



trace r&d | 2009

Diamond/Diamant

Canada 

Platinum/Platine



Gold/Or

Manitoba 

 **Ontario**



Silver/Argent

Alberta

IBM


Manitoba Pork

CANADIAN
Cattlemen
THE • BEEF • MAGAZINE

Bronze/Bronze

Alberta Farmer Express
Canadian Poultry Magazine
Canadian Wheat Board /
Commission Canadienne du blé

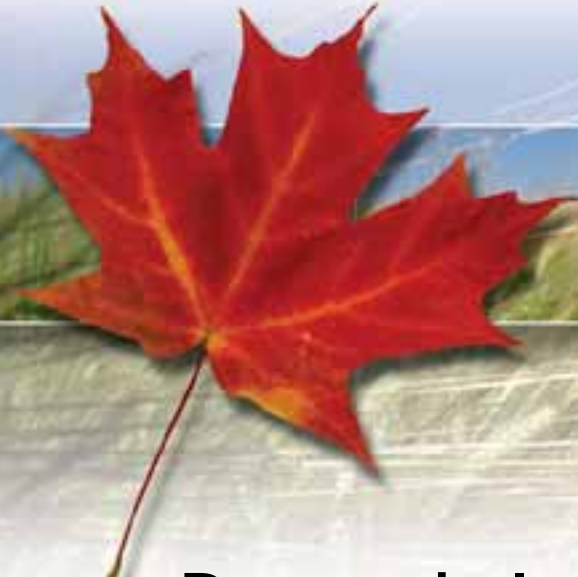
Consumer & Marketing Demand Network
Gallagher Canada
Grainnews
Intelliware Development Inc.

Manitoba Co-operator
On Trace
Trace it Solutions



Agriculture and
Agri-Food Canada

Agriculture et
Agroalimentaire Canada



Research, Innovation and Competitiveness in the Agriculture and Agri-Food Sector

TRACE Conference Winnipeg 2009.04.07
Christiane Deslauriers
Director General, Science Policy and Planning

Canada

Innovation is fundamental to the long-term competitiveness of Canada's agriculture and agri-food sector

- Competitiveness requires the capacity to continually adapt to change and innovation is key to this process
- Given Canada's limited growing season, vast distances, high transportation costs and relatively high dollar, innovation is a critical component for our competitiveness:
 - Creates new opportunities for producers and the value chain
 - Diversification through new value-added products and markets
 - Reduced input costs
 - Critical for responding to growing pressure on resources (e.g., competition for land and water, climate change)
 - Research for beneficial environmental management practices and on-farm technologies
 - Disease and drought tolerant plants
 - Provides opportunities for large-scale transformation
 - Zero tillage, canola

Innovation means different things to the various stakeholders

Producers: Innovation is seen as a technological change in production leading to increased productivity on farm and higher net incomes

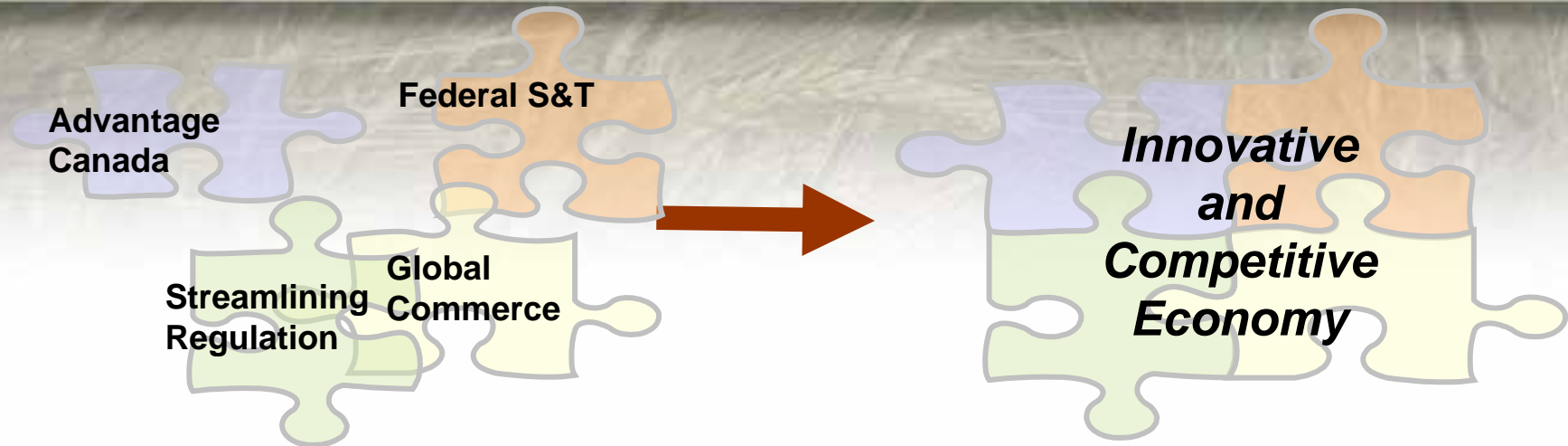
Processors: Innovation involves changes in processes, products and marketing with the objective of improving competitiveness and profitability

