



**11TH ANNUAL POLICY CONFERENCE TO BE HELD VIRTUALLY:
POLICIES FOR SURVIVING A PANDEMIC AND THRIVING IN THE ECONOMIC RECOVERY TO
FOLLOW**

**The 2021 CAES Policy Conference
POST-CONFERENCE VIRTUAL WORKSHOP
Evaluation of Public Programs Using Simulation and Stated Preference Methods:
The Case of the Living Laboratory Initiatives**

Date: Friday, January 22, 2021

Time: 1:00 am – 5:00 pm

Organized by:

Getu Hailu, University of Guelph

Cyprien Awono and Bruce Phillips, Agriculture and Agri-Food Canada (AAFC)

Overview:

The Government of Canada launched Canada's first Living Laboratory Initiative in 2018 - a new method of collaboration to address agri-environmental challenges. The Living Laboratory initiative is an 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. The ultimate benefit will be more practical technologies and sustainable farming practices adopted more quickly by Canadian farmers. The foundations of this workshop will be organized around the evaluation of the adoption of best management practices (BMPs) under the Living Laboratories Initiative. One element of the Initiative is academic research focussing on (1) identifying key success factors and barriers (and their rankings) to the adoption of BMPs and (2) the economic and agri-environmental evaluation of the outcomes of the initiative using economic models.

The roles of farm-level simulation modelling, experimental economics (e.g., field or laboratory experiments), and contingent valuation methods to the evaluation of BMPs (and government programs) have become more important over time for government departments and academics alike. Meanwhile, there is an increasing recognition that the complexity of the Living Laboratories Initiative requires rigorous economic analysis and government departments to work together in partnership with the research community in developing common knowledge of economic models for the effective evaluation of public initiatives and programs.

This workshop is designed to cover contemporary evaluation approaches in the context of BMPs. This workshop is targeted toward government policy analysts and academic researchers who wish to conduct policy/program impact assessment to answer real questions related to agri-food initiatives and programs using simulation modelling, experimental economics, contingent valuation methods. The course will address the following questions:

- What approaches can be used to analyze and elicit producers' relative ranking of incentives that may promote the adoption of BMPs and barriers that hinder the adoption of BMPs?
- What are the issues and challenges in the evaluation of BMPs impacts (in particular, The Living Labs Initiatives' impacts)?
- How do we address data challenges in assessing BMPs program impacts?

Participants completing the workshop will gain insight into how their backgrounds, training, and contexts may influence their choice or preference for particular program evaluation approaches. At this workshop, participants will learn about theories and methods of program evaluation. In addition, participants in this workshop will be introduced to case studies related to the adoption of BMPs under the Living Laboratories Initiative.

Presenters:

Dr. Vic Adamovitz, University, Professor, University of Alberta

Dr. Scott Jeffrey, University of Alberta

Dr. Tongzhe Li, University of Guelph

Dr. Patrick Withey, St. Francis Xavier University

Dr. Jun Zhao, Agriculture and Agri-Food Canada (AAFC)



1:00 – 1:05: Welcome, *Getu Hailu*, University of Guelph

1:05-1:20: The Role of Socio-Economic Analyses in AAFC's Living Laboratories Initiative, *Cyprien Awono*, Agriculture and Agri-Food Canada (AAFC)

This presentation will introduce the Living Labs approach to innovation and the reasons why AAFC believes it can lead to the faster adoption of solutions to agri-environmental challenges. An overview of the Living Laboratories Initiative will show the collaboration between economists, scientists, other partners and producers. The Initiative is involving the full use of government, non-governmental agencies, private sector and academic economists and – most importantly, producers themselves – to fill the information and analytical gaps that are not always addressed in research projects solely focused on scientific aspects of BMPs. In particular, it will address how the Living Labs socio-economists help bridge a gap between the scientific research into the agri-environmental benefits of BMPs and the real economic trade-offs faced by farmers when considering BMPs for use on their farms. Finally, a brief description of the main socio-economic projects and activities will be presented.

**1:20 – 11:50 The Role of Farm-Level Simulation in Evaluating the Economics of BMP Adoption–
*Scott Jeffrey, University Alberta***

While not the sole factor affecting producer decisions concerning adoption of Beneficial Management Practices (BMPs), direct farm-level costs and benefits associated with adoption are obvious important considerations. Simulation techniques represent one empirical tool available to economists interested in studying the farm-level economics of BMP adoption. This presentation provides an overview of simulation methods, specifically stochastic simulation or Monte Carlo simulation, and how they may be applied to the study of BMP adoption by agricultural producers. A brief description of “simulation” is presented; specifically, what it is, how it differs from optimization, what is Monte Carlo simulation, etc. This is followed by a discussion of how simulation methods may be applied to examine relevant economic problems: a) the farm-level problem – “What factors will/should affect producer adoption of BMPs?”, and b) the policy problem – “What policies/programs affect producer incentives and what policies/programs should be used to incentivize producers?”. The presentation highlights how simulation “adds value” to the examination of these problems, the limitations associated with using firm-level simulation methods are also noted, along with potential ways in which some of these limitations may be addressed.

