



GLOBAL
RESEARCH
ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES

**CROPLANDS/INTEGRATIVE RESEARCH GROUP:
Germany Country Update**

CRG/IRG representatives:

**Prof. Heinz Flessa &
Dr. Claudia Heidecke
Thuenen-Institute, Germany**

Activities/Accomplishment since last meeting

- Networks: Germany is co-leading the [Farm To Regional Scale Integration network](#); for information see network update presentation or join annual meeting on 16th January 2023
- Flagships: Germany is leading the flagship project “[Economics of GHG mitigation at farm level in global cattle production systems \(EMiFa\)](#)”; for further information see network update presentation
- Seminar: Greenhouse gas emissions in the EU agriculture and food sector- Potential and limits of climate mitigation policies and pricing instruments (<https://www.eaae181.de/>)
- [G7 online workshop](#) was held on the topic of “Carbon sequestration in agriculture – opportunities and challenges”
- Germany has been involved in the pilot project “Modeling European Agriculture with Climate Change for Food Security – Science-Policy Knowledge Hub”
- Germany is involved in EJP Soil projects: [CarboSeq](#); [Road4Schemes](#)

Activities/Accomplishment since last meeting

- Presentation at webinar of GRA Inventories and NDC Network: Commissioning and Managing Agricultural Inventory Research Projects. Contribution on a new method of N₂O emission reporting in Germany (05.07.2022; <https://www.youtube.com/watch?v=V15n1fp2dGc>)
- Flagship “Reducing N₂O emission and improving accounting”: Universities of Hohenheim (Dr. Ruser) and Göttingen (Prof. Dittert) and the Thünen Institute (Prof. Flessa) will contribute and share new results: e.g. indirect N₂O from N leaching (Eysholdt et al. 2022, JPNSS 185:850-863; direct N₂O from fertilization (Mathivanan et al. 2021, AEE 322, 107640); new project on nitrification inhibitors to reduce N₂O emission ([NitriKlim](#))

Research and Capability Opportunities

- Research Opportunities: – *identify research opportunities related to cropping system carbon neutrality for the IRG/CRG and Networks to raise during the discussion sessions, possible funding*
 1. Climate Mitigation in Agriculture- funding by the Federal Ministry of Agriculture to approach the more stringent climate targets for agriculture (call will be launched soon; international partner involvement possible with own funding)
- Capability Opportunities: – *identify upcoming workshops and training or projects with potential for students*
 1. Workshop series on “climate change and agriculture” (in German only): <https://www.dafa.de/veranstaltungen/2022-workshop-serie-zu-landwirtschaft-im-klimawandel/>

Examples of how cropping system carbon neutrality is being advanced

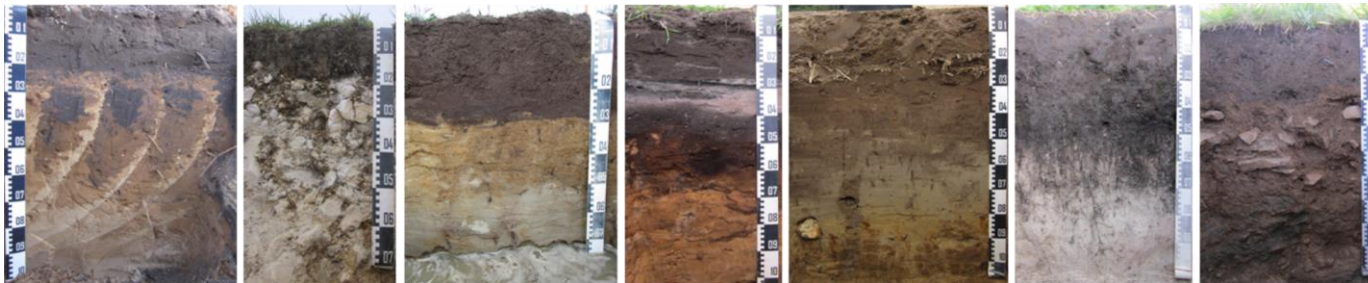
Main challenges and fields of action towards carbon neutrality in cropping systems in Germany:

1) Reducing emissions:

- Reduction of direct and indirect N₂O emission: optimizing N fertilization and N recycling in rotations, reducing nitrate leaching and ammonia emission (e.g. projects [NH₃-Min](#), [NitriKlim](#), [GülleBest](#))
- Using fertilizers with a low carbon footprint (produced without fossil energy sources)
- Reducing emissions from field management (e.g. tractors and machines running with green energy)
- No drainage of organic soils for crop production; rewetting of drained organic soils (e.g. national peatland monitoring for climate protection ([MoMoK](#)), several projects on rewetting, paludicultures)

2) Maintaining and increasing sequestration of CO₂-C:

- HumusKlimaNetz: 150 pilot farms for carbon sequestration measures in Germany for the next 10 years
- Second National Inventory of Agricultural Soils: Improving reporting of soil organic carbon changes:
www.thuenen.de/de/fachinstitute/agrarklimaschutz/projekte/bodenzustandserhebung-landwirtschaft-bze-lw



- Carbon sequestration by improving root growth and establishment of new hedges (projects WurCel and CatchHedge)