

Suppressing potato late blight through (strip) intercropping

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Diversifying the field



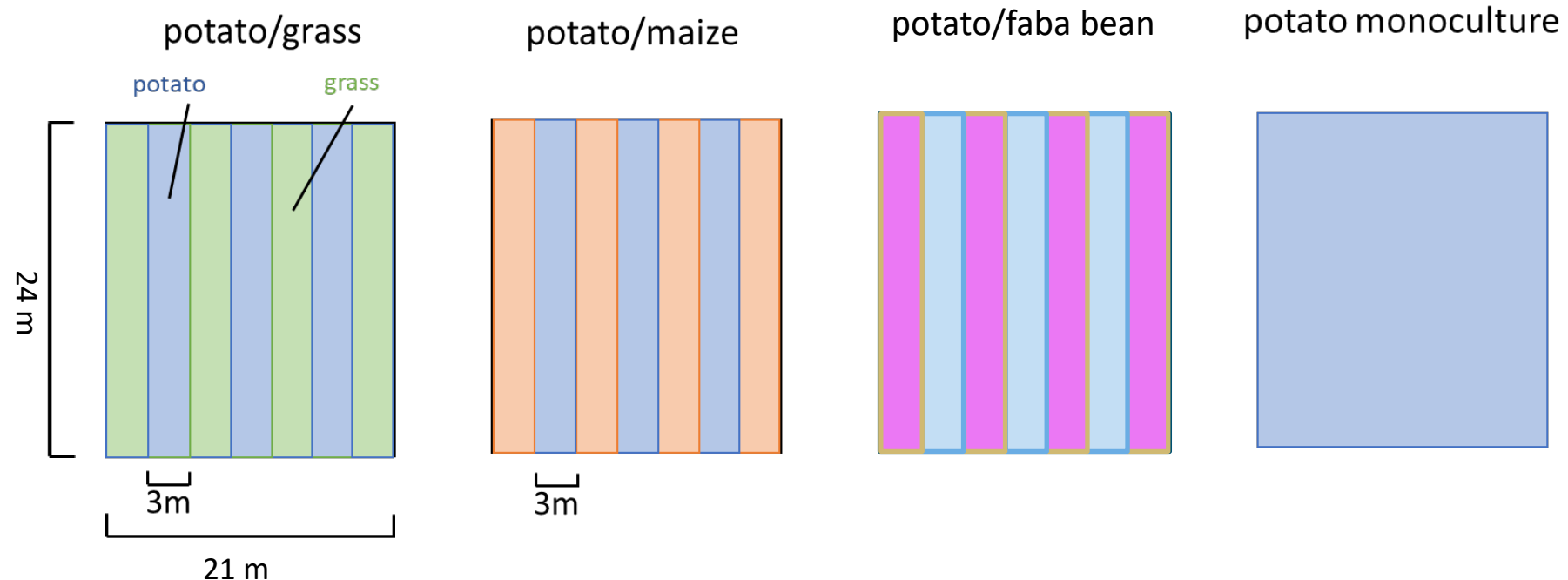
Crop diversification through strip-intercropping

“Intercropping is the practice of growing two or more crops in the same field for a significant part of their growing period.”



Strip-crop field experiment

- What is the effect of different types of companion crops on the epidemic development of *P. infestans*?
- Field experiment during the 2021 and 2022 (two locations) growing season in the Netherlands
- Strips of 3 meter width





