

Summer Research Internship Project Proposal

Project Topic	Chlorophyll content of seeds and evaluation methods for its reliable analysis		
Name	assoc. prof. Vít Gloser, Ph.D.	Field	Plant science
Department	Department of Experimental Biology, Faculty of Science	Keywords	Seeds, chlorophyll fluorescence, germination,

Description of the Project (overview, expected outcomes, reason for research, proposed outcomes for student(s))

Surprisingly, not only leaves but also seeds of some plant species may contain a pigment chlorophyll. The high chlorophyll content often leads to decreased germination of seeds and rapid loss of germination ability of seeds over time during storage. Therefore, knowledge of seed chlorophyll content is helpful for evaluating the quality of individual seed batches by seed producers. This project will explore the relationship between the amount of chlorophyll determined after extraction of seeds by chemical solvents and the chlorophyll signal in seeds measured by induced fluorescence of chlorophyll. The rapid, cheap, and non-destructive method based on chlorophyll fluorescence will be evaluated for several species to disclose how reliable this determination can be for each species of interest. The outcome of this project will help seed producers with a faster evaluation of seed quality and as an indicator for the possible introduction of fluorescence detection in seed sorting machines in the future.

Student Requirements (prerequisites, experience, acceptable fields of study, etc.)

- basic experience in chemistry lab
- basic knowledge of data handling (e.g. calculations in spreadsheet, creation of simple graphs)
- experience with computer image analysis may be also helpful

Proposed responsibilities of the student(s)

- Extraction of seeds by solvents
- Imaging of seeds by several optical methods
- Evaluation of images and signal quantification
- Data handling and preparation of results/outputs

Additional important information (max. number of students, additional staff/faculty involved, etc.)

- Student will be involved as a member of research team and during stay interact with supervisor and several other students and members of staff. Two students involved in this topic are acceptable.