

Life Cycle Assessment (LCA) – methods, models and databases with focus on GHG emission and sequestration potential of organic farming systems and organic food

**Expert Workshop
21 September 2010, Bari**

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(ICROFS)

Objectives:

to exchange in-depth scientific knowledge on improved Life Cycle Assessment (LCA) methods, models and databases focusing on GHG emissions and sequestration potential of organic farming systems and organic food to be used by organic sector organisations and operators for the development of certification of energy and carbon labels and for improvement of the organic sector's climate impact.

Expected Outcome:

Agreement on common research agenda for development of LCA methodology and inventories consistent to organic farming systems.

Substantial inputs to a comprehensive report on LCA method development and databases and LCA research agenda to close the current gaps.

Round Table for Organic Agriculture and Climate Change (RTOACC)

The principal objectives of RTOACC are to:

- Initiate, support and facilitate research on organic agriculture and climate change.
- Advise the international community on organic agriculture and climate change issues,
- Develop a measurement method to enable reliable quantification and certification of carbon sequestration in organic agriculture.

During 2010, the main activity of the RTOACC is the development of a methodology for the carbon market, which includes the synergies with general development goals and the benefit for smallholders in the global South

Different uses of LCA

- To identify climate hot-spots in present organic food chains
- To guide development of OA methods and food chains
- Product development: check the climate profile of new organic products
- Contributes to a scientific basis for carbon crediting – methodology and data standardisation

LCA - characteristics

- GHG emissions pr kg product (or functional unit)
- LCA is a method to account for complete interactions and combined effects in a food chain
- LCA needs itself inputs on emission and yields
- Helps avoiding sub-optimisation and 'leaking'

Programme (morning)

- 09:30: **Welcome and introduction to programme and tasks** – Dr. Niels Halberg, Director, International Centre for Research in Organic Food Systems (ICROFS), Denmark
- 09:45: **Current status on LCA as applied to the organic food chains: results, knowledge gaps and methodological challenges** – Dr. John E. Hermansen, Head of Research Unit, University of Aarhus, Denmark & Dr. Niels Halberg, ICROFS
- 10:15: **Characteristics in low-input and organic farming systems in tropical countries relevant for soil organic matter building and of importance for crediting climate mitigations** – Dr. Shamie Zingore, Regional Director, Africa, International Plant Nutrition Institute (IPNI), Kenya
- 10:45: Coffee/tea break
- 11:00: **State-of-the-art concerning carbon sequestration in organic agriculture versus emission of GHG and potential for climate mitigation compensation** – Report by Dr. Andreas Gattinger, Subject Leader climate, FiBL, Switzerland and Chair of Round Table for Organic Agriculture and Climate Change (RTOACC)
- 11:30: **Data & inventories relevant for LCA of organic agriculture & food systems** – Dr. Adrian Williams, Principal Research Fellow, School of Applied Sciences, Cranfield University, UK
- 12:00 **Comments-discussions-agreement on overall list and structure of problematic issues/sub-topics for the group discussions relevant for the expected outcome of the workshop – and formation of groups**
- 13:00: Lunch

Programme (afternoon)

14:30: **Group discussions – suggested topics (incl. coffee/tea)**

a) Accounting for inputs of manure, energy import versus self-reliance, feed import and implications for indirect land use change in LCA perspective

b) Carbon sequestration and soil organic matter increase: importance under different conditions and potentials for inclusions in LCA (models, empiric data)

c) Relative differences in GHG emissions from organic versus conventional agriculture systems (quantitative results + qualitative/explanations in terms of OA practices)

d) Demands for inventories and documentation for LCA-based carbon labelling

Questions to be discussed:

1. What is status of knowledge (methodological agreements/disagreements)

2. What are comparative advantages/disadvantages of OA compared with conventional agriculture within this specific sub-topic?

3. List the 3 most important methodologies and data source challenges for documenting this sub-topic of OA with LCA

16:15: **Coffee/tea break**

16:30: **Plenum – Discussion and agreement on status of current knowledge and a common research agenda for development of LCA methodology and inventories consistent to organic farming systems**

17:30: **Closure**

Group Discussions

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- 3. List the 3 most important methodologies and data source challenges for documenting this sub-topic of OA with LCA**

Discussion topic	Discussant	Reporter
<p>a) Accounting for inputs of manure, energy import versus self-reliance, feed import and implications for indirect land use change in LCA perspective</p>	<p>Brad Ridoutt CSIRO, Australia</p>	<p>Søren Løkke Aalborg University, Denmark</p>
<p>b) Carbon sequestration and soil organic matter increase: importance under different conditions and potentials for inclusions in LCA (models, empiric data)</p>	<p>Sjef Staps Louis Bolk Institute, Netherlands</p>	<p>Laurence G. Smith ORC, Elm Farm, UK</p>
<p>c) Relative differences in GHG emissions from organic versus conventional agriculture systems (quantitative results + qualitative/explanations in terms of OA practices)</p>	<p>Isobel Tomlinson Soil Association, UK</p>	<p>Alice D'Arcy University College Cork, Ireland</p>
<p>d) Demands for inventories and documentation for LCA-based carbon labelling</p>	<p>Sandra Eady CSIRO, Australia</p>	<p>Anna Flysjö ARLA Foods Amba, Denmark</p>