



Natural resources and  
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## 3<sup>rd</sup> Conference on Ecology of Soil Microorganisms

17–21 June 2018, Helsinki, Finland

Krista Kettunen & Oili Kiikkilä (Eds.)

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**Ecology of  
Soil Microorganisms**



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## Welcome to ESM2018!

We are pleased to welcome you to the 3rd conference on the Ecology of Soil Microorganisms in Helsinki, Finland. The two previous meetings were organized in Prague in 2011 and 2015 by Petr Baldrian. We are delighted to see that as many participants, 400 are joining us also under the midnight sun.

During the meeting, soil science will be linked with traditional microbiology and modern genomic, transcriptomic and proteomic analysis tools, extending from the soil-microbe interphase to their interactions with plants. Indeed, one important goal of the conference is to inspire us to bring forward new dimensions in the characterization of the interplay between soil microbial ecology and larger-scale processes in various ecosystems. In this meeting we will cover not only the role of soil microbiota but also their viruses. We hope that you take a moment to think of recent studies that have begun to unearth relationships found between soil microbes, plant performance and even human health. Sustainability of soils and their role in mitigation of climate change are key challenges for preserving life on Earth. As microbes are living functional components of soils, our focus during the week could not be timelier.

The organizers and the host organization Natural Resources Institute Finland wish you a fruitful and invigorating conference. We are excited that you have joined us here in Helsinki to promote state-of-the-art research in soil ecology under the northern midsummer madness!

