

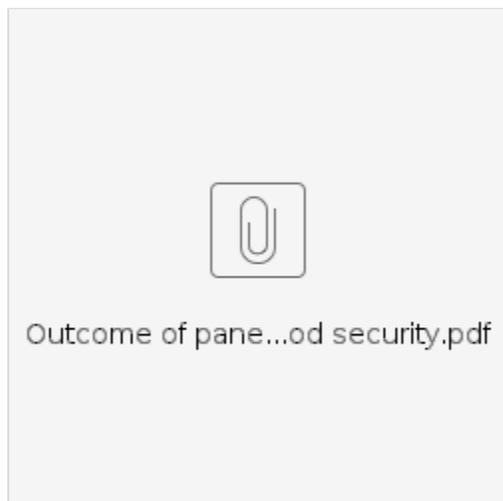
# 2022-03-24/25 Soil carbon sequestration and food security in Sub-Saharan Africa

Panel discussion on:

Soil carbon sequestration and food security in Sub-Saharan Africa: Synergies and Tradeoffs

24<sup>th</sup> and 25<sup>th</sup> of March, 2022, 3-5pm (CET), online

Documentation of the event:



Please contact us, if you would like to receive the recording of the panel!

## Outline:

Carbon sequestration in nutrient-deprived agricultural soils in SSA seems to hold a great potential to tackle two of the most pressing issues of our time: food insecurity and climate change. Carbon-rich soils increase the resilience of agricultural systems due to their improved water holding capacity, soil aggregation, and nutrient supply and hence, contribute to food security. At the same time, carbon sequestration in soils is regarded as one important nature-based solution to mitigate climate change. Nevertheless, the concepts proposed by scientists, how to improve soil health and soil fertility vary widely, and large discrepancies exist around the need for chemical inputs to quickly increase food and other biomass production. The different approaches might result in potential trade-offs between high levels of crop yields and carbon sequestration. During the two panel discussions, we would like to have a closer look at different land management practices and their synergies and trade-offs regarding climate change mitigation and current and future food production.

The guiding questions to the panel are:

What are the technical and socio-economical potentials of different soil management approaches on the given cropland (ISFM, conservation agriculture, organic agriculture, ...) for (A) achieving food security and (B) carbon sequestration?

What are the tradeoffs associated with each of those approaches (currently and in a situation of advanced global warming)?

Is there a corridor within which those approaches can meet and achieve good results for crop production and eventually food security on one side and carbon sequestration on the other side under different ecological and socio-economical conditions in tropical countries, in particular Sub-Saharan Africa?

## 24<sup>th</sup> of March: The scientific point of view

Moderation: Paul Luu, Executive Secretary "4 per 1000" Initiative

## 25<sup>th</sup> of March: The practitioners' point of view

Moderation: Niels Thevs, GIZ, Germany

Time (CET)	Program
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Time (CET)	Program
15:00 – 15:15	Welcome and short summary from day 1

15:00 – 15:10	Welcome and housekeeping: Juliane Wiesenhütter
15:10 – 16:15	Inputs by the panelists: Gatien Falconnier, CIRAD, France/ Zimbabwe Lydie-Stella Koutika, CRDPI; Congo Bernard Vanlauwe, IITA, Nigeria / Kenya Wellington Mulinge, KALRO, Kenya Rolf Sommer, WWF, Germany
16:15 – 16:50	Discussion: Questions from the audience If there are urgent questions that cannot be addressed, we may take them into Friday.
16:50 – 17:00	Wrap up and closing

## Panelists, presentations and background information day 1

### Gatien Falconnier

Gatien Falconnier is Systems Agronomist at CIRAD, based in Harare, Zimbabwe. He holds a PhD in Production Ecology and Resource Conservation from the University of Wageningen in the Netherlands. His research focuses on the contribution of agroecological intensification to poverty alleviation, food security, and climate change adaptation and mitigation, in the smallholder context of the Global South. This contribution is assessed using experiments with farmers, participatory research and farm/crop modelling.

#### Presentation:



#### Preparatory reading:

15:15-15:25	Keynote by Prof. Rattan Lal, OSU, USA
15:25 - 16:10	Inputs by the panelists: Pauline Chivenge, APNI, Morocco Barbara Banda, NADPZ, Zambia Joseph Chipimpha Mughogho, Simpson Foundation, Malawi Upendra Singh, IFDC,
16:10– 16:45	Discussion: Questions from the audience
16:45 – 17:00	Wrap up and closing

## Panelists and background information day 2

### Pauline Chivenge

Pauline Chivenge is a Principal Scientist for the African Plant Nutrition Institute based in Benguerir, Morocco. Pauline earned a PhD in Soils and Biogeochemistry at the University of California, Davis.

