EXECUTIVE SUMMARY

Canadian Agricultural Innovation and Regulation Network (CAIRN) is one of the five research networks funded by Agri-Food Canada through Enabling Research for Competitive Agriculture (ERCA) program. There are thirty-seven CAIRN members representing different academic, government and private institutions in Canada.

2012/2013 was a productive year for CAIRN. The network supported thirteen graduate student research projects that initiated or continued in 2012/2013. CAIRN organized a session in Canadian Science Policy Conference in November 2012. Furthermore, the CAIRN network hosted a successful Workshop and participated in organizing CAES-ERCA Policy Conference in January 2013. In addition, as evidenced in this report, members of CAIRN have contributed to agricultural innovation and regulation sectors in number of ways. They have engaged in number of innovation related research projects, have made number of publications, presentations and also have participated in policymaking process during this year.

This report is organized into five sections. Section 1 contains CAIRN’s objectives, its’ research matrix and CAIRN Membership information. Section 2 describes graduate student research projects with some CAIRN funding that were initiated or continued in 2012/2013. Section 3 contains a partial list of members’ research activities, publications and presentation during 2012/2013. Section 4 gives the list of new CAIRN reports and policy briefs completed in 2012/2013. Section 5 briefly summarizes the CAIRN networking through CAIRN Session in Canadian Science Policy Conference, CAIRN Workshop, and through the CAIRN’s contribution in CAES-ERCA Policy Conference.
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1: INTRODUCTION

The Canadian Agricultural Innovation and Research Network (CAIRN) was established in December 2004 by Agriculture and Agri-Food Canada (AAFC) as one of five Agricultural Policy Research Networks. Funding was renewed by AAFC under the Enabling Research in Competitive Agriculture (ERCA) program for the period October 1, 2009 to March 31, 2013. CAIRN later altered its name to Canadian Agricultural Innovation and Regulation Network. This report covers the period April 1, 2012 to March 31, 2013- the last year of the CAIRN.

1.1 Background and CAIRN Objectives

A number of economic, demographic, and environmental forces are converging that will fundamentally change the face of agriculture over the next few decades. As a result of forces like the concern over greenhouse gas emissions, food safety, and energy security, society will increasingly be looking to agriculture for solutions. Agriculture is well positioned to contribute to environmental sustainability, the provision of bio-energy and bio-products, and other goals. In providing these solutions, agriculture must be economically sustainable in an increasingly competitive global market place. Innovation is vital to effectively respond to these challenges.

Despite the recognition of the importance of innovation, developing the best innovation regulations and policies for facilitating adoption and market growth remains a challenge. Agricultural innovation is often constrained by a lack of public and private research funding, cumbersome regulation, jurisdictional disputes, freedom to operate, trade constraints, inappropriate commercialization vehicles and other aspects of the innovation system. Policy work is needed to deal with these issues.

CAIRN’s objective is to bring researchers together to study the processes of agricultural innovation while proactively engaging government, industry and the public in an effort to improve the agricultural innovation system in Canada. More specifically, however, CAIRN will identify and resolve obstacles to innovation, build a body of knowledge, train graduate students and increase the understanding of the agricultural innovation system in the context of its regulatory environment.
1.2 Description of Network Research Program Areas

The Innovation and Regulation Network defines its research areas as a matrix. There are three main areas of agricultural innovation; primary agriculture, functional food and food processing, and bio-energy/bio-product - and four areas of policy analysis; innovation, regulation, coordination and commercialization, and impact measurement.

Table 1.0 CAIRN Research Matrix

<table>
<thead>
<tr>
<th>Areas of Agricultural Innovation</th>
<th>Areas of Policy Analysis</th>
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<td></td>
<td>Innovation Systems Analysis</td>
<td>Regulatory Systems Analysis</td>
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<td>Primary Competitiveness &amp; Productivity</td>
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<td>Functional Food &amp; Food Processing Development</td>
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<tr>
<td>Bio-Energy &amp; Bio-Product Development and Environmental Stewardship</td>
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The matrix represents the interdependency of the agri-food sector and the need for multi-faceted public policy, which supports the innovation process, including the commercialization process.

