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Biopesticides: A Focus at Agriculture and Agri-Food Canada's Pest Management Centre

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INTRODUCTION

The Pest Management Centre (PMC) was established in 2003 by Agriculture and Agri-Food Canada (AAFC) to enhance competitiveness and sustainability of Canadian agriculture in the area of pest management.

PMC works with Canadian growers, researchers, provincial specialists, international collaborators, pesticide companies, and the federal pesticides regulator, Health Canada's Pesticide Management Regulatory Agency (PMRA), in fulfilling its mandate on behalf of the agriculture sector. PMC delivers two programs:

- **The Minor Use Pesticides Program** works with grower organizations and provinces to identify crop/pest priorities, and with research partners to conduct field trials and laboratory analyses in support of new minor use pesticide registrations.
- **The Pesticide Risk Reduction Program (PRRP)** facilitates the development, availability and adoption of reduced risk pest management strategies, including biological controls and integrated approaches for both major and minor crops.

Biopesticides enhance the pest management tool-box with sustainable solutions for use in reduced-risk pest management strategies. The PMC's work with biopesticides is carried out primarily within the PRRP.

SETTING PRIORITIES

PMC works annually with stakeholders including grower representatives, provincial specialists, researchers, biopesticide companies and PMRA to identify priority biopesticides for regulatory support and implementation project work (**Fig. 1**).

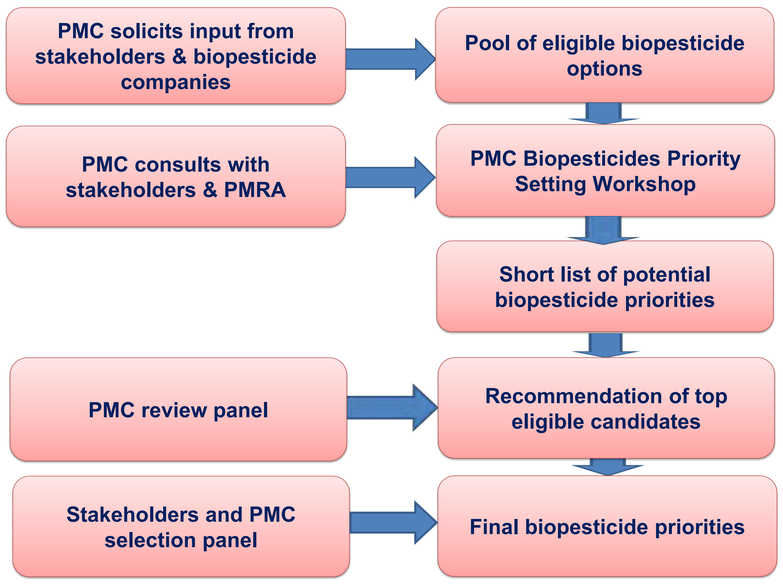

Fig. 1. PMC's annual biopesticide prioritization process

FACILITATING REGULATORY SUBMISSIONS

Since 2005, PMC has facilitated the development and submission of registration data with the goal to increase the registered biopesticide options available to Canadian growers. This work consists of two processes and follows several steps (**Fig 2**).

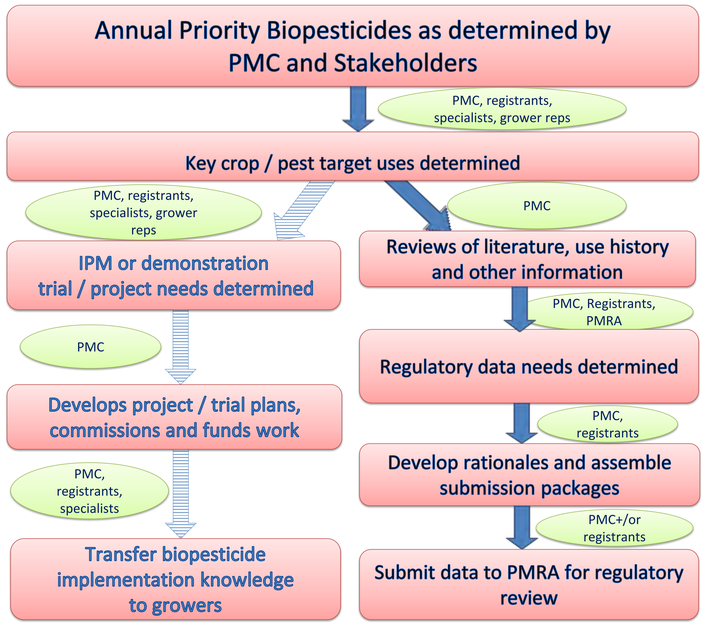

Fig. 2. PMC's biopesticide regulatory support process and proposed IPM project support.