Taina Pennanen and Hannu Fritze

Chairs of the Organizing Committee

## ORGANISERS

### Scientific committee



Hannu Fritze, Taina Pennanen



Petr Baldrian



Lynne Boddy



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# POSTERS PROGRAM

## Posters Monday 12:45-14:00

Lynette Abbott	P1   How influential is the common mycorrhizal network in nutrient transfer?
Sylwia Adamczyk	P4   The potential role of plant secondary metabolites in carbon and nitrogen cycling in boreal forest soils
Saija Ahonen	P7   Soil microbial communities in subarctic mountain birch forests in two reindeer grazing regimes recovering from a severe moth herbivory
Dalia Ambrazaitienė	P10   Microbial activity in relation to changing soil chemical and physical properties
Wassila Riah-Anglet	P13   Introduce grassland in crop rotation, a way to restore microbial diversity and soil function
O. Oluranti Babalola	P16   Some vast assemblage of archaea in termitaria
L. Carrasco-Barea	P22   Litter decomposition of three halophytic species in a Mediterranean salt marsh: influence of leaf chemical quality and edaphic heterogeneity
Arifa Beddiar	P25   Arbuscular mycorrhizal fungi enhance industrial tomato growth and production and compensate reduced fertilization levels in an Algerian field soil
Rebecca Bevans	P28   The Microbial Mediation Model: linking microbial communities, litter traits, and soil carbon cycling via community-level physiology.
Ewa Błońska	P31   The C:N:P stoichiometry of deadwood of different decomposition rate and tree species
S. Zechmeister-Boltenste	P34   Nitrogen addition to temperate forests lead to changes in microbial community structure and function
Andreas Breidenbach	P37   Impact of pasture degradation on the structure and function of microbial communities on the Tibetan Plateau
Michael Carson	P40   Culturing techniques in the age of omics: Strategies for obtaining uncultured soil microorganisms and genomes from environmental samples
Dorkrak Chaisarn	P43   Effect of Plant Growth Promoting Endophytic Bacteria on Riceberry Rice
Alica Chroňáková	P46   Increasing bacterial contribution in the nitrification following turf disturbances of the translocated wet meadows
Irene Cordero	P49   Strong legacy effects of intense and frequent droughts on soil microbial community structure and function
Evi Deltedesco	P52   Increases in temperature and atmospheric CO <sub>2</sub> can induce shifts in soil microbial communities
Laila Dubova	P55   Soil microbiological activity in differently cultivated Faba bean ( <i>Vicia faba</i> L.) fields
Lill Eilertsen	P58   Defining sustainable and economic forestry practices with minimal impact on soil biodiversity and maximum benefits for tree growth
Á. Prieto-Fernández	P61   Assisted phytostabilization of Cu- contaminated mine-soil using combinations of soil amendments and bioinoculants
Hanna Friberg	P64   Fungal communities in winter wheat – effects of cropping practices
Talia Gabay	P67   Bacterial communities of rehabilitated biological soil crusts in desert phosphate mines
Carlos Garbisu	P70   Rhizoremediation of mixed contaminated soil using <i>Brassica napus</i> and a bacterial consortium
J. Brandão Gontijo	P74   Linking archaeal diversity to potential functions in Amazonian wetlands' sediments
Adrian Gorecki	P77   Bacterial plasmids and their ecological role in Arctic permafrost environment
Paola Grenni	P80   Assessment of the natural microbial community in a cattle manure-amended soil in presence/absence of the antibiotic sulfamethoxazole
Esther Guillot	P83   With or without tree: What impact of a Mediterranean agroforestry system on microbial biomass CNP in drought stress conditions?
Juho Hautsalo	P86   Inclusion of mycorrhizal symbiosis could reform the phosphorus fertilization of strawberry
Pirjo Yli-Hemminki	P89   Enrichment of plant growth promoting bacteria and fungi by means of crop rotation and organic matter amendments in field soil
Martin Brtnicky	P92   Effect of differently changed biochar on cornerstones of Soil Food Web
