

The Effect of Moisture on Infection of *Rhododendron* 'Cunningham's White' and *Viburnum tinus* by Zoospores of *Phytophthora ramorum*¹

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Abstract

We performed studies to determine the effect of leaf wetness on infection of whole plants of *Rhododendron* 'Cunningham's White' and *Viburnum tinus* by zoospores of *Phytophthora ramorum*. We also evaluated the effect of a post-inoculation drying period on infectivity of the two host species with zoospore inoculum. Twelve plants of each species were spray-inoculated with 50,000 zoospores/ml of nine combined *P. ramorum* isolates, and placed in a dew chamber at 20°C in darkness. Two plants were removed from the dew chamber after 0, 1, 2, 4, and 6 h incubation, and placed on a greenhouse bench to allow the leaves to dry. After 1 h of drying, the plants were placed inside humidity tents on a greenhouse bench (average humidity 53.1%). The mean percentage of infected leaves for both host species increased gradually over the dew chamber moisture period of 1 to 6 h, reaching ca. 80% infection by 6 h. A further increase was observed up to 72 h, the final moisture period tested. There was a marked effect of a 30 min drying period between inoculation and dew chamber incubation on the percentage of leaves infected; *Rhododendron* 'Cunningham's White' sustained less than 40% infection, while *Viburnum tinus* sustained nearly 75% infection. Thus, the two host species tested responded differently to the effects of drying. Disease percentages for both host species dropped off sharply at drying periods longer than 30 min. Overall, we found that zoospores of *P. ramorum* can infect hosts in a shorter period of time than can sporangia and that zoospore infection appears to be strongly affected by the effects of post-inoculation drying. Knowledge of infectivity parameters for *P. ramorum* will lead to a better understanding of epidemic development and lead to improved recommendations for control.

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