

15.12.2022

MASTER THESIS

Influence of endophyte diversity on phenology in *Populus nigra*

Plants are associated with fungi or bacteria that live asymptotically in healthy plant tissues. These microorganisms are called endophytes, and their occurrence and distribution are thought to be influenced by plant genetic structure and climatic conditions. In addition, they have been shown to be able to promote plant growth, improve nutrient uptake, and protect the plant from abiotic and biotic stresses. These are factors that influence, among other things, the onset of different phases in the life cycle of a plant (phenology). However, the importance and occurrence of endophytes in relation to plant phenology and *vice versa* is poorly understood.

The aim of this master thesis is to find out if there is a relationship between endophyte diversity and phenology in plants. In a Common Garden experiment near Jena, different phenological stages, (e.g. leaf unfolding, senescence), as well as morphological and physiological traits (e.g. specific leaf area, stomatal parameters and photosynthetic rates) of young black poplars will be recorded weekly during the growing season. With respect to endophytic composition, trees will be sampled several times and isolated, described, and categorized in the laboratory. Furthermore, leaves will be analyzed for typical poplar compounds using liquid chromatography coupled to mass spectrometry (LC-MS).

We are looking for a dedicated student in biology or equivalent with interest in ecological, microbial, molecular biological and chemical analytical methods. A good basic knowledge in statistics and ecology, as well as a class B driver's license is an advantage.

We offer excellent technical equipment as well as extensive supervision in very motivated working groups at the Institute of Ecology and Evolution of the Friedrich Schiller University, as well as Max Planck Institute for Chemical Ecology.

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