Chien-Jui Huang	P95   <i>Bacillus subtilis</i> F29-3 produces a novel polyketide compound to promote plant growth and its interplay with fengycin and surfactin
Jenni Hultman	P98   epicPCR to study host range of antibiotic resistance genes
Hussein I. Ibrahim	P101   Impact of Polycyclic Aromatic Hydrocarbons (PAHs) on Active Naphthalene-Degrading Bacteria in Urban Soils
Jan Jansa	P104   Arbuscular mycorrhiza facilitated phosphorus acquisition by <i>Medicago truncatula</i> even under severe drought
Jaanis Juhanson	P107   Plant species and elevation shape composition and phylogenetic diversity of root-associated bacterial communities
M.Domżał-Kędzia	P110   Production of levan by newly isolated <i>Bacillus</i> strains from <i>Eisenia fetida</i> microflora.
Muawwar Ali Khan	P113   Microbial community structure of biochar enhanced sandy soil in response to altered physicochemical properties
Oili Kiikkilä	P116   In situ phytoremediation of soil polluted with both oil and heavy metals; the function of the rhizosphere microbes of <i>Populus</i> sp.
Mikuláš Kočíš	P119   The microbial community of cambisol at plots with different land use
Elmarie Kotzé	P122   Effect of rangeland management on soil microbial communities in a sandy savanna and clayey grassland ecosystem, South Africa
Irina Kravchenko	P125   Natural reforestation impact on the microbial communities in gray forest soils
Tuula Larmola	P128   Do foliar 15N patterns indicate shifts in mycorrhizal abundance and function under nutrient load?
Julieta Orlando	P131   Selectivity of <i>Peltigera frigidula</i> for bacterial groups of their microbiome
Dejun Li	P134   Responses of biological N <sub>2</sub> fixation to multiple environmental changes
Qiang Lin	P137   Microbial phylogenetic structure and interactions along primary succession
Shiyu Ma	P140   Soil chemistry and environmental conditions but not land-use history affect soil microbial community composition in temperate forests in Europe
M. Sagova-Mareckova	P143   The structure of microbial communities is related to seed predation by carabid beetles.
Tijana Martinović	P146   Microbial utilization of carbon in the soil of a temperate forest
Annelein Meisner	P149   Legacy of drying-rewetting affects soil microbial response to freeze-thawing
Éva Mészáros	P152   Microbial community changes in a short- term fertilization experiment on temperate forest soils
Daniel Miller	P155   Simulated winter incubation of soil and swine manure differentially affects multiple antimicrobial resistance elements
S. Kannappan Mohan	P158   Cloning of <i>Saccharomyces cerevisiae</i> halo- tolerance Hal1 gene into <i>Escherichia coli</i> XL10
Shinsuke Mori	P161   Bacterial profiles in the submerged soil around direct-seeded rice with different seed-coating materials
Håvard Kauserud	P164   Soil depth matters: Bacteria, fungi and micro-eukaryotes are all strongly structured by soil depth
Fernanda Nakamura	P167   Eastern Amazonian soils' methane emission varies due to changes in moisture and temperature
Tiina Nieminen	P170   An increasing trend in soil solution nitrate concentrations during a twenty-year- monitoring period in a Norway spruce forest
Jewel De Padua	P173   Biosorption of Nickel by the Fungus <i>Trichoderma</i> Isolated from Soil, Leaf Litter and Marine Substrata
Krista Peltoniemi	P176   Fungal biomass and species composition in boreal peatland forests estimated by in- growth mesh bag method
L. Mangeot-Peter	P179   Jasmonic acid signalling pathway alters the structuring of the root microbiome in Grey Poplar
Paulina Pradel	P182   Impact of long-term in situ warming on bacterial rhizobiome from Antarctic vascular plants.
Karin Pritsch	P185   Reactions of ectomycorrhizal communities of spruce and beech to repeated extreme droughts
Miguel A. Ramos	P188   Selection of high performance strains of edible mycorrhizal fungi for improved abiotic stress resistance
Bahar S. Razavi	P191   Hot experience for cold- adapted microorganisms: temperaturesensitivity of soil microbial enzymes