Consumers (domestic and global): Want increased assurance of the safety and quality of the food system and enhanced environmental performance of the agriculture and agri-food sector

Provinces and rural communities: See innovation in agriculture as opportunities for economic development

Researchers: See discovery science, linkages among academic communities and technology transfer in innovation

The Government of Canada agenda is focussed on enhancing Canada's innovative capacity, productivity, and competitiveness



Advantage Canada

Focused on industry competitiveness and economic growth achieved through innovation and productivity enhancements

Federal Science & Technology Strategy

A multi-year framework designed to encourage private sector innovation and guide strategic investment of public S&T funds

Creation of a Performance-Based Regulatory System

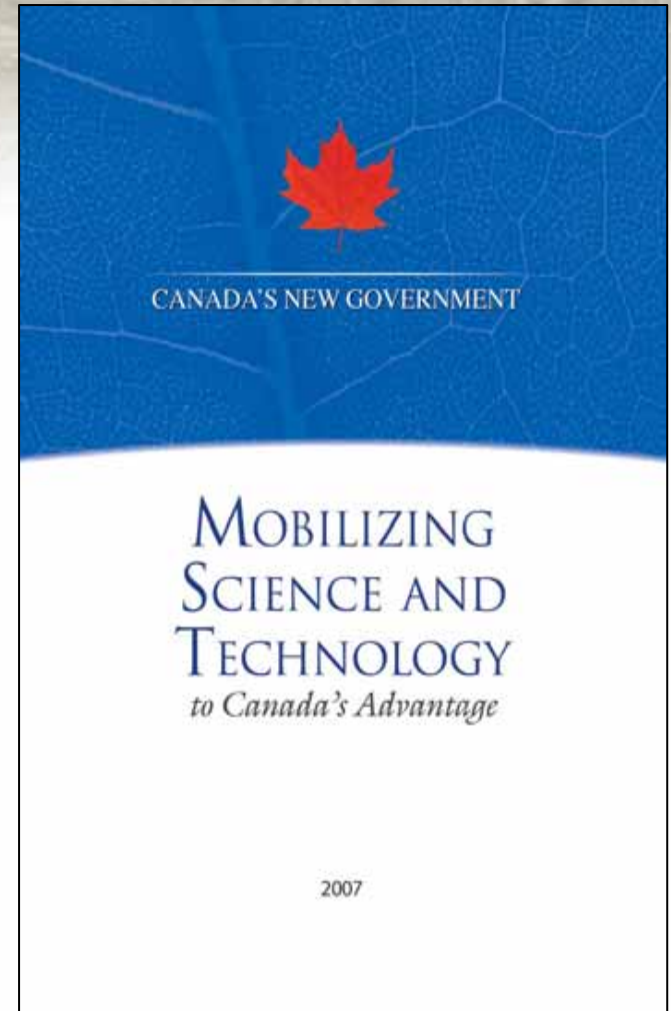
Cabinet Directive on Streamlining Regulation aims to make Canada a best-in-class regulator and ensure efficient and effective regulations

