

Farm To Regional Scale Integration Network

Annual Meeting

Date and Time: 16 January 2023, 15.00 – 16.30 CET

Participants: Alisa Spiegel, Andreas Meyer-Aurich, Ashraf Biswas, Bernhard Osterburg, Brenna Grant, Carlos Gomez, Claudia Heidecke, Claus Deblitz, Dr Sani Usman, Filippo Maggioni, Gelter Romero, Hajer Ammar, Jim Dobrowolski, Joanne Monjol, John Nyameasem, Laura Maritza Cardenas, Marcela Paranhos, Maria Paz Tieri, Michael Langemeier, Michiel Scholtz, Mokhele Moeletsi, Nani Gopal Das, Nick Hutchings, Nico Peiren, Nina Grassnick, Oleg Sukhanov, Pipat Weerathaworn, Roland Kroebel, Titis Apdini, Veerle Van Linden, Willie Ryan, Yelto Zimmer

Minutes by: Titis Apdini, Nina Grassnick and Yelto Zimmer

Agenda	Activities and Discussion
Overview of network activities since the last annual meeting	<ul style="list-style-type: none"> Nina Grassnick presented the latest achievements and activities of the network as well as future plans. The main achievements included the flagship project "Economics of GHG mitigation at farm level in global cattle production systems (EMiFa)" and an online survey "GHG accounting tools at farm level". See the presentation in Appendix.
Any other business	<p>Opportunities to present research results and to meet in person with the network members at these two conferences:</p> <ul style="list-style-type: none"> <i>agri benchmark</i> Beef&Sheep Conference on 15 – 21 June 2023 in Paraguay <i>agri benchmark</i> Cash Crop Conference on 18 – 24 June in Kenya
Breakout Session 1: Barriers and opportunities to mitigate GHG emissions and sequester soil organic carbon in cropping systems	<p>Projects/activities were presented that are related to low-emission cropping systems:</p> <ul style="list-style-type: none"> CropGas: EJP-Soil project that is coordinated by Laura Gardenas (Rothamsted Research, UK). The project is co-funded by GRA and includes 7 countries (4 Sub-Saharan African countries and 3 European countries). The project studies the impact of conservation agriculture practices, i.e. crop rotation and zero or minimum tillage, on GHG emissions. Denmark: Nick Hutchings mentioned that Denmark decided to introduce a tax at farm-level for activities releasing GHG emissions; he highlighted the following practices for low-emission (cropping) systems: (1) cover cropping and biochar, (2) bioplastic (made from natural resources); the Center for Landscape Research in Sustainable Agricultural Future (Land-CRAFT) aims to provide a novel framework that tests and assesses the sustainability of agricultural production, both within Denmark and globally. This framework will combine experimental observations, remote sensing, process-based models, and socio-economic analysis. --> possibility to collaborate Belgium: Veerle van Linden is coordinating the KLIMREK project. In this project Life Cycle Assessments and cost-benefit analyses are undertaken to identify measures that make the farm the most climate-friendly. The new project phase will focus on horticulture