1:50-2:20 Specific BMPs in Prince Edward Island: Costs of Implementation and Net Benefits of BMPs, *Patrick Withey (St. Francis Xavier University) and Van Lantz (University of New-Brunswick)*

The goal of the socioeconomic analysis conducted in this project is to determine the economic efficiency of best management practices (BMP) implemented on PEI farms. This work will be based on a simulation model that includes net revenues of standard (3-year rotation) farm practices in PEI, as well as the social costs and benefits of BMP implementation. The current presentation focuses on work completed to date, which includes a summary of preliminary costs of BMPs based on interviews with producers in the Living Labs program, development of a simulation model, and preliminary estimates of the net benefits of BMPs.



2:20 – 2:50: Laboratory and Field Experiments: Why, When, and How, *Tongzhe Li*, University of Guelph

Experimental economics methods are a relatively new approach developed to explain economic decision-making, without the assumption that human-beings are homogeneous, strictly self-interested, and rational. They are managed by using treatment control and replication to study the critical causal relationships of behaviour. This approach can help gain insights into effective ways to promote BMP adoption. For example, Nobel Laureate Esther Duflo and her coauthors drew experimental evidence on how to nudge Kenya farmers to efficiently use fertilizer (Duflo, Kremer, and Robinson, 2011 AER). This presentation will showcase how to use laboratory and field experiments to quantify the causal relationship between exogenous factors and BMP adoption. With a careful experimental design, these exogenous factors can represent various economic and policy instruments and the results will inform evidence-based policymaking.

2:50 – 3:00: Virtual Coffee Break

3:00 – 3:30: Examining the Barriers and Incentives of BMP Adoption, Jun Zhao and Margot McComb (Agriculture and Agri-Food Canada); Marina Puzyreva and Geoffrey Gunn (International Institute for Sustainable Development)

In order to accelerate the adoption of BMPs on Canadian farms by using policy tools and programs to lower barriers or increase incentives, it is essential to properly identify the significant barriers and incentives faced by farmers when deciding to implement BMPs. While literature exists on various factors that may influence the adoption of a specific BMP, the Living Laboratories (LL) project provides an excellent opportunity to examine this question at the producer level. AAFC and IISD collaborated, in conjunction with other external partners and the Economic Advisory Committee, in developing a questionnaire to identify barriers and incentives and to allow researchers to estimate the social capital impacts of the LL Initiative.

3:30 – 4:00: Evaluating Landowner Preferences for BMP Programs, Vic Adamowicz, University of Alberta

BMP program developers usually do not know which programs landowners will adopt and they do not know the payments that will be required to induce participation (if any). Before rolling out programs they would like to know which programs, and program attributes, are desirable and what the costs of such programs will be. Stated preference methods may be able to produce estimates of the costs of programs (Willingness to accept) as well as landowner preferences for programs and program attributes (e.g. contract length, area, etc.). Stated preference methods that could be used include "choice experiments" (landowner choices from attribute-based options), best-worst scaling (selection of the best and worst options from a set), and other variants of stated preference methods. The advantages of stated preference methods include experimental control (clarity of programs) and randomization that allows for empirical identification, as well as low cost. However, stated preference methods have several limitations that include a potential lack of incentive compatibility and sample selection bias. This presentation will review stated preference methods as they apply to ex ante evaluation of BMP program success and uptake. It will also include several examples of the use of stated preference methods in BMP program assessment and discuss the stated preference approach relative to revealed preference and farm level financial modelling approaches.

4:00-4:00 Closing Remarks – *Bruce Phillips*, Agriculture and Agri-Food Canada (AAFC) and *Getu Hailu*, University of Guelph



Speaker Biographies

Dr. W.L. (Vic) Adamowicz, University of Alberta

Vic Adamowicz is the Vice Dean in the Faculty of Agricultural, Life and Environmental Sciences, and a Distinguished University Professor in the Department of Resource Economics and Environmental Sociology, Faculty of Agricultural, Life & Environmental Sciences, University of Alberta. He obtained his BSc and MSc from the University of Alberta (1981, 1983) and his PhD from the University of Minnesota in 1988. His research has focused on the economic valuation of environmental amenities and ecosystem services and the incorporation of environmental values into economic analysis – with applications to forestry, water quality, air quality, endangered species and agriculture. His research also involves the analysis of choice behavior with applications to food demand, recreation, and environmental quality. Adamowicz is a Fellow of the Royal Society of Canada, Academy II – Social Sciences (awarded in 2007). He became a Fellow of the Association of Environmental and Resource Economists in 2019 and a Fellow of the Canadian Agricultural Economics Society in 2011.

