Agriculture et Agroalimentaire Canada | Agriculture and Agri-Food Canada

Lethbridge Research Centre, Lethbridge, Canada

Postdoctoral Fellowship Opportunity (2016)

Dairy farm systems modeling & analysis

Background: On behalf of the Government of Canada, Agriculture and Agri-Food Canada (AAFC) undertakes research to achieve security of the food system, health of the environment and innovation for growth. Within this broad mandate, an important objective is to assess and manage the risks to environmental quality and public health created by agriculture. We are therefore focussing our current research efforts on investigating the environmental impacts of dairy farm systems by following the nutrient balance on dairy farms in an attempt to reduce nutrient losses in the form of environmentally damaging compounds. For the assessments, the whole-farm models Holos and IFSM will be used, looking into the appropriateness of calculation approaches (validation through measurements), to estimate the farm system's footprint and environmental sustainability.

Description of the postdoctoral work: The successful candidate will focus initially on the simulation of representative dairy farm systems in Canada with the help of literature review and expert opinion present within AAFC. Based on these representative systems, analysis of greenhouse gas emissions will be conducted using the Holos model, an AAFC farm-level greenhouse gas calculator intended for development as an environmental impact tool. Additional analysis will be conducted to estimate nutrient flows in these representative farm systems. Strategies will be explored to lower nutrient losses. Measurements and nutrient analysis of forages grown at 3 sites in Canada (1 West, 2 East) under various management regimes will be used to formulate diets and simulate nutrient flows using the IFSM model. The results will be used to develop best management practises for minimizing greenhouse gas emissions and reducing nutrient losses from dairy systems in Canada. The candidate will be expected to publish the findings in scientific peer reviewed journals.

Qualifications of the Candidate: Candidates must have completed their PhD degree prior to applying for this position, and should have a background in agriculture and Canadian livestock production systems, expertise in life cycle assessment, whole-farm analysis and / or ecosystem modelling, or dairy cattle nutrition would be an asset. Also required is the demonstrated ability to design, conduct, and present the results of research projects.

Location and Scientific Supervision: Lethbridge Research and Development Centre, located about 200 km SE of Calgary, Alberta, Canada.

Conditions: The PDF position is intended to be available from April 1st, 2016 or as soon as a suitable candidate is found, under the condition that the project is funded. Remuneration will equal a Canadian government research scientist 1 – 1 salary with benefits. Fellowships are awarded annually as termed positions, and up to a maximum duration of 3 years.

Application: Please email a CV, a statement describing your motivation and eligibility to apply, and names of three potential referees **as a single PDF file** to Dr. Roland Kroebel, Dr. Karen Beauchemin, and Dr. Karen Koenig (use subject line: postdoctoral fellowship Dairy farm systems modeling & analysis 2016).

Postdoctoral work tasks:

Tasks 2016/ 2017	Q1	Q2	Q3	Q4
Literature review dairy farm systems	X	X		
Review Holos and IFSM model		X	X	
Whole-farm analysis of representative Canadian dairy farms			X	X
Stakeholder workshop (progress, planning, and feedback)				X
Tasks 2017/ 2018				
Investigation of GHG mitigation strategies for the rep. systems	X	X		
Investigative simulations using the ISFM model (calibration and validation)			X	X
Stakeholder workshop (progress, planning, and feedback)				X
Tasks 2018 / 2019				
Continued model evaluation and assessment of accuracy and validity	X	X	X	X
Stakeholder workshop (progress, planning, and feedback)				X