

Research areas of interest

Systems: Agricultural soils, Agroforestry soils, Contaminated soil and groundwater

Processes: N-cycle (especially symbiotic nitrogen fixation, evolution and formation of symbiosis), C-cycle (soil organic matter production, loss and modification), degradation of organic contaminants (biological indication and degradation of fresh and weathered pollutants)

Organisms: Bacteria, Plants, Archaea, Fungi

Members of the research group



Kristina Lindström (Professor)
Aregu Aserse (PhD student)
Yongchen Chen (MSc student)
Aneta Dresler-Nurmi (PhD student)
Anu Mikkonen (Postdoc, 2nd affil.)
Daniel Milligan (MSc student)
Abdollah Mousavi (PhD student)

Petri Penttinen (PhD student)
Leena Räsänen (Senior scientist)
Leena Suominen (Senior scientist)
Lijuan Yan (PhD student)
Zhen Zeng (MSc student)
Janina Österman (PhD student)

Methods

Isolation and characterisation of pure cultures, including AFLP, MLST and plant tests

Comparative genome analysis

Expression analysis

Soil bacterial, archaeal and fungal community profiling based on DNA and RNA

qPCR

Various soil & contaminant chemical and microbiological tests (respiration, MPN, kinetic photobacterium test)

Bioinformatics and multivariate statistics

Resources

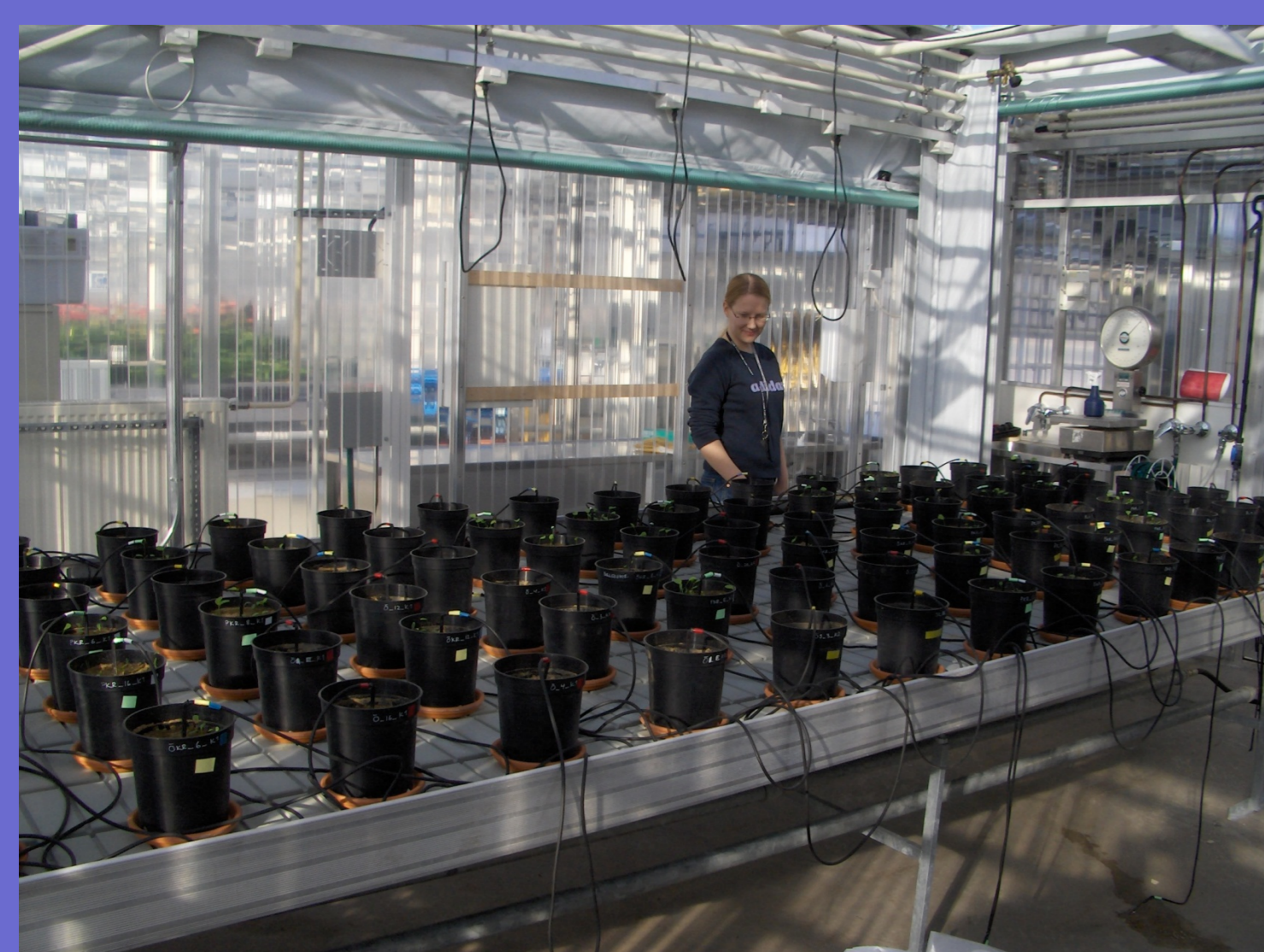
Automated greenhouses

Viikki experimental agricultural fields

Kilpilahti oil-contaminated fields

Chlorophenol-contaminated groundwater sites

Wide range of molecular and chemical analytical equipment (sequencer, qPCRs, GCs etc.)



Five key publications

Aserse, A.A., L.A. Räsänen, F. Assefa, A. Hailemariam, K. Lindström. 2012. Phylogenetically diverse groups of *Bradyrhizobium* are isolated from nodules of *Crotalaria* spp., *Indigofera* spp., *Erythrina brucei* and *Glycine max* growing in Ethiopia. *Molecular Phylogenetics and Evolution* 65: 595-609.

Li, L., H. Sinkko, L. Montonen, G. Wei, K. Lindström, L.A. Räsänen. 2012. Biogeography of symbiotic and other endophytic bacteria isolated from medicinal *Glycyrrhiza* species in China. *FEMS Microbiology Ecology* 79: 46–68.

Mikkonen, A., K.P. Hakala, K. Lappi, E. Kondo, A. Vaalama, L. Suominen. 2012. Changes in hydrocarbon groups, soil ecotoxicity and microbiology along horizontal and vertical contamination gradients in an old landfarming field for oil refinery waste. *Environmental Pollution* 162: 374-380.

Mikkonen, A., K. Lappi, K. Wallenius, K. Lindström, L. Suominen .2011. Ecological inference on bacterial succession using curve-based community fingerprint data analysis, demonstrated with rhizoremediation experiment. *FEMS Microbiology Ecology* 78: 604-616.

Österman, J., E.P. Chizhevskaja, E.E. Andronov, D.P. Fewer, Z. Terefework, M.L. Roumiantseva, O.P. Onichtchouk, A. Dresler-Nurmi, B.V. Simarov, N.I. Dzyubenko, K. Lindström. 2011. *Galega orientalis* is more diverse than *Galega officinalis* in Caucasus – whole-genome AFLP analysis and phylogenetics of symbiosis-related genes. *Molecular Ecology* 20: 4808-4821.