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

DOKTORSKÝ STUDIJNÍ PROGRAM

NÁVRH TÉMATU/PROPOSAL OF THEME

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

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

Katedra/*Department of*: **Agroenvironmental Chemistry and Plant Nutrition**

Školitel (včetně titulů), email/*Supervisor*, email: prof. Ing. Jiří Balík, CSc., dr.h.c., balik@af.czu.cz

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

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

Typ tématu/*Type of Theme:* **Framework**

Téma/*Theme:* Zinc Uptake by Crops and its Transfer to Edible Tissues Depending on Fertilizer Application in Long-Term Field Experiments

Hypotéza/*Hypothesis*: Zinc content in edible tissues can be affected by application of mineral and organic fertilizers, respectively.

Anotace/Annotation: The thesis is based on long-term field experiments of the Department of Agroenvironmental Chemistry and Plant Nutrition. Besides mineral fertilizers application, great attention is paid to long-term application of organic fertilizers: straw, manure and sewage sludge.
Biofortification with essential nutrients is of great importance globally. Over 2 billion people are likely to be at risk of inadequate dietary micronutrient intakes worldwide, especially of zinc. Zinc is an important micronutrient for human beings, animals as well as crops. In human metabolism, it plays an important role in many physiological functions. One of the key functions of zinc is its influence on the immune system.
Zinc uptake by plants is significantly affected by organic matter in soil, content of bioavailable phosphorus in soil, soil pH value, temperature, nitrogen fertilization etc. As a result, content of bioavailable zinc in soil is low and it strongly depends on physicochemical properties of soil, activity of microflora in soil and other factors. Plant species is another factor affecting zinc uptake by plants. For example, seeds of most cereals, such as maize, rice and wheat, have lower concentrations of zinc and iron than seeds of legumes. Zinc uptake by plants is also inhibited by some other nutrients, besides phosphorus it is e.g. copper and iron.

Zdroj financování/Source of:

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GA FAPPZ: Podpora výzkumné a publikační činnosti studentů v oblasti agroenvironmentální chemie a výživy rostlin (2020-2021)

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prof. Ing. Jiří Balík, CSc., dr.h.c.

Ing. Ondřej Sedlář, Ph.D.