

Observational study of early blight in Swedish farms

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Industrial PhD project (initiated in July 2018)

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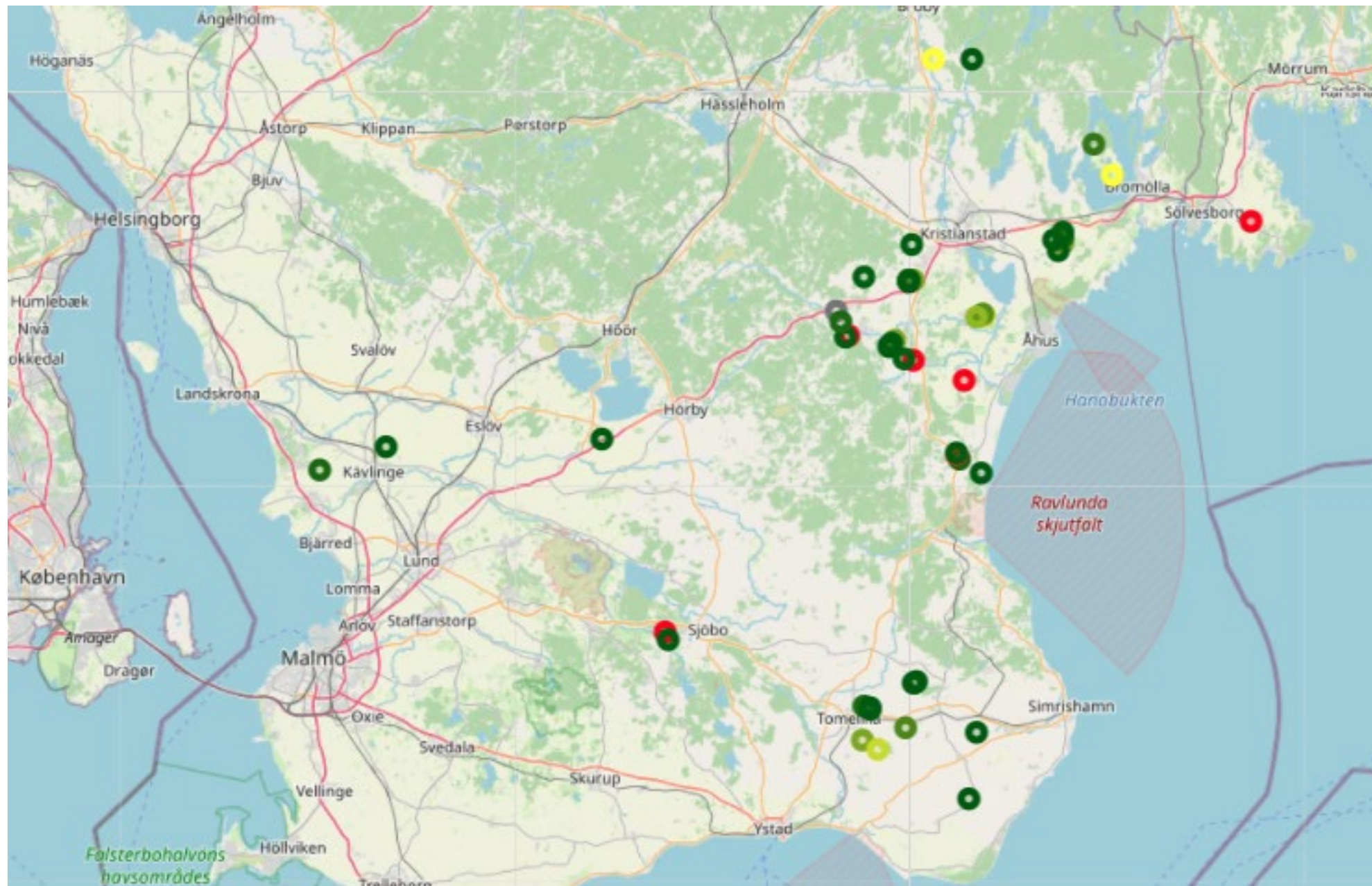
2022-05-11



Experimental setup

- Farmers were asked to leave a 24x24 m field plot untreated against early blight
- 50+ data points from three seasons (2019, 2020, 2021)
- Disease scoring, leaf analysis, soil analysis, farm management (crop rotation, planting date, cultivar, fertilizing strategy, irrigation, seed tubers)
- Find and understand what factors that are associated with risk of infection
- Create farm specific plant protection strategies





