

## HOLOS WORKSHOP: WHOLE-FARM GREENHOUSE GAS EMISSIONS

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### **Abstract**

The Holos model is AAFC's whole farm model that takes the algorithms of the Canadian National Greenhouse Gas Inventory and makes them available to farmers, policy makers, and academics. As such, the model is based on National emission factors and considers emissions of nitrous oxide (N<sub>2</sub>O), enteric and other methane (CH<sub>4</sub>), as well as carbon dioxide (CO<sub>2</sub>) to calculate a whole-farm greenhouse gas budget. The model is designed to only require data readily available on the farm and aimed to answer 'What if?' rather than 'What is?' question, meaning that the user is invited to test the effect of changing management practices on the Whole-Farm GHG budget. The model is freely available and open source.

The training will take approximately 2 hours, and will be a step-by-step process to set up a farm in Holos (with the goal that the user interacts with multiple parts of the interface and gets familiar with their layout and requirements). The model currently **works only on Windows OS** computers or laptops (**not tablets or smartphones**). Please make sure that the model is already installed on your machine.

*Holos model (including download link and user guide)*

<https://agriculture.canada.ca/en/agricultural-production/holos-software-program>

### **Biographies**

Aaron McPherson studied computer science at the University of Manitoba and has been a desktop application developer for over 8 years. He joined AAFC in 2016 as a software developer for the Holos modelling software.

Sarah Pogue completed a PhD at the University of Southampton (UK) in 2015 on long-term human-environment interactions and ecosystem service delivery in a protected area social-ecological system. She came to Lethbridge in 2016 as a postdoctoral researcher at the University of Lethbridge to examine the impacts of beef production on ecosystem services in Western Canada and has worked for AAFC since 2018 on changes in land cover and soil carbon change across Canada's agricultural landscape and as a Holos model developer.

Roland Kroebel has a background in Organic Farming (University of Kassel), Environmental Systems Analysis (Wageningen University and Research Centre) and experienced conventional Chinese agriculture during his PhD (University of Hohenheim). He has over 10 years of experience with agricultural models, their application and use, as well as their development. Roland joined AAFC in 2010. He has been involved with the development and use of Holos since 2013.