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

Pest Risk Analysis/ Risk Management Decisions and Responses

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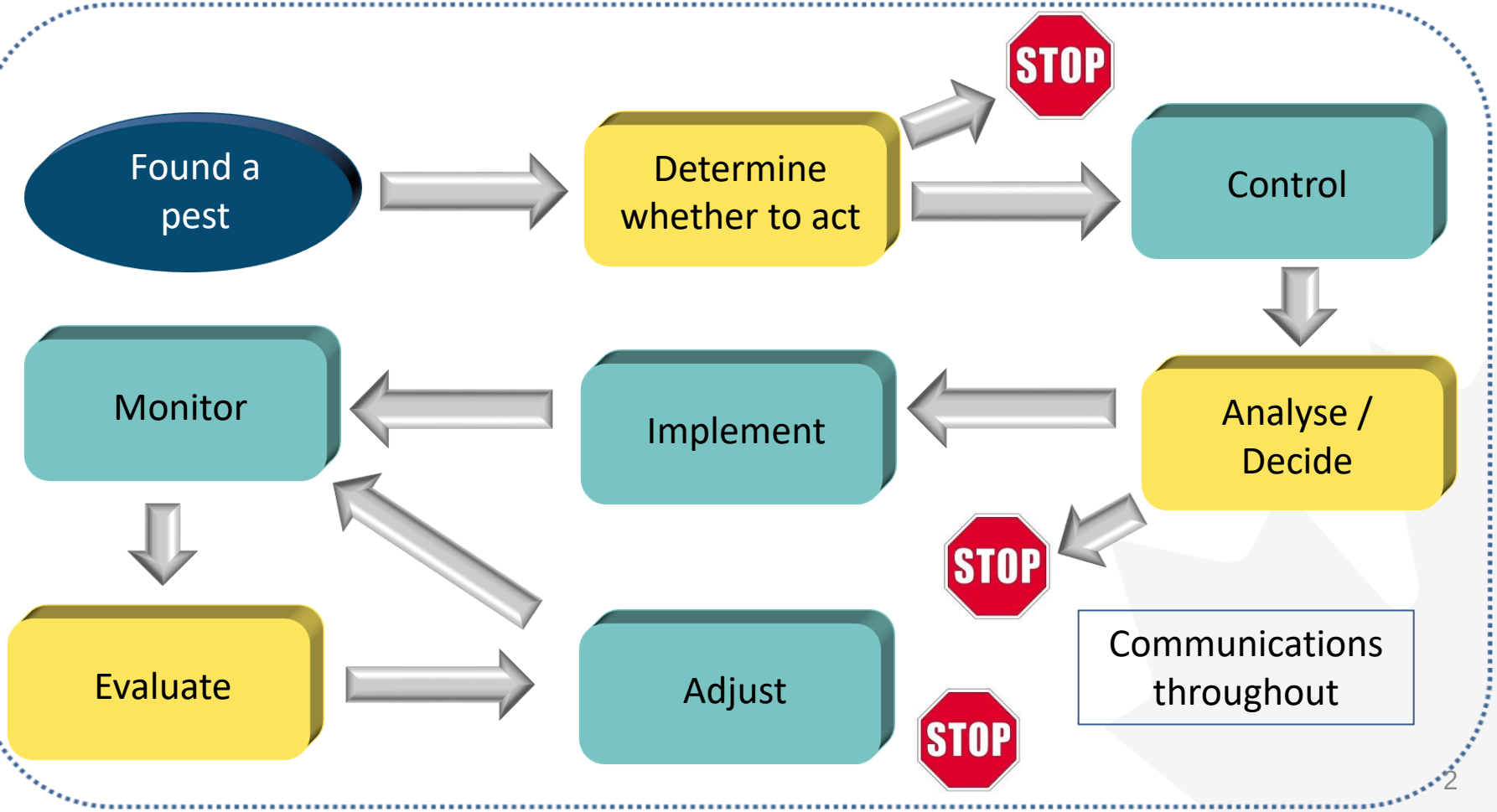
Canada

