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Agri-Food Canada

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# ***AAFC Economic and Policy Research Priorities on Innovation***

CAIRN Planning Workshop, Banff, December 2011

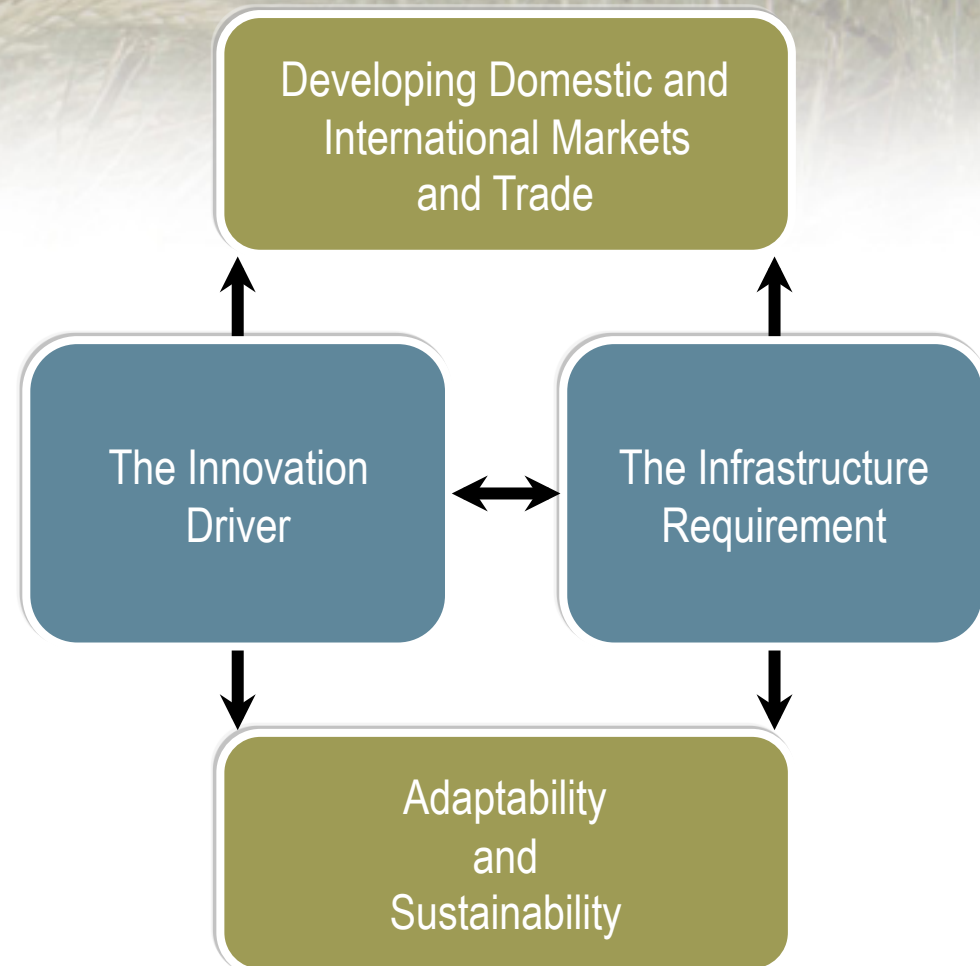
Canada 

## *Canada's agriculture and agri-food sector is under pressure to adapt to a changing economic landscape*

- Demand for agriculture and agri-food products is projected to grow at a rapid pace:
  - ❖ Growing population and income levels will drive much higher demand for food, fiber and fuel
  - ❖ Demand for fuels with lower GHG emissions will lead to increased interest in bio-energy options and demand for agricultural crops
  - ❖ Innovations in bio-based processing, propelled by environmental concerns, further contribute to demand for agricultural products
- Rate of growth in agricultural production may not be able to keep up with demand growth:
  - ❖ Global resource constraints, particularly water and arable land, is a challenge to global capacity to meet increasing demand for feed, food, fuel, and fibre
  - ❖ Breakthrough technologies, such as genetic engineering, could ease these constraints—however, public acceptance is a concern, especially for foods
- Uncertainty about the ability of the global agriculture system to meet these demands has raised food security as a critical global policy issue
- Abundant natural resources and a skilled workforce have been keys to Canada's success, but there is a need to continuously adapt and innovate to remain competitive and sustainable

