

Susceptibility Levels of *Rhododendron* Species and Hybrids to *Phytophthora ramorum*

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The most important hosts of *Phytophthora ramorum* in Europe are cultivated *Rhododendron* species and hybrids. Since November 2002, EU emergency phytosanitary measures are being taken to prevent the introduction and spread of *P. ramorum* in Europe. Surveys at all commercial *Rhododendron*-growing premises are part of these measures and have led to *P. ramorum* findings at 2 to 5% of the inspected sites in several European countries. An eradication and quarantine program is initiated at those premises in case of positive findings, resulting in serious commercial damage for the grower. Belgium is one of the larger *Rhododendron*-growing areas in Europe, so growers are taking all possible preventive measures to avoid emergence of *P. ramorum* at their site. These measures mainly consist of sanitation, limiting the leaf wetness period, avoiding plant injuries, and preventive fungicide treatments. Using host resistance would be another possible tool, for which there is high interest among growers, but little scientific knowledge is available about the relative susceptibility of different *Rhododendron* cultivars and species. With the objective of increasing this knowledge we screened a total of 63 potential *Rhododendron* hosts (21 species and 42 hybrids) for their susceptibility to *P. ramorum*. Species were selected to represent the main subdivisions within the genus *Rhododendron*. Hybrids were selected based on their economic importance.

Preliminary tests using four different *P. ramorum* isolates (two from *Rhododendron* and two from *Viburnum*) did not indicate pathological variation between the isolates on several different *Rhododendron* cultivars. Therefore, main tests were performed using a single isolate (A1 / EU type). Four inoculation methods were developed using either wounded or non-wounded leaves and branches. Methods involving non-wounded tissue were used to estimate the ability of the hosts to resist tissue penetration. Methods involving wounded tissue were geared at evaluating the resistance to pathogen growth inside leaf tissue. Significant differences in disease susceptibility were observed between species as well as between hybrids with all methods used. Inoculation of wounded leaves and stems showed that most species and hybrids were susceptible to some extent, while inoculation of non-wounded leaves and/or stems resulted in little to no infection for a few hybrids. These data suggest that if significant resistance is present, it is most clear at the level of tissue penetration. Assays were performed in batches, each time including a control cultivar. Time of year and age of plant material only seemed to affect the assay involving non-wounded leaves.

This research differentiates *Rhododendron* species and hybrids in disease susceptibility and contributes to further nursery management and control strategies. Long term application of the data may also involve breeding for disease resistance.