Most of Pauline's research has focused on soil and nutrient management in smallholder farming systems in sub-Saharan Africa and Asia. She has led a couple of international projects, working in diverse farming systems on topics that include biogeochemical nutrient cycling, natural resource management, watershed management, carbon sequestration, greenhouse gas emissions and sustainable ecosystem functioning. She has supervised more than 20 MSc and PhD students in Africa and Asia. She and has published more than 35 peer-reviewed journal papers and several book chapters. Pauline is an Associate Editor for Geoderma.

Before joining APNI, Pauline was a Senior Scientist in Soils and Nutrient Management at the International Rice Research Institute (IRRI) in the Philippines, focusing on sustainable management of soil and nutrients in rice-based cropping systems.

#### Presentation:



#### Preparatory reading:



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chivenge... STR.pdf



chivenge 2011.pdf



Leroux\_e...2022.pdf



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### Lydie-Stella KOUTIKA

Lydie-Stella Koutika is a soil scientist also acting as Director for Research Centre on Productivity and Sustainability of Industrial Plantations (CRDPI) at Pointe-Noire, Republic of the Congo. She obtained an engineer degree in agronomy with the specialization in soil science and agro chemistry at the Timiriazev Institute at Moscow, Russia in 1991 and a PhD in soil science at the Université Henri Poincaré, (merged to Université de Lorraine), Nancy, France in 1996.

For the duration of her career, she has been fascinated with soil organic matter (carbon and nitrogen) and phosphorus cycling in different ecosystems. During the last decade, she has been working on forest plantations, especially on how to sustain inherently nutrient-poor soils in the Congolese coastal plains.

She has been a "Research in Brussels" fellow (2003-2004), an International Rothamsted Research fellow, UK (2009-2010), an international TWAS-ENEA fellow (September 2018-May 2019), Italy and a member of 'The Phosphorus Sustainability Research Coordination, Network (P RCN) University of Arizona. She is a member of Scientific and Technical Committee (STC) of the '4 per 1000' "Soils for food security and climate Initiative" since 2016 and member of Global Soil Biodiversity Initiative (GSBI) since 2019. She is a laureate of 'African Union Kwame Nkrumah Regional Scientific Award for Women' (2014), The World Academy of Science (TWAS) -Al-Kharafi Prize (2018) and FAO Glinka World Soil Prize (2021). She has published more than 45 peer-reviewed journal papers and some book chapters. She is also a novel writer (<12 books) and is strongly dedicated to her catholic faith and to the development of Africa

#### Presentation:



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#### Preparatory reading:

### Upendra Singh

Upendra Singh, PhD, is Vice President Research at the International Fertilizer Development Center (IFDC). Upendra's career in soil-plant-nutrient dynamics and fertilizer research spans the globe, with research and training programs in over 36 countries over the past 35 years. Upendra is a globally recognized leader in soil and crop fertility and crop simulation modeling. He has over 200 research publications.

#### Presentation:



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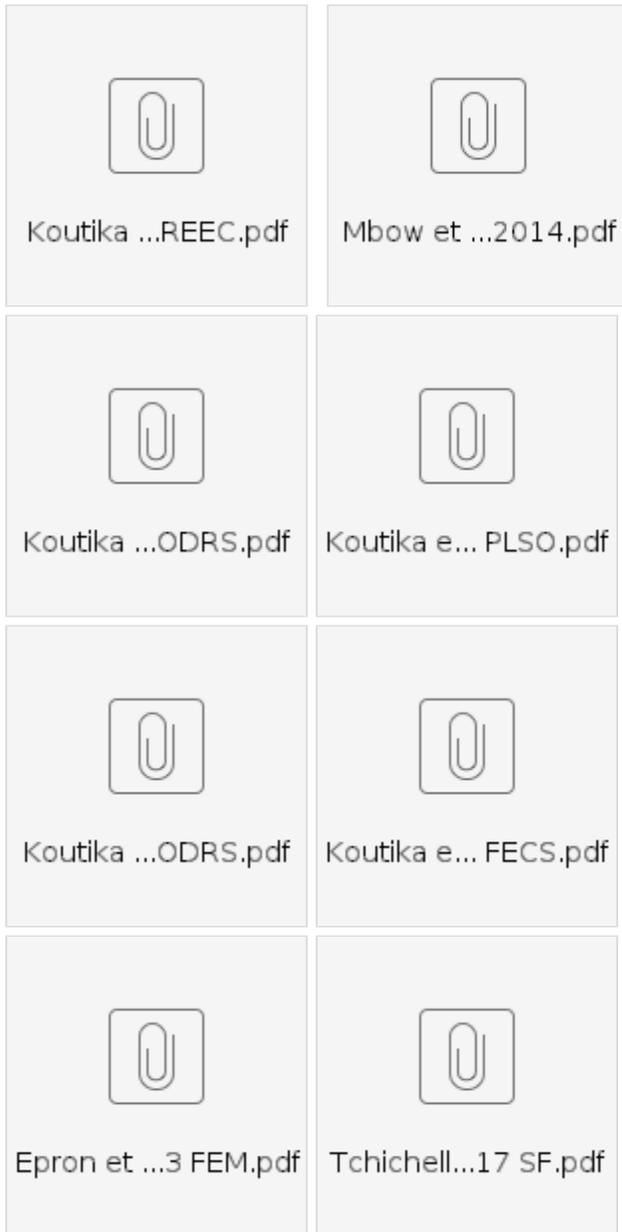
#### Preparatory reading:



IFDC\_Overview.pdf

Barbara Hachipuka Banda

<https://nadpz.org/>



**Joseph Chipimpha Mughogho**

Comes from Malawi. Holds Msc. in Community & Rural Development; Bsc. in Business Management and a PG Diploma in Project Management. Has over 30 years working experience in Faith-based Organisations (14 years), Private Sector (Poultry Industry – 12 years) and Non-Governmental Organisations (7 years). Experience in Finance, Operations, Administration and Organisational Systems/Procedures /Internal Controls. Has also done several UN-sponsored courses in Eco-Business (Natural Based Solutions), Sustainable Finance and United Nations SDG Policy Integration. He is currently the Head of Programmes for Simpson Foundation in Malawi, an organisation that advocates for Climate Smart Agriculture with special emphasis on land restoration, best agricultural practices and natural resources regeneration.

**Presentation:**



**Preparatory reading:**



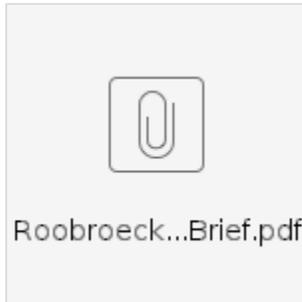
**Bernard Vanlauwe**

Bernard Vanlauwe joined IITA in Kenya in March 2012 to lead the Central Africa hub and the Natural Resource Management research area. Prior to this appointment, he was the leader of the Integrated Soil Fertility Management (ISFM) program of the Tropical Soil Biology and Fertility research area of CIAT (TSBF-CIAT). He obtained his PhD in 1996 in Applied Biological Sciences. He has published over 200 papers in scientific journals and over 180 in other forms and has (co-) supervised over 40 PhD and over 60 MSc students. He is currently facilitating the development of an Excellence in Agronomy 2030 initiative as part of the Once CGIAR reform process.

**Presentation:**



**Preparatory reading:**



**Wellington Mulinge**

Holds (i) a Ph.D. in Agricultural Economics, University of Nairobi, (ii) an M.Sc. in Agricultural Economics, University of Alberta, Canada (iii) a B. Sc. in Agriculture from the University of Nairobi, Kabete College of Agriculture and Veterinary Sciences, Kenya, and (iv) he is a holder of several certificates in agricultural research and development such as International Doctoral Studies Program For Development Research ZEF- University of Bonn, Germany; Risk-Reduction Strategies for Peasant Farmers DSE (Center for Food, Rural Development and Environment-ZEL), Germany; East Africa tradeoff Analysis University of Montana, USA. Dr. Mulinge is currently an Assistant Director (Socio Economics and Policy Development) Kenya Agricultural and Livestock Research Organization (KALRO). Dr. Mulinge is a seasoned agricultural economics and policy analysis specialist with over 20 years of experience in agriculture and resource management especially in Value Chain Analysis, Priority Setting and Policy Research and Analysis, Implementation Strategy Formulation (Based on SWOT, PESTEL, PAM analysis and Participatory Monitoring and Evaluation Trainer). Dr Mulinge is also a part-time lecturer and external examiner at the University of Nairobi.

**Presentation:**



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### **Rolf Sommer**

Rolf Sommer is director of the department of *Agriculture and Land Use Change* at WWF in Germany. Previously he worked as Principal Scientist at the International Center for Tropical Agriculture (CIAT) in Nairobi, Kenya.