B. Kieliszewska-Rokicka Fabiana Russo	P194   Mycorrhizas of white poplar ( <i>populus alba</i> L.) in riparian forests with diverse hydrological conditions P197   Soil fungi isolated from DDT-polluted soils: assessment of tolerance, interspecific metabolic diversity and efficacy of rhizo- bioremediation
Hans Sandén	P200   Exclosures and eucalyptus plantations on degraded land improve soil properties and shift the soil fungal community composition in Ethiopian highlands
Elena Gomez-Sanz	P203   Metagenomic analysis of long-term land- use effects on soil microbial communities in 600-year Alpine pasture system
A Schmalenberger Mikhail Semenov Richa Sharma Fedor Shirshikov	P206   Grassland microbial communities respond to soil drainage and phosphorus availability P209   Towards to physiological status of soil microorganisms determined by RNA:DNA ratio P212   Have bioinoculants won the race against chemical fertilizers: Case study with pigeonpea! P215   On the new genomospecies "Candidatus <i>Pectobacterium maceratum</i> ", a necrotrophic bacterium with own insect vector
Adriano Sofo	P218   Genetic and functional diversity of soil bacterial communities in an olive grove managed with sustainable or conventional approaches
Leandro de Souza Martina Štursová	P221   Soil pH modulation impacts microbial activity and 16S rDNA operon copies number in Amazon soils P224   Long-term litter decomposition in the montane forest of Central Europe.
A. K. Ahmad Suleiman Zelalem Taye Eeva Terhonen Sherlyn Tipayno	P227   Impact of microalgae-fertilizer on soil microbiome, greenhouse gases emissions and plant growth P231   Canola Rhizosphere Microbiome: Potential Source of Genetic Variability for Future Canola Breeding P234   Biocontrol Potential of Forest Tree Endophytes P237   Metagenomic assessment of dominant bacterial communities in metal contaminated rice paddy soils
Lea-Rebekka Tonjer Tero Tuomivirta L. Egerton-Warburton Safaa Wasof	P240   Changes in the soil fungal community across the mountain birch tree line ecotone P243   The H2020 Diverfarming project: assessing the impact of crop diversification on soil biodiversity across Europe P246   Seasonality drives arbuscular mycorrhizal community composition and diversity in tropical dry forests P249   Investigation on the interaction between enhanced nutrient availability and soil biota on plant community in grasslands – a mesocosm experiment
Tomáš Větrovský Monika Viikiené Yucheng Wu Rui Yin Jun Zeng	P253   Global distribution of dominant fungi in the environment P256   Bacterial community alternation under tillage intensity and their contribution to soil functions P259   Lignin-enhanced polycyclic aromatic hydrocarbons remediation and involved soil microbes P262   Soil faunal contribution to litter mass loss as affected by global climate and land use changes P265   Fate of polycyclic aromatic hydrocarbon in soil affected by laccase amendment and the resulting soil bacterial responses
Xuan Zhou Bunjirtluk Jintaridth	P268   Wildfire impact on permafrost bacterial communities and functional genes in Canada boreal forests P272   Efficiency of phosphate solubilizing microorganisms and Vesicular -Arbuscular Mycorrhiza for increasing baby corn yield on acid sulfate soils

