Canadian Food Inspection Agency | Agence canadienne d'inspection des aliments

Research needs in support of risk assessment and risk management at the CFIA

Brittany Day
Science Specialist, Plant Research & Strategies
Canadian Food Inspection Agency

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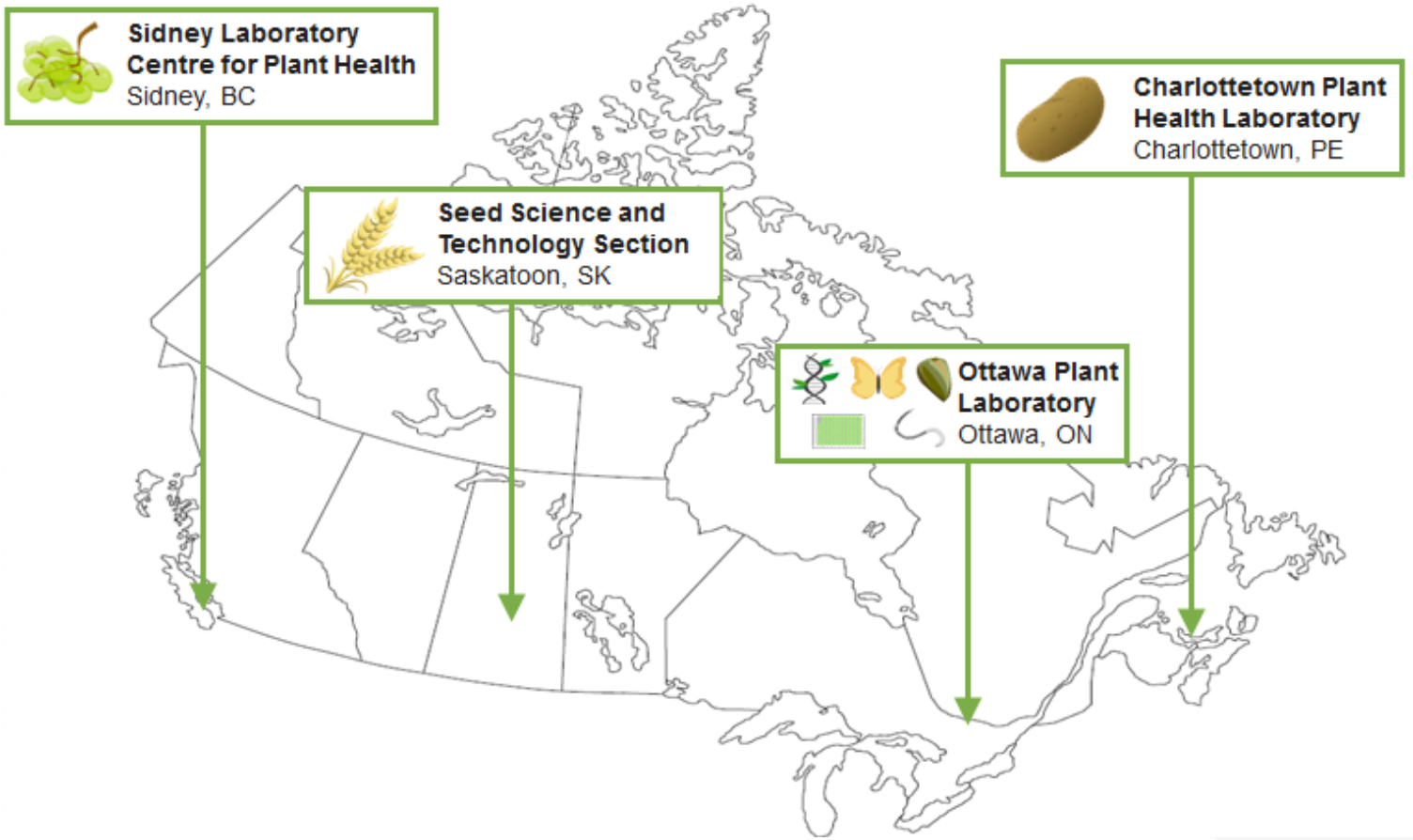
CFIA's Plant Laboratories

- CFIA relies on sound science from a network of four plant laboratories across the country to deliver on its plant protection mandate.



CFIA's Plant Research Program

- Delivers scientific research in the area of Plant Health.
- Supports plant research intended to inform evidence-based risk management and science-based decision making.

These goals also align with Government of Canada priorities:

- Advancement of science and innovation
- Increased focus on prevention
- Fostering partnerships and networks

CFIA's Plant Research Program

Internal Research Cycle

Plant Commodities

- Biosafety
- Fertilizer
- Forestry
- Grains & Oilseeds
- Horticulture
- Invasive Alien Species and Domestic Products
- Potato
- Seeds

CFIA's Plant Research Themes

Diagnostics and Monitoring

Detection and identification of plant pests and pathogens at the earliest point of introduction provides the best chance for eradication and informs risk assessment and effective surveillance-related activities.