Global Commerce Strategy

A comprehensive strategy, with a focus on international S&T cooperation, that strives to ensure Canadian businesses can fully participate in global opportunities

The Framework for Federal S&T embraces a new social contract for science support

- Federal S&T should be based on three principles
 - Support priorities of Canadians
 - Be built on effective, collaborative relationships
 - Incorporate the highest standards of excellence



Canada has a good foundation for innovation but we need to do a better job of following through

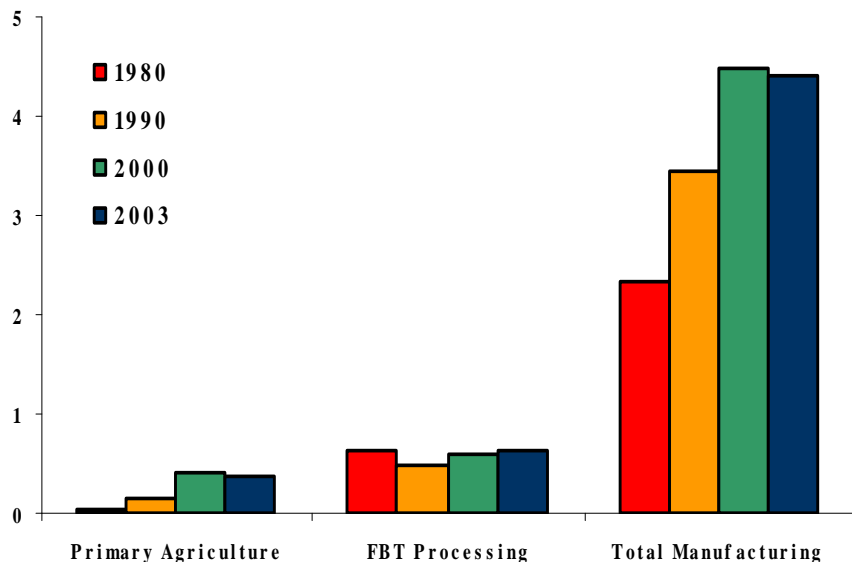
- Canada ranked 18th in capacity for innovation out of 134 countries in a recent World Economic Forum (WEF) Global Competitiveness Report (2008-2009)
- However, Canada faces challenges to its competitive position given significant investments in innovation in other countries
 - The ability to compete beyond prices is key to economic growth
- While we have a good foundation, our performance in converting knowledge into innovations that reach the market place is weaker

Private investment in innovation is modest relative to other sectors or countries

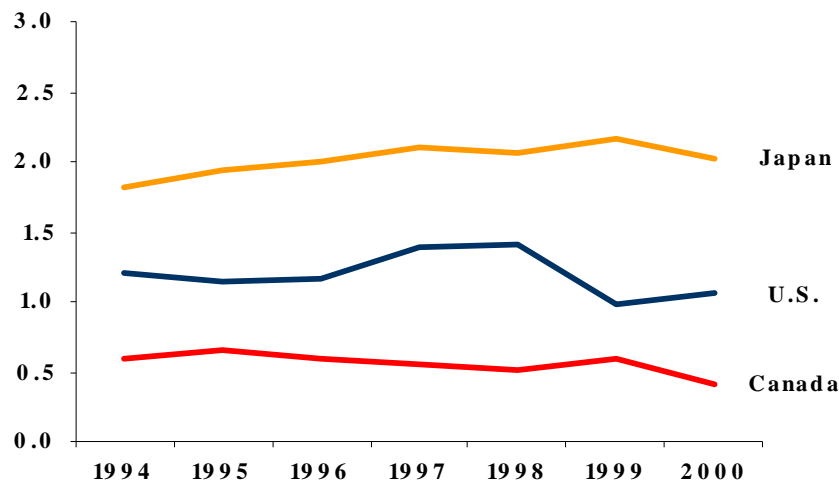
Private industry R&D expenditures as a share of GDP per industry (1980-2005)