So we have found a pest; now what? Summary



You found a pest, what now? Some examples

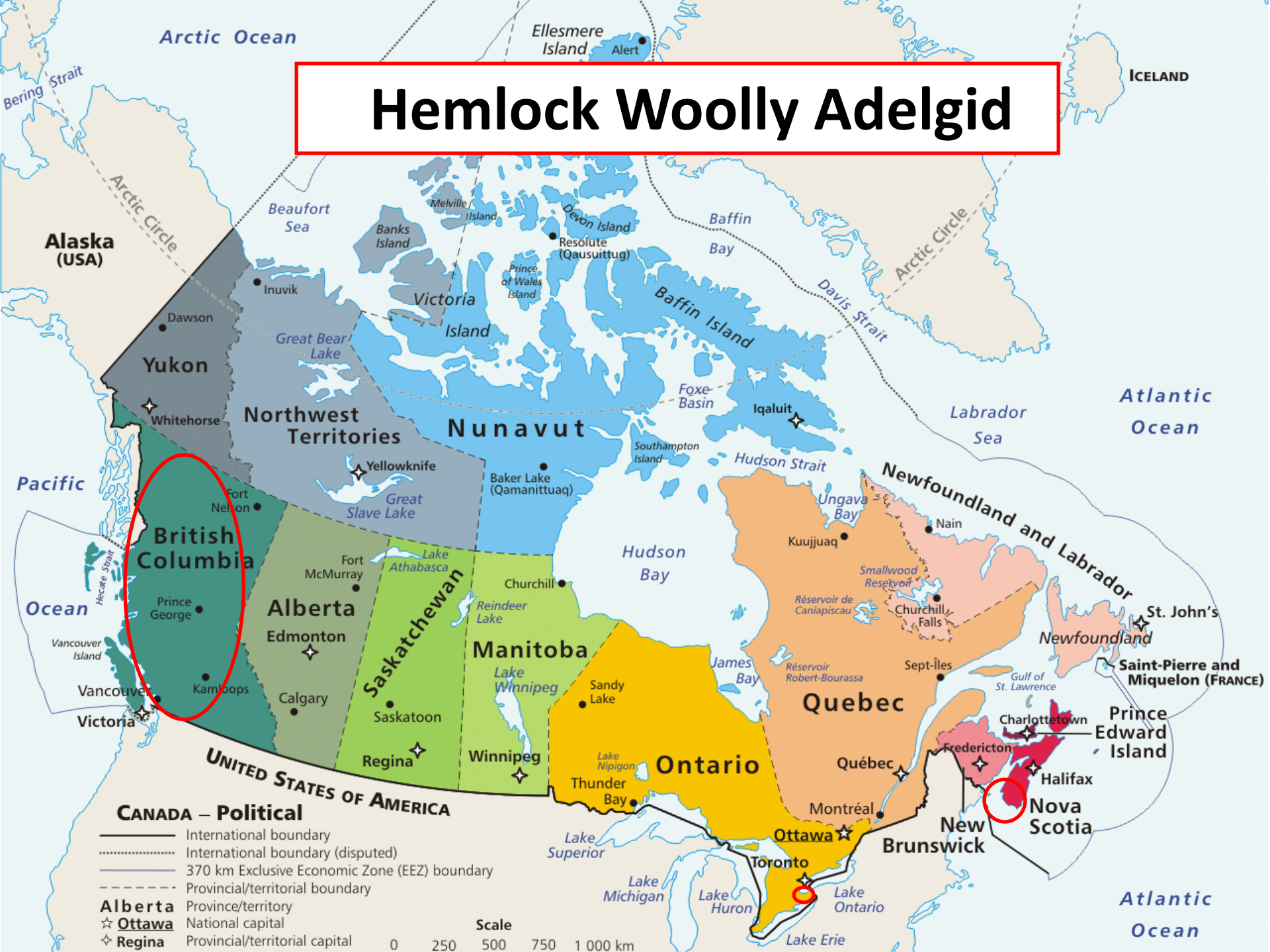
- Manage / slow the spread: Hemlock woolly adelgid – *Arvind Vasudevan*
- Eradicate: Jointed goatgrass – *Wendy Asbil*
- Choose not to regulate: Verticillium stripe – *Jason Murphy*

Now what ? Manage/slow the spread

Hemlock woolly adelgid – *Adelges tsugae* (Annand)