	<p>(fruit trees and arable crops); Veerle is interested to discuss possibilities to expand this approach to other regions</p> <ul style="list-style-type: none"> • USA: James Dobrowolski provided information on government payments for mitigation activities including cover crops and no-tillage, development of a database to record the achievement of mitigation activities, USDA has invested 6.2 USD for research projects related to climate-smart agriculture, 140 project proposals have been submitted; Kelvin Leibold provided some information before the meeting: this article describes how data, payments and methods flow in voluntary agriculture carbon programs in the USA, see here, this article describes the implications of the inflation reduction act of 2022, see here. <p>Other discussion points that have been raised during the breakout-session:</p> <ul style="list-style-type: none"> • Rewetting of organic soils is a topic with lots of attention in Denmark • No one in the group was aware of research aiming at Zero Carbon Emissions in crop production. There were concerns expressed against this concept because it does not seem realistic unless one excepts leakage. • Furthermore, the need for a concept to consider leakage in research and policy was mentioned as well as the need to improve and broaden the empirical database of agricultural activities and mitigation options. The DATAMAN-MELS project which is co-funded by the GRA was mentioned as an example for the livestock sector. The GRA flagship project "Development of context-specific emissions factors from the application of nitrogenous fertilisers" was mentioned as a project with the potential to fill this gap in the crop sector. • Agricultural inventories would need to be improved so that mitigation measures can be captured in the inventories.
<p>Breakout Session 2: Brainstorming on topics related to livestock production systems</p>	<ul style="list-style-type: none"> • The most voted topic to be discussed in the breakout session was "Adaptation to climate change, how does it impact GHG emissions". The second most voted topic was "How to create win-wins between GHG-mitigation and economics on farms?" • Participants in the breakout room shared their research projects with respect to the topic: <ul style="list-style-type: none"> • Brenna Grant – The project in Canada is conducting a baseline to calculate GHG emissions from different farming systems. The project aims to identify mitigation measures with an optimal cost-benefit for different farming systems. The preliminary result indicated that the potential benefit of rotational grazing to extend the grazing season in Eastern Canada is larger than in Western Canada. It occurred because of higher rainfall in Eastern Canada compared to rainfall in Western Canada. • Nico Peiren – The development of dry-tolerant grass is ongoing in Belgium. This study also observes the performance of dry-

	<p>tolerant grass for ensilaging and its nitrogen emissions. Yet, the economic analysis for dry-tolerant grass is not conducted.</p> <ul style="list-style-type: none">• Michiel Scholtz – A study in South Africa is conducted to identify beef cattle breeds with the lowest methane emission intensity. However, feedlots in South Africa commonly keep the two breeds with highest methane emissions intensity. In addition, they found that indigenous beef cattle have a higher resistance to heat stress compared to exotic breeds. The publications of those studies are currently in preparation.• Marcela Paranhos – The study in Brazil investigates benefits of mitigation measures for extensive and intensive beef farms. Extensive beef farms showed higher benefits to land use and soil carbon sequestration than intensive beef farms.• Carlos Gomez – The research in Peru observes the replacement of native pasture with cultivated pasture on dairy farms in the Andean region. The challenge of cultivated pasture is funding to build irrigation. In addition, cultivated pasture must be managed in such a way that it protects biodiversity.• There was no initiative from the participants to lead a working group that further works on the topic of synergy and trade-off between mitigation and adaptation strategies.
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Appendix

A banner for the Global Research Alliance on Agricultural Greenhouse Gases. The top half has a blue background with a pattern of white circles of varying sizes. The text 'GLOBAL RESEARCH ALLIANCE' is in white, with 'ON AGRICULTURAL GREENHOUSE GASES' in smaller white text below it. A dark blue horizontal bar contains the text 'ANNUAL MEETING: Farm To Regional Scale Integration Network' in white. The bottom half of the banner features a photograph of a field of golden-brown crops, possibly wheat or barley, with the text '16th January 2023, Online' and 'Dr. Claus Deblitz, Dr. Yelto Zimmer and Dr. Nina Grassnick' overlaid in white.

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**ANNUAL MEETING:
Farm To Regional Scale Integration Network**

16th January 2023, Online

**Dr. Claus Deblitz, Dr. Yelto Zimmer and
Dr. Nina Grassnick**

A banner for the meeting agenda. It has a blue background with a pattern of white circles. The text 'Meeting Agenda' is in white. The logo 'GLOBAL RESEARCH ALLIANCE ON AGRICULTURAL GREENHOUSE GASES' is in the bottom right corner.

Meeting Agenda

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1. Welcome - 5'
2. Overview of network activities since the last annual meeting - 15'
3. Any other business - 5 - 25 minutes
4. Two parallel Breakout-Sessions - 40 - 60 minutes
 1. Barriers and opportunities to mitigate GHG emissions and sequester soil organic carbon in cropping systems
 2. Brainstorming on topics related to livestock production systems
5. Closing - 5'

