Canada's approach to Pesticide Risk Reduction: *a model of joint Federal-Provincial-Territorial-Industry partnership*

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Sustainability Ecosystem in Canada

- **Important goal** to reduce pesticide risk to human health and environment - enhanced efforts in the last ~2 decades:
  - ✓ Turning point in **2000 -** Parliamentary Standing Committee on Agriculture & Environment report raising consumer concerns about pesticide use & impact;
  - ✓ Current joint *Sustainable Canadian Agriculture Partnership* policy framework addresses **3 key areas** of sustainability for sector resiliency;
  - ✓ **COP15**: committed to reduce by 50% the risk from pesticides by 2030 with emphasis on **biodiversity protection** (NEW Canada's National Nature Strategy)

- Alternative solutions and IPM systems regarded as essential to achieve risk reduction through reducing reliance on pesticides
- Implementation of pesticide risk reduction activities and IPM adoption are shared responsibilities among different levels of Government

Establishing AAFC's Pest Management Centre (PMC)

PMC established in 2003 as part of *Building Public Confidence in Pesticide Regulation initiative to* address public and sector concerns over:

- ✓ pesticide use/impact (risk of agrichemicals to human and environmental health)
- ✓ regulation (limited access to reduced risk pest control products for minor crops)

PMC to deliver on Parliamentary committee recommendations for the Government to allocate financial resources to support:

a) development of IPM strategies and alternative solutions; and
b) enable registration of new minor uses of pesticides

Mandate: Deliver tools, techniques and approaches to protect the environment and human health from pesticides

Goal: Address technology gaps and sector competitiveness, and facilitate trade, while strengthening public and stakeholder trust in pesticide regulation and safety

