

A model for a plant disease over a growing season

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ABSTRACT

This talk is about a compartmental model for the spread of a fungal disease (powdery mildew) over a vineyard. The time scale considered is a single season. The model investigates the impact of different factors upon the epidemics: (i) factors related to the growth of the host over the season such as primary and secondary leaves, human interference, (ii) factors related to the disease: date of initial contamination, loss of susceptibility of the leaves as time goes by, quantity of primary inoculum, use of a fungicide treatment. This investigation is achieved thanks to simulations which are compared with field data. Temporal variability of parameters is studied.

A PDE extension of this model for the spatiotemporal spread of the disease is also introduced.

This is a multidisciplinary work with A. Calonnec and J.-M. Naulin (INRA Bordeaux, France).

Key Words: transient dynamics, fungal disease.

AMS Classification: 34C60, 92D30

References

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