KONINKLIJKE NEDERLANDSE
AKADEMIE VAN WETENSCHAPPEN

KNAW-minisymposium Tijdreizen door de bodem

Het belang van een gezonde bodem vroeger, nu en in de toekomst

Time Travel Through Soil - The importance of healthy soil in the past, the present and the future

Date: 23 November 2016, 6 p.m. – 8 p.m.
Venue: KNAW, The Trippenhuis, Kloveniersburgwal 29, 1011 JV Amsterdam (route description)

Programme

5.30 p.m.	Registration
6.00 p.m.	Kelly Ramirez, Netherlands Institute of Ecology – *Discover the jungle under our feet*
6.15 p.m.	Richard Bardgett, University of Manchester– *How soil underlies civilisation*
6.40 p.m.	Ciska Veen, Netherlands Institute of Ecology – *Home Sweet Home*
6.55 p.m.	Maria Briones, University of Vigo – *Dangers of the future – a warming soil*
7.20 p.m.	Jasper Wubs, Netherlands Institute of Ecology – *Injecting nature to cure soils*
7.35 p.m.	Wim van der Putten, Netherlands Institute of Ecology / Wageningen University & Research – *Soil health: the future is history*
8.00 p.m.	Drinks

Chair: Louise Vet, Netherlands Institute of Ecology

Het Trippenhuis Kloveniersburgwal 29 · 1011 JV Amsterdam
Telephone +31 20 551 0700 · knaw@knaw.nl
www.knaw.nl

Short Bios and Lecture Abstracts

Dr. Kelly Ramirez
Email: k.ramirez@nioo.knaw.nl
Dr. Kelly Ramirez, PhD is a postdoctoral researcher (NIOO-KNAW) interested in characterizing the diversity and biogeographical patterns of soil microbes from across the globe to highly human-dominated areas, such as the soils in Central Park, NYC. In addition to her research she has led and been involved in a number of global synthesis and networking efforts; she was the Executive Director of the Global Soil Biodiversity Initiative and a postdoctoral research fellow at the German Centre for Integrative Biodiversity (iDIV).

Discover the jungle under our feet
Soil is one of the most species-rich and diverse environments on Earth, with over 5000 different species in just a handful of soil, and an estimated 10-100 million species worldwide. Soil biota are critical to human well-being because their activities underpin soil resources and the delivery of major ecosystem services, from nutrient cycling to food production. Despite the importance and abundance of soil organisms, our understanding of their global distribution remains incomplete. In her talk, Dr. Ramirez will discuss how we can keep track of the millions of organisms hidden in soils. She will highlight the importance of mapping the hidden diversity beneath our feet for the protection of healthy soils in the future.

Prof. Richard Bardgett
Email: richard.bardgett@manchester.ac.uk
Richard Bardgett is Professor of Ecology at The University of Manchester. The goal of his research is to better understand how complex soil biological communities regulate the structure and functioning of terrestrial ecosystems, and their response to global change. He has published over 240 papers on this topic and several books, including Earth Matters: How Soil Underlies Civilization (2016), published by Oxford University Press. He was Vice President of the British Ecological Society (2011-2014), and was elected an Honorary Fellow of the Royal Society of New Zealand (2006) and a member of Academia Europaea (2015).

How soil underlies civilisation
For much of history, soil has played a central role in society. Farmers and gardeners worldwide nurture their soil to provide their plants with water, nutrients and protection from pests and diseases; major battles have been aborted or stalled by the condition of soil; murder trials have been solved with evidence from soil; and, for most of us, our ultimate fate is the soil. In this talk, Richard Bardgett, Professor of Ecology at The University of Manchester will explore the role soil plays in our lives and in the biogeochemical cycles that allow the planet to function effectively. He considers how better soil management could combat global issues such as climate change, food shortages and the extinction of species.