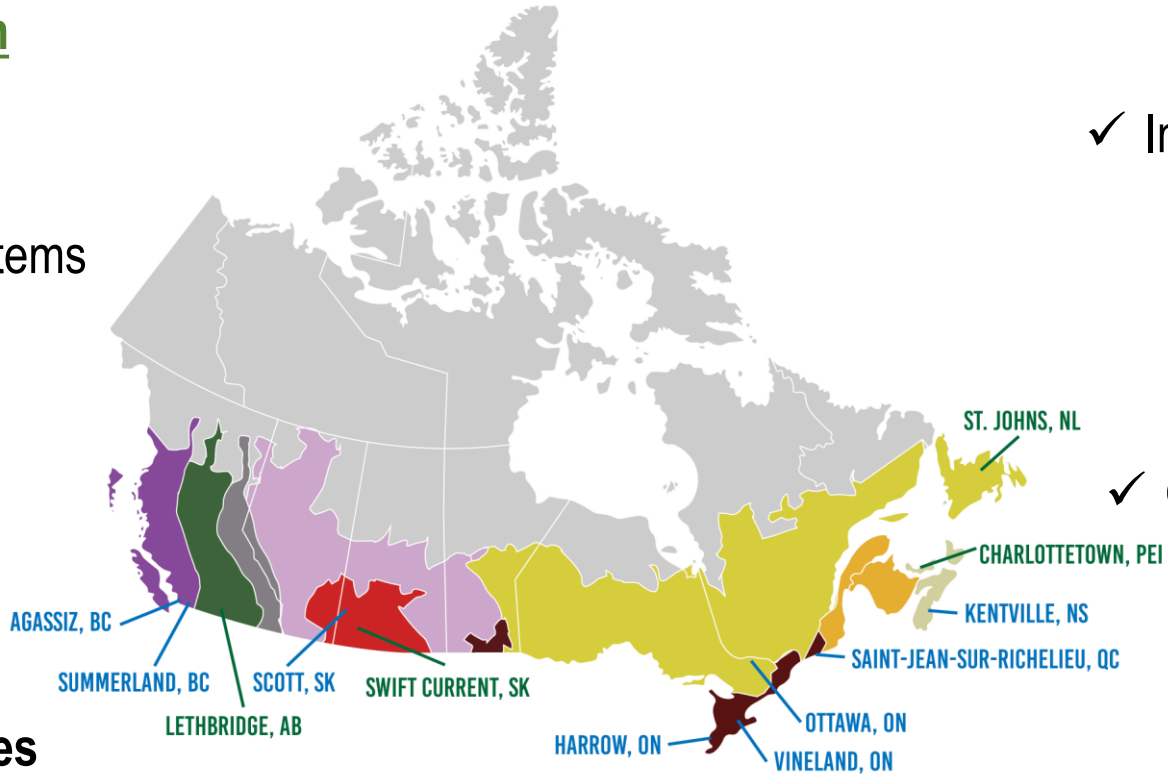
PMC remains highly relevant today

after 22 years in service to the agri-industry sector

Delivers **Pesticide Risk Reduction** and **Minor Use Pesticides** Programs
Fosters stakeholder consultations to identify grower needs & develop management strategies
Operates with over **60 employees** located at 11 Research and Development Centres across Canada

Pesticide Risk Reduction Team

- ✓ Increases access to new **alternative, non-chemical** control solutions and IPM systems to address **grower-identified** priority pest issues
- ✓ **GOAL**: Supports research, development and technology transfer of sustainable crop protection practices/tools **to reduce reliance on pesticides**



Minor Use Pesticides Team

- ✓ Improves access to new **minor uses** of pest control products (i.e., pesticides, biopesticides) to address **grower-selected** pest management needs
- ✓ **GOAL**: Conducts field and lab trials to generate **required efficacy and residue data** to support regulatory submissions

PMC achieves its mission through dedicated Federal funding and collaborations with numerous partners

Both PMC programs **consult and collaborate** with these entities to successfully deliver on annual targets and attain expected outcomes

Industry/ registrants	Provinces/ Territories	PMRA - Regulator	Researchers	Grower Organizations	Federal Partners	International Partners
Pest control product manufacturers and registrants	All 10 Provincial Minor Use Coordinators & Crop Specialists	Health Canada's Pest Management Regulatory Agency	AAFC, EEEC, CFIA, Academia, Private entities	Grower Groups representing major/minor crops, org & conventional	CFIA, Env. & Climate Change Canada, Plant Health Council	USDA IR-4, Brazil, Australia, Minor Use Foundation, CODEX, CABI

