

How Might Spatially Explicit Landscape Scale Models Be Improved?

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Large scale spatially explicit models of plant diseases have now been used for years. This class of model offers policy makers a rational way to understand how best to deploy limited resources for disease detection and control. However, there are various ways in which the underpinning models might be extended to include more realism, or the results of models interrogated more efficiently. Rather than talk about my own work on large scale spread modelling, I will instead reflect on recent work suggesting areas in which landscape scale spread models might perhaps be extended. I will describe recent small-scale models showing how successful disease control can be conditioned on stakeholder behaviour and polygenic differences in pathogen traits. I will also discuss how optimal control theory and techniques from artificial intelligence might be used to understand how, where and when to do disease detection and management most effectively.