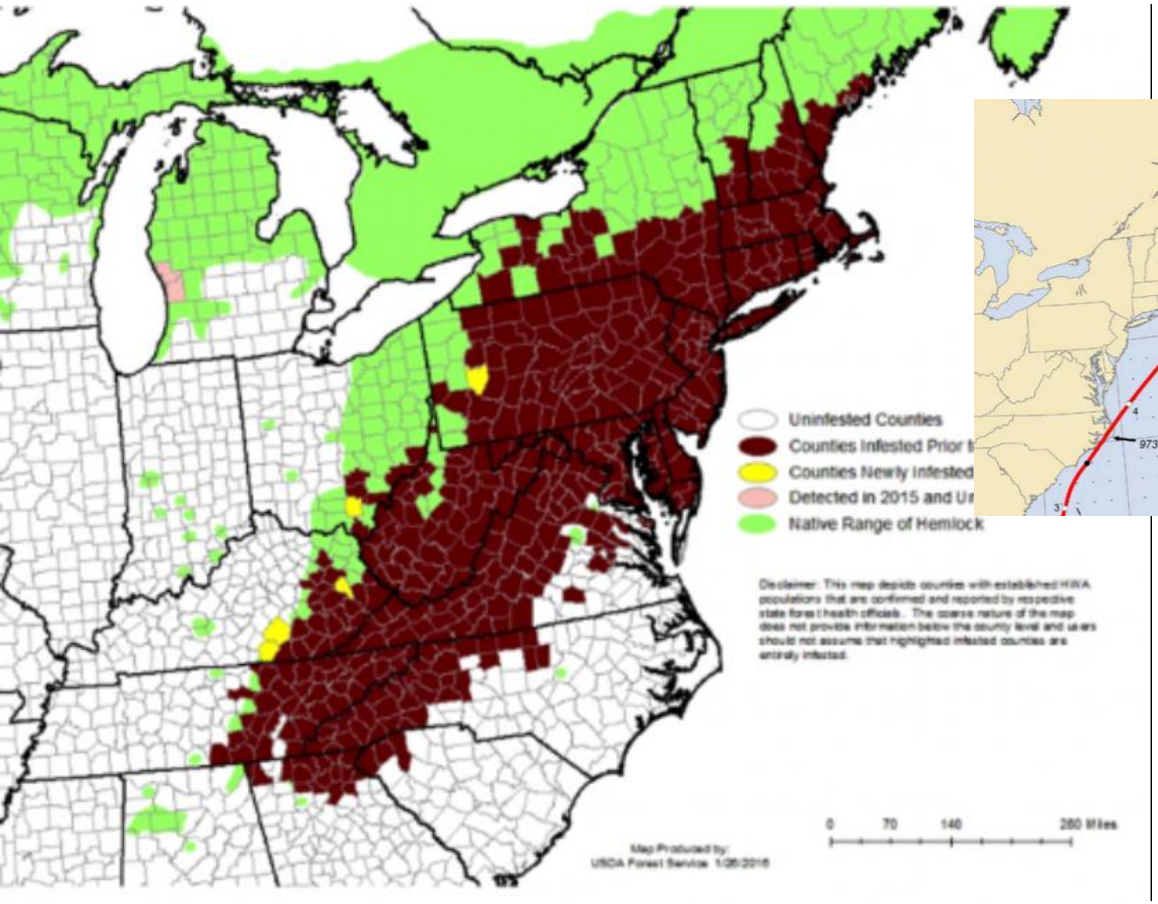
- Aphid-like pest feeds on the storages cells in hemlock twigs at the base of needles.
- Hemlock woolly adelgid (HWA) is a serious pest of susceptible species of hemlock.
- Is of major concern in Eastern Canada and Eastern United States.
- In British Columbia (BC), damage from HWA to Western hemlock, is minor due to natural resistance and presence of native predatory beetles.

Hemlock Woolly Adelgid



How did it get here?? How do you manage

- **Wind** ?
- Birds ?
- Humans ?



Slow the spread and protect non-infested areas of Canada

D-07-05: Phytosanitary requirements to prevent the introduction and spread of HWA from the US and within Canada

Regulated Articles	• Forest products with bark attached • Plants for planting • Hemlock, Yeddo and Tiger-tail spruce • Dried branches and Christmas trees • Decorative wreaths, foliage and branches • Firewood of all species
Phytosanitary Measures	• Import Requirements • Domestic Movement Requirements • Inspection Requirements • HWA Approved Processing Facility Compliance Program
Movement Restrictions	• Written authorization under a movement certificate required for movement of articles out of the infested place • High risk period: March 1 – July 31

Hemlock Woolly Adelgid Current Management

Nova Scotia

- July 2017: detected hemlock woolly adelgid (HWA) in SW Nova Scotia.
- Implemented movement restrictions and established a regulated area at the county level (5); annual surveys to delimit the spread.
- HWA has not been detected outside of the regulated area since the 2017 report.