Working together with stakeholder groups is the success factor for PMC

Pesticide Risk Reduction Program

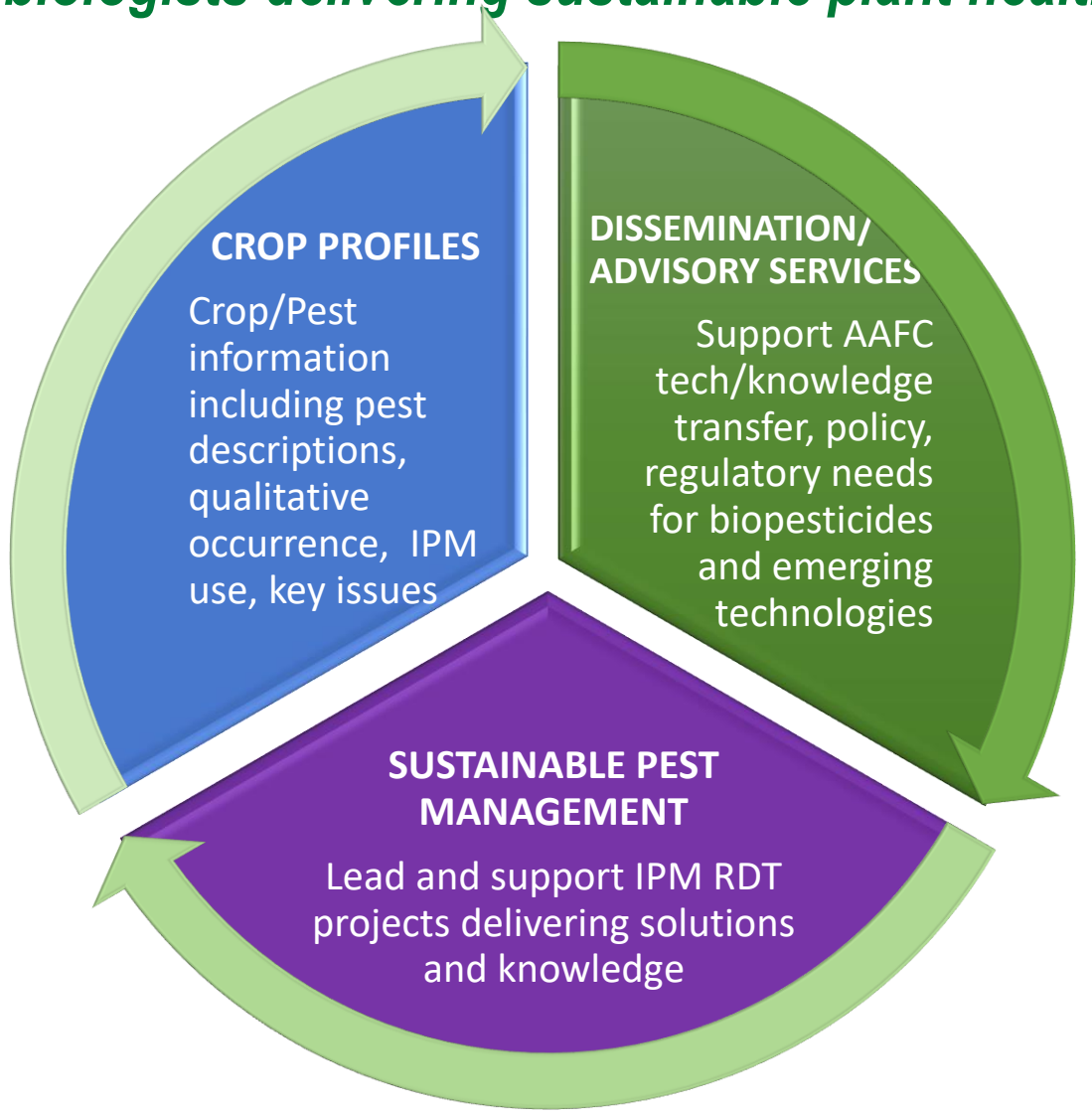
Team of 6 biologists delivering sustainable plant health outcomes

Crop Profiles:

✓ 36 Profiles published online

Strategy Work:

✓ 18 reduced risk strategies developed and published online



Project funding:

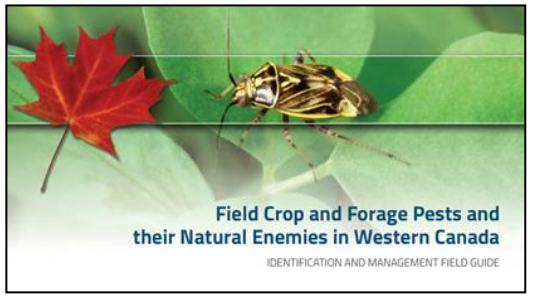
✓ Supported ~200 projects since 2003 resulting in numerous tools

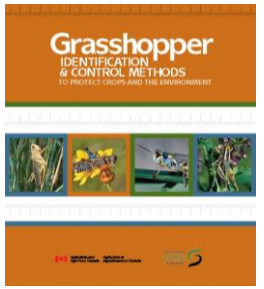
Regulatory support:

✓ Provided assistance for registration of 25 biopesticides

PRR Services: disseminate generated results

- PRRP has a large presence online through publication of:
  - ✓ Crop profiles
  - ✓ Results coming out of projects (searchable database)
  - ✓ Technical factsheets featuring innovative approaches
  - ✓ Field guides and manuals
- Promotes adoption of alternative tools and IPM systems through demonstration projects
- Contributes talks at scientific and grower meetings, run farm tours and content for grower media articles, videos, podcasts





Pesticide Risk Reduction Success Story #1: *Cabbage Maggot control* - Benefits of Insect Netting in Brassica Crops

Extensive on-farm demonstrations showed growers the feasibility and benefit of commercial adoption of insect netting using a mechanical roller system for cabbage maggot control in cabbage, rutabaga, and turnip crops.

