

Enhanced effects of forest pathogens promoted by drought : patterns, mechanisms and focus on a few case studies

Marie-Laure Desprez-Loustau (1), Benoît Marçais (2), Dominique Piou (1) and Andrea Vannini (3)

(1) INRA Bordeaux, UMR BIOGECO, Domaine de la Grande Ferrade, BP81, 33883 Villenave d'Ornon Cedex, France

(2) INRA Nancy, Laboratoire de Pathologie forestière, Champenoux, 54280 Seichamps, France

(3) Università degli Studi della Tuscia, Dipartimento di Protezione delle Piante, Via S. Camillo de Lellis, 01100 Viterbo, Italy

Disease development in plants, including trees, is the result of complex interactions between the host, the pathogen and the environment, where man can play a key role. Water availability, as a primary factor influencing both host and pathogen physiology, is of foremost importance in determining the outcome of host-pathogen interactions. Accordingly, drought has long been considered as a major factor involved in the origin and severity of several forest diseases and declines. The drought and heat wave of the summer 2003 in Europe has caused an increased concern about the potential effects of these extreme climatic events, which may become less unfrequent with global climate change.

This presentation will review the available knowledge on drought-forest pathogen interactions, with the aim of synthesising the current understanding of the processes and the possible implications for management strategies. In a first part, the different patterns and mechanisms of interactive effects of drought and pathogens will be presented. The second part will focus on a few case studies chosen for their importance from past studies (root pathogens and decline syndroms) or their relevance in the context of climatic change (thermophilic and water stress favoured pathogens such as *Sphaeropsis sapinea* on pines or *Biscogniauxia mediterranea* and other canker diseases on oaks).