1.3 CAIRN Membership (2012/2013)

CAIRN is composed of thirty-seven members representing academic, government and private institutions from British Columbia to Nova Scotia as well as the United States and Europe. As explained in coming sections they have contributed immensely to the improvement of the Canadian Agricultural Innovation and Regulations.
## CAIRN Membership 2012/2013

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
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<tbody>
<tr>
<td>1. Julian Alston</td>
<td>University of California-Davis</td>
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<tr>
<td>2. Henry An</td>
<td>University of Alberta</td>
</tr>
<tr>
<td>3. Derek Brewin*</td>
<td>University of Manitoba</td>
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<td>4. Metin Cakir</td>
<td>University of Saskatchewan</td>
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<td>5. Ryan Cardwell</td>
<td>University of Manitoba</td>
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<td>6. Richard Carew</td>
<td>AAFC - Summerland</td>
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<tr>
<td>7. Stephen Clark</td>
<td>Nova Scotia Agricultural College</td>
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<tr>
<td>8. John Cranfield</td>
<td>University of Guelph</td>
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<tr>
<td>9. Shon Ferguson</td>
<td>Research Institute of Industrial Economics</td>
</tr>
<tr>
<td>10. Murray Fulton*</td>
<td>University of Saskatchewan</td>
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<tr>
<td>11. Hartley Furtan (on leave)</td>
<td>University of Saskatchewan</td>
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<tr>
<td>12. Viktoriya Galushko</td>
<td>University of Regina</td>
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<tr>
<td>13. Pascal Ghazalian</td>
<td>University of Lethbridge</td>
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<td>14. Greg Graff</td>
<td>Colorado State University</td>
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<td>15. Richard Gray*</td>
<td>University of Saskatchewan</td>
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<td>16. Jill Hobbs</td>
<td>University of Saskatchewan</td>
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<td>17. Wilf Keller</td>
<td>Genome Prairie</td>
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<td>18. Bill Kerr</td>
<td>University of Saskatchewan</td>
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<td>19. Kurt Klein</td>
<td>University of Lethbridge</td>
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<td>20. Bon Koo</td>
<td>University of Waterloo</td>
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<td>21. Andréanne Léger</td>
<td>AAFC-Ottawa</td>
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<td>22. Stavroula Malla*</td>
<td>University of Lethbridge</td>
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<td>23. Eric Micheels</td>
<td>University of Saskatchewan</td>
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<td>24. Anwar Naseem</td>
<td>University of McGill</td>
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<td>25. Rose Olfert</td>
<td>University of Saskatchewan</td>
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<td>26. Peter Phillips</td>
<td>University of Saskatchewan</td>
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<td>27. Cami Ryan</td>
<td>University of Saskatchewan</td>
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<tr>
<td>28. Grace Skogstad</td>
<td>University of Toronto</td>
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<tr>
<td>29. Stuart Smyth</td>
<td>University of Saskatchewan</td>
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<tr>
<td>30. David Sparling*</td>
<td>Ivey School of Business</td>
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<tr>
<td>31. Bodo Steiner</td>
<td>University College Cork</td>
</tr>
<tr>
<td>32. Shelley Thompson*</td>
<td>SJT Solutions</td>
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<tr>
<td>33. Kien Tran</td>
<td>University of Lethbridge</td>
</tr>
<tr>
<td>34. Nicoleta Uzea</td>
<td>University of Western Ontario</td>
</tr>
<tr>
<td>35. James Vercammen*</td>
<td>University of British Columbia</td>
</tr>
<tr>
<td>36. Crina Viju</td>
<td>Carlton University</td>
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<tr>
<td>37. Simon Weseen</td>
<td>IBRG</td>
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* Denotes CAIRN Executive Member
2: CAIRN FUNDED GRADUATE STUDENT RESEARCH PROJECTS

During 2012/2013 CAIRN has funded 12 projects that involved graduate student research. These projects are all co-funded in-kind through supervisory roles, and other University support. Most of these projects also receive a significant amount of additional financial support through fellowships and scholarships, and project funding. A list of graduate projects that were funded by CAIRN during 2012/2013 is found below. These projects are briefly described in the remainder of the section in the same order.

