GLOBAL RESEARCH ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES

Country report : CANADA

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Presentation to IRG Annual Meeting
Wageningen, 3 March 2020

Contributions to GRA and IRG

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- Canada's commitment to the GRA remains strong with AAFC scientists taking on leadership roles in the research groups and networks and through scientific collaboration:

- Since 2018-2019, Canada has identified the GRA as an international science co-operation priority in our annual project call. This has resulted in an increase in aligned research.

- Currently there are eleven new and ongoing projects awarded over $5.4 M CAD funding ($5,398,392)
  - four new projects awarded $1,283,197 funding for 2019-2020
  - five ongoing projects awarded $1,234,020 in funding from the 2018-2019 project call; and,
  - two GRA aligned projects were also awarded $2,881,175 in funding through the Interdepartmental Research Initiative in Agriculture.

- In addition, Agriculture and Agri-Food Canada has provided incremental funding to existing projects to support GRA collaboration. This year two projects were awarded $60,000. This is in addition to the $203,500 in funding for 2017-2020 previously awarded to five projects.

Projects, initiatives and contributions to IRG's topics (current)

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New projects initiated in 2019-20 related to IRG:

- HOLOS and Life Cycle Analysis (Roland Kroebel)
  - Version 4 of the HOLOS model will be built to consider multi-year production cycles (ie. Crop rotations and reproductive cycles for livestock) to align with user requirements
  - Include better accounting of carbon flows
  - Prepare for open source deployment
- Can enhanced weathering sequester C? (Kirsten Hannam)
  - The viability of enhanced weathering as a climate change mitigation tool for Canadian agro-ecosystems using feedstocks such as mining slag, bioenergy ash, aggregate waste will be explored
- Environmental Change Onehealth Observatory (David Lapen)
  - Builds on the generalized concept that a 'mosaicked agro-ecosystem' is the most sustainable and robust means to address clean water, GHG emissions, carbon storage, biodiversity, disease regulation, flood protection, etc.

Opportunities, future actions and funding

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- AAFC has developed a scientific research strategy to enhance sustainable agricultural production and is working to better understand the impacts of a changing climate and develop innovative technologies to mitigate it and enable adaptation to it. Themes include:
  - Climate change resilience –including climate smart practices such as better water, fertilizer, and pesticide management, and the development of climate resistant crops.
  - Investigation of soil health and features such as riparian buffers, shelterbelts and field boundary habitats, both from a GHG mitigation perspective as well as for other benefits such as erosion control and biodiversity.
  - Forecasting and analyzing the impact of a changing climate and associated extreme events like floods, droughts and heatwaves.
  - Reporting and development of Agri-Environmental Indicators, including GHG indicators, to estimate the impacts of Canadian Agriculture.

Opportunities, future actions and funding

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- Environment and climate change is a priority for AAFC, both for federal innovation and science programming and for Canadian Agricultural Partnership cost-shared on-farm programs delivered by provinces and territories.

- Under the Canadian Agricultural Partnership, up to $436 million is available over five years (an average of $87.2 million per year) for cost-shared on-farm action related to environmental sustainability, including climate change mitigation and adaptation.

- AAFC is also funding the Living Laboratories Initiative, a $24 million integrated approach to agricultural innovation that brings farmers, scientists, and other partners together to co-develop, test, and monitor new practices and technologies in a real-life context. This approach is to adopt more practical technologies and sustainable farming practices more quickly by Canadian farmers that also aims to reduce GH emissions.

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