Potato/maize



Potato/grass

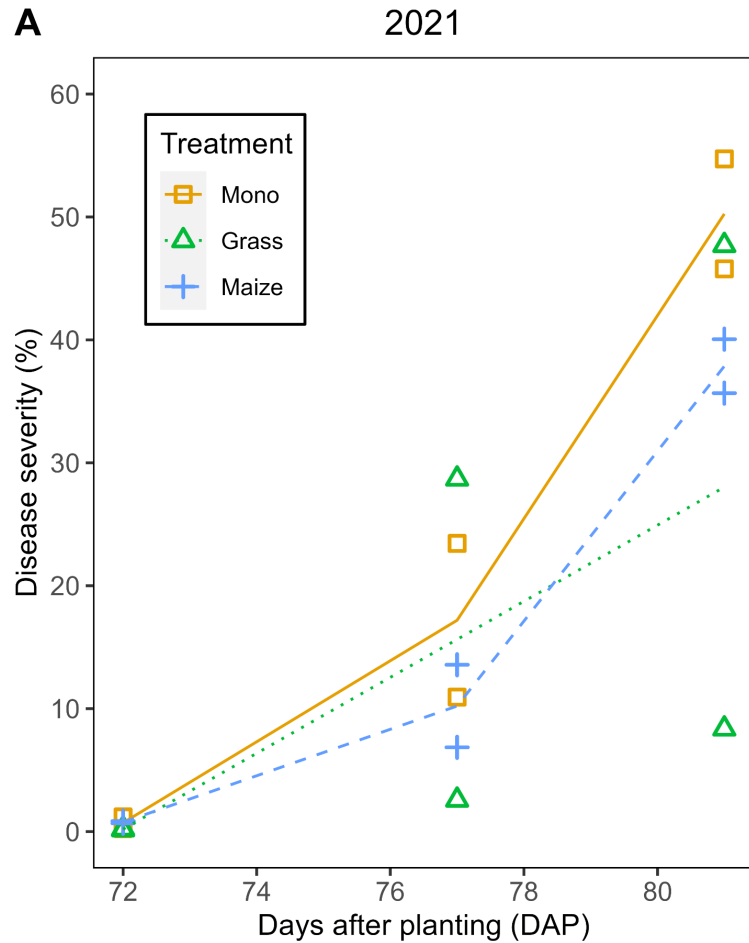


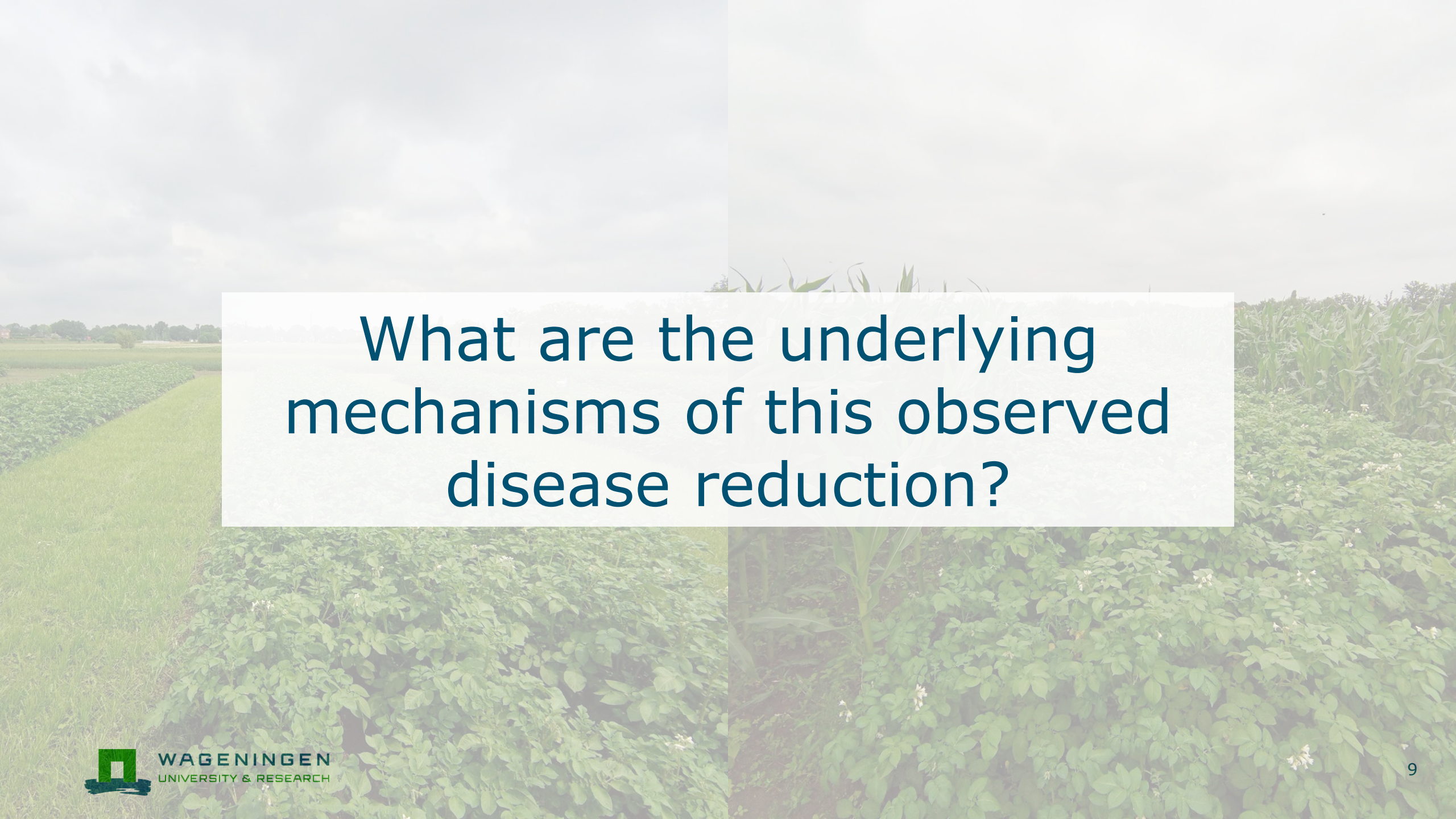
Potato/faba bean

Late blight observations over time