Developing and finding sustainable management solutions addressing the complexity of achieving food and nutritional security, sustainable agricultural development, the conservation of nature, biodiversity and agro-ecosystem functioning has been at the core of Rolf's work ever since. This includes protecting or rehabilitating soil fertility and health at field level, improving the livelihoods of smallholders through improved, competitive and eco-efficient productions systems at farm level, biodiversity, nature and landscape protection and rehabilitation at the watershed /regional level, and carbon sequestration and climate change mitigation at global scale.

Rolf holds a PhD in Agronomy and a MSc in Biology, and in the last 20 years have published over 50 peer-reviewed articles and numerous conference proceedings and online publications (see <http://scholar.google.com/citations?user=tAlw8ykAAAAJ&hl=en>).

### **Preparatory reading:**



Abera et ...iopia.pdf



Epron et ...3 FEM.pdf



Mathews e...rsity.pdf



Nyawira e...Kenya.pdf

### **Presentation:**



## Moderation and welcoming words day 1:

### Paul Luu

Dr. Paul Luu is an agronomist specialized in tropical agronomy. He began his career in the field, leading agronomic research projects in St. Lucia, Sri Lanka and Tonga for six years before joining the International Relations Department of the French Ministry of Agriculture.

In 2011, Paul Luu was appointed director of Agropolis International, the international association representing the scientific community "Agronomy – Environment – Biodiversity – Water" of the Occitanie region. In particular, he contributed to the creation of the CGIAR Consortium in Montpellier, an international organization dedicated to agricultural research for the benefit of the poorest people on the planet. He joined the organization in September 2013 as Liaison Officer with the French authorities, then as Protocol Officer.

Since September 2016, Dr. Paul Luu has been Executive Secretary of the "4 per 1000" initiative launched at COP 21 in Paris.

### Juliane Wiesenhütter

Master graduated Geographer, Expert in International Development with working experience in West and East Africa, key competencies in: natural resource protection and management, international environmental policies, rural development, Climate change mitigation and adaptation, project management (planning, monitoring and evaluation), institutional development. She is appointed with GIZ since 2010 with stations in Burundi and Germany. Before, that appointment at GIZ, she was appointed with German Development Service and Invent

## Moderation day 2:

### Niels Thevs

Niels Thevs is an advisor at GIZ in the field of soil protection and sustainable land use. Before that, 2014-2020, he was appointed at CIFOR-ICRAF in Bishkek, Kyrgyzstan, to develop a research program on agroforestry systems for Central Asia. Before 2014, he worked as a researcher at University of Greifswald. There, he was responsible to develop and carry out research projects in the fields of sustainable land use in riparian oases and drylands of Central Asia. He established partnerships with research institutions from China, Kazakhstan, Uzbekistan, and Turkmenistan. Next to research, he was involved in teaching (GIS, remote sensing, and soil science) in the international Master Course Landscape Ecology and Nature Conservation at University of Greifswald. Dr. Thevs obtained his PhD in Landscape Ecology at University of Greifswald and a Diploma in Biology and Soil Sciences from University of Hamburg. Between the Diploma and the PhD course, he developed projects in the field of environmental education with various organizations from China.

### Rattan Lal

Rattan Lal ,Ph.D. , is a Distinguished University Professor and Director of CFAES Rattan Lal Center for Carbon Management and Sequestration, the Ohio State University, and was soil Physicist at IITA, Ibadan, Nigeria . He researches soil carbon sequestration , soil health, conservation agriculture, soil restoration and sustainable management. He has authored > 1000 journal articles , 550 book chapters, and written/ edited 100 books. He was President of the Soil Science Society of America (2006-2008), and the International Union of Soil Sciences (2017-2018). He holds a Chair in Soil Science and Goodwill Ambassador for Sustainability Issues for the IICA, Costa Rica. He was a member of the 2021-UNFSS Science Committee and Action Track 3 with focus on "Coalition 4 Action on Soil Health". He is laureate of the 2018 World Soil Prize, 2019 Japan Prize and 2020 World Food Prize.

## Further reading and contributions from the audience

Please feel free to share your contributions here or send them to us ([julia.klemme@ble.de](mailto:julia.klemme@ble.de)). We also invite you to leave your comments in the comments section below!

### Contribution by Rolf Derpsch:

<http://www.rolf-derpsch.com/en/>

### Contribution by Eleanor Milne (Colorado State University)

[Eleanor Milne](#)

Grazing lands in Sub-Saharan Africa and their potential role in climate change mitigation: What we do and don't know

### Contribution by Dries Roebroek (IITA)



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Please have a look here:

<https://www.ars.usda.gov/research/publications/publication/?seqNo115=330320>



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**Contribution by Demba Diakhaté:**



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