



MTA•ATK
Talajtani és Agrokémiai
Intézet

Environmental research at MTA ATK TAKI

Nikolett UZINGER

Opening workshop
Introduction of the *Terra Preta* Consortium: research activities

1th September 2014
Budapest

INTRODUCE OURSELVES

- ◆ Founded 1949
- ◆ Name: Institute for Soil Sciences and Agricultural Chemistry, Centre for Agricultural Research, Hungarian Academy of Sciences
- ◆ Important roles!
- ◆ Scopes!

CONTACT INFORMATION

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THE MAIN RESEARCH TOPICS

agroecology and soil fertility

sustainable plant nutrition

soil utilization, material flows

ground water management

digital soil mapping

monitoring of biodiversity, soil zoology

rhizosphere researching

soil contamination and waste usage

SOME RESULTS FROM THE LAST TEN YEARS

- ◆ Programs and models were developed to describe the moisture and mass regimes of soil
- ◆ Soil Conservation Strategy
- ◆ Soil Degradation Subsystem (TDR) of the National Environmental Information System
- ◆ Cost and environmental friendly fertilizer advisory system
- ◆ “Biotest” were developed
- ◆ Bio and phytoremediation technologies
- ◆ A measuring device for monitoring of collembola for ecological degradation

SOME RESEARCH TOPICS FROM THE RECENT PAST

- ◆ the impact of **climate change** in the Carpathian region,
- ◆ **utilisation of wastes** (red mud, bioashes, sewage sludge, slaughterhouse compost),
- ◆ effects of traditional and modern farming on the **microbial biodiversity of soil**,
- ◆ setting up a **complex monitoring system** for the analytical detection and biological evaluation of micropollutants,
- ◆ **map simulation for** the delimitation of less favoured areas in Hungary,
- ◆ green energy supply with new tree species, growing and harvesting technologies **using AMF inoculum**,
- ◆ **Soil contamination** (heavy metals, hydrocarbons)

SOILUTIL

„Soil amelioration by innovative waste utilization technologies”

- ◆ Aims were to improve the physical, chemical and biological properties of the degraded soils using recyclable wastes
 - development of a database utilizable for waste management and soil amelioration purposes
- ◆ Our tasks!

CURRENT RESEARCHES

- ◆ “Analyses and integration of spatial and thematic properties of **soil maps and databases** for the compilation of countrywide, digital soil maps”
- ◆ “Statistical and hydrological modelling of soil and subsoil **salt-accumulation** caused by tree plantations established above shallow saline groundwater”
- ◆ “**Soil role in weather formation**”

CURRENT RESEARCHES

- ◆ “Data model fusion for studying the combined effects of different land use and climate change scenarios **on water regime and soil erosion**”
- ◆ “Effect of **weeds on the water and nutrient** cycle of soil”
- ◆ “Changes of **soil microbial community** caused by salt and water stress, vegetation type and cultivation”

CURRENT RESEARCHES

- „Development of scientific background for the quality control system of fertilizers resulting from treatment of **bio-waste materials** – composts and fermentation residues”
- “Development of **heat recovery technology** for landfill”

CURRENT RESEARCHES

Terra Preta Project

*Combined application of biochar and microbial inoculant for
deteriorated soils*

supported by

Green Industry Innovation Program – EEA Grants and
Norway Grants

2014 -2016

WORTH MENTIONING

Contribution:

- ◆ National conception of usage and disposal of sewage sludge in the next 7 years.
- ◆ Water Resource Management to improve the water shortage ecological statement of Danube-Tisza ridge
- ◆ Impact indicator system: investigation of soil biodiversity and activity (National Food Chain Safety Office)

WORTH MENTIONING

Agrochemistry and Soil Science Journal

Online version: <http://www.aton.hu/en>



Average publications' number/year: 170
(international and national journal, book or book chapter)

<http://mta-taki.hu/hu/dokumentumok>

**THANK YOU FOR YOUR
ATTENTION**