2.1 Induced Innovation and Canadian Agriculture (Stephen Clark and Shelley Thompson)

2.2 The Innovation and Diffusion of Policy: Novelty in the Canadian Regulatory System for Plants with Novel Traits (Peter Phillips and Jaime Lynn Leonard)

2.3 Enhancing Innovation and Productivity in the Canadian Food Processing Industry (David Sparling and Nicoleta Uzea)

2.4 Exploring Options for Technology-Driven Value-Enhanced Lentil Supply Chains (Richard Gray)

2.5 Regulatory Frameworks for Functional Food and Natural Health Products (Jill Hobbs and Stavroula Malla)

2.6: Extensions of the Basic Ricardian Model for Predicting the Economic Impacts of Climate Change on the Canadian Prairies (James Vercammen and Hossein Ayouqi)

2.7 Enhancing the Effectiveness of Western Canadian Agri-Environmental and Agri-Food Policies (James Vercammen)

2.8 On the Relationship between Regional Trade Agreements and Innovation Activities (Pascal Ghazalian)

2.9 Technology Adoption in Prairie Agriculture: Policy Impacts of the Loss of the WGTA (Rose Olfert and Shon Ferguson)

2.10 The Role of Traceability and Authenticity Technologies in Public and Private Sector Food Quality Standards (Jill Hobbs and Albert Ugochukwu)

2.11 Lifestyle farm enterprises in Canada: Hobby Farm or innovation Laboratory? (Stephen Clark and Shelley Thompson)

2.12 Long Term Dynamics of Firm R&D Investment in Plant Breeding under Plant Breeders Rights (Derek Brewin and Mehdi Arzandeh)
2.13 Role of Public-Private Partnership (P3s) in Plant Genetic Resource Research and Development (Peter Phillips and Bill Boland)

2.1: Induced Innovation and Canadian Agriculture

School: Dalhousie University
Project Leaders: Stephen Clark
Co-investigator: Shelley Thompson

Proposed Timeline and progress to Date: Interview guide was submitted to NSAC ethics committee for review.

Abstract: The study re-examines the induced innovation hypothesis from 1958-2006 in Canadian agriculture for two regions in Canada: Central Canada (Provinces of Ontario and Quebec) and Western Canada (Provinces of Alberta Saskatchewan and Manitoba). There is broadly consistent support for the induced innovations hypothesis for Canadian agriculture, especially for Western Canadian Agriculture. In addition, there is support for the notion the US as well as Canadian research expenditures are important to the explanation of input ratio movements in Canadian Agriculture in the long run. This could indicate the existence of spillover effects that run from US agricultural research to Canadian Agriculture.

Outputs to Date:

2.2: The Innovation and Diffusion of Policy: Novelty in the Canadian Regulatory System for Plants with Novel Traits

School: University of Saskatchewan
Project Leader: Peter Phillips
Graduate Student: Jaime Lynn Leonard, MPP Candidate

Proposed Timeline and progress to Date:
- Case study analysis – completed
- Literature review – completed
- Writing and synthesis – ongoing (current)
- Complete for revisions – beginning of April 2013
Abstract: The research project looks at the history and integration of the concept of novelty into the regulatory system for agricultural products of biotechnology in Canada. The idea of novelty, its emergence and incorporation at multiple levels of regulatory policy is reviewed and examined with a policy learning lens. A review of the policy diffusion and policy innovation literature is applied to the case study of Canada’s ‘plants with novel traits’ category for agricultural biotechnology products. It is used to explain how the approach is unique in the regulatory world and among Canada’s largest trading partners, and specifically why the Canadian approach has not diffused throughout the regulatory world. Finally, the paper offers suggestions as to how Canada can utilize its position to gain further influence and advantage internationally via the potential export or review of its regulatory policies in this area.