Business R&D expenditures as a share of value added in food, Beverages and tobacco in OECD Countries (1994-2000)

Percent of Industry's GDP



Percent of Value Added



A key objective of AAFC is to accelerate the pace of innovation in the sector to improve competitiveness

- Studies of Canada's innovation performance consistently point out a critical gap in the innovation continuum between invention in the lab and the entry of a commercial products into the marketplace
- Competitiveness and Innovation activities must be based on engaging industry, government and academia in a more robust and coordinated approach, to capture efficiencies and synergies

Historically, AAFC has fostered innovation primarily through agricultural research and development

- Since 1886, the federal department of agriculture has had a mandate to develop crops and animals suited to Canadian conditions
- Canada has traditionally been a world leader in investing in the discovery of knowledge
 - Governments account for approximately 80% of agriculture R&D
 - 35% of AAFC staff supports R&D
- However AAFC's role in supporting the sector is evolving beyond R&D as the sector strives to be more competitive in a global marketplace

...and has developed ways of working with industry which have evolved to keep pace with developments

- The department conducts in-house research, collaborates with industry, and provides funding for agricultural science projects through a suite of programs
 - AAFC scientists conduct in-house research that is externally peer-reviewed for scientific excellence and internally evaluated for alignment with government and sector priorities
 - AAFC has collaborated with and co-funds projects that address industry priorities (Matching Investment Initiative, Agriculture Bioproducts Innovation Program)
 - AAFC has provided funds to sectoral partners to stimulate the development of industry strategies, product scale-up and commercialization (Broker Program, Agri-Innovation Program, Advancing Canadian Agriculture and Agri-Food, ecoAgriculture Biofuels Capital initiative , Biofuels Opportunities for Producers Initiative)

The current suite of programs has been successful but we need to be ready for bigger challenges

- A **common understanding** of future opportunities and challenges would allow decisions-makers to develop strategies and define actions for long term profitability and competitiveness
- Greater industry investment could be realized by providing incentives for more **agricultural producer / processor organization leadership** and control in programs for applied science and technology
- By engaging resources in governments, industry and academia, we could accelerate new developments and capture **efficiencies and synergies** in support of industry competitiveness
- By supporting **early adoption** of new technologies we could enhance profitability and competitiveness

The Science and Innovation Strategy brought focus to AAFC science efforts; Growing Forward adds emphasis

- In 2006 the Science and Innovation Strategy identified 7 national priority areas for S&I
 - Human health and wellness
 - Food safety and quality
 - Security and protection of food supply
 - Economic benefits for stakeholders
 - Environmental performance
 - Understanding, protecting and conserving Canadian bioresources and their genetic diversity
 - New opportunities from bioresources

