Geophysical Research Abstracts
Vol. 19, EGU2017-16569, 2017
EGU General Assembly 2017

Soil as a Sustainable Resource for the Bioeconomy – BonaRes

Ute Wollschläger (1,13), Wulf Amelung (2), Nicolas Brüggemann (3), Joachim Brunotte (4), Robin Gebbers (5), Rita Grosch (6), Uwe Heinrich (7,13), Katharina Helming (7,13), Ralf Kiese (8), Peter Leinweber (9), Barbara Reinhold-Hurek (10), Edzo Veldkamp (11), Hans-Jörg Vogel (1,13), and Traud Winkelmann (12)

(1) UFZ - Helmholtz Centre for Environmental Research, Department Soil Physics, Halle, Germany (ute.wollschlaeger@ufz.de, hans-joerg.vogel@ufz.de), (2) Institute of Soil Science and Soil Ecology, INRES – University of Bonn, Bonn, Germany (amelung@uni-bonn.de), (3) IBG-3: Agrosphere Institute of Bio- and Geosciences, Forschungszentrum Jülich GmbH, Jülich, Germany (n.brueggemann@fz-juelich.de), (4) Thünen Institute of Agricultural Technology, Braunschweig, Germany (Joachim.brunotte@ti.bund.de), (5) Leibniz Institute for Agricultural Engineering, Potsdam-Bornim, Germany (rgebbers@atb-potsdam.de), (6) Leibniz-Institute of Vegetable and Ornamental Crops (IGZ), Großbeeren, Germany (grosch@igzev.de), (7) Leibniz Centre for Agricultural Landscape Research, Müncheberg, Germany (uwe@zalf.de, helming@zalf.de), (8) Karlsruhe Institute of Technology IMK-IFU, Garmisch-Partenkirchen, Germany (Ralf.Kiese@kit.edu), (9) Soil Science, Faculty of Agricultural and Environmental Sciences, University of Rostock, Rostock, Germany (peter.leinweber@uni-rostock.de), (10) Department Microbe-Plant Interactions, Faculty of Biology/Chemistry, University of Bremen, Bremen, Germany (breinhold@uni-bremen.de), (11) Soil Science of Tropical and Subtropical Ecosystems, University of Göttingen, Göttingen, Germany (eveldka@gwdg.de), (12) Institute of Horticultural Production Systems, Leibniz Universität Hannover, Hannover, Germany (traud.winkelmann@zier.uni-hannover.de), (13) BonaRes – Centre for Soil Research, Germany (info@bonares.de)

Fertile soils are a fundamental resource for the production of biomass and provision of food and energy. A growing world population and latest climate targets lead to an increasing demand for bio-based products which require preserving and – ideally – improving the long-term productivity of soils as a bio-economic resource. At the same time, other soil functions and ecosystem services need to be maintained: filter for clean water, carbon sequestration, provision and recycling of nutrients, and habitat for biological activity. All these soil functions result from the interaction of a multitude of physical, chemical and biological processes which are insufficiently understood. In addition, we lack understanding about the interplay between the socio-economic system and the soil system and how soil functions benefit human wellbeing, including SDGs. However, a solid and integrated assessment of soil quality requires the consideration of the ensemble of soil functions and its relation to soil management.

To make soil management sustainable, we need to establish a scientific knowledge base of complex soil system processes that allows for developing models and tools to quantitatively predict the impact of a multitude of management measures on soil functions. This will finally allow for the provision of options for a site-specific, sustainable soil management.

To face this challenge, the German Federal Ministry of Education and Research (BMBF) recently launched the funding program “Soil as a Sustainable Resource for the Bioeconomy – BonaRes”. In a joint effort, ten collaborative projects and the coordinating BonaRes Centre are engaged to close existing knowledge gaps for a profound and systemic assessment and understanding of soil functions and their sensitivity to soil management. In BonaRes, the complete process chain of sustainable soil use in the context of a sustainable bio-economy is being addressed: from understanding of soil processes using state-of the art and novel measurement and modelling techniques towards soil functions and ecosystem services driving the development of assessment and decision support tools for a sustainable soil management. To this end, soil scientists and researchers from several other disciplines including social sciences are collaborating closely. Besides a better understanding of fundamental soil processes from each of the collaborative projects and the development of novel measurement techniques and models, the outcome of the joint BonaRes programme will be a web-based portal (www.bonares.de) providing information, knowledge, models, a data repository with doi-referenced, internationally available, open soil data from the BonaRes funding initiative and beyond, as well as decision support options for a sustainable soil management.

This presentation will provide an overview about the BonaRes funding initiative and the research conducted therein.