

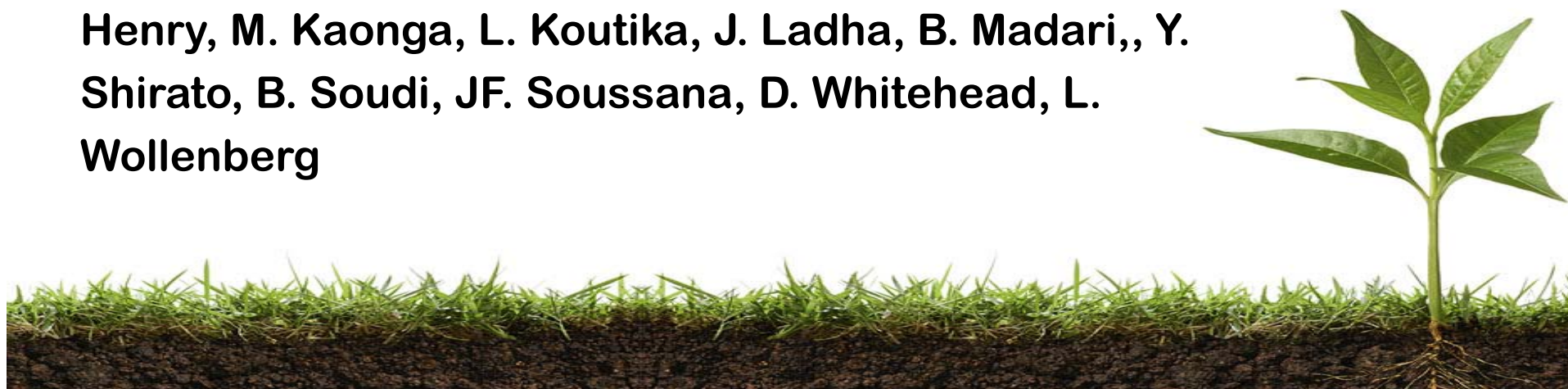


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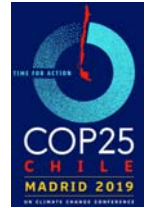
Activity report of the Scientific and Technical Committee of the 4p1000 initiative

C. Rumpel, F. Amiraslani, C. Chenu, M. Garcia Cardenas, B. Henry, M. Kaonga, L. Koutika, J. Ladha, B. Madari,, Y. Shirato, B. Soudi, JF. Soussana, D. Whitehead, L. Wollenberg





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Expertise at the science policy interphase

Review of reports:

- «The Technical Manual on SOC Management» by Global Soil Partnership
- “A Verification System for Carbon Sequestration and Soil Health” by the Soil Carbon Initiative,
- “The Agricultural Transformation Review” and the Strategic research Agenda of the project CIRCASA.

Joint submissions to Koronivia workshops

- Improved soil carbon, soil health and soil fertility under grassland and cropland as well as integrated systems, including water management (June 19)
- Improved nutrient use and manure management towards sustainable and resilient agricultural systems (Nov 19)

Launch of expertise concerning carbon sequestration in countries NDCs

➔ Liesl Wiese will be reporting





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Vision and outreach of the 4p1000 initiative

Vision of the 4p1000 initiative

- Reflections on how to improve the mission of the Initiative particularly from a scientific point of view
- Collaboration with Consortium, in particular the Bureau with representatives from all colleges

Outreach

- In line with the Consortium's request, a first call of formative project assessment was launched. 13 field projects from different regions of the world have been assessed by STC members.

➡ Paloma Melgarejo will be reporting

- Writing of a book on 4p1000





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Moving from a scientific controversy to a debate

United Nations

Definition of aspirational goal



SDGs, Paris agreement

National Governments

Suggested solution = Increasing soil C storage



Strong political appeal

1. Negative emission technology in view of climate change mitigation
2. Contribute to food security and climate change adaptation
3. Overall contribution to ecosystem resilience, adaptation and ecosystem services

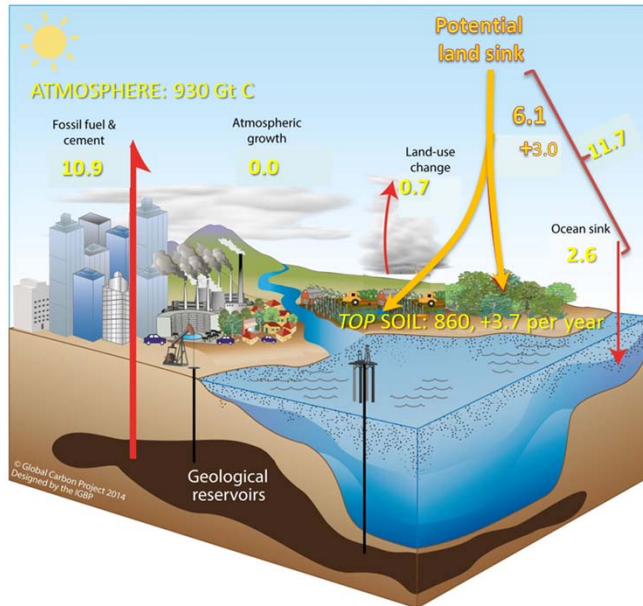


Scientific community: Robust discussion of controversial issues and feasibility



Moving from a scientific controversy to a debate

A back of the envelope calculation:



$$\frac{\text{Atmospheric CO}_2 \text{ increase } 3.5 \text{ Gt}}{860 \text{ Gt SOC in 0-40 cm}} = 4 \%$$

