Studying and modelling the summer development of esca foliar symptoms

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A first survey, carried out in Aquitaine vineyards (France) from 2004 to 2006, showed that esca foliar symptom occurrence had a similar progressive pattern in all the plots surveyed. This pattern corresponded to a sigmoïdal increase in the incidence of vines exhibiting typical symptoms. It was generally observed, regardless of the site and the year, the leaf-symptomatic vines increased uniformly over time, reaching a maximum incidence by the end of July. To further study this phenomenon, another survey was carried out from 2012 to 2014 in the Bordeaux region. This survey was based on a regular monitoring: vines were observed twice a week. The data confirmed the previous results and were used to build up a logistic model aimed at characterizing the period of symptom appearance over time. This period corresponded to the increase in average temperatures and to a putative establishment of a water restriction. This model could be used to study the effect of environmental conditions, *i.e.* soil, climate and the susceptibility of cultivars. Other previous results indicated that esca symptoms were mostly associated with longitudinal xylem discolorations located just under the bark on cordons or trunks. The origin of this peculiar symptom is still unclear even it has been attributed to infections by Botryosphaeriaceae. In the same survey, vines with recent symptoms were identified and investigated. Wood samples collected either from discoloured or close "apparently healthy wood" were cultured in Petri dishes. Whatever the origin of the wood tissues, either "healthy" or altered, diverse fungal communities were isolated. The percentages of Botryosphaeriaceae isolated from "healthy" or altered woods were not significantly different. Furthermore, their absence in some samples indicated that these fungi cannot be responsible (at least alone) of the xylem discolorations.

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