



The **Leibniz Centre for Agricultural Landscape Research (ZALF) Müncheberg** offers the position of

1 doctoral candidate (PhD) (beginning on 1st October 2018)

within the DFG-funded Research Training Group RTG 2118 **“Integrating Biodiversity Research with Movement Ecology in Dynamic Agricultural Landscapes [BioMove]”**

The RTG (Speaker: Prof. Dr. Florian Jeltsch) is a joint project of the University of Potsdam (UP), the Freie Universität Berlin (FU), the Leibniz Institute for Zoo and Wildlife Research (IZW, Berlin) and the Leibniz Centre for Agricultural Landscape Research (ZALF, Müncheberg) and offer a total of 11 positions for doctoral candidates (for more details see <http://www.biomove.org>).

We would like to highlight here the PhD position on the following topic:

“Trade-offs between dispersal ability and niche competition of co-occurring microorganisms in the phyllosphere of host plants”

26 hours per week (65%) for three years; the salary is in accordance with the German public service 13 TV-L (area east). Contracts are time-limited according to the Academic Fixed-Term Contract Law (WissZeitVG).

Description of this project:

Mycotoxin producing fungi of the genera *Fusarium* and *Alternaria* cause several economically relevant diseases of cereals and therefore, they are the focus of interest in this project. A complex set of abiotic and biotic factors mediates their dispersal via the crop canopy within a field as well as through the air from field to field. This dispersal depends on the specific traits that are typical for spores of *Fusaria* and *Alternaria* and their ability to disperse with the wind over different distances. Additionally, the spore formation on cereal leaves and ears as well as the assertiveness of the immigrating spores in a new habitat depends on the aggressiveness of the fungi and on the competition with the bacteria and fungi that are already present here. Here, we ask which of two characteristics is more important for a successful infection of wheat plants by phytopathogenic fungi: a high dispersal ability or a strong competitive ability? Experiments in a wind tunnel and in agricultural fields within the AgroScapeLabs will reveal the distribution of phytopathogenic fungi in space and time and how this is influenced by the interactions between bacteria and fungi in the phyllosphere of wheat plants in the habitats of origin and immigration.

The aims of this project are

- to select *Fusarium* and *Alternaria* strains with different spore types (ascospores, conidiospores) as well as *Pseudomonas* strains with different antagonistic activity and their ability to spread over different distances (wind tunnel experiments, plot experiments)
- to assess the ability of these fungal strains to infect wheat plants with different indigenous bacterial and fungal populations (after artificial inoculation with differently active antagonists)
- to track specific strains from one plant to another (in the wind tunnel) and from one site to another (in a field plot experiment) by means of stable isotope tracking methods or by selection of antibiotic resistances
- to compare fungal communities in agricultural wheat fields surrounded by heterogeneous or homogeneous landscapes as barrier for the fungal spread

Expected profile of PhD student:

Candidates must have a completed MSc in Microbiology, Phytomedicine, Microbial Ecology, Environmental Microbiology, Biotechnology or similar qualification. Previous experience in (1) culture-dependent and culture-independent methods for the detection and identification of microorganisms, (2) common microbiological, biochemical and ecological methods, (3) field and landscape studies, (4) ArcGIS and R statistics are desirable.

Ability to conduct field work independently, willingness to combine creative thinking with extensive laboratory work is an absolute prerequisite.

BioMove links innovative individual research projects that overcome the apparent gap between movement ecology and biodiversity research, employing a joint conceptual framework. Projects cover different spatial and temporal scales and groups of organisms ranging from bacteria, fungi, plankton, plants, and insects to birds and mammals (for more details see <http://www.biomove.org>).

Doctoral candidates will strongly profit from a unique qualification program specifically tailored to bridge between state-of-the-art concepts and methods in movement ecology and biodiversity research, supplemented by a broad range of soft skill workshops.

Detailed information on the application process are available at <http://www.biomove.org>. Short-listed candidates will be invited to an application symposium on June 21./22. in Potsdam and to a lab visit at Müncheberg.

The Leibniz Centre for Agricultural Landscape Research strives to maintain gender balance among its staff. Severely disabled applicants shall receive preference in case of equal qualifications. We expressly invite applications from people with migration backgrounds.

Please send your application in electronic form **by June 1, 2018** to the RTG coordination office (biomove-rtg@uni-potsdam.de). **Applicants should follow the information and instructions given at <https://www.biomove.org/phd-vacancies-2018/p10/>**

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