Ontario

- Previous incursions in southern Ontario (Niagara Region) between 2012 and 2015. Infected trees removed.
- In 2019, HWA detected again in the Niagara Region at two locations.
- CFIA is working with landowners to determine the extent of the infestation and exploring tree removal and other control options.

Research Priorities

- Explore and assess the most promising predators for biological control of HWA in Canada
- Identify the mechanisms and genes behind host resistance in eastern hemlock
- Explore the use of silvicultural techniques to reduce hemlock mortality caused by HWA
- Identify a systemic insecticide for protection of high value hemlock trees

- **End of part 1:**
  - Manage / Slow the Spread: Hemlock Wooly Adelgid

- **Coming next is part 2:**
  - Eradication: Jointed Goat Grass

Now what?

Eradicate

Jointed goatgrass plants (Sam Brinker, OMNR-NHIC)

Invasive Plants Program
a.k.a. pest plants

***Aegilops cylindrica* (jointed goatgrass)**

*Alopecurus myosuroides (*slender foxtail)

Arundo donax (giant reed)

Centaurea solstitialis (yellow starthistle)

Centaurea iberica (Iberian starthistle)

Crupina vulgaris (common crupina)

Cuscuta spp. (dodder)

Dioscorea polystachya (Chinese yam)

Echium plantagineum (Paterson's curse)

Eriochloa villosa (woolly cup grass)

Microstegium vimineum (Japanese stiltgrass)

Nassella trichotoma (serrated tussock)

Orobanche spp. (broomrape)

Paspalum dilatatum (Dallis grass)

*Persicaria perfoliata (*Devil`s-tail tearthumb)

Pueraria montana (kudzu)

Senecio inaequidens (South African ragwort)

Senecio madagascariensis (Madagascar ragwort)

Solanum elaeagnifolium (silverleaf nightshade)

Striga spp. (witchweed)

Zygophyllum fabago (Syrian bean-caper)

- Others may be regulated in future based on risk analysis
- Decisions to not regulate species are equally important

Jointed goatgrass

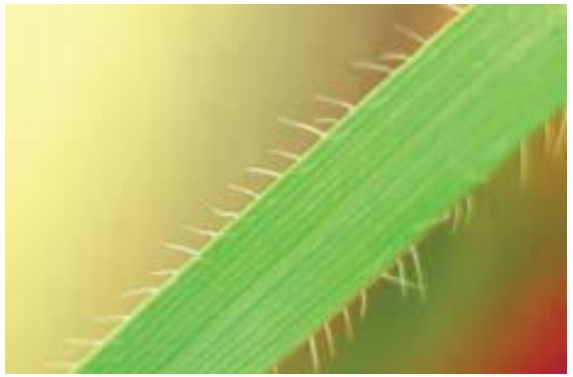
- Annual grass
- Human-mediated spread
- Pathways = contaminated grain (e.g. imported wheat) and seed, machinery, transportation routes (e.g. leaky railcars, trucks)
- Regulated as a pest under *Plant Protection Act* - prohibited
- Prohibited noxious weed under *Seeds Act*
- Regulated by some trading partners (e.g. Mexico, China)

Jointed goatgrass

- Detections in British Columbia, Ontario and Quebec under official control
- Goal = eradication

Jointed goatgrass

What We Do



- Import requirements
- Outreach to partners and industry
- Annual surveys around seed and grain handling facilities
- National in-field surveys
- Follow-up on potential sightings (e.g. by CFIA staff, partners and stakeholders)

Detections

- Delimit extent of site
- Restrict activity on site
- Order mitigation measures (e.g. treatment)
- Site monitoring
- 5-years without detection at site = eradicated

