

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.

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

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

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

Téma/Theme: Transformations of manganese as a function of fertilizing system and soil-climatic conditions

Hypotéza/Hypothesis: We assume that soil conditions will play a key role in manganese transformation, even more than different fertilizing system. Therefore, selection of proper extraction agent will be dependent on soil conditions.

Anotace/Annotation:

Manganese is one of the essential microelements in plant nutrition. Its contents in plants strongly depends on plant species and can reach from 10 to 5500 mg/kg in dry mass and even more. It is important co-factor activating bright scale of enzymes, but usually is not directly their component. Manganese is cooperating on building chlorophyll and often is a part of different organic molecules. For its usually sufficient content in soil, only few studies were written about manganese in plant nutrition. But, with increasing Mn requests of new varieties of grown plants, interest about studying manganese transformations is strongly increasing.

The objective of thesis is to evaluate different manganese forms in soil and their interaction with other soil properties (pH, soil texture, content of other nutrients). Another objective is to study the relationships among manganese in soil and plant.

To fulfill the objectives, samples from precise long-term field experiments (established in 1996) will be analyzed. Here, potatoes, wheat and barley are grown in crop rotation. To further investigate the relationship among manganese in soil and Mn in plant, soil and plant (wheat, oilseed rape, maize) samples will be taken up from bright scale of locations around Czech Republic. Analytical methods will include Mn fractions with different solubility as well as total manganese content in plant material. Results will be evaluated using detailed statistical analysis.

Zdroj financování/Source of: Regional Development Fund Project NutRisk Centre

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