Risk Assessment

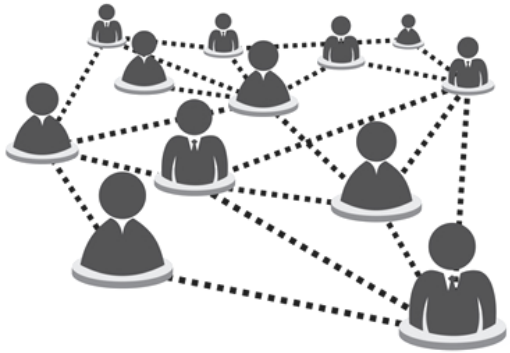
Focus on prevention, introduction and spread of plant pests and pathogens of quarantine concern to Canada and reliant on sound science to inform the evaluation of risk.

Control and Containment

Development of appropriate measures for control and mitigation of plant pest and pathogen incursions.

Plant Research Collaborations & Partnerships

- CFIA Plant Research connects with external scientists and funding organizations to:



  - Collectively generate information/data
  - Share materials (samples, equipment)
  - Share information (unpublished, internal, confidential)
  - Share resources (funds, student, workspace)

- Cooperative research efforts engage a diverse group of partners:
  - International organizations (e.g., Euphresco, Plant Health QUADS)
  - Federal/Provincial/Territorial organizations
  - Academia
  - Industry
  - Other stakeholders

Collaborative Research Projects at CFIA

- *BioSurveillance of Alien Forest Enemies (BioSAFE)* – Genome Canada
- *Development of a standardized resistance monitoring bioassay for corn rootworm* – University of Guelph
- *Establishing best practices for determining thermal tolerances and potential for overwintering in novel invasive insects* – University of Western Ontario
- *Evaluating attractiveness of trap colour to European Agrilus* – Forest Research Institute Zvolen, Slovakia, Natural Resources Canada
- *Fitness implications of introgression of novel traits from Camelina sativa to related species of C. microcarpa, C. alyssum and Capsella bursa-pastoris* – University of Alberta, Agriculture & Agri-food Canada

Plant Research Foresight & Communications

Plant Science Scan


PLANT SCIENCE
SCAN
Edition 1, March 2012
BACKGROUND: The Plant Health Science Division of the Canadian Food Inspection Agency (CFIA) routinely scans external sources to identify information that might be of possible regulatory significance or interest to Canada's national plant health. This Plant Science Scan report was prepared by and for the CFIA's staff as a mechanism to highlight potential items of interest, raise awareness and share significant new information related to plant health.
Index of Articles
Pathology
1 New Disease: Erwinia uzenensis, a new bacteria species described from Japan
2 Update: Phytophthora ramorum diseases in the United Kingdom and North America
3 Update: Groundnut ringspot tospovirus on tomato, pepper and other crops in Florida
4 Update: 'Candidatus Liberibacter solanacearum', Zebra Chip of potato
5 Spread: Monilinia species causing Brown Rot in Europe and China
6 Spread: First report of Tomato torrado virus from Columbia
Biotechnology
7 First Report: Western Corn Rootworm, Diabrotica virgifera, developing Field-Evolved Resistance to transgenic Bt Maize
8 First Report: Herbicide resistant Kochia weed, Bassia scoparia, found in Alberta
Entomology
9 New Pest: The gall midge, Dasineura heterophylla, is reported as a new species from China
10 Update: Asian Longhorned Beetle, Anoplophora glabripennis, in North America and Europe
11 Spread: Box tree moth, Cydalima perspectalis, spreading in Europe
12 New Pest: Zigzag elm sawfly, Aproceros leucopoda, an emerging pest of urban elms in Central Europe
13 Update: Light Brown Apple Moth, Epiphyas postvittana, hosts
14 Spread: First Report of Tomato Leaf Miner Moth, Tuta absoluta, from England
15 Update: Xylotrechus arvicola, is an emerging European grape pest
Botany
16 Update: Japanese Angelica Tree, Aralia elata, an invasive look-alike spreading in North America
Numbered squares correspond to numbered articles above
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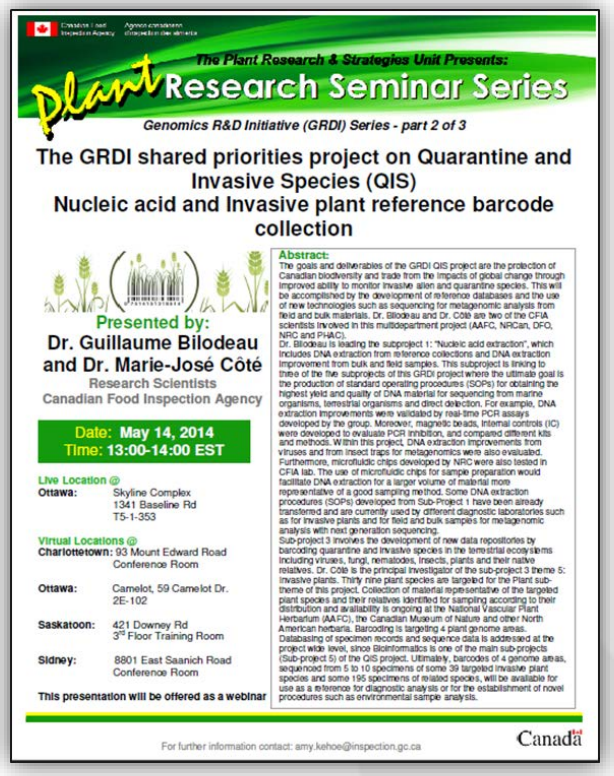
Plant Research Seminar Series


