Working Group on Sustainability for Nutrient Recovery

The Working Group on Sustainability aims to enhance and robust the existing knowledge about the environmental impact of the use of recycled derived fertilizers (RDFs) or biobased fertilisers (BBFs) obtained from different waste streams. The current webinar series is oriented towards a more meaningful environmental assessment of BBFs through their whole life cycle from production to application, allowing a fair comparison with the mineral counterparts through a consistent and consensual Life Cycle Assessment (LCA). For that, several experts from industry and academia will share their experiences in assessing the BBFs. This will include LCA methodological aspects to overcome and experiences of LCA practitioners at the industry level as well as non-LCA issues such as BFFs efficiencies, field emissions, presence of xenobiotics and other related topics that have a direct influence on LCA. Moreover, the projects from the community and stakeholders will have the opportunity to present their points of view and approaches to deal with these matters.

Proposed seminar series:

1. Life Cycle Assessment: setting methodological priorities for BBF modelling (ESNI conference)
2. **Biogenic Carbon accounting modelling: State of the art, limitations, and global trends towards the integration of realistic modelling in LCA.**
3. Biodiversity: methods for agricultural systems and impact of Bio-Based Fertilisers (Webinar)

2. Biogenic Carbon accounting modelling: State of the art, limitations, and global trends towards the integration of realistic modelling in LCA.

The accounting of biogenic carbon in LCA has been broadly treated by the scientific community. Although it has been treated in multiple scientific publications, webinars, and workshops there is not a consensus about the methodologies to assess it, and its integration in the LCA of bio-based products. Typically, two criteria prevail in LCA accounting: i) the uptake-release accounting (-1/+1), and ii) the exclusion approach (0/0) employed in the PEF method. However, the temporary storage effect and carbon flows emerge as equally crucial drivers in this context. Particularly, the C accounting of BBFs has been widely controversial due to its multifactorial, dynamic and heterogenous nature:

soil properties, climate conditions, soil aggregates, mineralization processes, effects of land use and management practices and so on. The dynamic transformations of Soil Organic Carbon (SOC) present a challenge for its seamless integration into Life Cycle Assessment (LCA) inventories As a result, inconsistent LCA modelling and inaccurate results could blind the decision-making. Therefore, it is essential to align SOC simulation models and empiric knowledge with the modelling into the LCA. That is a discussion between the scientific community specialized in these two fields.

This webinar aims to promote the discussion about the accounting of biogenic carbon in the BBF life Cycle. The webinar will cover two presentations by specialists in Soil Carbon modelling and LCA. The main topics that will be discussed are:

- Gaps and trends in biogenic carbon (each approach will define it)
- Approaches used for carbon accounting in LCA (0/0 or -1/1), and other models used in Non-LCA approaches. Including temporary storage and time-limit releasing.
- Soil Organic Carbon (SOC) and Soil Inorganic Carbon (SIC) affections in Agrosystems because of the BBFs application.
- Challenges in methodologies harmonisation in LCA and the inclusion of other approaches (non-LCA). Is there a consensus between methodologies and approaches possible?

Finally, the discussion will be oriented to remark on the gaps and limitations of including SOC simulation models in the LCA approach and highlight the opportunity areas or challenges to include in the methodology.

Date and venue: January 16th at 15:30 CET, 1 hour and 35 minutes in length. Online event.

Agenda

15:30 Welcome and moderation by *Carlos A. Torres-Guerrero, BETA-UVIC, Spain*

15:35 Soil Organic Carbon modelling, *Jørgen Eivind Olesen, Aarhus University, Denmark*.

15:50 Soil Organic Carbon modelling, *Daniele De Rosa, University of Basilicata, Italy and Panos Panagos, JRC, European Commission*.

16:05 Q&A and Interactive session with the audience

16:15 Project approach: the vision of NOVAFERT by *Jorge Senan, BETA-UVIC*.

16:20 Biogenic Carbon Accounting in LCA framework, *Massimo Pizzol, Aalborg University, Denmark*.

16:35 Coupling Soil Organic Carbon modelling into LCA framework, *Christhell Andrade University of Toulouse, France*.

16:50 Q&A and Interactive session with the audience

17:00 Concluding remarks.