2.3: Enhancing Innovation and Productivity in the Canadian Food Processing Industry

School: Richard Ivey School of Business, University of Western Ontario
Project Leaders: David Sparling and Necoleta Uzea

Outcome: Identify Variables Required for the Project and Finalize Methodology
Proposed timeline: August 31, 2012
Progress to date: completed

Outcome: Data Analysis
Proposed timeline: November 30, 2012
New timeline: July 31, 2013

Outcome: First Draft of the Paper
Proposed timeline: January 31, 2013
New timeline: August 31, 2013

Outcome: Final Paper
Proposed timeline: February 28, 2013
New timeline: September 30, 2013

Outcome: Policy Brief for CAIRN
Proposed timeline: March 8, 2013
New timeline: October 7, 2013
2.4: Exploring Options for Technology-Driven Value-Enhanced Lentil Supply Chains

School: University of Saskatchewan
Project Leader: Richard Gray

Proposed Timeline and progress to Date:
- Thesis Proposal – completed
- Development of licensing / development mechanism – draft completed
- Theoretical framework – completed
- Economic Simulation model – Framework is complete – parameterization underway
- Thesis defense – September 2013
- Policy Brief – September 2013

Abstract: The development of niche markets often requires innovative approaches that identify and capture value through new value chains. A number years ago SPG recognized that some varieties were destined for a niche markets, and that these varieties could be commercialized through an exclusive license that would allow a firm to contract with growers for specified production amounts while the market was being developed. A number of new development have created a situation that suggests that there could be an opportunity for the development of a high value supply chain for dehulled lentils within the larger red lentil market. Given these developments a closed loop value chain for these lentils, where all of the product is dehulled before marketing, may create significant value for Saskatchewan Pulse producers. Such a chain would enable the production and processing of the higher yielding variety by taking advantage of the desirable feature of this channel, while minimizing the negative impact of the existing red lentil market and preventing foreign plantings the new variety. For the value chain to be viable there has to be additional surplus created to make the proposition viable for all participants including growers, processors, marketers and the SPG who funded the varietal development. This project examines the economic impacts of the value chain on producers and processors.

Outputs to Date: Thesis proposal, Literature Review, and simulation framework complete
2.5: Regulatory Frameworks for Functional Food and Natural Health Products

Project Leader: Jill Hobbs, University of Saskatchewan
Co-investigator: Stavroula Malla, University of Lethbridge

**Proposed Timeline and progress to Date:**
The research for the book is complete and a series of draft chapters have been prepared. Further editing and writing is underway. Target timeline for submission of the completed manuscript to a publisher is summer 2013.

**Abstract:** A book manuscript examining functional food and natural health product regulations, policies and key industry trends in Canada and internationally is being prepared. The book includes a broad review of a number of key issues facing the functional foods and natural health products industry, including consumer awareness, acceptance and willingness to pay, industry and product development strategies and regulatory situations. The book examines the current situation with respect to allowable health claims in Canada and several other countries and discusses the implications of different policies toward new product approvals and health claims.

2.6: A Comparative Analysis of Environmental Best Management Practices by Canadian Farmers

School: University of British Colombia
Project Leader: James Vercammen
Graduate Student: Hossein Ayouqi (MSc Candidate)

**Proposed Timeline and progress to Date:**
Hossein’s thesis is in progress as of March, 2013. Expected completion date is Summer, 2013.

**Outputs to Date:**
2.7: Enhancing the Effectiveness of Western Canadian Agri-Environmental and Agri-Food Policies

School: University of British Columbia  
Project Leader: James Vercammen

Proposed Timeline and progress to Date:  
Caroline Chiu, (Masters of Food and Resource Economics Student, UBC), funded by CAIRN to facilitate a four month summer internship at the British Columbia Ministry of Agriculture and Lands (May to August, 2013). Caroline worked on several different projects involving innovation and competitiveness within Canada’s agricultural sector. Caroline continued to work with this Ministry after completing her internship.

Yijeong, Park (Masters of Food and Resource Economics Student, UBC), funded jointly by LEARN and CAIRN to facilitate a four month summer internship at UBC (May to August, 2012) working with Professor Jim Vercammen on the topic of adoption of conservation tillage on the Canadian Prairies.

Zhou Chen (Masters of Food and Resource Economics Student, UBC), jointly funded by LEARN and CAIRN to assist Jim Vercammen with the creation of a GIS system for assessing the environmental impacts of food distribution systems in British Columbia’s Lower Mainland (March, 2013).

