The Effects of Salinity on *Phytophthora ramorum* Viability and Infectivity[1]

Jason Preuett,[2] Daniel Collins,[2] Douglas Luster,[3] and Timothy Widmer[3]

Abstract

Phytophthora ramorum, a threat to eastern United States forests, has been found in waterways outside the boundaries of infested ornamental nurseries in states other than California and Oregon. Very little is known about what factors are conducive to its survival and sporulation in water. Water collected from various sources with different salinity was used to better understand what effect salinity has on the life cycle of *P. ramorum* and its ability to infect tissue. Water samples, collected from natural bodies of water in May 2010 that had measured conductivity values of 5.6, 30.5, 32.3, and 35.3 mS, were added to cups containing *P. ramorum*-infested sand (1,000 chlamydospores/cm^3). Rhododendron leaf disks were placed on the water surface for 1 week at 20 °C and then plated on a *Phytophthora*-selective medium (PARPH+V8). Very few leaf disks (≤ 3 percent) were infected at the three highest conductivity levels, while 100 percent infection occurred at the lowest level (5.6 mS). Similarly, rhododendron leaf disks were placed on the surface of different salt solutions (conductivities of 10.3, 26.5, 36.0, 57.2, and 67.9 mS) added to *P. ramorum*-infested sand at two chlamydospore levels (100 and 1,000/cm^3) for 1 week, and plated on PARPH+V8. The percentage of leaf disks infected exposed to 100 chlamydospores/cm^3 were 61.1, 23.1, 3.3, and 0 percent, respective of the above conductivity values, while the percentage of infection at 1,000 chlamydospores/cm^3 was 100, 70.0, 55.6, 2.2, and 0 percent, respectively. This research demonstrates that *P. ramorum* can form infective propagules that infect plant tissue at high salt concentrations, gaining an insight as to the survival and factors affecting infectivity of *P. ramorum.*

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[2] Southern University and A&M College, Urban Forestry Program, Baton Rouge, LA 70813.
[3] USDA ARS, Foreign Disease-Weed Science Research Unit, 1301 Ditto Ave., Fort Detrick, MD 21702.
Corresponding author: jasonpreuett1@gmail.com.