RESULTS

Cabbage Cultivar	Treatment	Insecticide sprays (#)	Marketable yield (kg)	Root damage (%)	Risk indicators*	
					Health (HRI)	Environment (ERI)
Promise	No - netting	5	3,29a	90	670	381
	Under netting	0	3,26a	9	0	0
Ancoma	No - netting	4	3,08a	44	666	308
	Under netting	1	2,82a	12	4	73

* Pesticide Risk Indicator developed in Quebec with two components (Québec Pesticide Risk Indicator : QPRI : Health and Environment)

CONCLUSION

Cost-benefit analysis estimated that **netting** increases crop protection **cost by $20,000/acre** compared to conventional practice. While not offering an economic advantage, netting leads to high-level pesticide risk reduction. Large scale adoption can be encouraged with financial incentives to offset extra costs.

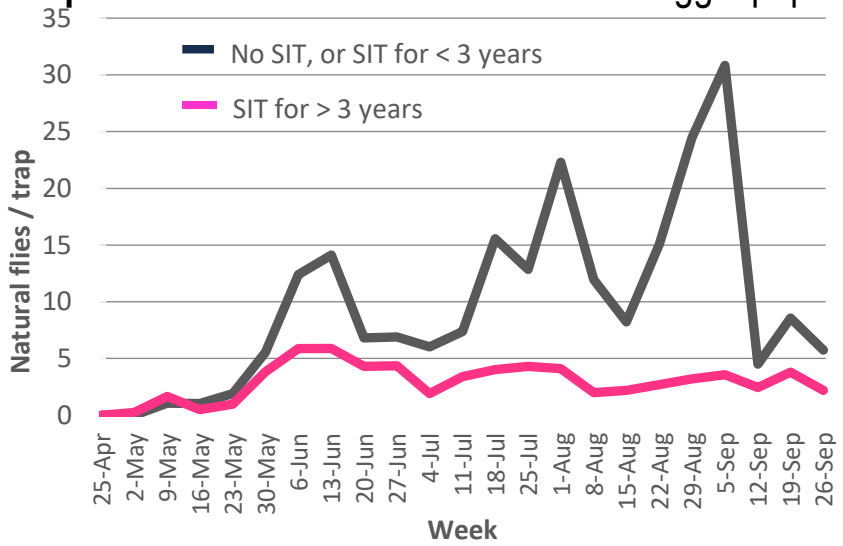
Pesticide Risk Reduction Success Story #2 - *Sterile Insect Release* technique (SIT) a judicious solution for Onion Maggot

Article promoting the technique to growers

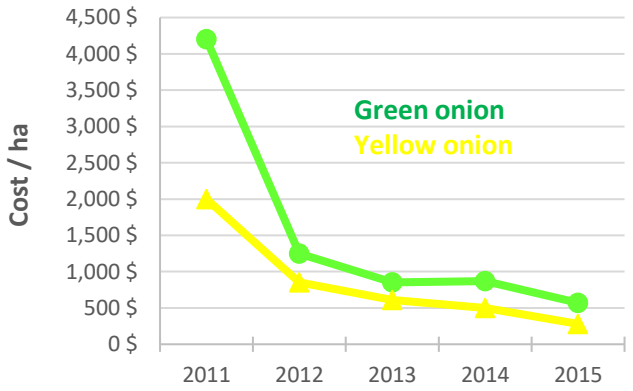
Integrated pest management: sterilized pink onion flies | Sollio Agriculture

2011 - 1st large-scale releases of 'pink' sterile flies in onion fields in Quebec province;
2025 - over 1,250 ha under this practice (province reimburses growers with 70% of sterile fly purchase cost)

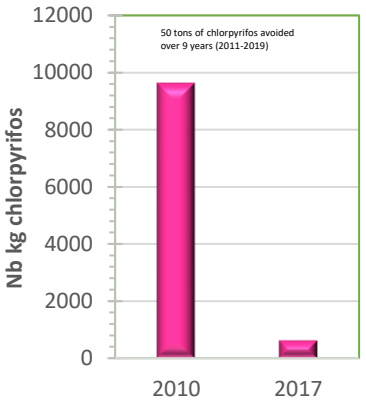
Impact #1: Over time reduction of wild maggot population