Webinars

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- *Economic analysis of Climate Change – marginal abatement costs* (Oct 2021): <https://globalresearchalliance.org/library/farm-to-regional-scale-integration-network-webinar-oct-2021/>
- *Carbon farming with no-till and straw incorporation – A reality check* (Nov 2021): <https://globalresearchalliance.org/library/farm-to-regional-scale-integration-network-webinar-nov-2021/>
- *Flagship Project Webinar Series – Session 1* (Oct 2022): <https://globalresearchalliance.org/library/flagship-project-webinars-2022-1/>

Flagship-Project: Economics of GHG mitigation at farm level in global cattle production systems (EMiFa)

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Project coordination (Thuenen-Institute)

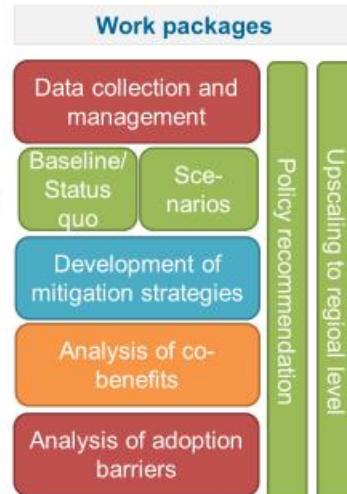
- Claus Deblitz, Katrin Agethen and Nina Grassnick

Project goals

- Identification of the most cost-effective management and technology options in different global cattle production systems and regions
- Evidence-based policy recommendations on GHG mitigation strategies at the farm level

Countries

- Australia, Argentina, Columbia, Germany, Peru, Portugal
- Future: Belgium, Canada, Ghana, South Africa, New Zealand and United Kingdom



Online Survey on GHG accounting tools at farm level - Overview

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Involved persons

- Daniel Bretscher (Agroscope), Nina Grassnick (Thünen-Institute)

Aim of survey

- Identify challenges and opportunities for the use of GHG accounting tools at farm level in different world regions.
- Develop a work programme to close the identified data gaps and to develop the tools further.

Countries

- Australia, Belgium, Canada, France, Germany, Ireland, Kenya, New Zealand, Netherland, Switzerland, USA, United Kingdom, Zimbabwe

Online Survey on GHG accounting tools at farm level – Preliminary results

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Next steps to promote the use of farm-level GHG accounting tools:

- Linkage to the national policy framework (to also facilitate monitoring processes)
- Linkage to a rewarding mechanism
- Facilitate access to tools and provide training to farmers/consultants
- Integrate existing data sources

GHG farm-level accounting tools may broaden their focus in future:

- Consider co-benefits such as adaptation, biodiversity, water use, etc.
- Link results of GHG accounting to mitigation measures
- Expand system boundary (e.g. cradle to retailer / to fork)
- Assess possible emission leakages, uncertainties in overall GHG emissions, pre-chain emissions
- Include economics to provide information on cost-effective mitigation measures

Planned activities

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EMiFa Project

- Collect data from further countries and calculate baselines/scenarios
- Kick-off working packages “mitigation strategies”, “trade-offs and benefits” and “adoption barriers”
- Host two CLIFF-GRADS students from Round 5 to support project (March-August 2023)

Online Survey “GHG accounting tools at farm level”

- Organize workshop to discuss results and develop work program
- Publish results as a journal paper

Webinars

- Calculating GHG emissions on dairy farms: Challenges and potential solutions
- Are the current policy targets to achieve net zero/carbon neutral agricultural production too ambitious?

Breakout sessions

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Barriers and opportunities to mitigate GHG emissions and sequester soil organic carbon in cropping systems

- What options to reduce GHG emissions are of most interest to you?
- Are policymakers in your home country developing concrete measures to incentivize growers to reduce their GHG emission?
- How do you account for transaction cost to realize GHG savings?
- How do you account for and avoid/minimize potential leakage effects?
- Relevance of policy measures that (can) generate a co-benefit in GHG mitigation?
- What are the roadblocks/opportunities/threats?

Brainstorming on topics related to livestock production systems

- How to upscale farm level to regional; land use policy visions?
- Identify and analyze trade-offs: food security and GHG mitigation
- What motivates producers to change? What are adoption barriers?
- Adaptation to climate change, how does it impact GHG emissions?
- Search for win-win options for producers