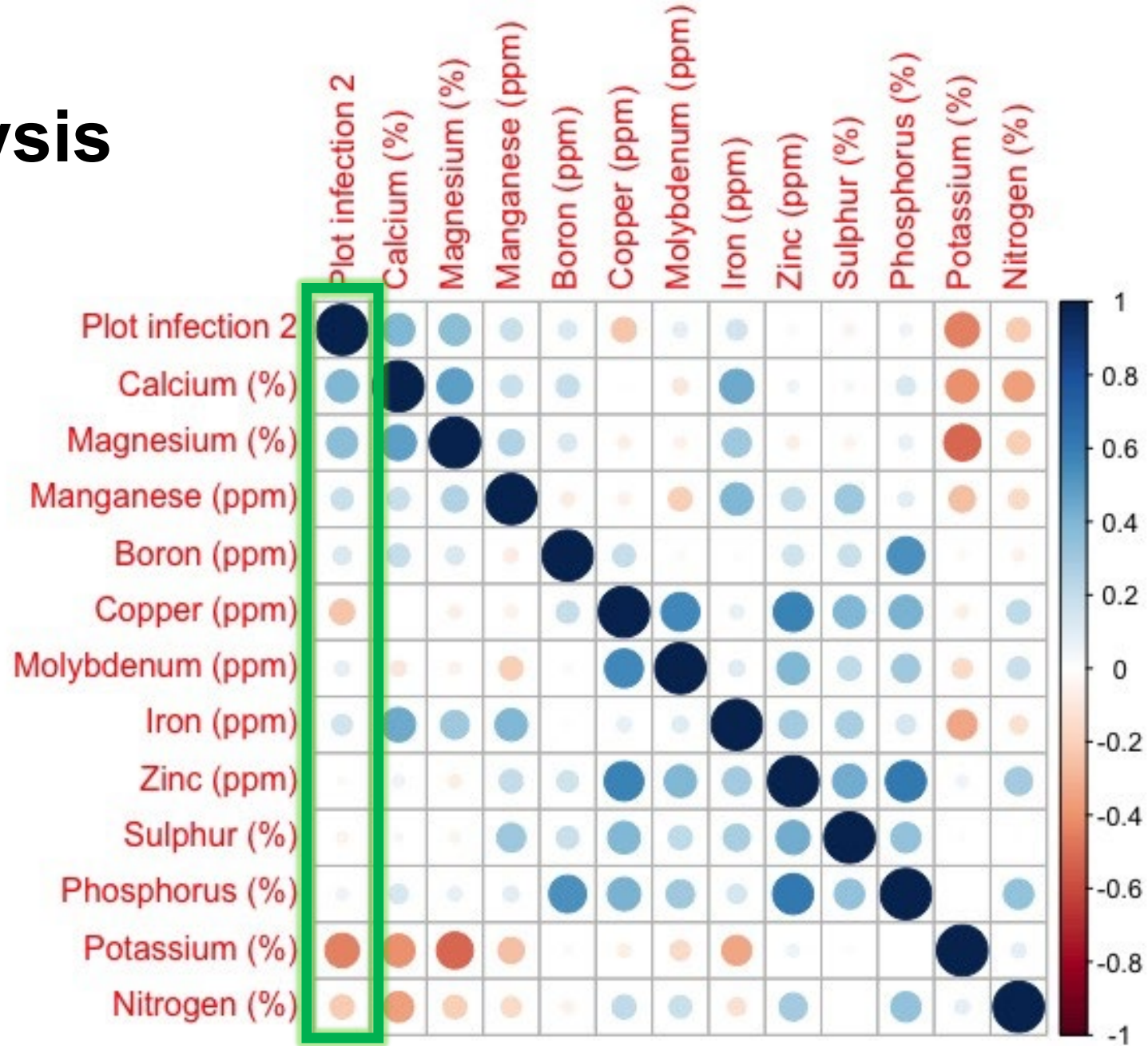
High
infection

Low
infection

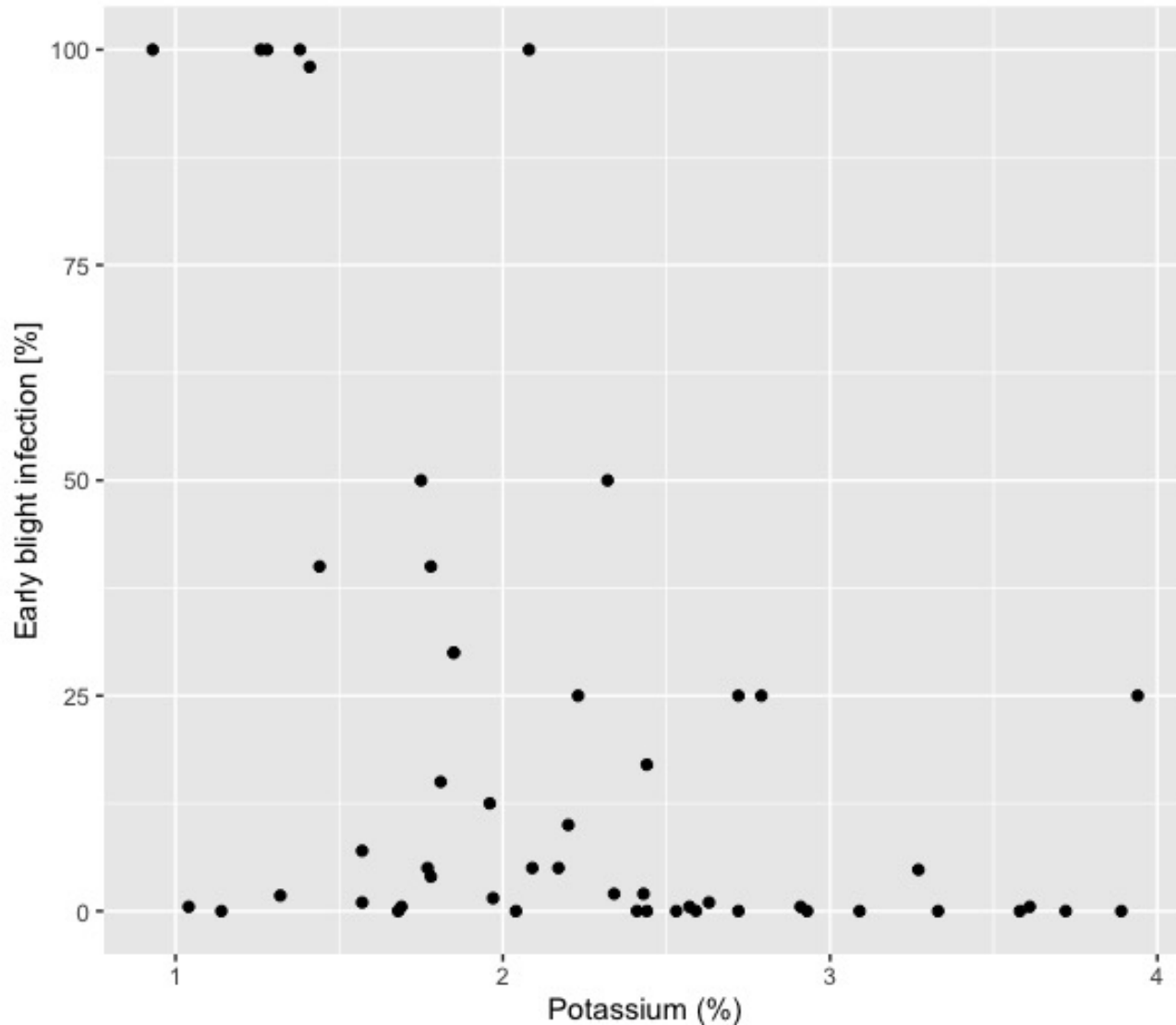


