# securing tomorrow's resources

# BSc or MSc thesis "Durable smut resistance for organic oat production"

Institute for Breeding Research on Agricultural Crops - based in Groß Lüsewitz

## The project

The share of organic oat cultivation area has grown continuously to now approx. 33%, which is due to an increasing demand and positive crop rotation effects of oats. Loose smut of oats (*Ustilago avenae*) is an important disease in organic oat farming and especially organic oat seed production. The most effective option for avoiding losses is to cultivate resistant varieties. In addition, closed flowering (cleistogamy) can significantly reduce seed infestation. However, the level of resistance and cleistogamy that has to be combined to sustainably prevent smut infestation in replicated seed is not clear and will be investigated in this project. Furthermore, the relationship of cleistogamy and smut infestation will be validated. In addition, QTL studies using segregating populations will be conducted to identify genetic regions contributing to smut resistance and cleistogamy.

### Research activities and methods

The activities of the current project involve (but are not limited to)

- Collection of panicle samples in the field
- Assessment of cleistogamy in diverse oat genotypes and in a segregating population
- Rating of smut infestation in the field and under controlled conditions
- Analysis of genotypic data and QTL analyses
- Statistical analyses of the collected data

### Qualification and interest

We are looking for candidates with the following qualification and interest:

- Enrolled in a graduate program in biological or agricultural science, biotechnology or related fields.
- Interest in plant cultivation, plant diseases and phenotyping in field experiments.
- Experience with or interest in statistical analysis of genotypic and phenotypic data.
- Motivation and good work ethics.

### Our offer

- a research oriented BSc or MSc thesis with practical relevance for organic oat production at the Institute for Breeding Research on Agricultural Crops, which is part of the Julius Kühn Institute, the Federal Research Center for Cultivated Plants.
- an international and multi-disciplinary group with expertise on biostatistics, quantitative genetics, plant genomics, molecular genetics, plant breeding, bioinformatics and plant physiology working on current topics of breeding methodology and crop genetics.
- an enabling working environment and friendly colleagues, state-of-the-art plant cultivation facilities, laboratories and an experimental field.
- Our institute can be reached within 17 minutes by train from Rostock central station.

### More information

For further details on project description and application, please contact

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