Outputs to Date:  

2.8: On the Relationship between Regional Trade Agreements and Innovation Activities

School: University of Lethbridge  
Project Leader: Pascal Ghazalian

Proposed Timeline and progress to Date:  
The first draft of this research project has been completed. June 2013 is the proposed completion date of this research project.

Abstract: The implementation of a Regional Trade Agreement (RTA) is normally accompanied with a rise in market competition levels, in domestic agricultural markets through increases in imports and in foreign agricultural markets through increases in exports. These effects are expected to induce adjustments in agricultural technology and
productivity in the importing and exporting countries. This paper analyzes the implications of these adjustments in the context of Viner’s (The Customs Union Issue. Carnegie Endowment for International Peace: New York, NY, 1950) conventional partial equilibrium framework with perfectly elastic foreign supply schedules faced by the importing member country. It also examines these implications in the context of Pomfret’s (Review of World Economics, 122(3): 439–465, 1986) extended partial equilibrium framework depicting upward-sloping foreign supply schedules for the importing member country. The analysis underscores important changes and redistributions through the RTA’s initial benefits and losses, following the RTA-induced adjustments in agricultural technology and productivity. Some analytical considerations are also discussed in the context of vertical agricultural markets. Finally, an empirical investigation is carried out, revealing different implications of membership in the European Union (EU) for productivity in the agricultural sector.

2.9: Technology Adoption in Prairie Agriculture: Policy Impacts of the Loss of the WGTA

School: University of Saskatchewan
Project Leader: Rose Olfert and Shon Ferguson
Graduate Student: Mony Louk

Proposed Timeline and progress to Date:
- First draft of academic paper completed (Ferguson Olfert 2013)
- First draft of Mony Louk’s MSc thesis completed
- Policy brief for publication on CAIRN website complete by July 2013.

Abstract: In 1995 the Canadian Government removed a century-old railway transportation subsidy for the export of grains from the Prairie region of Canada, resulting in substantial increases in freight rates for wheat and other export grains. We exploit the large regional variation in these one-time freight rate increases in order to evaluate the impact of the policy reform on technology adoption and production. Utilizing detailed Census and independent freight rate data for approximately 400 finely detailed spatial units across Alberta, Saskatchewan and Manitoba and a difference-in-differences methodology we find evidence that higher freight rate increases led farmers to adopt new seeding technology and more modern crop production methods.

Outputs to Date:

2.10: The Role of Traceability and Authenticity Technologies in Public and Private Sector Food Quality Standards

School: University of Saskatchewan  
Project Leader: Jill Hobbs  
Graduate Student: Albert Ugochukwu, PhD Candidate

Proposed Timeline and progress to Date:  
This project has partially supported the Ph.D. thesis research of Albert Ugochukwu. The thesis comprises three papers addressing the incentives for firms/industries to adopt traceability and authenticity technologies, and the role of technology in strengthening regulatory systems dealing with animal and plant health and food safety in an international trade context. To date the research has focused on the international regulatory systems (IBOL) paper and has developed a series of theoretical models examining the impacts of technology adoption. Completion of the thesis research is planned for 2014.

Abstract: Issues of traceability and authenticity continue to remain important in food markets. New technologies and innovations in the food sector may help address the information problem inherent in the provision of credible quality claims. Traditional technologies for identifying and verifying the presence of food attributes are external labels or identifiers placed on the product package, such as bar-coding and Radio-Frequency-Identification (RFID) technologies. Recent innovations in food chemistry have the potential to allow identification and verification within the food product at a molecular level, while there has also been considerable interest in DNA-based traceability systems and so-called ‘barcode of life’ technologies. Proprietary firm-level standards, regulation, and industry-wide standards, coupled with supply chain monitoring activities, are also means of delivering traceability and authenticity assurances. Reputation externalities from authenticity problems (counterfeit or misrepresented products) provide industries with an incentive to introduce collective standards for quality verification and certification. The research questions examined in this project include the extent to which traceability and authenticity technologies can strengthen the quality signals embedded in these standards, the incentives for firms to adopt these new food technologies, and the potential role of the Barcode of Life (IBOL) technology in strengthening regulatory systems for detecting pathogens and in international agreements around Sanitary and Phytosanitary (SPS) issues
Outputs to Date:


2.11: Lifestyle farm enterprises in Canada: Hobby Farm or innovation Laboratory?