## Posters Tuesday 12:45-14:05

Bartosz Adamczyk Alexey Afonin	P2   How interaction between fungi and plant- derived polyphenolics contributes to soil carbon stabilization? P5   Bacterial genetic features determining the strain specificity of <i>Pisum sativum</i> line P61 interaction with <i>Rhizobium leguminosarum</i>
Júraté Aleinikovienė	P8   Determination of Changes in Soil Microbiota of Different Soil Genesis and of Long-Term Diverse Soil Use Intensity
Fuad Ameen	P11   Degradation of azo dyes by fungi inhabiting contaminated soil: Optimization of the degradation conditions with the view to bioremediation
Agnès Ardanuy O. Oluranti Babalola Luciana Bachega Gyeryeong Bak Milan Bartos	P14   The physiology of plant soil feedbacks in temperate tree species P17   The varied assemblages of fungi on termite mounds P19   Soil microbial community in an ecosystem succession chronosequence of tropical riparian forests P20   The characteristics of soybean ( <i>Glycine max</i> ) cultured soil with high microorganism activities on Saproliite soil P23   Mycobacteria in the microbiomes of Hranice Abyss and Zbrasov Aragonite caves (Hranice Karst, Czech republic)
Helene Berthold	P27   Consequences of climate change on PFLAs (Phospholipid Fatty Acids) in lysimeters of agricultural soils in the Pannonian area of Austria
E. Blagodatskaya R.S. Boeddinghaus	P29   Single microbial population controls energy and carbon use efficiency during growth and starvation in soil P32   Short-term changes in grassland soil microbial function and composition are explained by concurrent shifts in plant functional traits
Hanka Brangsch B. Guedes Souza e Brito C. Trasar-Cepeda Timofey Chernov Lucie Cihlářová O. Y. de Assis Costa Timo Domisch P. Dudhagara Dana Elhottová Á. Prieto-Fernández	P35   Ecological functions of two putative <i>Streptomyces</i> phosphinothricin N- acetyltransferases P38   Decomposition Parameters Using the TBI Method in Two Cerrado Environments in Southeast Brazil P41   Microbial biomass C and C mineralisation of a seaweed-garlic substrate P44   Comparison of buried and surface soils microbiomes by qPCR and NGS P47   The effect of plants with different mycorrhizal preferences on soil fungal community composition P50   Optimization of growth and EPS production of two strains of <i>Acidobacteria</i> P53   Effects of repeated water-logging periods during the growing season on soil conditions and Scots pine seedlings P56   Cross-biome Metagenomic Assessment of Saline Soil Microbial Communities of Kutch Desert, India P59   Interaction of manure, soil and bacteria in spreading of resistance to antibiotics P62   Rhizosphere bacterial communities of Ni- hyperaccumulating plants in ultramafic soils analysed using traditional isolation and culture independent techniques
Tobias Frøslev Sara Gallego	P65   Man vs machine: do fungal fruitbodies and DNA metabarcoding provide comparable insights in the soil funga? P68   Ecotoxicological effects of wastewater borne contaminants on microbial communities from soils previously exposed to pesticides.
Carlos Garbisu Juan M. Gonzalez Sue Grayston	P71   Antibiotic resistant genes in agricultural soil amended with sewage sludge P75   Influence of soil temperature and water content on microbial extracellular enzyme activities P78   Nutrient availability and vegetation cover as drivers of fungal diversity in reconstructed oil-sands soils and natural boreal forest soils.
Florian Gschwend Esther Guillot Petra Havlíčková	P81   Next-generation soil quality monitoring P84   Decomposers' activity along a spatial gradient in a Mediterranean agroforestry system P87   Effects of vegetation and chemistry on diversity and composition of bacterial community across temperate montane forests
N. Bhagya Wijayalath	P90   Impact of top canopy Scots pine harvesting on soil fungal communities and litter decomposition in a primary successional site.
Adrian Ho Anna-Sofia Hug Zander Rainier Human Heribert Insam Mayuko Jomura	P93   Effect of salt stress on aerobic methane oxidation and associated methanotrophs; a microcosm study. P96   Implementing metabarcoding of soil microbial communities into a long-term soil monitoring network P99   Seasonal changes of bacterial and fungal communities in <i>Picea abies</i> forests P102   Reclamation of acid soils with biomass ashes from pyrolytic wood liquefaction P105   Response to environmental stresses of decomposition respiration and microbial biomass of dead wood inoculated with <i>Lentinula edodes</i>
Robert Kahle	P108   Elevated Temperature Changes the Ratio between Auto- and Heterotrophic Soil Respiration in an Agroecosystem