Strip cropping consistently reduced late blight severity over two years and locations





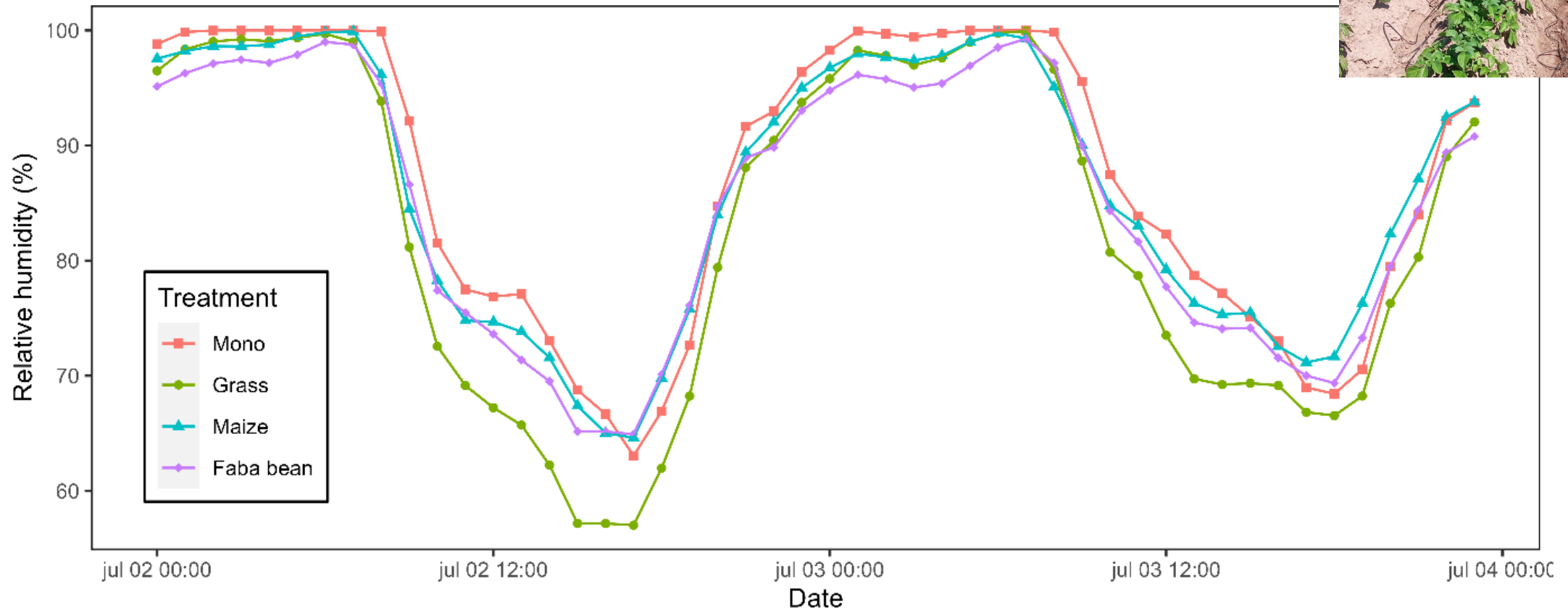
What are the underlying mechanisms of this observed disease reduction?