Leaf analysis

from mid August
scoring early Sept

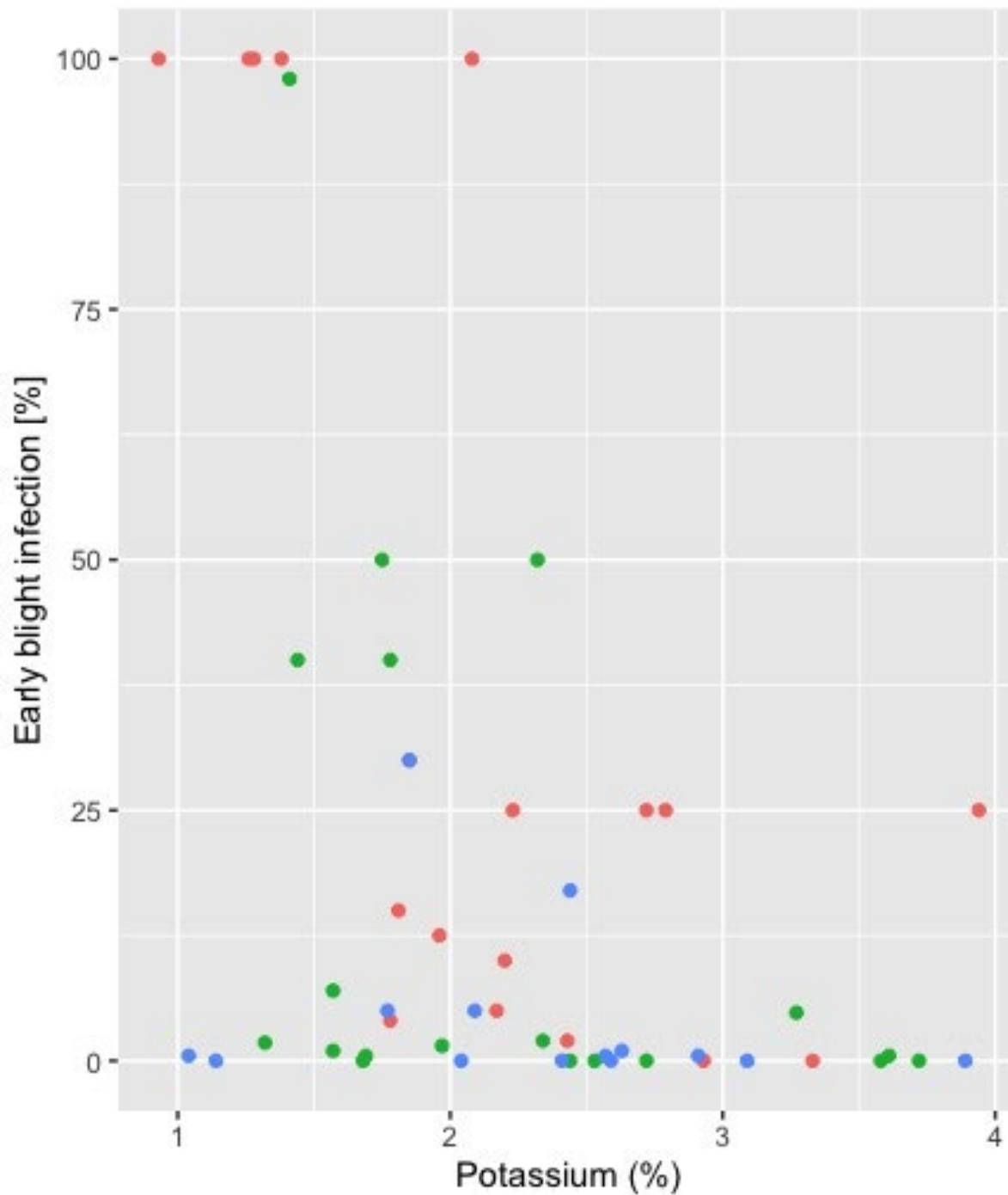


Levels of potassium in leaves