The Plant Research & Strategies Unit Presents:
Plant Research Seminar Series
Genomics R&D Initiative (GRDI) Series - part 2 of 3
The GRDI shared priorities project on Quarantine and Invasive Species (QIS)
Nucleic acid and Invasive plant reference barcode collection
Presented by:
Dr. Guillaume Bilodeau and Dr. Marie-José Côté
Research Scientists
Canadian Food Inspection Agency
Date: May 14, 2014
Time: 13:00-14:00 EST
Live Location @
Ottawa: Skyline Complex, 1341 Baseline Rd, T5-1-353
Virtual Locations @
Charlottetown: 93 Mount Edward Road, Conference Room
Ottawa: Camelot, 59 Camelot Dr., 2E-102
Saskatoon: 421 Downey Rd, 3rd Floor Training Room
Sidney: 8801 East Saanich Road, Conference Room
This presentation will be offered as a webinar
Abstract:
The goals and deliverables of the GRDI QIS project are the protection of Canadian biodiversity and trade from the impacts of global change through improved ability to monitor invasive alien and quarantine species. This will be accomplished by the development of reference databases and the use of new technologies such as sequencing for metagenomic analysis from field and bulk materials. Dr. Bilodeau and Dr. Côté are two of the CFIA scientists involved in this multidepartment project (AAFC, NRCan, DFO, NRC and PHAC).
Dr. Bilodeau is leading the subproject 1: "Nucleic acid extraction", which includes DNA extraction from reference collections and DNA extraction improvement from bulk and field samples. This subproject is linking to three of the five subprojects of this GRDI project where the ultimate goal is the production of standard operating procedures (SOPs) for obtaining the highest yield and quality of DNA material for sequencing from marine organisms, terrestrial organisms and direct detection. For example, DNA extraction improvements were validated by real-time PCR assays developed by the group. Moreover, magnetic beads, internal controls (IC) were developed to evaluate PCR inhibition, and compared different kits and methods. Within this project, DNA extraction improvements from viruses and from insect traps for metagenomics were also evaluated. Furthermore, microfluidic chips developed by NRC were also tested in CFIA lab. The use of microfluidic chips for sample preparation would facilitate DNA extraction for a larger volume of material more representative of a good sampling method. Some DNA extraction procedures (SOPs) developed from Sub-Project 1 have been already transferred and are currently used by different diagnostic laboratories such as for invasive plants and for field and bulk samples for metagenomic analysis with next generation sequencing.
Sub-project 3 involves the development of new data repositories by barcoding quarantine and invasive species in the terrestrial ecosystems including viruses, fungi, nematodes, insects, plants and their native relatives. Dr. Côté is the principal investigator of the sub-project 3 theme 5: invasive plants. Thirty nine plant species are targeted for the Plant sub-theme of this project. Collection of material representative of the targeted plant species and their relatives identified for sampling according to their distribution and availability is ongoing at the National Vascular Plant Herbarium (AAFC), the Canadian Museum of Nature and other North American herbaria. Barcoding is targeting 4 plant genome areas. Databasing of specimen records and sequence data is addressed at the project wide level, since Bioinformatics is one of the main sub-projects (Sub-project 5) of the QIS project. Ultimately, barcodes of 4 genome areas, sequenced from 5 to 10 specimens of some 39 targeted invasive plant species and some 195 specimens of related species, will be available for use as a reference for diagnostic analysis or for the establishment of novel procedures such as environmental sample analysis.
For further information contact: amy.kehoe@inspection.gc.ca
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Preventing the next ‘big one’

- Starts with knowledge.
- Research in support of risk assessment and management.
- Collaborative research to leverage resources & expertise.
- Foresight and communications

Acknowledgment

- Martin Damus – Plant Health Risk Assessor (Entomology), Plant Health Risk Assessment Unit, CFIA.

Contact Info

- Brittany Day – Science Specialist, Plant Research & Strategies, CFIA

E-mail: Brittany.Day@inspection.gc.ca

Telephone: (613)-773-5525