School: Dalhousie University  
Project Leaders: Stephen Clark  
Co-investigator: Shelley Thompson

Proposed Timelines and Progress to Date: The interview guide was submitted to NSAC ethics committee for review.

Abstract: Its objective is to understand innovation by smaller farmers and it is focusing on Community Supported Agriculture output: incomplete as yet.

2.12: Long Term Dynamics of Firm R&D Investment in Plant Breeding under Plant Breeders Rights

School: University of Manitoba  
Project Leader: Derek Brewin  
Graduate Student: Mehdi Arzandeh

Proposed Timelines and Progress to Date:  
Abstract: This study examines the dynamics of incentives for R&D firms to invest in the improvement of biotech varieties which are sold to differentiated farmers by competing with an existing generic seed in an oligopolistic market. We distinguish between the two types of innovation, in process and in product, and assume they positively affect the outcome of one another R&D investment. A number of propositions are drawn for policy purposes which could be tested with empirical analysis.

2.13: Role of Public-Private Partnership (P3s) in Plant Genetic Resource Research and Development

School: University of Saskatchewan
Project Leader: Peter Phillips
Graduate Student: Bill Boland (PhD candidate)

Proposed timelines and progress to Date: My PhD consists of three publications and three comprehensive examinations. All are completed. I am finishing the draft of my dissertation.

Abstract: Plant genetic resource (PGR) management refers the R&D intensive process of plant-breeding using biotechnology, genomics and molecular biology. Public-private partnership (P3) refers to the collaborative efforts of the public, private and voluntary sectors to collectively achieve specific policy objectives. Many models of the combined PGR-P3 exist at the local, national and international levels of operation. However, there is both a paucity of theory and a dearth of empirical analysis in evidence. I intend to advance the theory, analysis and policy review of the PGR-P3 by asking how do PGR-P3s contribute to the formation and operation of science and technology oriented agrifood R&D networks, specifically, how do they facilitate knowledge generation and technology transfer.

Derek Brewin

a. Innovation Related Research Projects:

Title: Effects of Biotechnology on Canola
Funding sources: U of M and U of Lethbridge Travel allowances

Abstract: This paper is a broad assessment of effect of biotechnology on Canola in Canada. We examine the effects of biotechnology on the canola industry in terms of area, varieties, and yields; as well as the returns to research and firm level benefits. Evidence of the privatization of the canola industry is seen in the dominance of the private sector in the registration of new canola varieties. The dominance of a private few firms is the latest development in the sector, which raises new concerns. However, the literature and our calculations indicate considerable benefits from canola research and recent technological advances. The area seeded to canola varieties, the number of varieties available, and canola crop yields have been on an upward trend for 50 years. Current producer benefits were estimated to be over $1 billion and breeding firm returns were over $700 million.

b. Innovation Related Publications and Presentations:

Publications:


Presentations:


Ryan Cardwell

a. Innovation Related Research Projects:

Title: "The TRIPS Agreement as a Coercive Threat: Estimating the Effects of Trade Ties on IPR Enforcement.", with Pascal L. Ghazalian.

Funding sources: CATPRN

Timeline and progress to date: Published as CATPRN working paper #2021-07.

Abstract: Negotiators from developed countries pushed hard for the inclusion of the TRIPS Agreement in the WTO set of agreements because it was viewed as a potentially effective method of coercing developing countries to strengthen their protection of intellectual property rights (IPR). We investigate whether the threat of cross-agreement retaliation, which could be authorized in disputes regarding the TRIPS Agreement, is effective in changing countries’ IPR protection regimes. The results from a panel empirical model suggest that both the TRIPS Agreement and the strength of trade ties with developed countries are important determinants of IPR protection, but the vulnerability to potential trade losses through cross-agreement retaliation is not a uniformly significant determinant across geo-economic regions. We conclude that the
threat of trade retaliation is just one important determinant of countries’ institutional protection of IPR.

b. Innovation Related Publications and Presentations:


John Cranfield

b. Innovation Related Publications and Presentations:


Appeared before the Senate Standing Committee on Agriculture and Food in relation to the importance of intellectual property rights relative to innovation and research activities in the agricultural and agri-food sector, Ottawa Oct. 18, 2012.


