesion size varies within these conditions, we measured the lesion area on each infected leaf. Data were analyzed both in terms of infection rates (plus or minus infection) and infection extent (lesion size). This study will aid others who are developing risk assessment for native oak forests, for whom knowledge about conditions in the environment that limit infection by *P. ramorum* is crucial.

Key words: *Phytophthora ramorum*, temperature limitations

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