Dr. Ciska Veen
Email: c.veen@nioo.knaw.nl
Dr. Ciska Veen, PhDis a soil ecologist at the Netherlands Institute of Ecology interested in understanding the role of soil organisms for the functioning of terrestrial ecosystems. She has received two personal grants to explore how changes in environmental conditions drive soil decomposer community composition, decomposition rates and soil nutrient cycling.

Home Sweet Home
Decomposition of plant litter is one of the most fundamental ecosystem processes driving the recycling of carbon and nutrients worldwide. Evidence is increasing that decomposer communities are specialized to break down litter from the plants they are associated with, referred to as home-field advantage. Understanding which factors determine the specialization of decomposer communities in natural systems provides knowledge on how efficiency of nutrient cycling can be enhanced. In her talk, Dr. Veen, will show how soil decomposers play a home game in natural systems and she will discuss ways to use this knowledge to steer decomposer communities in agricultural soils.

Prof. Maria Briones
Email: mbriones@uvigo.es
Maria J.I. Briones (PhD in Biological Sciences) is currently a Professor of Animal Biology at the University of Vigo (Spain) with special interest on the functional role of soil fauna in terrestrial ecosystems in the context of climate change. In particular Maria has been trying to quantify soil biodiversity changes and their potential implications for ecosystem services that they govern (i.e. sustainable plant production, soil carbon sequestration, greenhouse gas mitigation, hydrological regulation). To achieve this she has developed a robust research profile on taxonomy and ecology of different soil organisms.

Dangers of the future – a warming soil
Human activities are producing more CO_2 than our current ecosystems have ever experienced. To what extent this excess carbon can be stored in soils under climate change is a question of global significance. The role of small animals, almost invisible to the naked eye, in controlling how much carbon can be stored in soils is absolutely critical, but totally ignored in major contemporary studies - a serious omission and one that Darwin himself would have considered unthinkable. In her talk, Professor Maria Briones will discuss the critical connection between climate change, soil invertebrates and carbon storage. She will give examples of how responses of the soil biota to climate change could effect of long-standing soil carbon reservoirs and have severe consequences on the global carbon cycle.

Jasper Wubs MSc, PhD Candidate
Email: j.wubs@nioo.knaw.nl
Jasper Wubs is a plant and soil ecologist with the goal of sustainable management of natural as well as agro-ecosystems firmly in mind. Jasper's recent work on soil inoculation for nature restoration was highlighted by both academic and popular press and received the national Zilveren Parnassia Award for nature conservation.

Injecting nature to cure soils
Plants are under constant influence of soil life. However, it is still unclear how we use this knowledge to manage our nature. Recently, Jasper Wubs has provided the first demonstration in the field of how inoculation of whole soil communities can help restore nature on former agricultural land. This approach has strong analogies with faeces transplantation, so that curing soils may appear the same as curing humans.

Prof. Wim van der Putten
Email: W.vanderPutten@nioo.knaw.nl
Wim van der Putten is head of the Department of Terrestrial Ecology at the Netherlands Institute of Ecology (NIOO-KNAW) and professor of Functional Biodiversity at Wageningen University & Research. He studies how plants interact with aboveground and belowground biodiversity and how these interactions influence the responses of terrestrial ecosystems to human-induced global changes in climate, land use, species loss and species gain. He has been awarded an ERC-Advanced grant to study how terrestrial ecosystems become re-organized under climate change, and is an elected member of the Royal Netherlands Academy of Arts and Sciences (KNAW).

Soil health: the future is history
Human society depends on healthy soils. Healthy soils perform a multitude of functions, such as cycling of nutrients, water, prevention of greenhouse gases, producing clean drinking water, and suppressing human, animal, and plant diseases. However, soils have a memory and many of today's problems have their origin in history. That also means that future soil health depends on how we handle soils today, which, in turn, depends on what was done with the soils in the past. In this presentation, examples will be given of soil functions that are at risk and it will be explored how research, conservation and policy efforts on natural soils may help to improve soil functioning in human-dominated environments. Considering the dependence of human society on soils, and the approaching national elections, why do political parties care so little about soils?