

DOKTORSKÝ STUDIJNÍ PROGRAM

**NÁVRH TÉMATU/PROPOSAL OF THEME**

Studijní program/*Study Program*: **Special Agricultural Science**

Studijní obor/*Branch of Study*: **Exploitation and Protection of Natural Resources**

Katedra/*Department of*: **Soil Science and Soil Protection**

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

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

**Téma/Theme**: Modelling of root uptake of pharmaceuticals in soil

**Hypotéza/Hypothesis**: Uptake of pharmaceuticals by different plants and their accumulation in particular plant tissues depends on a degree of their dissociation. Mathematical models can be used to simulate observed behavior of pharmaceuticals.

**Anotace/Annotation**: Behavior of selected pharmaceuticals will be experimentally studied in soil columns, in which model plants will be grown. Selected pharmaceuticals will be applied on the soil surface during 4 weeks. Cumulative infiltrations and discharges from the soil columns bottoms will be registered. Water regimes in the soil columns will be monitored using the microtensiometers. Concentrations of pharmaceuticals and their metabolites in efflux will be measured. Final concentrations within the soil columns and plant tissues will be assessed. Statistical analyses will be used to find relationships between observed data. Next soil hydraulic properties will be evaluated and proper models describing transport processes will be selected. Observed water flow and solute transport will be mathematically simulated.

**Zdroj financování/Source of**: NutRisk Centre reg.č.: CZ.02.1.01/0.0/0.0/16\_019/0000845

**Datum/Date**: 30.1.2020

**Podpis/Signature**: