FACCE-JPI is the **Joint Programming Initiative on "Agriculture, Food security and Climate change"**. It brings together 21 European and associated countries to coordinate their research capacities to address the vital challenge of ensuring sufficient production of food, as well as feed, fibres and bio-fuels, in the context of demographic growth and a changing climate.

The Multi-partner Call on Agricultural Greenhouse Gas Research, initiated by FACCE-JPI with the American National Institute of Food and Agriculture of the USDA, New Zealand's Ministry for Primary Industries and Agriculture and Agri-Food, Canada aims to bring together excellent research consortia to enhance international collaboration in the face of the global issue of climate change mitigation.

In the frame of this call, the following project has been recommended for funding:

Basic Data

Title	**Quantifying Greenhouse Gas Mitigation Effectiveness through the GRA Croplands Greenhouse Gas Network**
Acronym	**MAGGNET**
Theme	Study of mitigation options at the field, animal and manure management scales with quantification of their technical potential for a range of agricultural systems and regions
Topic	Greenhouse gas emissions in the agriculture sector arising from agricultural soils including crops and grasslands, domestic livestock and waste management systems
Duration	01.01.2014 – 31.12.2016
Total cost (in €)	175 189€
Requested funding (in €)	145 189€

Coordinator

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Partners

Organisation Name	**Agroscope**
Country	Switzerland

Organisation Name	**Università degli studi di Sassari, Nucleo di ricerca sulla desertificazione**
Country	Italy

Organisation Name	Thünen Institute of Climate-Smart Agriculture
Country	Germany

Organisation Name	MTT Agrifood Research Finland
Country	Finland

Organisation Name	National Institute for Agro-Environmental Sciences
Country	Japan

Organisation Name	Facultad de Agrnomia, Universidad de Buenos Aires
Country	Argentina

Summary

This project will quantify greenhouse gas (GHG) mitigation potential of cropland management practices around the world using a recently developed and expanding database coordinated by the Global Research Alliance (GRA) Croplands Research Group. To meet this goal, a Project Team of research scientists from seven countries has been assembled, each representing GRA member countries. The team will work collectively to gather, analyze, and disseminate relevant published GHG data from major agroecoregions throughout the world in order to identify promising mitigation strategies, potential ecosystem service tradeoffs associated with such strategies, and critical research gaps. Outcomes from this collaborative effort will also serve to improve predictive capabilities of process-based models.

Specific objectives of this project include: 1) quantify the effectiveness of specific mitigation practices (e.g., fertilizer type/rate, tillage, crop rotation, residue management, cover crop, livestock integration, etc.) for arable crops throughout the world using meta-analysis, 2) quantify potential tradeoffs in GHG mitigation and crop yield, 3) identify and communicate critical data gaps, and 4) facilitate communication and cooperation among member countries in GRA research groups to improve predictive capabilities of process-based models. Proposed activities will contribute key validation data to the GRA Soil C/N Crosscutting Research Group, focused on modeling soil C and N dynamics in agricultural systems.

The project will be conducted in four phases: 1) retrieve GHG emissions and SOC stock change data from published studies conducted by member countries, 2) validate data and conduct meta-analyses across >200 experimental sites, 3) disseminate results to GRA partners and the public, and 4) interface with a C-and-N-modeling team in the Croplands and Soil C/N Crosscutting Research Groups to validate and improve predictive capabilities of process-based models for estimating GHG emissions from multiple agroecoregions represented by member and non-member GRA countries. Using input from partners in North and South America, Europe, and East Asia, a data entry spreadsheet has been developed - it encompasses background characteristics (e.g., climate, soil attributes, experimental treatments), major findings (e.g., soil C stocks, GHG flux, crop yield, etc.), and citations of journal articles associated with experimental sites. This recently developed spreadsheet will be the foundation of this project to conduct meta-analyses of GHG emissions and SOC stock changes, provide a source of robust data to test models, and eventually to be incorporated into the Research Data Alliance (http://rd-alliance.org/) for general sharing of published data. Collectively, activities associated with this proposed project will contribute significantly to the Croplands Research Group, which seeks to reduce GHG intensity of cropland systems.