Richard Gray

a. Innovation Related Projects
CTAG - Canadian Triticum Advancement through Genomics

b. Innovation related advisory boards
Science Advisory Board AAFC
Science Advisory Board VEGI - Value-directed Evolutionary Genomics Initiative

c. Innovation Related Publications:
Galushko, V. and R.S. Gray (2013) “Privatization of wheat Research in the UK: lesson for Other Countries” A presentation to the 87th Annual Conference of the Agricultural Economics Society, University of Warwick, UK.


d. Innovation Related Presentations:


Richard Gray. Funding Agricultural Research Farming Smarter Conference Medicine Hat, December 5, 2012.

Richard Gray, Crop research funding models, Saskatchewan Ministry of Agriculture June 27, 2012.

Viktoriya Galushko, Richard Gray, Jordan Woloshyn A re-examination of the role of intellectual property rights in U.S. seed exports The 28th Triennial Conference of the International Association of Agricultural Economists (IAAE), Brazil, august 19th, 2012.

Richard Gray 4P Models for Financing R&D in Agriculture Presentation to the Feed Stakeholder Group, Saskatchewan Feed Institute November 15, 2012

Richard Gray IPRs and Levies for Financing R&D in Agriculture Presentation for the Senate Standing Committee on Agriculture and Forestry, October 18, 2012

Richard Gray The Returns in Cereal Research, Zero Tillage and Regional Variety Trials Agronomy Research Update Saskatoon, December 12 2012.

Richard Gray, 4P Models for Financing R&D in Agriculture presentation at the Canadian Science Policy Conference Calgary, Alberta, November 6, 2012


Richard Gray – The contribution of genomics research to economic growth, Genome Prairie's BioEconomy Reception, Legislative Building Regina, April 29, 2013
Jill Hobbs

b. Innovation Related Publications and Presentations:

Publications:


Conference papers


Conference Presentations:


Cami Ryan

a. Innovation Related Research Projects:

Total Utilization Flax Genomics (TUFGEN): the intellectual property and regulatory challenges of innovative crop varieties

- Funder: Genome Canada GE3LS (Genomics, Ethics, Environment, Economics, Law and Society)
- Timeline: 2009 - 2013
- Principal Investigator(s): Gordon Rowland, University of Saskatchewan; Stuart Smyth, University of Saskatchewan; Sylvie Cloutier, University of Manitoba
- Role: Professional Research Associate

Analyzing the Wheat Genomics Research/Breeding Network (under the Canadian Triticum Advancement through Genomics (CTAG) GE3LS Project)

- Funder: Genome Canada/GE3LS
- Timeline: 2011 – 2015
- Principle Investigators: Richard Gray (U of S) and V. Galushko (U of R)
- Role: Collaborator

Public-Private-Producer Partnerships (P3s) in Canada

- Funder: Agriculture and AgriFood Canada (AAFC)
- Timeline: 2012
- Co-Investigators: P.W.P. Phillips (U of S) and W. Boland (U of S)
- Role: Co-investigator
b. Innovation Related Publications and Presentations

Book(s):


Journal Articles:


Presentations:


**David Sparling**

**b. Innovation Related Publications and Presentations:**

**Academic Papers and Technical Reports:**


**Articles in Industry Press:**


Presentations at Academic Conferences:

Presentations at Industry Conferences and to Government:


16. Sparling, D. Agri-Food@Ivey. Presentation to the Ivey Advisory Board. Toronto. April 2012. *Invited*


James Vercammen

b. Innovation Related Publications and Presentations:

