

Progress Report on the Evaluation of the Susceptibility of the Holm Oak (*Quercus ilex*) Forest Ecosystem to *Phytophthora ramorum*¹

Eduardo Moralejo² and Enrique Descals²

Key words: *Phytophthora ramorum*, susceptibility tests, Mediterranean vegetation and sporulation

Abstract

In preliminary studies on the susceptibility of plant members of the holm oak (*Quercus ilex*) forest, detached leaves of several woody species were highly susceptible when inoculated with zoospore suspensions of local isolates of *Phytophthora ramorum* (Moralejo and Hernández 2002). Since then, there have been reports of natural infections by *P. ramorum* on leaves and shoots of *Q. ilex* in the UK, and new findings on *Viburnum tinus* in nurseries across Europe. Taken together, this indicates that at least some areas of Mediterranean vegetation with a prevalence of the *Arbutus unedo*-*Viburnum tinus*-*Quercus ilex* association should be closely monitored. Yet, there are, so far, no outdoor infections in the Mediterranean basin.

For having a more complete picture of what might occur at the plant community level, we are further *in vitro* testing the susceptibility of fruits, leaves and twigs of shrubs and vines of the understory, as well as logs of *Q. ilex* to different isolates of *P. ramorum*. The sporangial production on leaf lesions is being assessed to identify potential major sources of inoculum. Available protocols of the European Project RAPRA, either for testing the susceptibility of tree and non-tree species or for determining sporulation capacity, are being used. Leaf lesion areas developed 4 and 7 days after inoculating are measured in cm², and the sporangial production is rated as number of sporangia/leaf lesion unit (cm²). The length of the twig lesions is measured 10 days after wound inoculating. For the log trials, the necrotic area is calculated in cm² ca. 40 to 50 days after wound inoculating.

Results of the ongoing research on susceptibility of fruits (nine species), leaves and twigs (seven species), and logs (*Q. ilex* and *Pinus halepensis*) to five *P. ramorum* isolates will be presented. Collected data are being analyzed to determine (i) whether isolates of *P. ramorum* differ in pathogenicity, (ii) to rank the susceptibility of different organs of each potential host, (iii) to identify which hosts might act as major sources of inoculum, (iv) to calculate the latent period, i.e. time from infection to the first appearance of sporangia, and (v) to determine the capacity of *P. ramorum* for invading the bark of *Q. ilex* and *P. halepensis*.

¹ A version of this paper was presented at the Sudden Oak Death Second Science Symposium: The State of Our Knowledge, January 18 to 21, 2005, Monterey, California

² Institut Mediterrani d'Estudis Avançats, IMEDEA (CSIC-UIB), c/ Miquel Marqués 21, 07190 Esporles, Majorca, Spain; viaemr@uib.es

References

- Moralejo, E. and Hernández, L. 2002. **Inoculation trials of *Phytophthora ramorum* on detached Mediterranean sclerophyll leaves.** Sudden Oak Death Science Symposium, The State of our Knowledge. Monterey, CA, December 15-18.