Katharina Keiblinger	P111   Cu application disrupts the bacterial community structure and the soil N cycle
Munawwar Ali Khan	P114   Bacterial community structure of sandy soil treated with green compost, composted sludge and compost with bio- fertilizer
O. Janne Kjønaas	P117   How does tree species change affect forest soil C stocks, C mineralization rates, organic matter stability and microbial diversity?
Petr Kohout	P120   Role of exotic woody plant species in introductions of non-native symbiotic fungi
Martina Kracmarova	P123   Influence of different types of fertilization, crop rotation and geochemical composition on soil microbial structures
Katharina Kujala	P126   Ecophysiology of arsenic- and antimony- metabolizing microorganisms in peatlands treating mining-affected waters
Gwenaëlle Lashermes	P129   Responses of microbial degradation patterns of soil organic matter to a gradient of anthropogenic pressure on agrosystems
Leandro Lemos	P132   A novel unculturable Paracobacteria presents a versatile metabolism adapted to long-term effects of anoxic conditions in deforested Amazon soil
Honghong Li	P135   Soil bacterial response to different fertilizer-crop managements in a boreal climate
Jennifer Stoiber-Lipp	P138   Microbial communities at two coal tar waste contaminated sites
Irena Maček	P141   Biodiversity and community composition of arbuscular mycorrhizal fungi in selected biodiversity hot spots of the Balkan Peninsula
M. A. Lopez Marin	P144   Exploring the potential of <i>Micrococcus luteus</i> culture supernatant for enhancing the culturability of soil bacteria
L. Schneider-Maunoury	P147   The black truffle <i>Tuber melanosporum</i> , ectomycorrhizal with trees and endophyte with herbs
Lucas William Mendes	P150   Breeding for resistance to soil-borne pathogen impacts rhizosphere microbiome in common bean
Mitiku Mihiret	P153   Impact of treated wastewater irrigation on proliferation of antibiotic resistant genes and Class 1 integrons in soil and crops
Maki Miura	P156   Effects of freeze-thaw and dry-wet events in an arable soil
S. Kannappan Mohan	P159   Bioactive potential of <i>Halomonas pacifica</i> MML1909 isolated from Saltpan
Shinsuke Mori	P162   Submerged soil collection method for studies on soil microbial changes around directly seeded rice seeds
David Myrold	P165   Intra-annual Variation of Soil Microbial Communities
Diana Nebeská	P168   Development of PLFA profile of soil microbial communities during pot growth of <i>Miscanthus x giganteus</i> in contaminated soils
Olabiya Obayomi	P171   Impact of treated wastewater irrigation on soil and crop microbial communities
Ansa Palojärvi	P174   Soil microbial and structural properties as sensitive soil quality indicators affected by long-term crop sequence and manure use
Mari Pent	P177   Bacterial communities in mushrooms: what determines their structure and function?
Martin Pingel	P180   Response of soil microbial communities and soil functions to long-term soil perturbation and nitrogen fertilization in a perennial cropping system
Nadine Praeg	P183   Highly sensitive quantification of methanogenic and methanotrophic microorganisms via droplet digital PCR (ddPCR)
Marja Roslund	P186   Greening of daycare yards modifies skin and gut microbiota and enhances well- being of urban children in Finland
Irina Bergström	P189   Integrated Biodiversity Conservation and Carbon Sequestration in the Changing Environment (IBC-CARBON)
Thomas Reitz	P192   Combined effects of land use intensification and climate change on microbial decomposition processes in soils.
Niina Lallukka	P195   TANIA: Treating contamination through nanoremediation
Jan Säcký	P198   Functional analysis of Zn transporters of the ectomycorrhizal Zn-accumulating fungus <i>Russula atropurpurea</i>
Minna Santalahti	P201   The long term effect of reindeer grazing on soil fungal communities and enzyme activities in boreal coniferous forests in Finland
Elena Gomez-Sanz	P204   Microbial composition and antimicrobial resistance determinants in one of the oldest experimental agricultural field soils in Europe
A.Schmalenberger	P207   The effect of sulfate fertilization of grassland columns on soil microbiota and nematodes
Jasmin Seven	P210   Food for microbes - C:N:P stoichiometry of microbial biomass and incorporation of nutrients into cellular pools respond to altered nutrient levels
Lingling Shi	P213   Forest disturbance causes loss of functionally dominant fungi in a tropical rain forest in SW China
Outi-Maaria Sietiö	P216   The impact of plant-derived carbon flow on root litter decomposition
Hong-Gyu Song	P219   Screening of soil bacteria with antimicrobial activity against several microbial residents on human skin
Heide Spiegel	P222   How does long-term different tillage management affect soil microbiota?
Salisa Suchitwarasan	P225   Potential for growth enhancement by arbuscular mycorrhizal fungi in potato.
Jachym Suman	P228   <i>Pseudomonas alcaliphila</i> JAB1 – a versatile degrader of aromatics of both natural and anthropogenic origin
Zelalem Taye	P232   Fine Root Dynamics and Its Possible Implications in Structuring the Rhizosphere Microbial Community in Sixteen <i>Brassica napus</i> (Canola) Lines
Sakshi Tewari	P235   Multifaceted bioformulations enhancing nodulation and growth attributes of pigeon pea under multi-stress conditions
Keisuke Tomioka	P238   Pink seeds of barley attributed to infection with <i>Erwinia rhapontici</i>
Marika Truu	P241   Relationship of soil microbial community with plant roots and greenhouse gas emission in full-drained peatland forests
Jana Täumer	P244   Effects of grassland and forest land use intensity on the abundance and activity of methane-oxidizing[] Microorganisms
Milankumar Varsadiya	P247   Functional potential of microbial communities in cryoturbated organic matter from Herschel Island
James Weedon	P250   Community adaptation to temperature explains abrupt soil bacterial community shift along a geothermal gradient
Meike Widdig	P254   Effects of element inputs on P-solubilizing bacteria and on phosphatase activity in two grassland soils in South Africa
Shanay Williams	P257   Linking soil nitrogen cycling to microbial community composition and function to differentiate nitrogen uptake among diverse <i>Brassica napus</i> (canola) lines
Mohamed Al-Yahya'eI	P260   Organic farming practices in a desert habitat increased the abundance, richness and diversity of arbuscular mycorrhizal fungi
Kim Yrjälä	P263   Tropical peat decomposition under land- use change: adaption to resources and conditions (TROPDEC)
Yi Zhao	P266   AsChip: a high-throughput qPCR chip for comprehensively profiling of microbial arsenic biogeochemical cycling genes in the environments
Jure Zrim	P269   Effects of softwood biochars on soil biota in medium-term field experiments in Finland
Julieta Orlando	P271   Settlements of sea animals increase nitrous oxide emissions in Antarctic