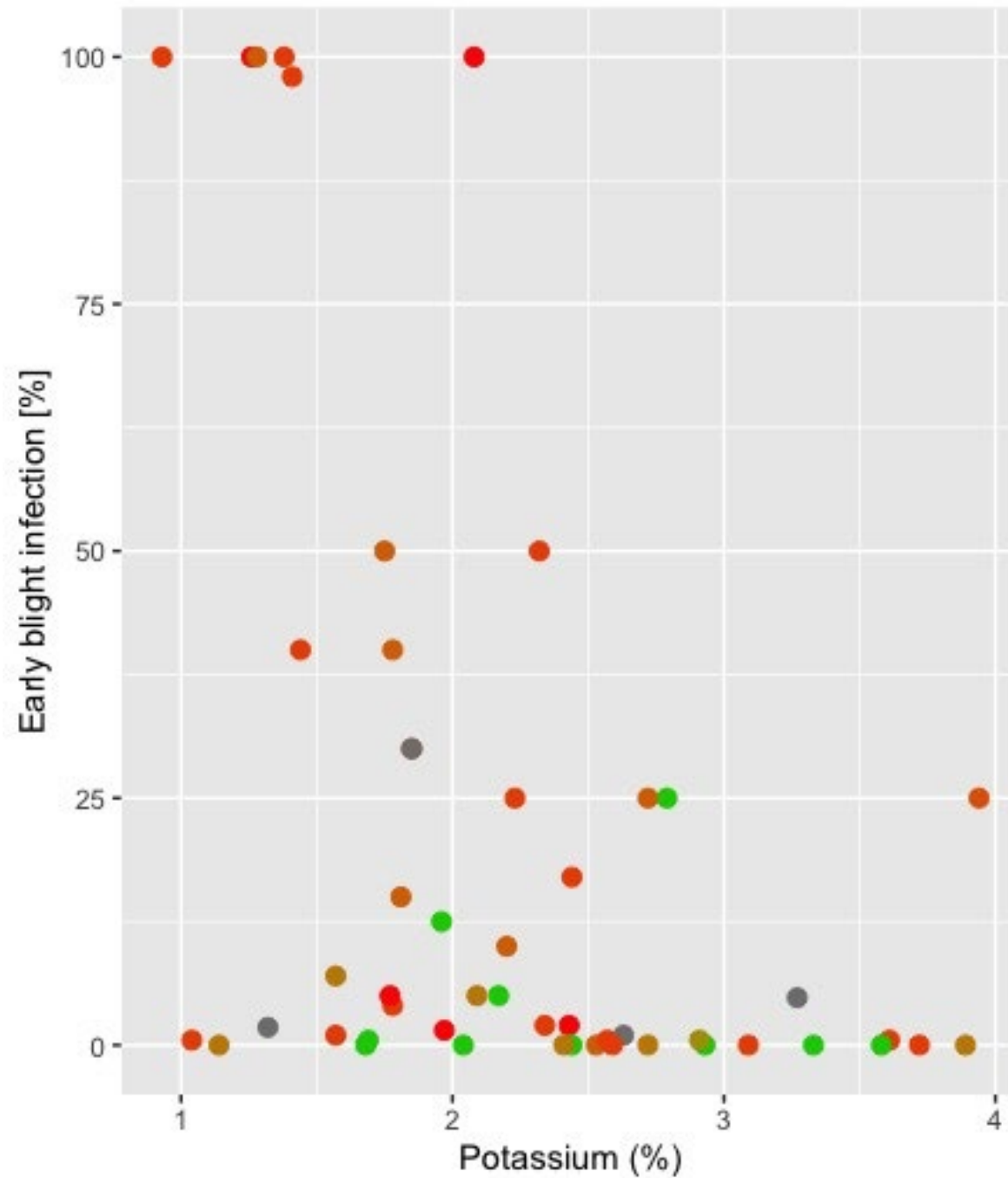
Potassium levels under 2.5 % gives a higher risk of infection