Impact #2: Over time reduction of average SIT cost



Impact #3: Significant reduction in chlorpyrifos use

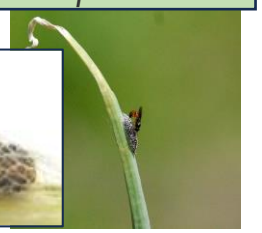


Pesticide Risk Reduction Success Story #3 – IPM toolbox for Leek Moth :

10 years of collaborative Research Development and knowledge transfer

Decision Support Tools: Monitoring with (Pheromone trap

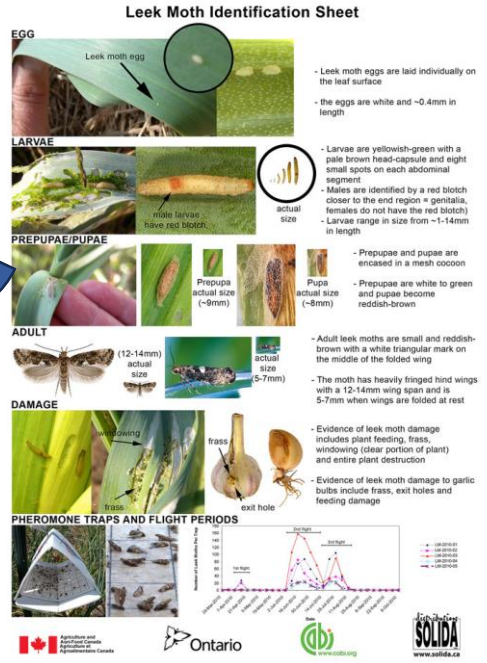
Biocontrol agent (at pupae stage) **:** *Diadromus pulchellus*



Physical Barriers: Row Covers

Control Products: Biopesticides (at eggs stage)

Knowledge and Technology Transfer: working with stakeholders through farmer participatory approach



Currently, scaled-up rearing and releases of the parasitic wasp *D. pulchellus* are underway annually across QC and ON onion and leek fields

Minor Use Pesticides Program Success Story #1:
>5,000 new pesticide uses approved to since 2003

Canadian Pest Management Priority Setting Workshops is held annually with participation of about 130 stakeholders (including federal and provincial reps, regulators, grower associations, CropLife reps, and manufacturing company reps)

About 30 crop/pest/solution issues are prioritized annually for entomology, pathology and weed science disciplines combined;

~ 250 field trials and lab studies are carried out annually to generate the data required for regulatory evaluation of new pesticide uses

Minor Use Pesticides Program Success Story #2:
Research to support regulatory decision for pesticide spray with drones

Goal: **12 trials** conducted on 4 representing crops to generate comparative residue data between the drone and conventional spray application techniques;

Anticipated outcome: Address a regulatory need in verifying whether there is equivalence in amount of residues found on edible parts of tested plants.

Currently, the regulatory body is assessing the research results and safety parameters before approving this spray technology.

Challenges / Barriers /Lessons Learned to promoting uptake of alternative practices & IPM

Challenges / Barriers to Adoption

- Budget limitations to dedicate to development and demonstration of alternatives and addressing competing national priorities
- Higher cost, uncertain economic return, more know-how & engagement needed to use alternatives, some negative perception exist about the efficacy of alternatives
- No established national system to estimate adoption by growers; low uptake of alternative solutions/BMPs/IPM systems observed
- Integration of practices is required for best results; longer-term efforts to observe impact
- Effective and feasible alternatives not always available

Lessons Learned: Promote Adoption

- Public funding to support applied research is important to meet the needs of growers for alternative pest management solutions to address key pest concerns and help them achieve environmental sustainability goals
- Developing feasible BMPs/IPM strategies which meet specific grower needs and are adapted to local conditions/crop systems
- On-farm demonstration of new technologies is important to showcase benefits to growers
- Conducting cost-benefit and environmental analyses to showcase economic and pesticide risk reduction advantages
- Incentives to facilitate grower uptake

Thank you

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