Dr. Cyprien Awono, Agriculture and Agri-Food Canada (AAFC)

Cyprien Awono is a Senior Socio-Economist at Agriculture and Agri-Food Canada. Within AAFC's Living Laboratories Initiative, he is the national coordinator of the socio-economic component. He holds a PhD in agricultural and resources economics from the Agrocampus Ouest de Rennes, University of Rennes 1 in France. He has diverse work experiences in Africa, France and Canada including within AAFC's Market and Industry Services Branch and the Canadian Dairy Commission.

Dr. Getu Hailu, University of Guelph

Getu Hailu is a Professor in the Department of Food, Agricultural and Resource Economics (FARE) at the University of Guelph. Getu started his career in Ethiopia working with small farmers on farm management strategies under an uncertain environment. He graduated with a PhD degree from the University of Alberta with a major in Agricultural and Resource Economics. He joined the University of Guelph in 2005.

Dr. Scott Jeffrey, University of Alberta

Dr. Scott Jeffrey is a professor in the Department of Resource Economics and Environmental Sociology (REES) and Associate Dean (Academic) in the Faculty of Agricultural, Life and Environmental Sciences at the University of Alberta. Dr. Jeffrey's teaching and research program in REES addresses problems related to agricultural production economics, including issues of risk and efficiency in agricultural production. Dr. Jeffrey has participated in and led projects examining farm level economics for a variety of issues/problems in the Canadian Prairie region, including adoption of beneficial management practices (e.g., wetland restoration, establishment of buffer strips, rotational grazing), technical and economic efficiency in crop and livestock production, impact and effectiveness of public business risk management programs, and agricultural land use change. Current research activities include the study of economic and environmental tradeoffs associated with cow-calf producer adoption of alternative grazing management strategies, and a risk efficiency analysis of crop diversification in the Canadian Prairies.

Dr. Jeffrey holds a B.Sc.(Agr) in Animal Science and M.Sc. in Agricultural Economics from the University of Guelph, and a Ph.D. in Agricultural Economics from the University of Minnesota. Dr. Jeffrey served as an Assistant Professor at the University of Manitoba from 1987-1992 and has been at the University of Alberta since 1992.



Dr. Tongzhe Li, University of Guelph

Dr. Tongzhe Li is an assistant professor at the Department of Food, Agricultural and Resource Economics, University of Guelph and the founding director of FARE Laboratory for Experimental and Applied Economics. She earned a Ph.D. in Economics from Washington State University in 2015. Li investigates the status quo of economic behaviour and then uses Experimental and Behavioral Economics techniques to draw causal inferences on how various treatments change the tipping point of public choices. Her work has been funded by multiple agencies in Canada and the U.S., including Genome Canada, OMAFRA, National Science Foundation, National Oceanic Atmospheric Administration, and U.S. Department of Agriculture. Dr. Li has published 28 peer-reviewed articles in the past five years. She is a recipient of the 2017 Sylvia Lane Mentor Fellowship, a competitive, international award for young female agricultural and resource economists.

Bruce Phillips, Agriculture and Agri-Food Canada

Bruce Phillips is a Deputy Director of the Agricultural and Economic Policy Analysis Unit at Agriculture and Agri-Food Canada where his team contributes to socio-economic research for the Living Labs Initiative, maintains and conducts economic analysis using the Canadian Regional Agricultural Model and collaborates with Statistics Canada on the development of the Farm Management Survey.

Dr. Patrick Withey, St. Francis Xavier University

Dr. Patrick Withey is an Associate Professor in the Department of Economics at St. Francis Xavier University. His research focuses on issues related to climate change, and has involved modeling resource management in the context of climate change, as well as impact analysis with a focus on climate policy. He completed his Ph.D. at the University of Victoria, where his research focused on wetlands management in the face of climate change. Since arriving at StFX in 2012, his research has been funded by grants from Natural Resources Canada, Agriculture and Agri-Food Canada, and a SSHRC Insight Development Grant.

Dr. Jun Zhao, Agriculture and Agri-Food Canada

Dr. Jun Zhao is a Senior Economist at Agriculture and Agri-Food Canada. He holds a Ph.D. in economics from the University of Ottawa. His current research focuses on climate change and its economic impacts on crop production, and the economic impacts of agri-environmental beneficial management practices.