Microclimate



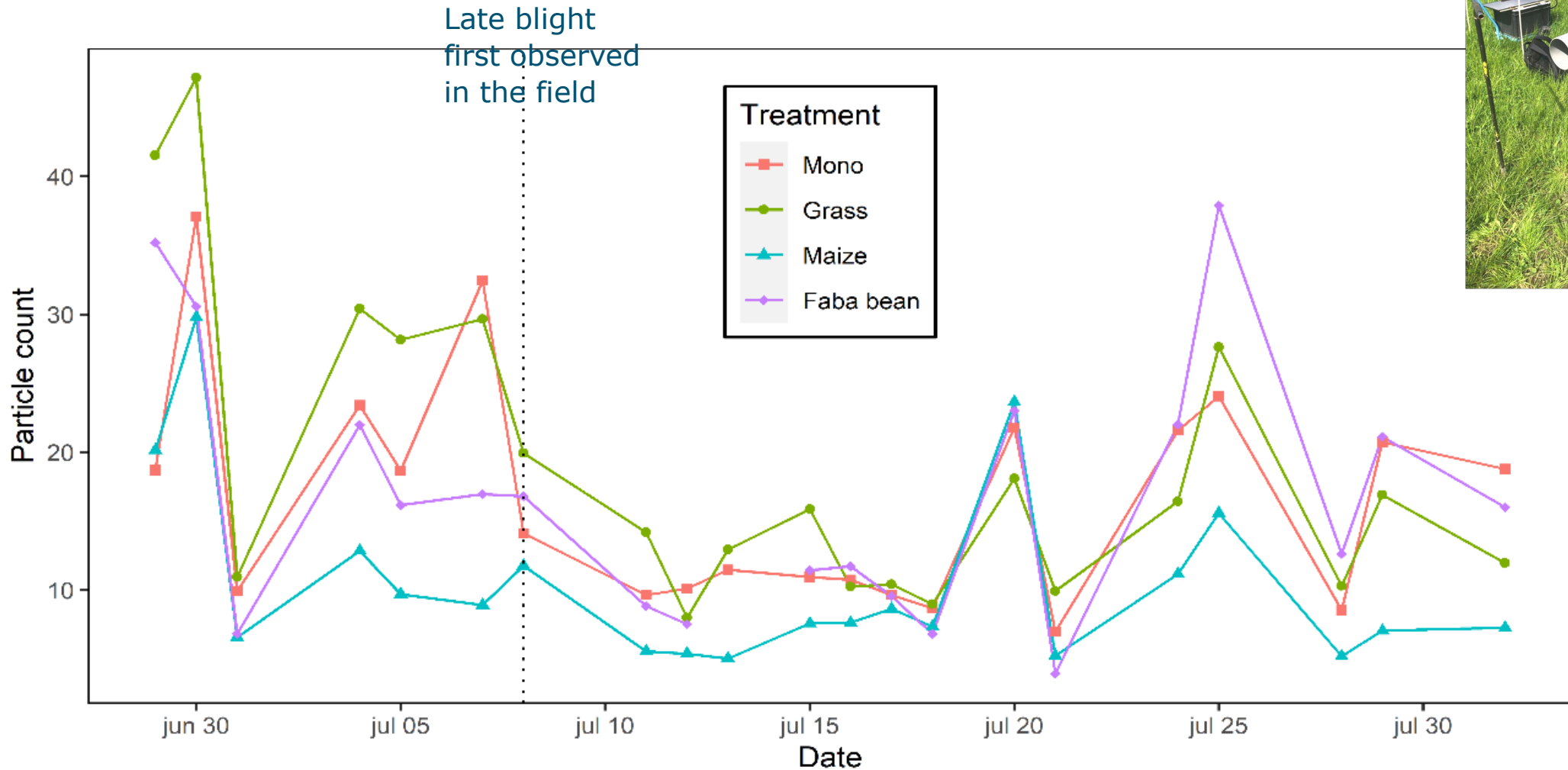
Lower duration of a high relative humidity in the potato strips next to grass