- **End of part 2:**
  - Eradication: Jointed Goat Grass

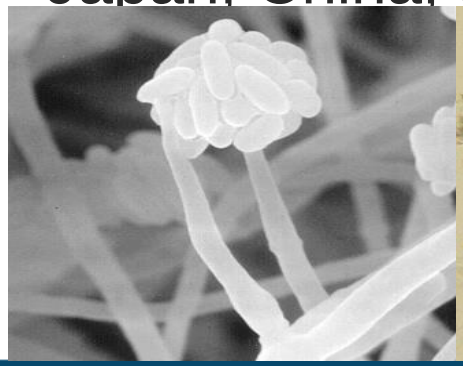
- **Coming next is part 3:**
  - Choose not to regulate:

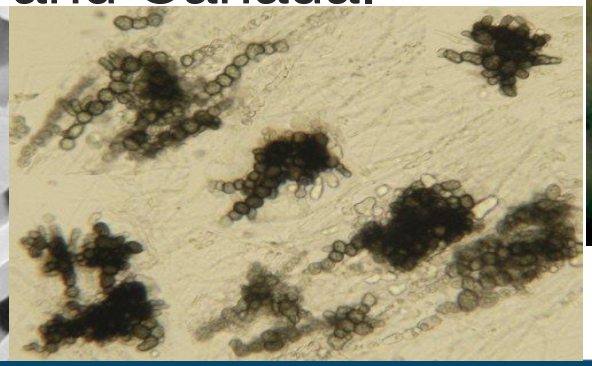
    Verticillium stripe

Now what ? Decide not to regulate

Verticillium longisporum
(Verticillium stripe)

- Fungal pathogen primarily of cruciferous crops.
- Present in Belgium, Czech Republic, France, Germany, Netherlands, Poland, Russia, Sweden, UK, USA (CA, IL), Japan, China, and Canada.





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First Detection in Canada

- 2014: Verticillium stripe was detected for the first time in Canada from a canola field at a single farm location in Manitoba with the identity of the pest confirmed on October 31.
- Most of the 2014 canola crop had been harvested by this time
- We took regulatory actions on the farm to do everything possible to confine the pest and limit its spread and set about learning more about the biology and threat the pest presented to Canada. A deep winter really helped

First Detection in Canada

Photo: A. v. Tiedemann, Göttingen, 2006).

Field symptoms of *V. longisporum* on canola (*Brassica napus)*. Brownish stripes along the stems become visible during maturation of the crop (**red arrows**).

Stubble cross section with abundant microsclerotia

Preliminary Assessment

- Facing a pest of canola, Canada's most valuable field crop, in the main production area of the country.
- 43,000 producers growing canola on just over 24 million acres.
- A pest known to cause up to 50% yield loss in Northern European countries.
- Lots of uncertainty around the regulatory status of the pest with Canada's main destination markets for canola and concern if those trading partners required shipments to be free from a pest we had no idea was here and if it was even possible to exclude from canola intended for export.

Risk Management Communications

From the moment the pest was detected an external advisory group composed of the canola industry (producers, processors, exporters), academics, provincial and other federal government partners was created to propose management options for the pest and communicating the latest information on the regulatory status of verticillium stripe to affected stakeholders.