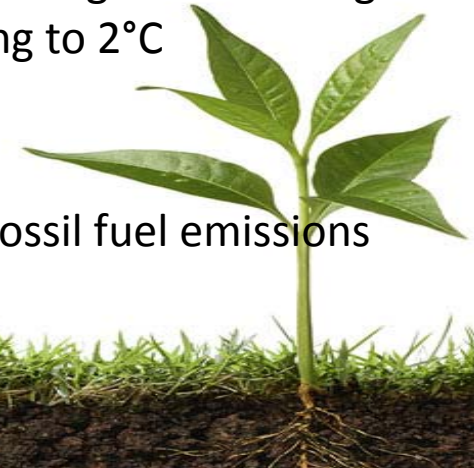
Strengthening the land carbon sink by 4per1000 in topsoil to contribute to climate change mitigation

Balesdent and Arrouays, 1990
Soussana et al., 2018, Soil and Tillage research

1 number = easy to communicate →

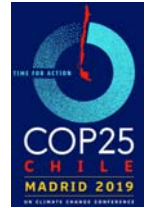
Consistent with the political goal of limiting global warming to 2°C

- was wrongly understood as target, goal, and strong commitment
- Initial criticism related to the suggestion that this could offset *all* fossil fuel emissions





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Moving from a scientific controversy to a debate

Publication of a paper addressing the concerns and criticism

PERSPECTIVE

The 4p1000 initiative: Opportunities, limitations and challenges for implementing soil organic carbon sequestration as a sustainable development strategy

Cornelia Rumpel , Farshad Amirshahi, Claire Chen, Magaly Garcia Cardenas, Martin Kaonga, Lydie-Stella Koutika , Jagdish Ladha, Beata Madari, Yasuhito Shirato, Pete Smith, Brahim Soudi, Jean-François Soussana, David Whitehead, Eva Wollenberg



Participation in an international conference addressing the issue

Food security and climate change: 4 per 1000 initiative new tangible global challenges for the soil

17th to 20th June 2019, Poitiers, France





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Where do we go from here?

General consensus: Increasing soil C is valuable due to the co-benefits and contribution to climate change mitigation -BUT:

Technical potential for agricultural soils limited to ~1.3 Gt OC y⁻¹
(Smith et al., 2016)

Equivalent to emissions
from 1 big emitter
(European Union)

→ Stop soil organic carbon loss

→ 4p1000: an aspirational goal, not a normative one

- Achievable locally, but not everywhere
- Costs : N, P, water, biomass, ..
- Risks : GHG balance, land use

.....there are many possibilities for improving nutrient and organic residue management at farm, region and national scales, which could be exploited to maintain and if possible increase SOC stocks and improve soil quality or soil health.

→ **A geographically spatially diversified strategy is needed**





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Actions to promote region-specific 4p1000 strategies

Organisation of a special issue on region-specific sustainable agricultural practices to increase soil C sequestration

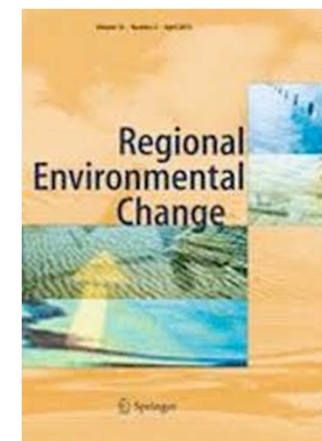
America (B. Madari, M. Garcia Cardenas, L. Wollenberg)

Africa (L. S. Koutika, M. Kaonga, B. Soudi)

Asia (Farshad Amiraslani, JK Ladha, Y. Shirato)

Oceania (B. Henry, D. Whitehead)

Europe (C. Chenu, J.-F. Soussana, C. Rumpel)



➔ Highlight the potential for specific actions to be taken

Participation/organisation of regional (multistakeholder) workshops

South East Asia workshop (Hanoi, Vietnam, 3.-5.10. 19)

Latin-America and the Caribbean (Foz do Iguaçu, Brazil, 17-19.06.20)

Asia regional meeting (Dehli, India, sept/oct 2020)

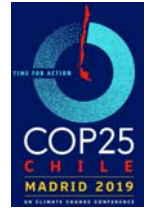
➔ inform and gather multistakeholder consortia to develop 4p1000 projects

➔ attract funders





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Special thanks to:

The scientific community

The stakeholders and project holders

The farmers

The Bureau members

Paul Luu and the executive secretariat

Thank you for your attention!