## Growing Forward 2 provides an integrated approach to respond to economic challenges

- GF2 represents a renewed focus towards achieving :
  - ❖ competitiveness in domestic and international markets
  - ❖ a sustainable and adaptive sector
- **Innovation** and **Infrastructure** have been identified as the two main drivers that will contribute to strategic outcomes
- As a driver, **innovation** would
  - ❖ foster competitiveness through improved productivity, market development and adoption of new business models
  - ❖ enable sustainability and adaptability via new products or processes that mitigate risks, diversifies production or improves environmental performance





## *As a key policy driver, innovation is part of the strategy to advance a modern and sustainable sector*

- FPT Ministers have recently agreed to three main policy objectives that will foster innovation:
  - ❖ Sustained commitment to public research and development;
  - ❖ Improved collaboration/partnerships among key institutions
  - ❖ Increased private sector leadership and investment
- To achieve these objectives, proposed GF2 innovation priorities are to:
  - ❖ Conduct basic, far-from market research that benefits the sector and Canadians
  - ❖ Collaborate on applied research to increase private sector capacity and investment
  - ❖ Encourage knowledge diffusion, transfer and adoption
  - ❖ Increase commercialization of innovation
  - ❖ Create an environment conducive to innovation

***Innovation** in the agriculture, agri-food and agri-based products sector is a process that generates new knowledge and develops or adapts new or improved products, processes or practices that are implemented or adopted to add value to farms, firms or the sector.*

## *As a result, innovation has become a high priority research area*

- To further the policy dialogue, a better understanding of innovation is needed in agri-based producing, processing and supporting industries.
- Areas where the policy discussion has been focused recently include:
  - ❖ The role of the broader enabling environment
    - Factors affecting investment capacity and the balance between public and private investment
  - ❖ Factors driving innovation; factors driving the adoption of new technologies, practices and business models
    - the nature and extent of new products, processes, practices and technologies being developed
    - how these contribute to productivity, sustainability
    - characteristics of firms that innovate/adopt and those that don't
  - ❖ The current regulatory structure and Intellectual Property Rights (IPRs)
    - The factors influencing commercialization
    - Consumer attitudes towards new technologies, products and processes
    - Opportunities and challenges in food and health
  - ❖ Opportunities and challenges in the bio-economy - biotechnology, bioproducts and biofuels

## *The broader enabling environment includes taxes, fiscal policy or other factors that influence competitiveness*

- **Current analytical activities include:**
  - ❖ Support investment in scientific research and development, and where required, be the provider
  - ❖ Enable access to the best research including through collaboration
  - ❖ Help to improve coordination in the innovation system, by enabling diffusion, adoption and commercialization
  - ❖ Better communicate the opportunities in the agricultural sector and potential to address national and global priorities
  - ❖ How can governments assist with reducing risk
  - ❖ Better understand research and science capacity through the development of an inventory of R&D activities in the agriculture, agri-food and agri-based products sector (Science Scan)
- **Areas where further analysis is needed include:**
  - ❖ Identification of market failures
  - ❖ Analysis of the relationship between private and public R&D, analysis of the returns to R&D and how this could be used to target federal resources
  - ❖ What is the best mix between public and private investment?
  - ❖ What institutional arrangements, partnerships or funding models can be used most effectively to encourage investment?
  - ❖ What federal policies help or hinder investment and how can they be improved?
  - ❖ What are the features of enabling governments in other countries and how can their successes be adapted in Canada?