## Posters Wednesday 13:10-14:30

- Bartosz Adamczyk P3 | Plant-associated microbes use a different pathway to decompose soil organic matter than free-living saprotrophic microorganisms.
- Oscar E. Aguinaga P6 | Peatland provides metal remediation by preserving microbial diversity and facilitating microbial Fe and S oxidation
- Rana Shahbaz Ali P9 | Response of microbial growth to substrate complexity under different temperature regimes
- Roey Angel P12 | New insights into the origin and role of biological rock crusts in rock weathering processes
- Floriana Augelletti P15 | Bioaugmentation with fluorene-degrading *Sphingobium* sp. strain LB126: role of biodiversity of resident communities on establishment and survival of the invader
- Doreen Babin P18 | Impact of long-term farming practices on the rhizosphere microbiome and plant health
- S. Adebayo Balogun P21 | Shiga Toxin Producing stx I and II genes in *Escherichia Coli* O157: H7 from Domesticated Cane Rat (*Thryonomys swinderianus*).
- Capucine Baubin P24 | The role of petrichor in desert soil microbial communities resuscitation during a rain event
- Jennifer Bell P26 | Microbial Community Assembly Processes in a Grassland Undergoing Invasion
- Ewa Błońska P30 | Soil biochemical properties and stabilization soil organic matter in relation to deadwood of different tree species
- R.S. Boeddinghaus P33 | Microbial colonization of organo-mineral complexes and microbial resource partitioning in grassland soils under different land-use intensities
- Alfonso Méndez-Bravo P36 | Microbial interactions in the avocado rhizosphere: pathogenic fungi and plant growth-promoting bacteria with antifungal activity
- Juan Antonio Campos P39 | Microbiological activity and plant colonization patterns in a so long abandoned sulfide mine precinct
- C. Trasar-cepeda P42 | Impact of the ionic liquid [C1C1Im] [DMP] on soil microbial activity in a forest soil
- V. Kumar Choudhary P45 | Bacterial typing of rhizospheric communities of the *Thysanotæna latifolia* (Roxb. ex Hornem.) Honda., fam. Poaceae., associated with iron ore mines
- Anna Clocchiatti P48 | Stimulating saprotrophic fungi in agricultural soils
- Valentine Cyriaque P51 | Following the impact of metals on river sediments in microcosms: metals as a community manager
- A. M. Fiore-Donno P54 | Small-scale spatial structure of a major group of soil protists (Cercozoa, Rhizaria) in a temperate grassland revealed by high- throughput sequencing
- Konrad Egenolf P57 | Heterotrophic nitrate immobilization – a neglected variable in crop BNI performance?
- Marcia Astorga-Eló P60 | Rhizobacterial community composition and potential PGPR associated to the Flowering Desert phenomenon in the Atacama Desert, Chile.
- V. Angulo Fernández P63 | Designing microbial inoculants that improve the ability of compost amendments to restore degraded soils
- Yu Fukasawa P66 | Foraging association between myxomycetes and fungal communities on coarse woody debris
- Sara Gallego P69 | Ecotoxicological impact of oxamyl on the abundance and diversity of bacterial communities in an agricultural soil adapted to enhanced degradation.
- Richard Gere P72 | Functional diversity of soil microorganisms in natural and managed forest ecosystems: influence of forest stand age and tree species
- Nina Goodey P76 | Distribution of soil extracellular phosphatase activity across soil macro – and micro-environments
- Timothy Philpott P79 | Fine-root decomposer fungi are largely decoupled from dominant vegetation and edaphic gradients through secondary succession
- Heng Gui P82 | Funneliformis mosseae alters soil fungal community dynamics and composition during litter decomposition
- Lenka Harantova P85 | Composition of soil and root-associated bacterial communities along plant diversity gradient
- Bobbi Helgason P88 | Diverse crop rotations impact the root microbiome and soil microbial processes
- Bridget Hilbig P91 | Exploring soil biological complexity across different urban agroecosystems on the Wasatch Front
- Martin Brtnický P94 | Effect of different soil types of organic matter application on biological parameters of soil
- Nan Hui P97 | Urban green space, human microbiome and immune-mediated diseases – comparisons between urban and rural elderly in the Lahti region
- Karoliina Huusko P100 | Carbon to agricultural fields: Impacts of organic soil amendments on soil microbes and transformation of soil organic matter
- Heribert Insam P103 | Old foes and novel suspects lead to an extended model of apple replant disease
- Jaanis Juhanson P106 | Microbial communities are not linked to vegetation changes induced by long-term warming across the Arctic
- Ida Karlsson P109 | Unravelling the role of protists in microbial networks in agricultural soil
- Lee Kerkhof P112 | Bacterial rRNA operon profiling of Arctic tundra soils by Oxford Nanopore MinION sequencing
- Heikki Kiheri P115 | Effects of 15 Years of Nutrient Addition on Ericoid Mycorrhizal Colonization at Whim Bog
- Jenna Knuutinen P118 | Interaction of nickel with bacteria isolated from a nutrient-poor boreal bog
- Jan Kopecky P121 | Decomposition of beech litter: early fungi colonization and late bacterial communities structure
- E. N. Tikhonova P124 | Methylophony as metabolic adaptation and survival strategy of *Azospirillum* in wetlands
- Niina Lallukka P127 | Remediation of oil-polluted soils in situ through stimulation of the indigenous microbes with physical and chemical treatments
- Tarja Lehto P130 | Temperature affected the formation of arbuscular mycorrhizas and ectomycorrhizas in *Populus angustifolia* more than a mild drought
- Tereza Leonhardt P133 | Zinc and arsenic over-accumulation trait in *Russula* spp.
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## P217 Soil nitrogen cycling in relation to terpenes and tannins: Examples from forest bioenergy harvest