Vercammen, J. “A Life Cycle Model of Farm Investment in Environmental Capital” (originally written as a LEARN Commissioned Paper), submitted to the selected paper competition, AAEA/CAES Meetings, Washington DC, Aug 4 – 6, 2013


4. CAIRN PUBLICATIONS IN 2012/2013

CAIRN Publications
Publication # 36 - Functional Foods and Natural Health Products Regulations in Canada and Around the World: Nutrition labels and Health Claims - Malla, Hobbs and Sogah

Publication # 35 - Assessing the Functional Foods and Natural Health Products Industry: A Comparative Overview and Literature Review - Malla, Hobbs, Sogah and Yeung

Publication # 34 - The Privatization of British Wheat Breeding: What Can Canada Learn? - Galushko and Gray

Publication # 33 - Historical Review of Agricultural Productivity Studies - Darku, Malla and Tran

Publication # 32 - Historical Review of Agricultural Efficiency Studies - Darku, Malla and Tran
Publication # 31 - Sources & Measurement of Agricultural Productivity & Efficiency in Canadian Provinces: Crops & Livestock - Darku, Malla and Tran

Publication # 30 - Stochastic Frontier Approach of Measuring Agricultural Productivity & Efficiency: Accounting for Innovations - Darku, Malla and Tran

CAIRN Policy Briefs

Number 33- Functional Foods and Natural Health Products Regulations in Canada and Around the World: Nutrition labels and Health Claims- Malla, Hobbs and Sogah

Number 32- Assessing the Functional Foods and Natural Health Products Industry: A comparative Overview and Literature Review: Summary- Malla, Hobbs, Sogah and Yeung

Number 31 - Returns to Beef Cattle Producer Check-off Dollars Investment in Research and Marketing Activities- Cranfield

5. CAIRN NETWORKING

1. Canadian Science Policy Conference, November 5-7 2012, Calgary, AB.

CAIRN held the Session "Addressing the Food & Fuel Demand Through Private, Producer and Public Partnerships" in Canadian Science policy Conference (CSPC) in Calgary, Alberta on November 6, 2012.

The objective of this session was to identify the need for Private, Producer and Public partnerships in Biotechnology research. Three papers were presented at the session;

Paper one: The global genetics IP landscape
By Gregory Graff, Colorado State University (co-authors- Phil Pardey, Bonkoo Woo, and Brian Wright)

By Frank Curtis, Limagrain Cereal Seeds

Paper three: The potential for private-producer-public partnerships to reinvigorate agricultural productivity growth
By Richard Gray, University of Saskatchewan
2. CAIRN Workshop, January 23, 2013, Ottawa, ON.
CAIRN held its annual workshop in Ottawa in January 23, 2013. This constituted a full day of presentations and discussions on various research topics. There were four sessions in the workshop;
Session 1: Grain Research Systems
Session 2: Future Directions for Wheat Breeding in Canada
Session 3: Role of Policy Research in the GF2 Innovation Agenda
Session 4: Efficiency and Productivity Growth in Canadian Agriculture and Beyond.

There were 14 presentations in the workshop and some of the video recorded presentations are posted on the CAIRN website.
(http://www.ag-innovation.usask.ca/cairn_events/index.html).

3. CAES-ERCA Policy Conference, January 23-25, Ottawa, ON.
CAIRN, along with the other ERCA networks, organized the Third Annual Policy Conference in Ottawa with the title: “Growing Canada's Agricultural Economy: The Role of Trade”, in January 23-25, 2013. Graduate students funded by CAIRN presented five posters at the Conference.

1. Public- Private Partnerships (P3s) for the Management of Agricultural Research and Development Innovation Systems- Bill Boland and Peter Phillips

2. Induced Innovation in Canadian Agriculture- J.S. Clark, Lukas Cechura and S.J. Thompson

3. The Role of Human Values in Consumer Choices When Meat is Labeled for Carbon and Water Footprints- Carola Grebitus, Bodo Steiner and Michele Veeman

4. The Role of Corporate Governance in Australian Crop R&D- Katarzyna Bolek and Richard Gray


6. Long Term Dynamics of Firm R&D Investment in Plant Breeding under Plant Breeders Rights- Mehdi Arzandeh and Derek Brewin