First 2021 joint call project Newsletter

Dear Reader,

We are pleased to present you the first edition of our annual newsletter featuring the 2021 Joint Call on “Circularity in mixed crops and livestock farming systems with emphasis on climate change mitigation and adaptation”.

The four ERA-NETs SusAn (Sustainable Animal Production Systems), FACCE ERA-GAS (Monitoring and Mitigation of Greenhouse Gases from Agriculture and Silviculture), ICT-AGRI-FOOD and SusCrop (Sustainable Crop Production) have coordinated and aligned efforts in areas of mutual interest and established a joint transnational funding initiative in the field of agricultural greenhouse gas (GHG) research, focusing on circularity in mixed crops

and livestock farming systems with emphasis on climate change mitigation and adaptation. The Call was officially launched on the 8th of March 2021.

The overall expected impact of projects funded under this Call is to **enhance circularity between crop and livestock farming systems**. Proposals submitted to this Call had to cover the following four points:

a) Focus on mixed crop-livestock farming systems.

b) Address the monitoring and/or mitigation of GHGs from agriculture or agroforestry.

c) Contain an Information and Communication Technology (ICT) dimension.

d) Take a systems approach.

The Call is funded by **29 institutions** from **22 countries** (16 EU Member States, 3 EU-Associated Countries and 3 non-EU/Associated Countries) and the **Global Research Alliance on Agricultural Greenhouse Gases**.

After peer review and ranking of the 39 eligible full proposals by an International Evaluation Committee, the funders recommended **9 projects** for **funding** within the limits of available national/regional funding**.**

The 9 selected projects have successfully started. Please find below the first updates of the individual projects.

Thank you for your interest.

On behalf of the editorial team, enjoy the reading.

CircAgric-GHG: Strategies for circular agriculture to reduce GHG emissions within and between farming systems across an agro-ecological gradient

Norbert Pirk, a researcher at the University of Oslo, demonstrates via a video which drones they have available and plan to use in CircAgric-GHG. The project will use various remote sensing technologies to detect CH4 and CO2 fluxes from landscapes and animals.

Drones to measure climate gas emissions from ruminants

More information of the project

ConnectFarms: Connecting sustainable agroecosystems and farming with circular bioeconomy and new technologies

ConnectFarms is showcasing in images a snapshot of the current activities, all based on the circularity of crop production, livestock farming and soil amendments.

ConnectFarms at work!

More information of the project

DairyMix: Multi-criteria assessment, decision support and management tools for sustainable circular mixed farming systems for dairy production

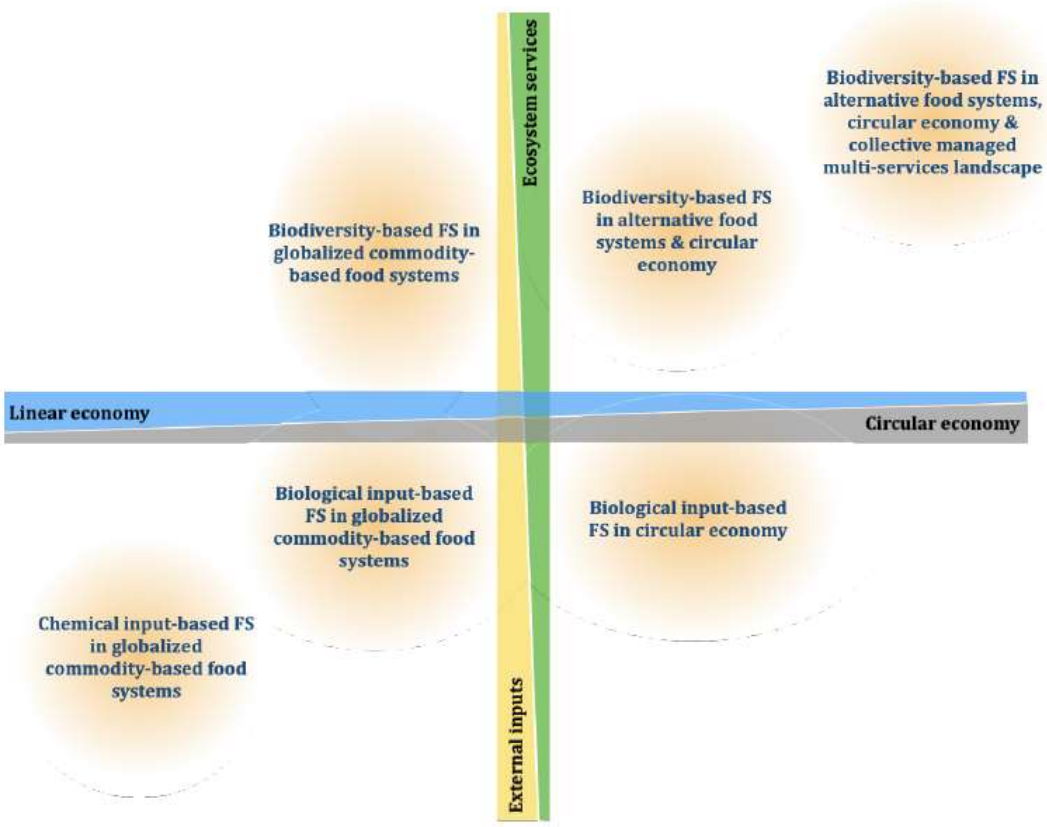
Project work started in March 2022, and the kick-off meeting of the project was held at the Norwegian Institute of Bioeconomy Research (NIBIO) in Tjøtta (Norway) in June 2022. This meeting was attended in person and online by a broad representation of DairyMix partners. The attendees had the opportunity to see first-hand the NIBIO research facilities in Tjøtta and to visit some of their case study dairy farms, receiving extensive explanations of the ongoing projects with the aim of fostering synergies. The partners and coordinator of DairyMix express their gratitude to the NIBIO team for the perfect organization of such a fruitful meeting.

More information

INTEGRITY: How can integrated farming production systems increase circularity and promote Sustainability in the context of climate change?

A tendency for more ecosystem-based and circular solutions…

One of the main features of modern agricultural systems has been to free themselves from the variability and restrictions of ecosystems and the environment by external inputs (e.g. fertilizers, pesticides, irrigation, mechanization), relying heavily on non-renewable energy, creating another form of dependence with non-desirable effects (e.g., climate change, water, soil and air contamination, biodiversity and natural resources depletion). In light of this reality, new agricultural models have emerged (e.g. agroecology, organic farming, ecological intensification, etc.) sharing a common idea; to be a more ecosystem-based activity, i.e. relying more on ecosystem mechanisms to ensure a sustainable supply of resources and services.



More information

MI BICYCLE: Collaboration and biomass circularity at landscape scale potentially lowers greenhouse gas emissions and nitrogen losses

An example of the coupling of biogas and biorefineries in Denmark

Farms and farming systems in North and Western Europe are generally highly specialised, with little integration between crop and livestock production within farms and between farms within a region. Yet, improved integration, be it at farm or landscape level, offers substantial potential for enhanced circularity of utilization of biomass, especially for co-products (e.g. residues, manure, waste). The main objective of this research project is to co-design locally improved, innovative circular crop and livestock systems in North and Western Europe. To reach this objective, MI BICYCLE assesses alternative utility options of biomass and co-products in integrated crop-livestock systems at field, farm and landscape levels.

More information

PROENV: How can we find a balance between agricultural PROduction and the ENVironment ?

Should the balance be at field, farm or regional level?

Balancing production and the environment can be achieved at many levels, but how to get a closer balance on a regional scale via implementing measures at lower scales?

Land share - Land spare

Across Europe, economic factors have led to increased intensification of crop and livestock production, an increase in the specialisation of farming, a local to regional concentration of animals, increased imports of nutrients in feed and synthetic fertilisers, and a simplification of crop rotations. These developments have created barriers to achieving an optimum balance

between food production and environmental impact. In parallel with climate change and nitrogen emissions, there is increasing political focus on the role of agriculture in compromising other ecosystem services, especially biodiversity. There are two fundamental methods of balancing agricultural production and other ecosystem services; land spare and land share. Inland spare, the landscape is partitioned into areas with highly-productive agriculture and areas with extensive or no agriculture that provide the other ecosystem services. Inland share, by limiting the farming intensity, the landscape is less partitioned and the whole area offers all ecosystem services, including agricultural production. This latter approach is in particular the one used in organic and agroecological farming.

More information

ReLIVE: BACK TO THE FUTURE?

Reconnecting land and livestock

The widespread reintroduction of crops and livestock could make a major contribution to the development of the wider EU circular (agricultural) economy and contribute to sustainable growth, through the more effective recycling of materials and resources, the minimization of waste, and a reduction in external supplies of feed and synthetic fertilizers, with potential biodiversity, environmental and soil health benefits. However, this comes with significant challenges, including the potential for enhanced greenhouse gas (GHG emissions), particularly methane (CH4) emissions, from enteric fermentation, land degradation, due to overgrazing and water pollution, as well as the need to effectively substitute all/most inorganic fertilizers with organic manures. Organic amendments applied to land could conversely result in enhanced GHG emissions, particularly nitrous oxide emissions, unless these are managed appropriately and the necessity to store large amounts of organic manures/wastes may also be problematic, given their links to environmental pollution and GHG emissions. Additional complications could arise due to associated modifications in land use, including a shift from a grass-based to a forage/alternative crop-based diet, altered grazing practices and increased competition between food and animal feed, or the use of biogas or bioenergy crops. Whilst mixed farming systems were previously common and economically viable, they will need to be matched to current production and market conditions to ensure their long-term viability. To address these issues, as part of the ReLIVE project (Reintegration of land and livestock for GHG mitigation and circularity), we have assembled a multi-actor inter-disciplinary research team, with wide-ranging expertise in the animal-crop supply chain and its environmental impact.

More information

SENSE: Unlocking the potential of soils through improved circularity in integrated systems

The SENSE project (Synergies in integrated systems: Improving resource use efficiency while mitigating GHG emissions through well-informed decisions about circularity) officially started in March with an online kick-off meeting to discuss the implementation of the project.

In early June, Carlos Alho from Wageningen University & Research (co-lead WP5 – Project management) met with the project coordinator Jagadesh Yeluripati at the James Hutton Institute to discuss the project structure and to visit the case study farm Glensaugh in Scotland, which included a demonstration of the soil sensors implemented on the farm for near-real-time monitoring of soil data that is used for the modelling of greenhouse gas emissions.

More information

ICT-AGRI-FOOD

SusCrop

FACCE ERA-GAS

SusAn

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