The season is an important factor





Crop rotation needs to exceed 7 years to have any impact

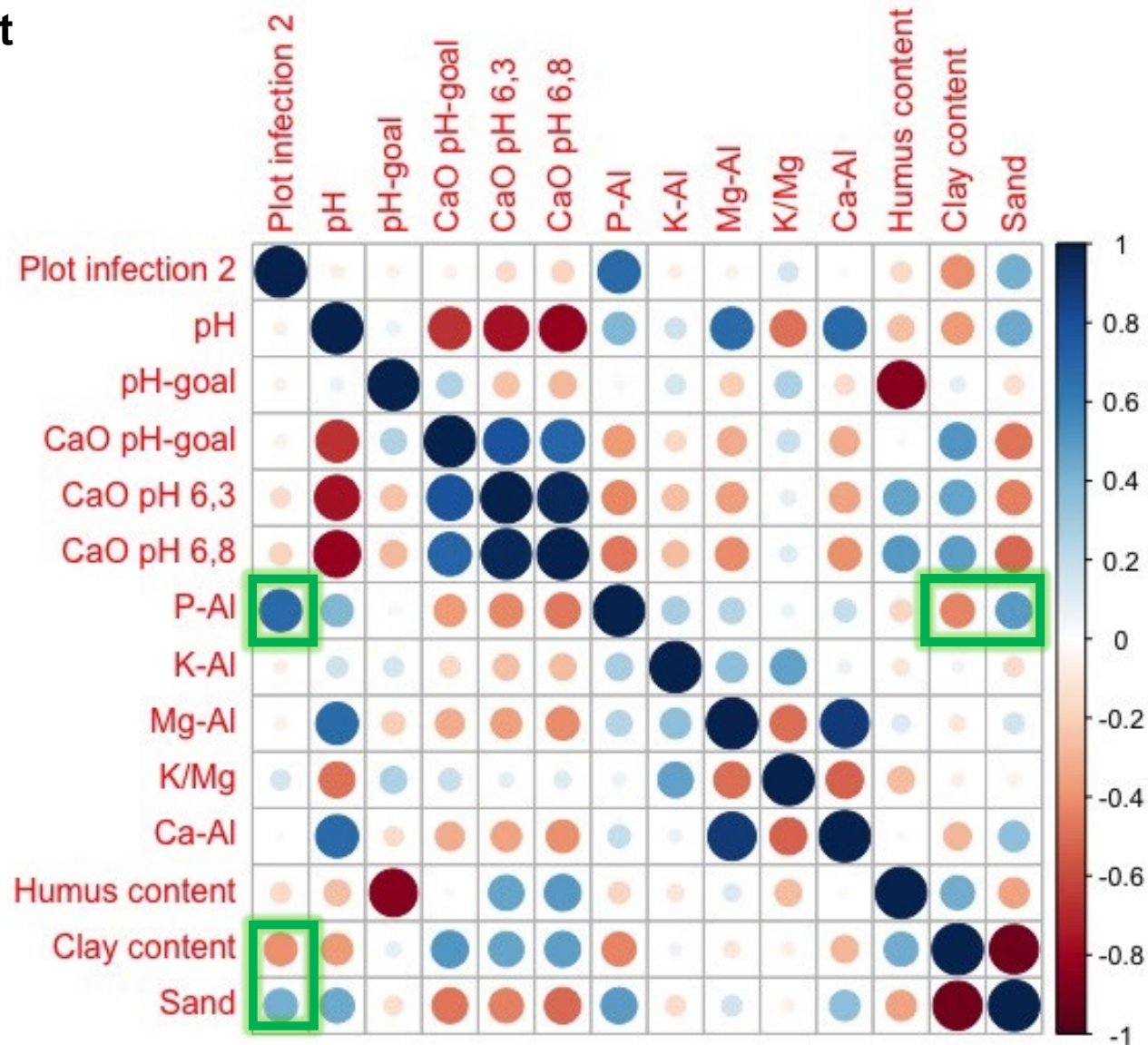
Potassium trials

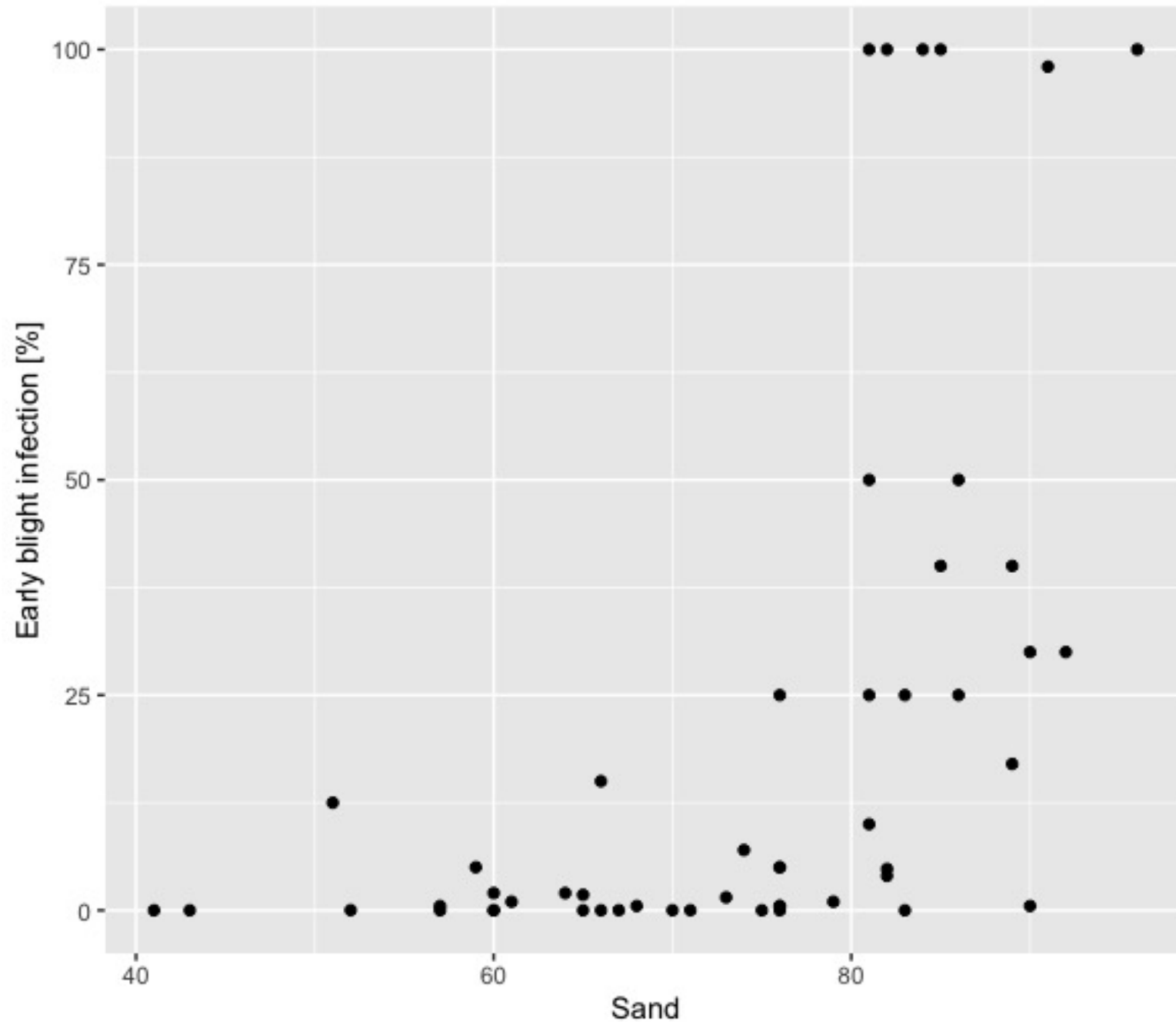
- In 2021 field trials were made to further investigate the role of potassium fertilization on soils with low levels as a follow up to the observational study.
- In 2021 we did not achieve the depletion below 2% that we wanted
- However potassium depletion showed a tendency to lead to higher infection levels.
- In 2022 the trials will be repeated with even lower potassium fertilization.
- More results will come after this season