# Factors driving innovation and adoption are of particular interest to policy makers

- **Current analytical activities include:**
  - ❖ Adoption of Best Management Practices (BMP) in various forms (no till, environmental G&S) and the characteristics of farms who adopt versus those who don't
  - ❖ Nature and extent of innovation in agriculture and food processing
    - Characteristics of innovators and non innovators
    - Analysis of business innovation surveys – SIBS, survey of advanced technology, bioproducts, functional foods and natural health products (2012)
    - Benchmarking Innovation in Food and Beverage Processing – Canada/Europe comparison
  - ❖ Departmental Strategic Plan for Innovation – provide strategic direction; indicators; performance strategy for programs
- **Gaps in this area include better understanding of:**
  - ❖ Adoption and impact of various forms of farm technology or business practices and characteristics of producers
  - ❖ Adoption and impact of various forms of technology in the retail, wholesale, and transportation sectors of the agri-food system
  - ❖ Nature of the relationship between research, extension, education, and infrastructure and the magnitude of their effects on productivity
  - ❖ Returns to research and innovation in terms of profitability and sustainability
  - ❖ Impacts of regulations on output growth and market opportunities
  - ❖ Indicators for performance measurement of innovation activities and outcomes at the farm level
  - ❖ Better understanding of which firms innovate and why – what factors drive or impede innovation and are innovators more profitable
  - ❖ Identifying what technologies/science advancements are working and which ones are not



## *The impacts of the regulatory environment are probably the least understood policy area*

- **Current analytical activities include:**
  - ❖ The role of Intellectual Property Rights and Institutional arrangements on innovation in agriculture
  - ❖ The costs and benefits of health claims and other regulations (transfats, sodium) on the health of Canadians and the performance of the sector
  - ❖ Impacts of the U.S. food safety modernization act in Canada
  - ❖ Impacts of private standards on competitiveness of the sector
- **Analysis that would fill gaps in the policy development process :**
  - ❖ Issues and challenges in food and health regulatory environment – health claims
  - ❖ Factors affecting commercialization
  - ❖ The role of regulations in the development of private standards for sustainability and other quality attributes
  - ❖ Consumer perceptions, regulations and their impact on the development of new products and processes in agriculture and food (irradiation, GE wheat, FFNHP)



## *The bio-economy - biotechnology, bioproducts and biofuels – presents new market opportunities but at high risk*

- **Current analytical activities include:**
  - ❖ Paper on issues related to co-existence of GM and non-GM grains (Departmental working group)
  - ❖ Ongoing analysis of results of Bioproducts survey 2009
  - ❖ Departmental working group on bio-economy strategy
- **Analysis that would fill gaps in the policy development process :**
  - ❖ Better understanding of the economics of co-existence of GM & non-GM grains
  - ❖ Continued analysis of potential impacts of the introduction of GM wheat
  - ❖ Assessing the role of patents and other forms of IPR in providing incentives in biotechnology
  - ❖ Exploring the role of regulation on biotech investments
  - ❖ Assessment of Bioproduct Opportunities (i.e. scientific challenges, feedstock availability, economic analysis, change in GHG emissions, etc.)
  - ❖ Coordination along non-traditional value chains

## **ANNEX:**

### ***Examples of recent economic studies on innovation by RAD Staff***

- Innovation in Food and Beverage Processing: Results from the 2005 Survey of Innovation (2008)
- Understanding the critical conditions for successful commercialization: The case studies of innovations in Canadian food beverage processing (2009)
- What causes Canadian farmers to adopt environmental Beneficial Management Practices? (2010)
- Characteristics of Successful Farms: Managing for Success Is Not the Same for Everyone - Evidence from Grain and Oilseed Farms in Canada (2010)
- Innovation in the Canadian Food Processing Industry: Evidence from the Workplace and Employee Survey (2011)
- Results from the 2007 Survey of Advanced Technology (2011)
- Intellectual Property Rights and Institutions (2011)
- Constraints on Canadian Food Processing Firms' Ability to Compete: Evidence from the 2004 Survey on Innovation in the Food Processing Industry (2011)
- Results from Statistics Canada's 2009 Bioproducts Development and Production Survey (2011)
- Understanding the factors that contribute to long term success of Leading Edge Producers (2011)



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