2006 S&I Strategy was a Research Branch initiative.

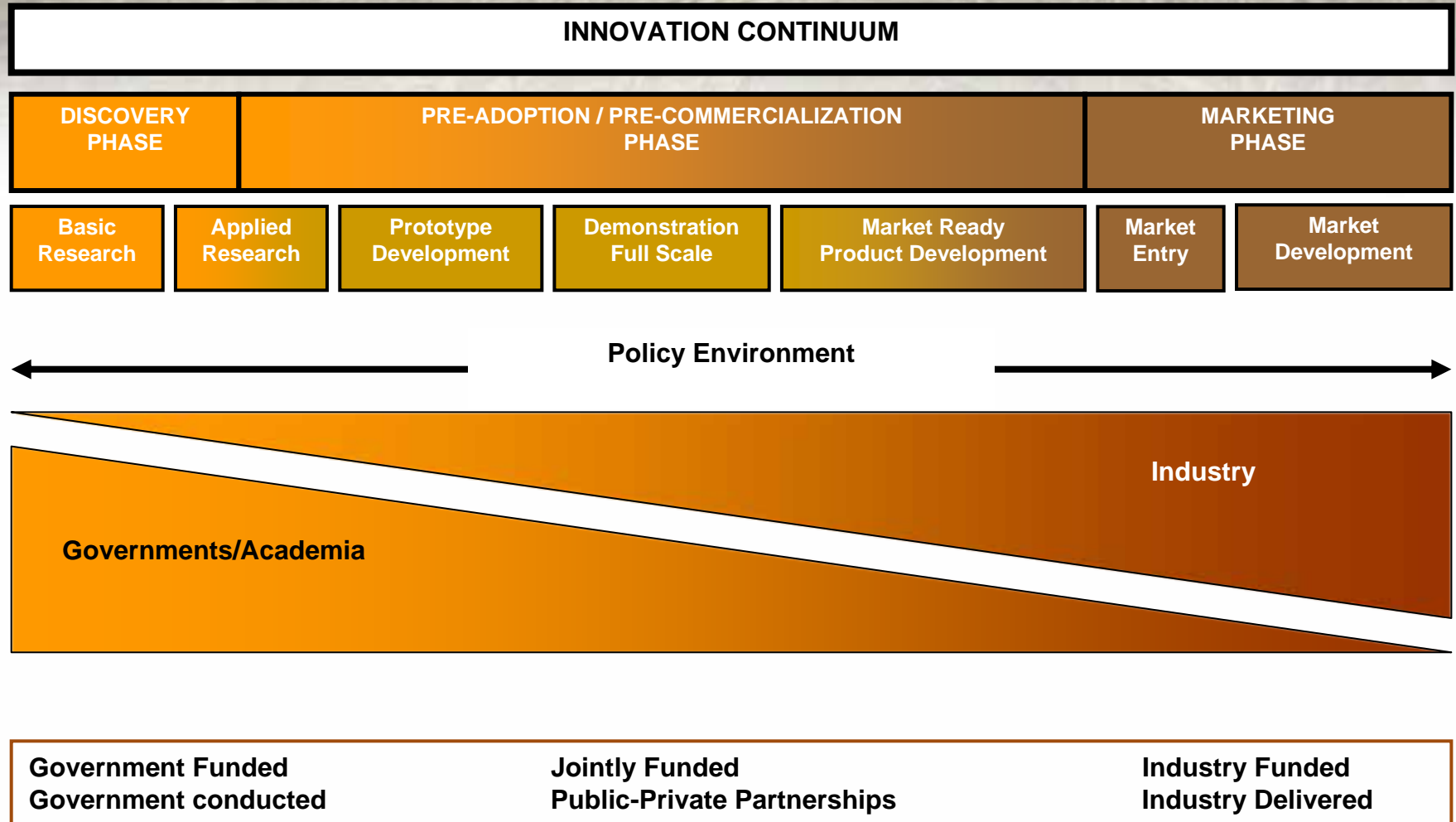
- Growing Forward puts greater emphasis on S&I, on relationships across the department, portfolio and sector.

The Action Plan recognizes that an AAFC approach to innovation is required

AAFC's Strategic Action Plan is a blueprint for how Research Branch will deliver S&I Strategy

- Is a framework for results-based management of science and innovation activities that is:
 - Multi-disciplinary in application; and
 - Integrated across AAFC, the portfolio, other science-based departments, provincial governments, academia and the agriculture, agri-food and agri-based products sector
- Details the concrete work needed to achieve these results
- Provides clear direction to staff and to our collaborators, and forms the basis for annual work planning and reporting
- Is dynamic and updated annually to ensure relevance

A systems approach to innovation and competitiveness is needed



Currently AAFC seeks to fill gaps all along the innovation continuum

- At each stage along the continuum, it should be asked:
 - Is this the right role for the federal government/AAFC?
 - Can there be partnerships with other parties (i.e. provinces and territories, industry, academia)?
 - What level of investment is needed to achieve the desired outcome?
 - Are we displacing activity that would likely occur without our intervention?



A suite of new programs under Growing Forward is being put in place to support the sector in various ways

- Anticipating and responding to opportunities and challenges
- Expanding and focusing science capacity to address key priorities
- Transforming new technologies into commercial gain.

