Česká zemědělská univerzita v Praze
Fakulta agrobiologie, potravinových a přírodních zdrojů

DOKTORSKÝ STUDIJNÍ PROGRAM/ DOCTORAL STUDY PROGRAM

NÁVRH TÉMATU/PROPOSAL OF THEME

Studijní program/*Study Program*: **Crop Science**

Studijní obor/*Branch of Study*: **General Crop Science**

Katedra/*Department of*: **Agroecology and Crop Production**

Školitel (včetně titulů), email/*Supervisor*, email: **doc. Dr. Mgr. Vera Potopová, potop@af.czu.cz**

Konzultant (včetně titulů)/*Co-supervisor*: **Ing. Pavel Procházka, Ph.D.**

Forma studia/*Form of Study*: **Full_time**

Typ tématu/Type of Theme: Framework

Theme: Vulnerability of hop production due to compound climate and weather events

Hypothesis:

1) Is hops quality production dependent on the increase in air temperature, more frequent occurrence of droughts, hot waves, storms and hails?
2) Crop growth models (Soil – Plant – Atmosphere system) illustrate that traditional noble aromatic varieties of hops are most at risk, and beer prices could double due to climate change across Europe in the near future.

Annotation:

Compound extremes (or events) may lead to amplified impacts than may individual extremes (or events) and have received increasing attention in the past decade. Concurrent extremes of drought and heat causes problems for hop growers across Europe. Statistical data suggest that especially aroma hops are vulnerable to extremes. While irrigation can eliminate drought impact, but the main problem still remains, and that is the drop in content of alpha-acids. High summer temperatures inhibited the accumulation of alpha-acids. **The proposed PhD** will therefore undertake **a novel examination** in vulnerability of hop production to such extremes. Modern agricultural system endeavour to minimize these hazards by means of infrastructure protection plans, efficient resource management, and insurance plans.

The PhD thesis aims is to modelling the long-term yield response to changes in occurrences of compound climate events as well as the short-term response to adverse weather events on the hop yield quality and quantity in the main European producing countries. The three key objectives of the study are (1) Identify different classes of bivariate and multivariate compound events affecting hop yield quantity and quality, (2) Summarize the impact of relevant compound climate/weather events for hop production in the main growing regions; and (3) Establish a list of stakeholders in a hop and brewing industry in EU.

The European Cooperation in Science and Technology (COST) funded the Action CA17109 called “Understanding and modeling compound climate and weather events”, or “DAMOCLES” for short (2018-2022). DAMOCLES brings together climate scientists, impact modellers, statisticians, and stakeholders from all over Europe to better understand, describe and project compound events. The PhD thesis will be realized in the collaboration with the DAMOCLES action.

Application must be made in the form of a Declaration of Interest including the following:

- A research proposal/description of your approach to the above proposal
- A letter stating your specific interest, motivation and qualifications for the PhD thesis
- Detailed CV, including personal contact information
- Copies of diplomas, Bachelor as well as Master’s degree, including transcript of notes/grades
- At least two signed reference letters.

We offer:

Excellent research opportunities, advanced training and state of the art technical research infrastructure, within an interdisciplinary, international team located in a very pleasant a unique university campus in Prague.

Source of funding: project NAZV - QK1910269, SGS and development funds from which the well-working student will be supported beyond the scholarship.

Date: 24.1.2020 *Signature:*