23 biopesticide products covering 248 uses (**Table 1**) have been registered in Canada as first time registrations or label expansions as the result of PMC's submissions over the past 10 years.

Table 1. Biopesticides registered through PMC's regulatory support

Product name	Active ingredient	Number of uses	Product name	Active ingredient	Number of uses
Agriphage	Bacteriophages	2	Heads Up Plant Protectant	Saponins of *Chenopodium quinoa*	2
Bartlett Superior 70 Oil	Mineral oil	1	Met52 Granular Bioinsecticide	*Metarhizium anisopliae* F52	12
BioSave 10LP	*Pseudomonas syringae* ESC10	14	Milstop	Potassium bicarbonate	12
BlightBan A506	*Pseudomonas fluorescens* A506	2	Prestop	*Gliocladium catenulatum* strain J1446	48
BlightBan C9-1	*Pantoea agglomerans* C9-1	2	Regalia MAXX	Giant knotweed extract	6
BloomTime	*Pantoea agglomerans* E325	2	Rhapsody	*Bacillus subtilis* QST 713	6
Blossom Protect	*Aureobasidium pullulans* DSM 14940 & DSM14940	18	Root Shield Granules	*Trichoderma harzianum* Rifai strain KRL-AG2	6
Botanigard 22WP	*Beauveria bassiana* GHA	22	RootShield HC	*Trichoderma harzianum* Rifai strain KRL-AG2	11
Botanigard ES	*Beauveria bassiana* GHA	15	Serenade Max	*Bacillus subtilis* QST 713	18
Contans WG	*Coniothyrium minitans* CON/M/91-08	14	Surround WP Crop Protectant	Kaolin clay	10
GF-120	Spinosad	1	Timorex Gold	Tea tree oil	10
Grotek Ascend Vaporized Sulphur	Sulphur	14	–	–	–

ENABLING TECHNOLOGY TRANSFER AND ADOPTION

PMC contributes regulatory advice and pathfinding for biopesticide discoveries arising from AAFC research work and registrant companies. Funding for projects involving screening (**Fig. 3**), scale-up and demonstration trials (**Fig. 4**) and IPM systems enable the transfer of new biopesticide technologies to Canadian industry and growers.

Fig. 3. A biopesticide screening trial for powdery mildew control in greenhouse ornamental crops

Fig. 4. A demonstration trial of GF-120 Naturalyte Fruit Fly Bait for the control of apple maggots in apple orchards.

FUTURE FOCUS

Integration of biopesticides into IPM programs

PMC is shifting emphasis away from regulatory data generation trials for biopesticides in response to new guidelines for value data requirements which have been implemented by the PMRA. The new focus is work to integrate biopesticides into IPM systems to enable the uptake of these options in commercial crop situations (**Fig. 5**).

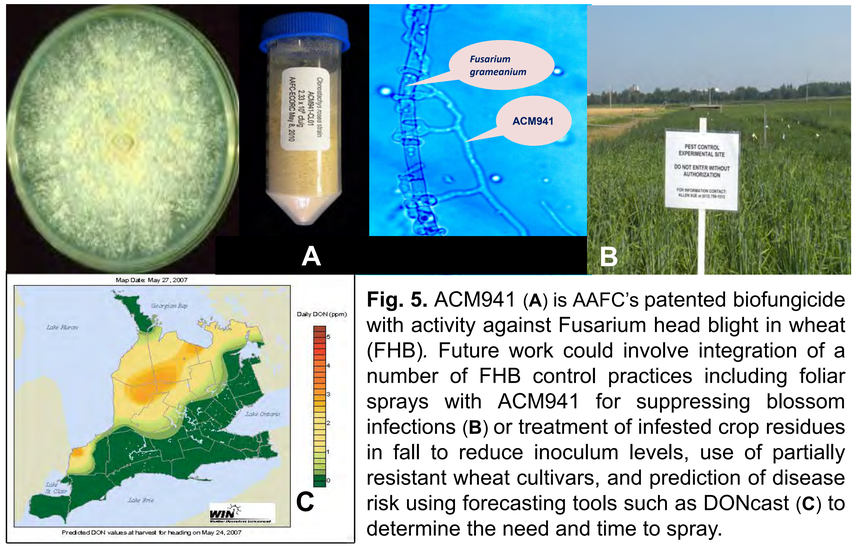

Fig. 5. ACM941 (**A**) is AAFC's patented biofungicide with activity against Fusarium head blight in wheat (FHB). Future work could involve integration of a number of FHB control practices including foliar sprays with ACM941 for suppressing blossom infections (**B**) or treatment of infested crop residues in fall to reduce inoculum levels, use of partially resistant wheat cultivars, and prediction of disease risk using forecasting tools such as DONcast (**C**) to determine the need and time to spray.

CONTACTS

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