- The Regulatory Action Plan
 - Taking action on key regulatory priorities with other federal departments and agencies.
 - Enhance the sectors' capacity to navigate the regulatory environment (including scientific requirements),
 - Results in approvals for minor use pesticides, veterinary drugs, health claims, novel foods, ingredients, and discretionary food fortification.
 - The Research Branch-led Science Substantiation function will provide funding to AAFC scientists to conduct research addressing critical gaps in scientific evidence required for novel food and ingredient safety and health-claim validity.

- The Sustainable Agriculture Environmental Systems (SAGES)
 - Focus on Water and Climate Change:
 - nutrients, pathogens and pesticides in water
 - carbon dynamics and greenhouse gas emissions in relation to climate change mitigation and adaptation.
 - Knowledge and development that can be linked directly to:
 - new/improved BMP development or
 - new/improved decision support tools or other appropriate tools – at farm gate –
 - support of Policy development and implementation

- The Animal and Plant Health Research (APHR)
 - Focus on research on plant and animal health
 - emerging threats to the sector, such as cereal stem rust and on clubroot disease in canola
 - develop risk mitigation strategies and measures to be adopted by the Canadian agri-food sector.
 - research on alternatives to antibiotics to build a knowledge base and create technologies and farming practices that reduce antibiotic resistance and the prevalence and persistence of pathogens within livestock environments.

GROWING FORWARD - Science and Innovation Programming

- Agri-Foresight:
 - Engage the agricultural sector, governments and academia in activities to improve its capacity to anticipate future challenges and take advantage of emerging opportunities.
- Promoting Agri-Based Investment Opportunities:
 - Create linkages that encourage private investment in the development of innovative agricultural products and processes by bringing together and encouraging networks of potential investors and agri-entrepreneurs.

Foresight helps link research priorities to desired end user outcomes

- Anticipating possible futures creates a context for end users to identify opportunities and challenges in the short-, medium- and long-term
- This, in turn, helps define a short-, medium- and long-term research agenda that contributes to those outcomes
- The multidisciplinary approach identifies other measures required to enhance the relevancy of science outcomes, i.e. new market mechanisms, new policy environments, technology transfer tools for end users
- Foresight encourages a systems approach to solutions that helps to increase the relevancy and impact of science and enhance integration with policy

GROWING FORWARD - Science and Innovation Programming

CANADIAN AGRI-SCIENCE CLUSTER INITIATIVE

- PURPOSE
 - Clusters will help key industry-led agricultural organizations to pull together national scientific and technical resources to establish clusters that support innovation for enhanced profitability and competitiveness.
 - Agricultural organizations leading Clusters will develop and implement comprehensive applied science plans and technology transfer and commercialization strategies that address their national sector priorities.
- EXPECTED RESULTS
 - The Initiative is expected to result in:
 - national industry, academic and government research resources engaged in a coordinated response to industry-defined objectives for profitability and competitiveness.
 - key agricultural industry organizations experienced in developing and managing national applied science plans with technology transfer and commercialization strategies

GROWING FORWARD - Science and Innovation Programming

DEVELOPING INNOVATIVE AGRI-PRODUCTS (DIAP)

- PURPOSE
 - DIAP is designed to provide Canadian agri-entrepreneurs, firms and organizations who may have limited scientific, technical and marketing intelligence resources greater access to government, university and other resources required to support successful transformation of their innovative ideas into viable business ventures
- GOALS
 - Stream A: to encourage innovation strategy development, such as value chains that are national in scope and lead to new market opportunities for agricultural practices, processes and products; and/or
 - Stream B: to address specific issues or opportunities through access to government, university and other applied science and research resources required for pre-commercialization of products, processes or practices.
- EXPECTED RESULTS
 - The initiative will help the sector to develop new or expand existing innovation opportunities, such as value chains and to access the Canadian scientific and technical support needed to resolve pre-commercialization issues relating to agri-products, practices and processes development

Roles of AAFC and Industry in Clusters and DIAP

- Clusters and DIAP have funding available if industry requires AAFC expertise to complete research activities.
- Both initiatives are industry led, meaning that proposals must come from industry clients.
- Research projects must tie into the industry/sector priorities and accelerate the pace of innovation.