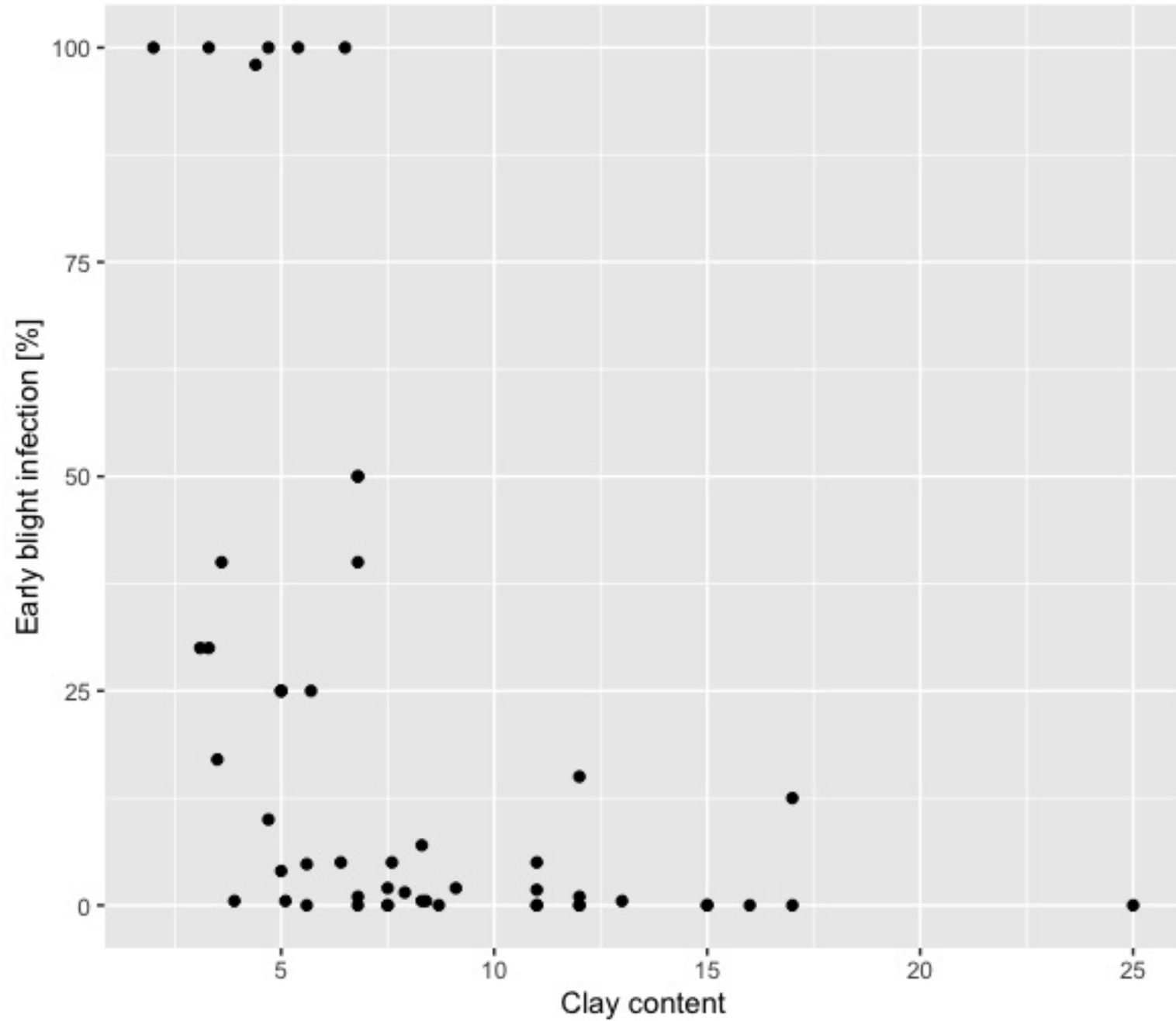
Soil analysis

from early Sept

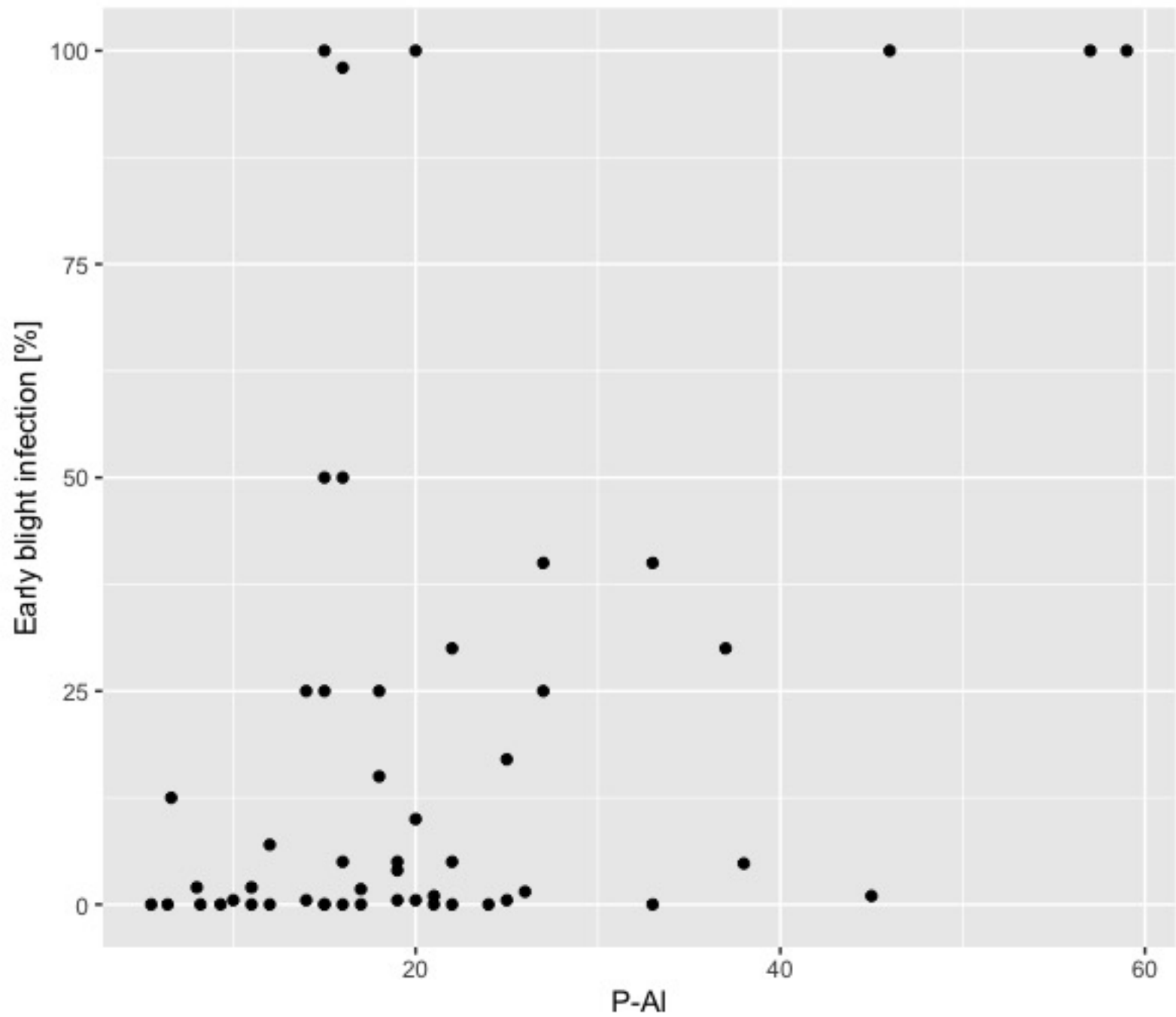


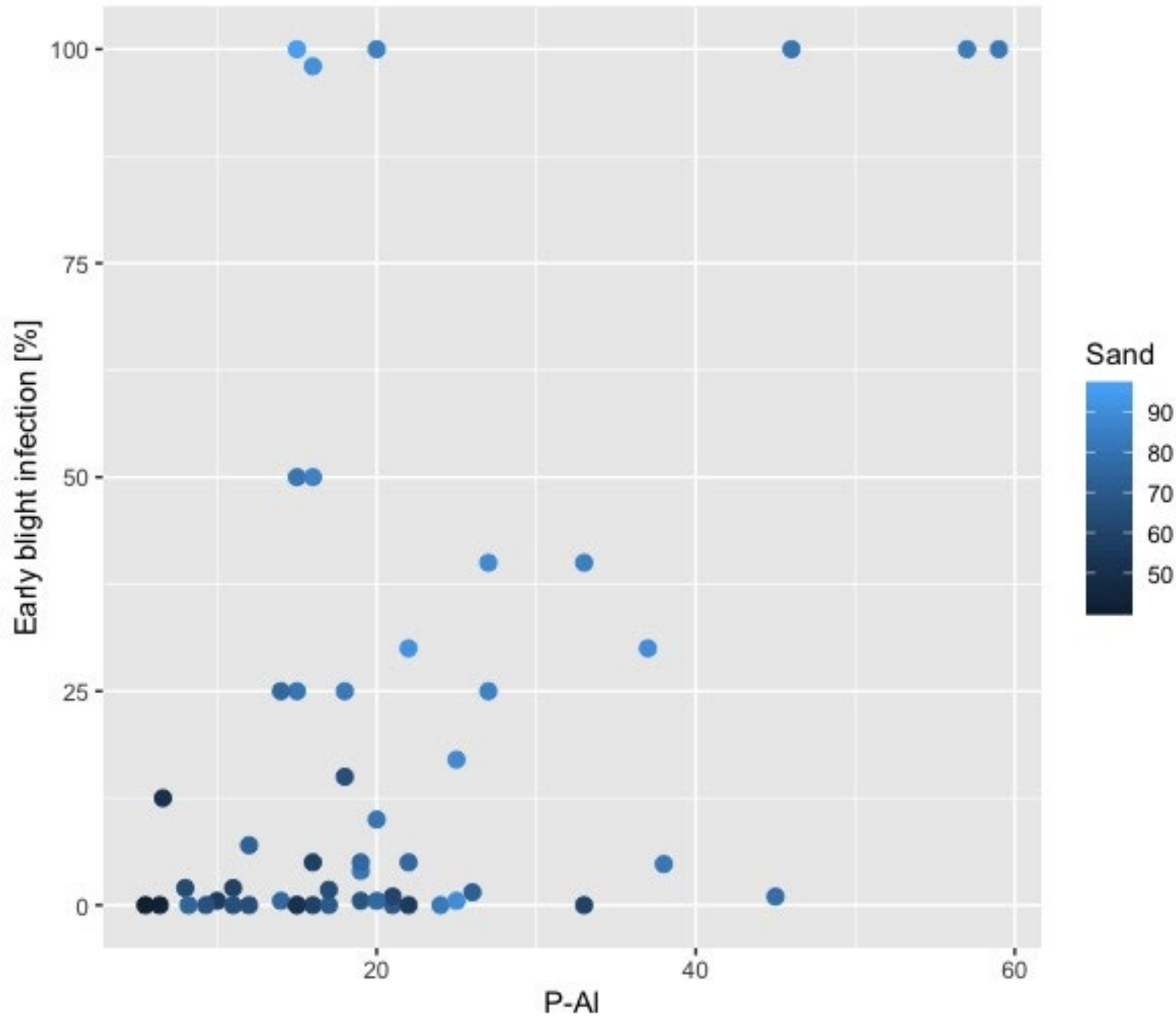


Soils with a sand content over 80 % have a higher risk of infection



Clay content below 10 % increases the risk of infection





Soil phosphorous content is related to the sand content. A possible explanation lies in the use of manure.

Ongoing research

- Analyze the data further and write articles
- Customize fungicide recommendations according to the risk at the specific farm
- Goal: Reduce the use of fungicides and fungicide resistance development



Conclusions

- The sand/clay composition of the soil has a significant impact on infection
- Farmers must increase crop rotation to 7 years in order for this to reduce early blight disease
- Potassium levels in potato foliage is correlated with the amount of early blight infection.





Lyckeby FORMAS



Thank you

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This study will help to enlight

What factors are causing the blight

We'll look at the numbers

Deprived of slumbers

And publish without any fight

SCIENCE AND
EDUCATION
FOR
SUSTAINABLE
LIFE