



Lebensgrundlagen für morgen sichern

Master's thesis: Developing guidelines for yield loss trials in plant protection

MSc Thesis | Plant Protection | Field Trials | Data Standardisation | FAIRagro
Institute for Crop and Soil Science (PB) - Braunschweig Bundesallee or Kleinmachnow site

The project

How strongly do pests and diseases reduce crop yields? And how can results from different yield loss trials be compared so that they become useful for research, modelling and decision support systems?

These questions are central to future-oriented integrated pest management. In practice, however, yield loss trials often differ in experimental design, control treatments, assessment methods, timing of observations, sample sizes and documentation. This makes it difficult to merge results, compare them across sites and years, or use them for modelling.

In FAIRagro Use Case 3, we are developing solutions to better standardise and integrate data on pests, diseases and yield effects. In this master's thesis, you will develop guidelines for standardising yield loss trials and thus create an important basis for improved data quality in integrated pest management.

Research activities and methods

The activities of the master's thesis include, among others:

- Literature review on yield loss trials, plant protection trials, epidemiological experiments and standards in agricultural field experimentation
- Analysis of existing experimental concepts and documentation practices, with particular focus on comparability and reusability of the data
- Identification of key design elements, e.g. control treatments, replications, randomisation, pest and disease assessments, yield measurements, environmental and management data
- Development of a proposal for minimum information that should be documented in yield loss trials
- Preparation of practical guidelines for trial planning, data collection, metadata description and data provision
- Alignment of the guidelines with requirements from research, modelling and decision support systems
- Optional: application of the developed guidelines to selected example datasets or trial descriptions

Your own methodological ideas, e.g. for developing checklists, templates or visualisations, are very welcome.

Qualifications and interests

We are looking for committed master's students with the following profile:

- Enrolled in a master's programme in agricultural sciences, plant sciences, phytomedicine, biology, environmental sciences, data science or a related field
- Interest in integrated pest management, field experimentation, epidemiology, yield modelling and sustainable crop production
- Enjoyment of systematically evaluating scientific literature and experimental concepts
- Interest in data quality, standardisation, metadata and FAIR principles



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- Basic knowledge of statistics, experimental design or agronomic data analysis is an advantage
- Good German and English language skills
- A careful, structured and independent way of working
- Motivation to prepare research results in a way that makes them practically useful and scientifically applicable

What we offer

We offer a topical, research-oriented master's thesis with high relevance for sustainable plant protection, data integration and digital decision support. You will work on a research question that can directly help make trial data more comparable, easier to model and reusable.

You will become part of an interdisciplinary environment at the interface of plant protection, agricultural research, research data management and modelling. The thesis offers you the opportunity to deepen your expertise in experimental design, standardisation and data management while producing a visible result with practical value.

We offer close supervision, a friendly scientific environment and room for your own ideas. The guidelines developed can feed directly into further work in FAIRagro Use Case 3.

Further information

For further details on the project description and application, please contact:

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If you are interested, please send a short statement of motivation, a CV and, if available, a current transcript of records.