

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**

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Forma studia/*Form of Study*: **Full\_time**

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

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

**Hypotéza/Hypothesis**: Copper 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. The most frequent clinical manifestations of copper deficiency are anemia, neutropenia, and bone abnormalities. It should be considered that copper is an essential nutrient with potential toxicity if the load exceeds tolerance. The phytoavailability of Cu in many agricultural soils is low, and Cu applied to the soil often becomes rapidly unavailable to plants. Moreover, nutrients such as copper, zinc and iron are not transported in the phloem. Thus, phloem-fed tissues such as fruits, seeds and tubers are often poor sources of Fe, Zn and Cu. Concentrations of various mineral elements are lower in higher yielding genotypes. However, there are also observations suggest that the biofortification of crops with mineral elements can be achieved without compromising yield. Particularly in developing countries, it has been suggested that biofortification strategies should focus on the staple foods because if the concentrations of mineral elements in staple foods can be increased, then the delivery of mineral elements to vulnerable populations can be increased without need of change in dietetic behaviours.

**Zdroj financování/Source of:**

European Commission: Centrum pro studium vzniku a transformací nutričně významných látek v potravním řetězci v interakci s potenciálně rizikovými látkami antropogenního původu: komplexní posouzení rizika kontaminace půdy pro kvalitu zemědělské produkce (2018-2023)

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

Datum/*Date*: 13.1.2020

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