

Development of a microbiological complex for naturalization of soft fruit rhizosphere

(Project: Ecofruits – BIOSTRATEG)

Healthy ecosystems are essential for increasing resilience and sustainable crop production, which requires the development of environmental monitoring principles based on biological indicators, including microbiological biodiversity. The general objective of the project, within which research for the doctoral thesis will be carried out, is the development of new biotechnological solutions in the diagnosis, control and monitoring of key fungal pathogens in organic fruit cultivation, ensuring biodiversity protection and sustainable production.

The subject of the proposed doctoral thesis includes the development of a new bioproduct for the protection of biodiversity and plant health in the organic cultivation of soft fruits. The aim of the study is to develop a microbiological complex for naturalization of soft fruit in organic cultivation. The studies will also include: determination of the effectiveness of the microbiological complex in controlling key fungal pathogens and determination of the natural soil fungal biodiversity on selected soft fruit plantations. The research will use microbiological and biochemical techniques and molecular biology methods, including microbial cultures, isolation and identification of microorganisms based on sequencing, characterization of metabolic abilities of microorganisms using the Biolog system, determination of chemical sensitivity of microorganisms using phenotypic microarrays. The composition of microorganism community on organic soft fruit plantations will be determined on the basis of the next generation sequencing (NGS) using appropriate genetic markers for bacteria (16S) and for fungi (ITS1).

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Candidate profile:

- master's degree in biology, environmental protection, biotechnology or other Life Sciences
- very good command in English, including specialist terminology
- knowledge of molecular biology methods and microbiological and biochemical techniques used in environmental research
- proven record of research activities (e.g. extracurricular research training period, research internships, participation in scientific conferences),
- ability to use bioinformatics and statistical software to elaborate results
- teamwork skills, motivation, creativity, independence