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ABSTRACTS BOOK



Instituto de
Ciencias de la
Vid y del Vino



IOBC-WPRS

Long-term historical characterization of French vineyard exposure to pests and diseases: case study of Bordeaux and Champagne regions

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Abstract

The French agricultural warning service has historically published weekly reports and annual summaries of the pressure from pests and diseases (grouped and named “pests” hereafter). The summaries are based on a large number of plots, notably vineyards, monitored in different regions with different local editions for each region. The information, issued from field observations conducted by experts, constitutes a highly valuable body of literature on the presence and overall damage of pests in vineyards. In this work, we used this literature to develop a textual analysis and build an integrative score of annual pest occurrence over a long-term period.

To transform the warning service bulletins into annual pest indicators, we proceeded as follows: (1) For every pest and every year, we extracted from the annual reports the keywords related to (a) pest occurrence within a given area and (b) associated damage. (2) We transformed these data into semi quantitative scores ranging from absence to (a) widespread pest or (b) severe damage. (3) We combined the occurrence and severity scores to obtain an annual score for each pest. After an analysis of historical surveys from 1961 to 2020 in the Bordeaux and Champagne regions, we established a long-term database of annual indicators, including various grapevine diseases (mildews, rots, trunk diseases, etc) and phytophagous or disease vector animals (moths, mites, scale insects, leafhoppers, etc.).

Using these indicators, we found that in the Bordeaux region, vineyards were exposed to a regular but rarely generalized presence of *Lobesia botrana*, which could be very severe locally, in contrast to *Eupoecialia ambiguella*. For diseases, black rot was constantly present and, after a phase of relative regression (from 1980 to 2013), has become more widespread over the last decade. Rot Brenner is completely unknown in this winegrowing region.

The Champagne vineyards were characterized by regular and widespread populations of *E. ambiguella*, sometimes with important damage but decreasing over time. *L. botrana* was present only locally but with increasing severity. For diseases, rot Brenner was historically present with local damage but is now in decline (even disappearing). On the other hand, black rot, which appeared 25 years ago, was recently more frequently observed locally and with low severity.

We reconstructed the pest occurrences that affected grapevines over time in two contrasting French winegrowing regions. This tool is very useful for characterizing the epidemiological status of various years and analysing long-term trends *versus* isolated events. This analysis helped to better characterize the conditions that prevailed in some phytosanitary situations. We can therefore better understand past pest evolutions and link them to socioeconomic contexts. This information will contribute to anticipating the necessary evolution of grape protection against quantitative and qualitative losses to adapt to global warming and regulatory and/or marketing conditions and meet changing societal demands.

Key words: grapevine, crop protection, history, pests, database