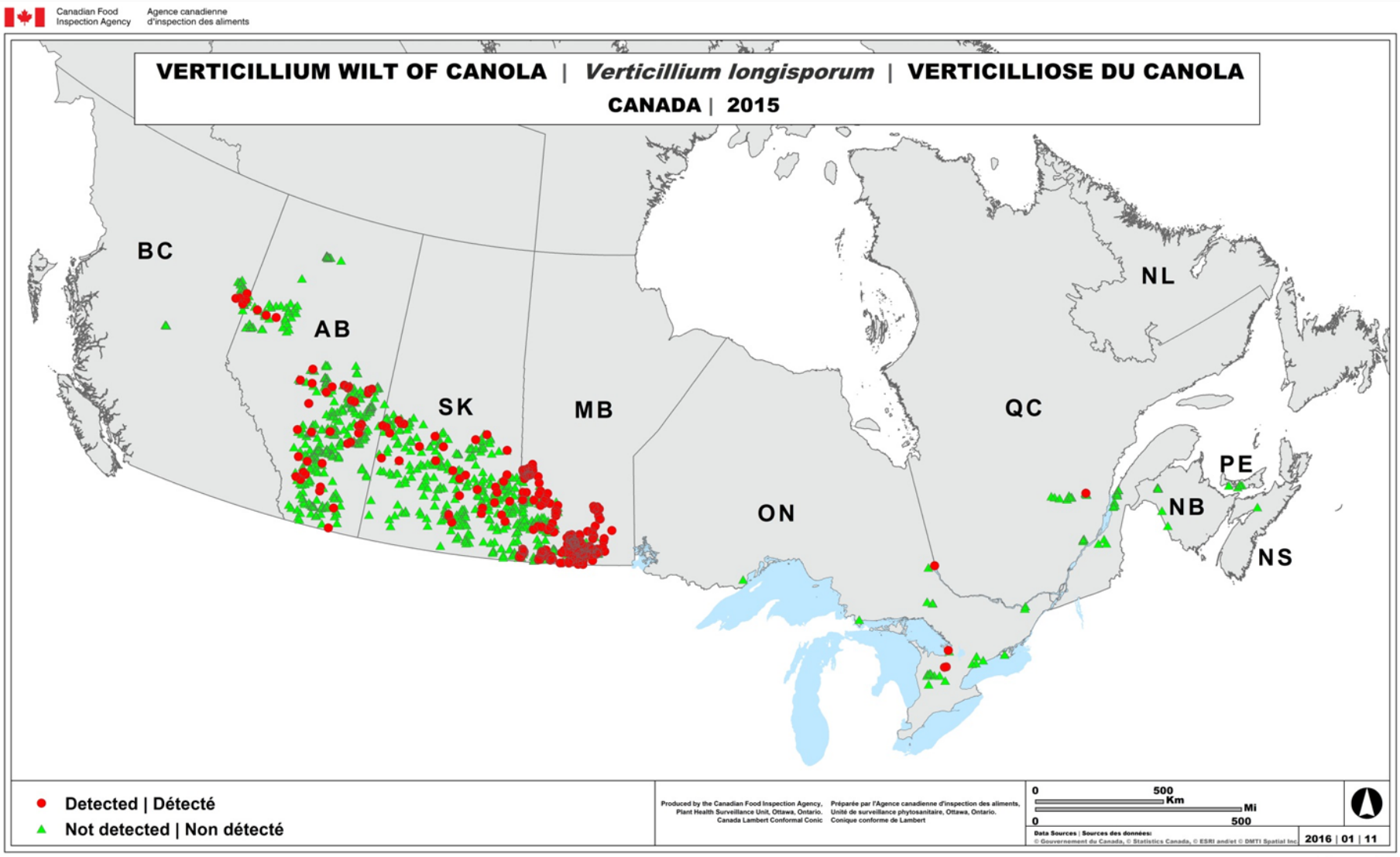
Gathering evidence

In July 2015, delimitation surveys were completed to determine if the pest was present in fields adjacent to the infested farm.

- The pathogen was found in 7 of the 16 fields tested proving it was not isolated to the original location. All regulatory controls were lifted from the infested farm and no restrictions were applied to the new positive locations.
- A comprehensive survey was needed to determine the extent of the pathogen’s distribution in Canada.

2015 Verticillium National Survey

- An extensive survey to determine the distribution of the pest in Canada began in September 2015. This survey was conducted jointly with provincial partners and industry stakeholders.
- Survey sample collection was completed on November 30, 2015. Samples were collected from 1,074 canola fields located in the provinces of British Columbia (BC), Alberta (AB), Saskatchewan (SK), Manitoba (MB), Ontario (ON), Québec (QC), New Brunswick, Nova Scotia and Prince Edward Island.
- The testing of all survey samples was completed in January 2016.


