Spatially explicit models of fungal growing plant lesions from imaging data

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Due to the complexity of the mechanisms involved in epidemic development, few models have been proposed to reproduce *in vivo* lesion growth. Spatial mathematical models using morphological imaging data appear as a significant multidisciplinary approach.

We will present a deterministic model accounted for the pathogen density (u) at the lesion scale, which is of paramount importance to predict emergence of epidemics. The model is translated as a PDE of the form

$$\frac{\partial u}{\partial t} = \nabla \cdot (D \nabla u) + f(u).$$

Using daily imaging data of peas, we will discuss in detail the dynamics reconstruction considering Fisher-KPP source term. We will give some keys about how to better include the host physiology.

References

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