Barrier effect



Number of incoming particles lower in the potato strips next to maize

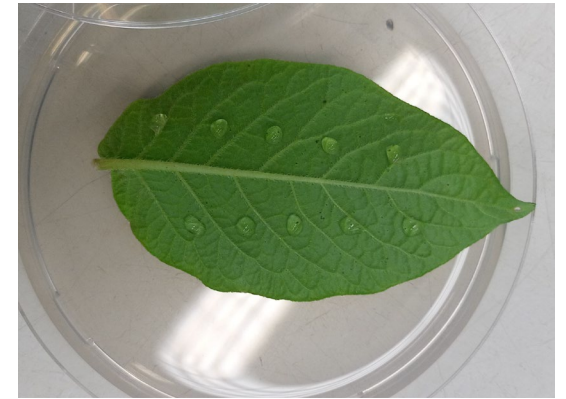
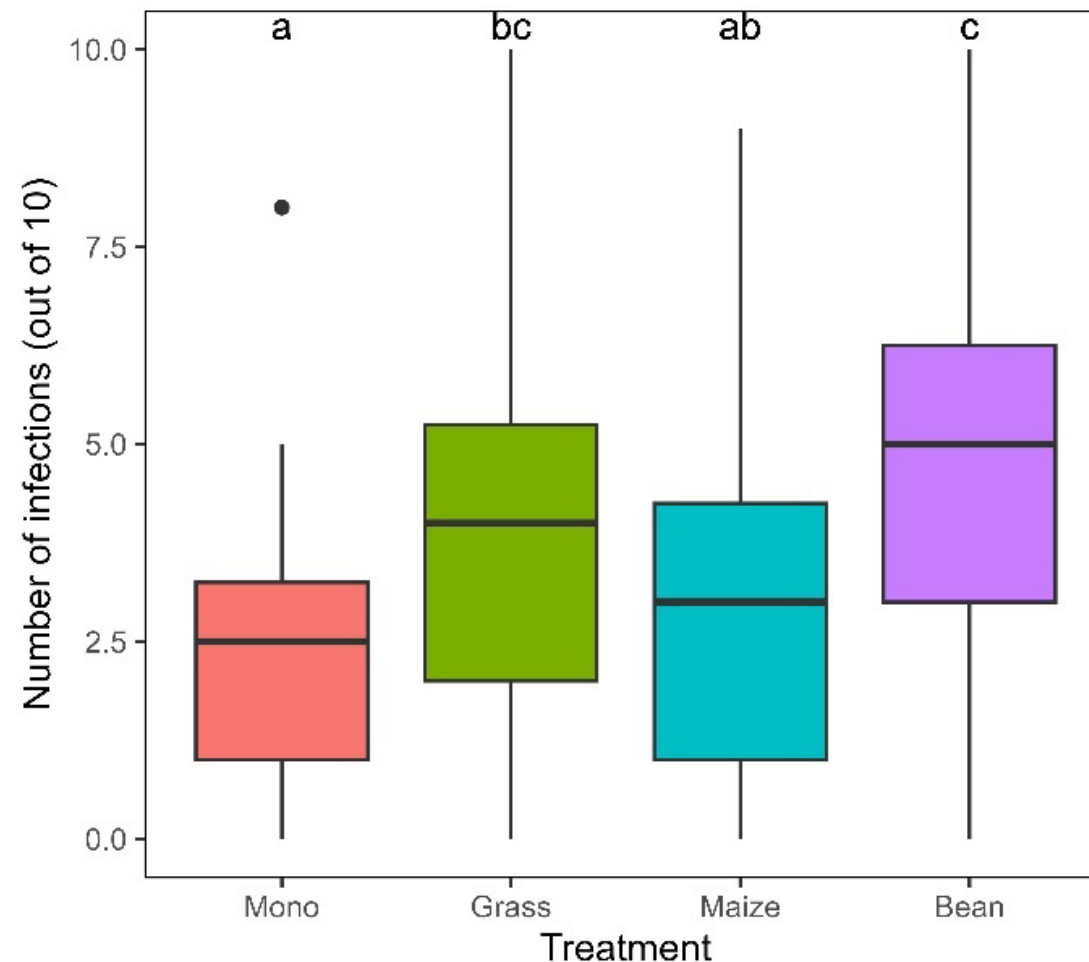


