

GENOMICS FOR AGRI-FOOD

Genomics is helping Canada's agri-food sector develop innovative products and processes to increase global market share.



GENOMICS: The science that aims to decipher and understand the entire genetic information of an organism.

AGRI-FOOD SECTOR: a pillar of the Canadian economy*



\$40.3
BILLION IN
EXPORTS



8%
OF TOTAL GDP



1.4%
ANNUAL GROWTH
SINCE 1997



2.1

MILLION JOBS



6TH

LARGEST WORLD
EXPORTER OF
AGRI-FOOD PRODUCTS

* Figures from Agriculture and Agri-Food Canada, 2011



GenomeCanada



GenomeBritishColumbia



GenomeAlberta



GenomePrairie



OntarioGenomicsInstitute



GenomeQuébec



GenomeAtlantic

CHALLENGES FACING THE AGRI-FOOD SECTOR IN CANADA

EFFECTS OF CLIMATE CHANGE

Severe weather, disease and pests are threatening production and food quality.

COMPETITIVENESS AND RISING COSTS

Costs of production are rising faster than gross margins for crops.

Consumer demand for non-conventional agricultural practices is driving up costs and lowering production volume.

OUTDATED REGULATIONS

Outdated regulations slow the adoption of new technologies and products, and can lead to local supply shortages.

IMPACTS ON THE ECONOMY AND HEALTHCARE SYSTEM

Food consumption trends are associated with increasing rates of obesity, high blood pressure, type 2 diabetes and cancer, and these health challenges reduce economic productivity.

SUSTAINED FUNDING

Longer-term public funding is needed to support industry commercialization and attract more private investment and top talent.

EDUCATION AND AWARENESS

Societal misconceptions about the use of new technologies as they relate to food production and traceability can slow their uptake and effectiveness.



GENOMICS

Generating competitive production systems and innovative products

GENOMICS IS HELPING TO:

- Improve food quality.
- Increase yields.
- Decrease food waste.
- Produce hardier crops and livestock.
- Improve human and animal health.

WHY CANADA CAN LEAD IN AGRI-FOOD GENOMICS:

- ✓ Canada boasts extensive and varied research capacity (people, infrastructure and technology) in agriculture, food, and biotechnology across the country in both public and private institutions.
- ✓ Industry partners are leading or supporting research in many areas.
- ✓ Canada has a regulatory system that is generally well-regarded internationally.

“Genomics is key to a healthy, safe food supply and to maintaining a vibrant, profitable and sustainable farming industry in Canada.”

– John Webb, Director of Emerging Science, Maple Leaf Foods Inc.





BUILDING ON SUCCESS

Canada is leading a number of national and international genomics-based initiatives that are producing results, namely:

- Improving wheat yields.
- Managing pests and invasive species that threaten agricultural production, and food and water safety.
- Building science clusters focused on beef, dairy, pork/swine, poultry, canola/flax, pulse, wheat breeding, edible horticulture, ornamental horticulture and organic agriculture.
- Creating a DNA-based library of every species on earth (a database of thousands of species has already been developed) that will make it easier to prevent food fraud and manage pests and invasive species.
- Reducing common diseases that threaten commercial pig production.
- Creating oilseeds with improved yield, composition and quality.
- Developing the sunflower as a new biofuel source.
- Studying important wine varieties and yeasts used in wine production.
- Shaping public policy and streamlining regulations to move innovation from the laboratory to practical applications.

Canada's Opportunity

Genomics opens the door to new opportunities for Canada's agri-food sector to remain globally competitive through innovation. Opportunities for the sector are detailed in the recent strategy paper *The Opportunity for Agri-Food Genomics in Canada: Ours for the Making* available on Genome Canada's website at www.genomecanada.ca/en/sectorstrategies.



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