



Agriculture and
Agri-Food Canada

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United States Department of Agriculture

AAFC-USDA Collaboration on Genotyping and Monitoring of High Risk Plant Pathogens (2019)

Cleveland, OH
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<https://www.ars.usda.gov/crop-production-and-protection/plant-diseases/docs/aafc-usda-collaboration/>

Background

In 2014, an agreement between Under Secretary Catherine Woteki (USDA) and Dr. Siddika Mithani, Assistant Deputy Minister, Agriculture and Agri-Food (AAFC) Canada identified “Next Generation Sequencing Technologies and Applications” for genotyping and monitoring or quarantine and invasive species as 1 of 5 strategic priority areas.

2 day meeting in Beltsville in June (AAFC, CFIA, USDA-ARS, USDA-APHIS)

Topics limited to fungal and bacterial pathogens

Six major topics were discussed:

- 1) Defining high risk plant pathogens and prioritize them
- 2) Bioinformatics: acquiring, sharing, and analyzing big data, including hardware, software (including training), and approaches to analysis
- 3) Genomics: sequencing genomes of selected pathogens
- 4) Metagenomics: detection, identification, building reference data sets, methods of analysis, air/rain/commodity sampling for monitoring pathogen distribution & spread
- 5) Molecular detection (including distinguishing dead vs. alive)
- 6) Nomenclature and taxonomy: Nomenclature is the system of scientific names following international codes whereas taxonomy is the science behind defining species. Talks about updating taxonomic monographs.

Background

Action plan was drafted and set for 3-5 years

1. Follow-up meeting between U.S. and Canadian computer/IT people
2. List of pathogens of concerns
3. Reference data for identification, nomenclature and pathogen information
4. Metadata for both genomics and metagenomics
5. Raw data sharing
6. Bioinformatics tool development
7. Sharing molecular and robotics protocols
8. Collaboration of specific pathogens
9. Dead vs alive detection

Some original items from 2014 Action Plan were successfully completed and others were not due to changes in staff, funding, etc.

Background

Genotyping and monitoring of high risk pathogens remains one of the key strategic areas for both USDA and AAFC as expressed in a letter from Dr. Chavonda Jacobs-Young (USDA Administrator) to Dr. Brian Gray (AAFC Assistant Deputy Minister) dated October 29, 2018.

“The main goal of the new Action Plan will be to speed up the creation and adoption of technological innovation that use advancements in sequencing technology, bioinformatics, and artificial intelligence to prevent the introduction and spread of high-risk plant pathogens into Canada and the United States.”

Objectives:

1. Each participant would give a 10 min presentation of their area expertise and research
2. Participants would meet with their counterparts. Together, they would identify and discuss potential collaboration on more specific high-risk plant pathogens of concern, in their area of expertise, where the U.S. and Canada could collaborate on
3. The group would together formulate a new Action Plan set for a period of the next 3 to 5 years while taking into account updated priorities, new researchers, additional organisms (e.g. oomycetes, viruses, nematodes, phytoplasma)

Agenda

Opening remarks from organizers, 9:00-9:15

Oomycetes, 9:15-9:55

BREAK 9:55-10:10 (coffee will be brought in)

Fungi, 10:10-11:30

LUNCH 11:30-1:00

Restaurant: Pho Thang Café - 815 Superior Ave, Cleveland, OH 44114, USA
Near Hampton Inn, Across the street from Dunkin' Donuts

Viruses, 1:00-1:40

Detection methods, 1:40-2:00

Nematodes, 2:00-2:20

Bacteria & Phytoplasma, 2:20-3:00

BREAK 3:00-3:20

Action Plan Working Groups 3:20-4:00

Working Groups Short Presentations, 4:00-4:30

Group picture 4:30