Detached leaf assay

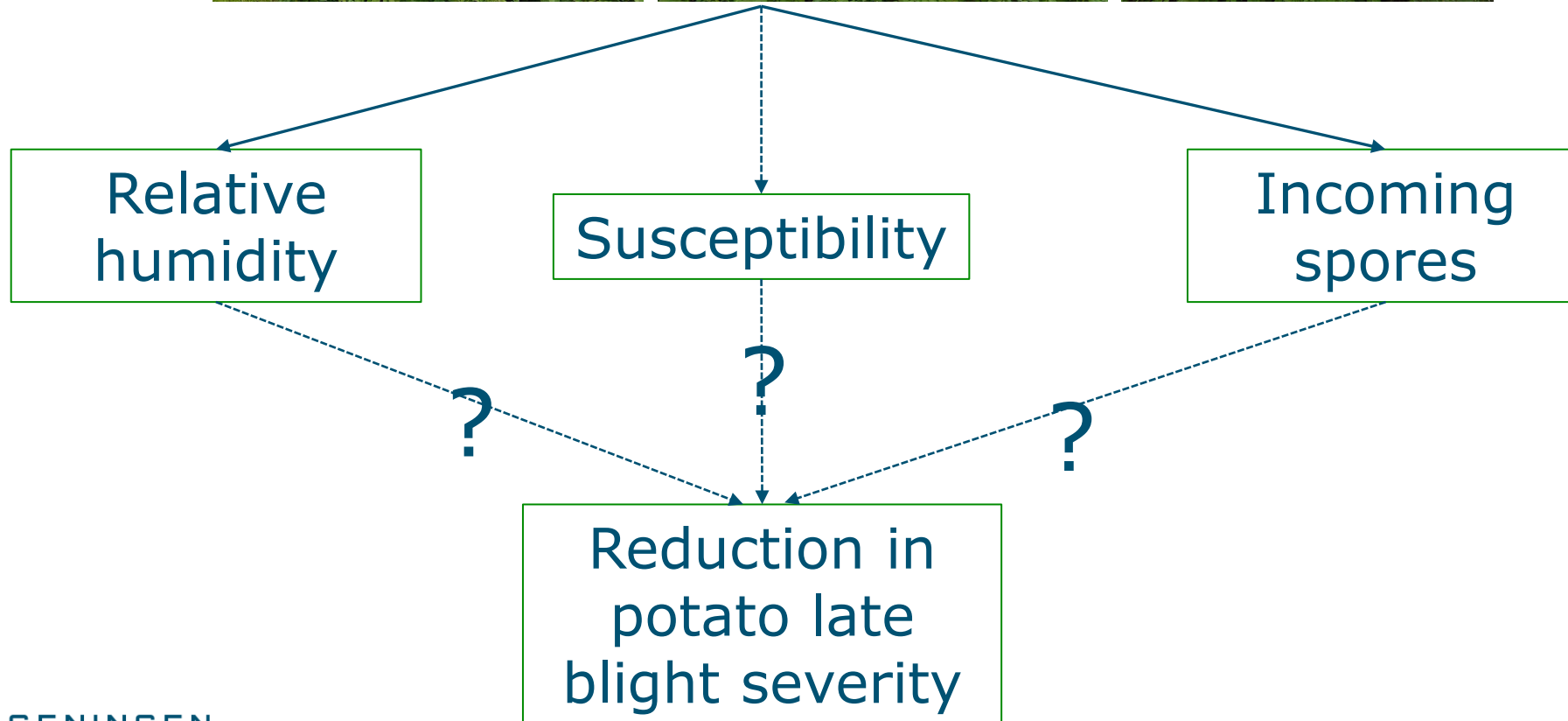


Count the number of infections out of 10 droplets