Canadian Food Inspection Agency
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VERTICILLIUM WILT OF CANOLA | Verticillium longisporum | VERTICILLIOSE DU CANOLA
CANADA | 2015
BC
AB
SK
MB
ON
QC
NL
PE
NB
NS
Detected | Détecté
Not detected | Non détecté
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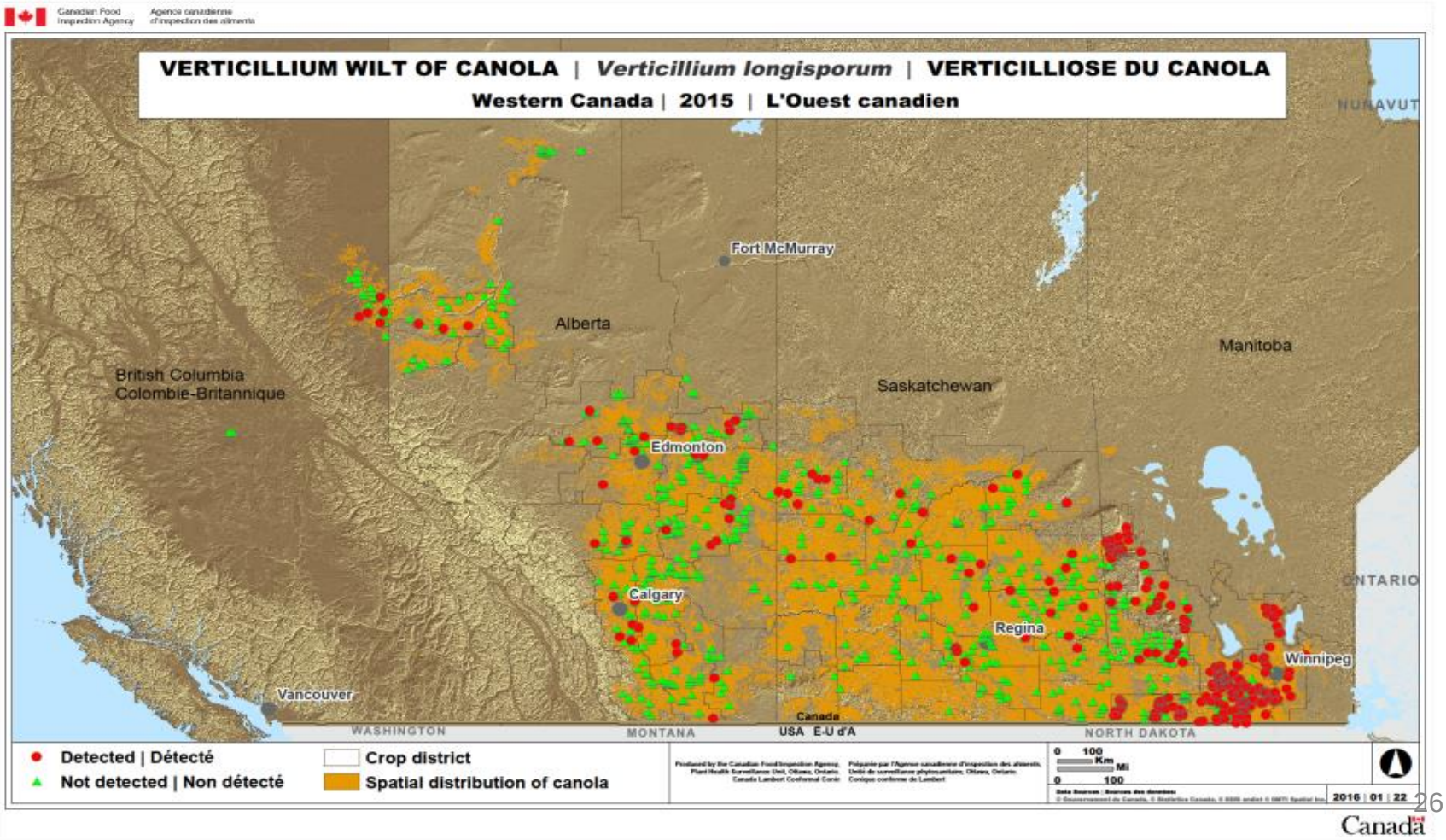
Survey results in Canola country



Informing decisions and recommendations

- What does the literature review and PRA tell us about verticillium stripe? Does it meet the criteria to be regulated in Canada?
- Do the results of the national survey support the regulation of the pest in Canada?
- Is it cost-justifiable to implement official measures to control further introductions or domestic spread of this pest?

Risk Management Decisions

- In September 2018, the CFIA published a Risk Management Decision for *Verticillium longisporum* (verticillium stripe) on their website.
- Based on widespread distribution in Canada verticillium stripe did not meet the International Plant Protection Convention (IPPC) definition of a quarantine pest.
- The regulation of verticillium stripe under the *Plant Protection Act* was not warranted, nor was it cost-justifiable to implement official measures to control further introductions or domestic spread of this pest.
- On farm biosecurity measures appeared to be the best approach to manage and reduce further spread of verticillium stripe in Canada

- **End of part 3:**
  - Choose not to regulate:

    Verticillium stripe

So we have found a pest; now what? Summary