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In short-term laboratory experiments, exposure of forest soil to different terpenes or condensed tannins often inhibit those N cycling activities that increase the risk for N mobilization and losses. We studied how soil concentrations of these plant secondary compounds and N cycling activities are related in field conditions. Organic layer samples were from conifer logging residue experiments in thinning stands and final fellings, established to study the effects of forest bioenergy harvest, and included logging residue and control treatments. We compared short- and long-term effects of logging residues, consisting of fresh branches and stem tops, on soil N cycling and plant secondary compound composition. In thinning stands, logging residues increased the rate of net N mineralization but the rate of net nitrification was always negligible. On a recently clear-cut site, logging residues strongly stimulated net nitrification during the first years. In both short and long term, net N mineralization and nitrification were generally stimulated with increased concentrations of condensed tannins and various terpenes. For instance, volatile monoterpenes, that in laboratory exposure experiments strongly inhibit net nitrification, were emitted on the clear-cut in large amounts from the residues to the soil. Still net nitrification was intensive. Correlations - if any - between the concentrations of terpenes and tannins and N mobilization activities were positive. Input of these compounds to soil occurs together with a large variety of other compounds that unsettle the situation, and extrapolating results from simplified laboratory addition experiments is not straightforward.

## P218 Genetic and functional diversity of soil bacterial communities in an olive grove managed with sustainable or conventional approaches

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The aim of the present work was to evaluate the medium-term effect (18 years) of two soil management systems, so called 'sustainable treatment' (ST) and 'conventional treatment' (CT) on bacterial genetic and functional diversity in soils of an olive (*Olea europaea* L.) orchard located in Southern Italy (Basilicata Region). ST system included no-tillage and endogenous and polygenic organic matter inputs deriving from spontaneous cover crops and pruning material left on the field. CT soil was tilled, without cover crops, and pruning residues were removed. Microbial analyses were carried out by culture-based (plating, spectrophotometry, Biolog<sup>®</sup>) and molecular-based approaches (DGGE, 16S DNA cloning/sequencing and metagenomic analysis). Significant differences were observed between the treatments regarding the number of many classes of culturable bacteria, the activities of microbial soil enzymes, Biolog<sup>®</sup> carbon source utilization patterns and related indices, and DNA abundance and presence of the bacteria involved in soil dynamics, such as C and N biogeochemical cycles, lignin degradation, humification and organic matter mineralization. Generally, the data revealed a significantly higher bacterial abundance, activity, diversity and complexity in ST soils. This higher biodiversity could lead to greater soil stability and multifunctionality, positively affecting also plant status and product quality. The results obtained highlight that in Mediterranean orchards, under semi-arid climatic conditions, the application of endogenous organic matter can be a key factor to enhance soil quality/fertility and produce in a sustainable way, preserving natural resources and avoiding detrimental effects on the environment.