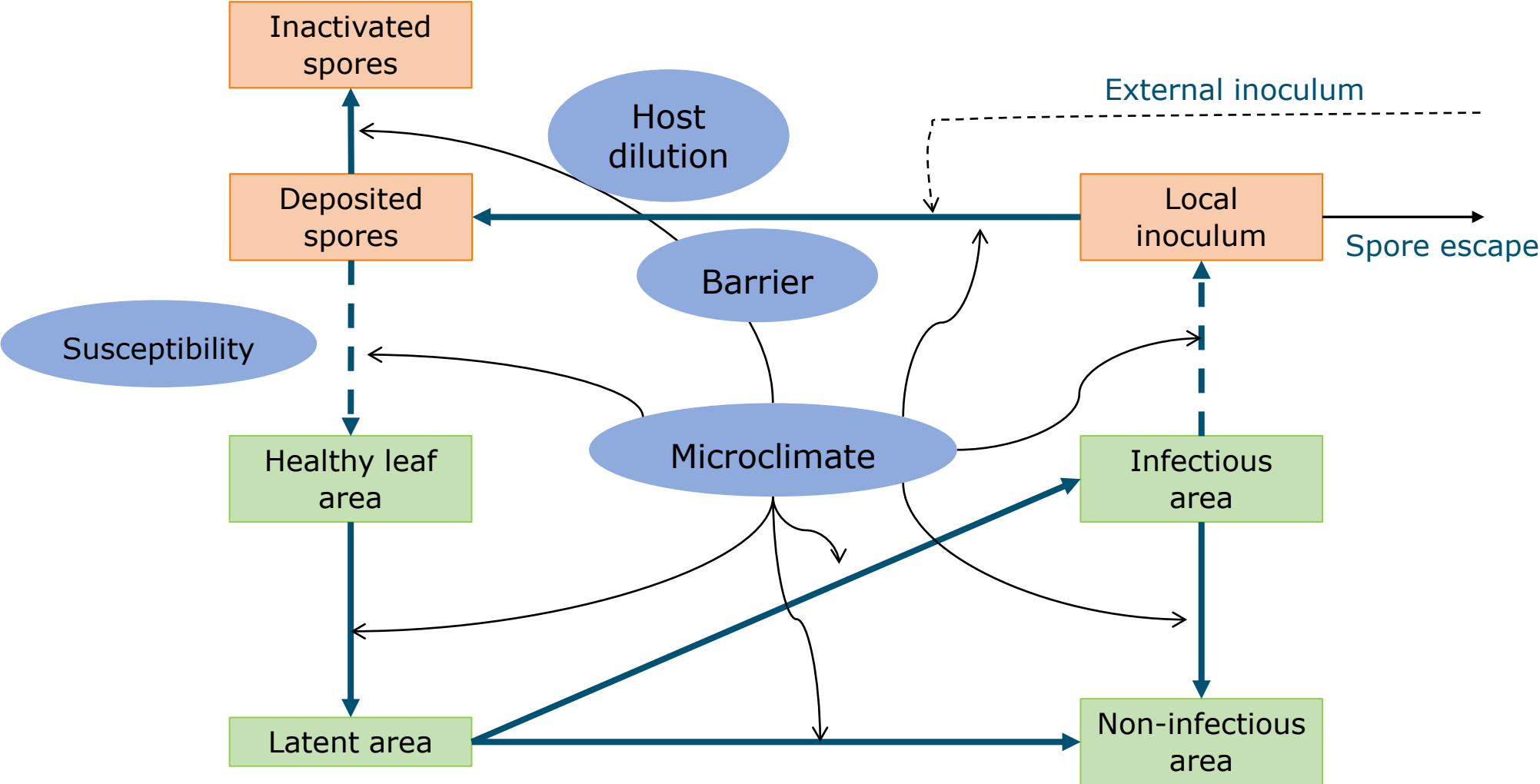
Potatoes strip-cropped with grass or bean show increased susceptible to in vitro late blight infections



Strip cropping

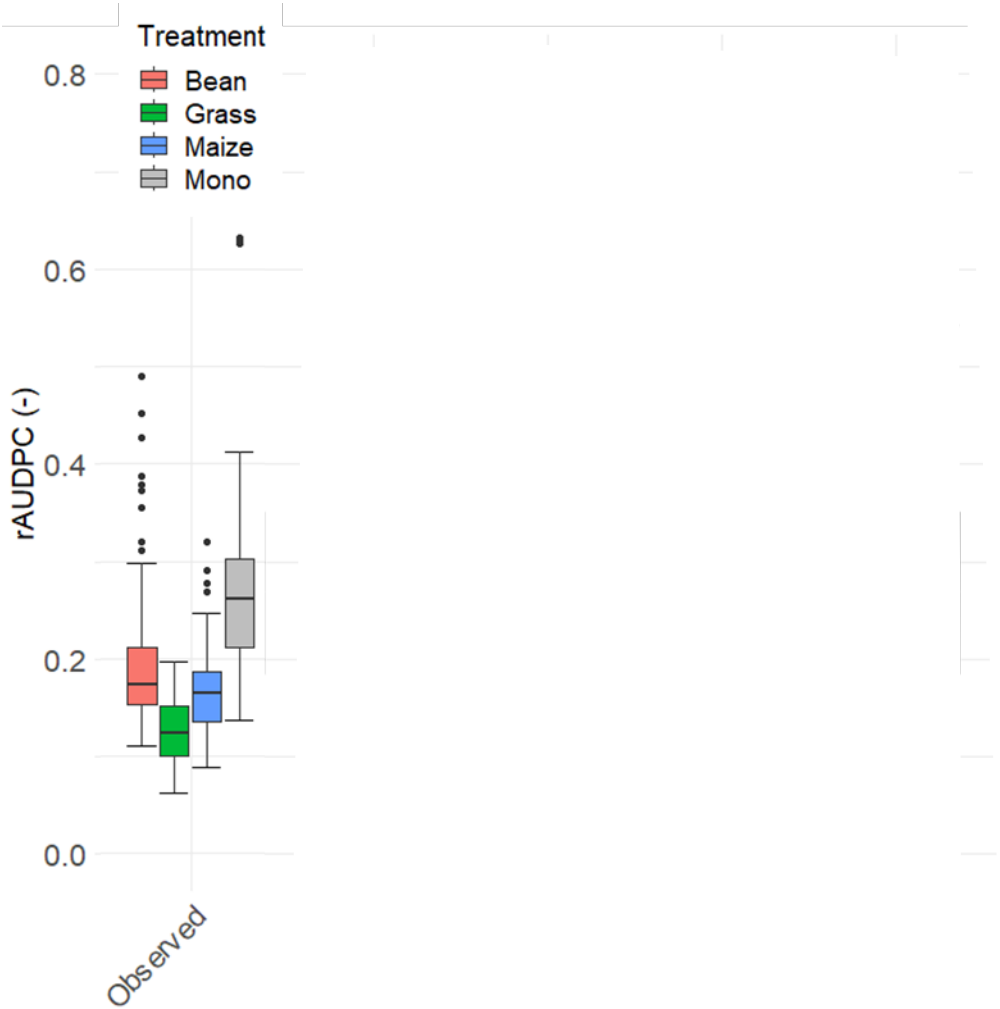


Model



Mechanisms in a late blight model

AUDPC: area under the disease progress curve; a quantitative measure of the cumulative disease severity over time



Conclusion and looking forward

- Strip-intercropping can reduce late blight severity, through different disease-suppressive mechanisms
- Combine this practice with other control methods
- Improve feasibility of implementation
- Enhance species diversity



Thank you!

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