



PEST MANAGEMENT CENTRE 2016 YEAR IN REVIEW



MESSAGE FROM THE EXECUTIVE DIRECTOR



Dr. Manjeet Sethi

NEW CHALLENGES BECKON...

Change is good and it is time for me to move on. I have accepted a position as Director General with Corrections Services Canada

dealing with mental health issues, currently a challenging Canadian issue.

It was eight years ago that I joined Agriculture and Agri-Food Canada's (AAFC) Pest Management Centre (PMC), a fledgling organization going through some growing pains. I must say, it's been quite a ride. The reorganization of the PMC, establishment of a modern, robust and user-friendly database, and setting up of a state of the art chemical residue analytical laboratory were all achieved thanks to input and commitment of staff, senior management, and stakeholders. The development of internal service standards has contributed to a 50% increase in the submissions for the registration of minor use pesticides. Today, the PMC is recognised worldwide

for its Pesticide Risk Reduction and Minor Use Pesticides Programs (MUPP), and countries like China and Brazil are emulating our programs. Seeing these achievements fills me with pride and is humbling at the same time.

Through our partnerships with the Pest Management Regulatory Agency (PMRA), the United States Department of Agriculture's (USDA) Interregional Research Project #4 (IR-4), United States Environmental Protection Agency, Canadian growers and grower organizations, Provincial Minor Use Coordinators, and CropLife Canada and its members, we have been able to register safe and effective pest management tools and have provided close to 2,000 new uses to Canadian growers helping them remain competitive. Registration of safe pesticides and effective risk reduction tools contribute to consumer and environmental protection and facilitate trade.

A cost benefit study conducted by AAFC economists has estimated that MUPP has contributed to the prevention of crop losses in the range of \$653 million to \$998 million since implementation in 2003. The study estimates societal benefits of \$3.4 billion from the implementation of the program in addition to other benefits to consumers such as greater access to food products and lower pesticide residues.

I wish to acknowledge the following people who went above and beyond to help, support and advise me as I led the PMC: Dr.s Jerry Baron and Dan Kunkel from the USDA IR-4 ; Pat Curry, Susan Wong and Jennifer Selwyn from PMRA; provincial minor use coordinators Jim Chaput, Caroline Bédard, and Luc Urbain; Anne Fowlie, Tracey Shinnars -Carnelley, Gary Brown,



Charles Stevens, and Craig Hunter of the Canadian Horticultural Council; Cary Gates from Flowers Canada; and Pierre Petelle from CropLife Canada. I am grateful and thankful to all PMC staff at all of the sites for a job well done, and for the many others within AAFC who contribute to the success of these two world class programs.

Manjeet

HIGHLIGHTS OF THE 2016 FIELD SEASON

GOOD BUG, BAD BUG: HOW BENEFICIAL INSECTS ARE HELPING FARMERS DEAL WITH APHIDS

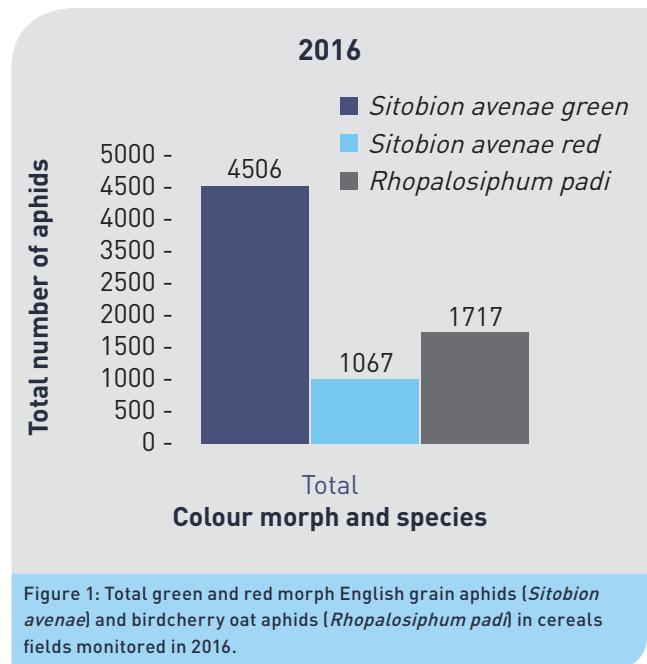
Beneficial insects can keep aphid pest populations in check and a new tool will soon be ready to help growers mobilize this natural workforce to protect their crops and reduce reliance on insecticides.

In many instances, beneficial insects have the ability to keep aphid populations from reaching the economic or action threshold. This threshold is the level at which insecticides would need to be applied in order to avoid costly crop losses.

As part of the Pesticide Risk Reduction Program's [strategy for controlling foliar insects like aphids on prairie field crops](#), scientists at Agriculture and Agri-Food Canada (AAFC) developed and are fine-tuning a model that predicts the growth of the aphid

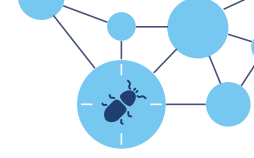
population. The new model takes into account the rate at which beneficial insects such as lady bugs, damsel bugs and green lacewings feed on the aphids.

The model will become the back-bone of an easy-to-use spray-decision tool that will be soon available as a mobile phone app called 'AphidBoss'. Already a prototype of this app is in development and a commercial version will hopefully be available shortly. Soon producers will have a powerful tool to help them save money and reduce environmental impacts by knowing precisely when and where to apply insecticides.



GROWERS AGREE INSECT NETTING WORKS AS WELL AS CHLORPYRIFOS

Cabbage maggot is a major pest when growing brassica crops such as cabbage, broccoli, and cauliflower in Atlantic Canada. Its control has relied heavily on chemical insecticides, including the organophosphate chlorpyrifos.



Researchers at Agriculture and Agri-Food Canada’s (AAFC) St. John’s Research and Development Centre in Newfoundland and Labrador were encouraged by results that found European insect netting to be as good, and often better, as chlorpyrifos in reducing damage from cabbage maggot in certain Canadian crops.

In order to encourage producers to learn and try the new technology, AAFC hosted open demonstrations of the netting and row cover layer and remover equipment called Hiwer™ at their 2016 Farm Field Day in Western Newfoundland and Labrador.

Roger Peach, a horticulture producer in Newfoundland and Labrador and a producer who tried the netting, was pleased with its outcome and said that without a doubt, he would use the netting again.



A demonstration of insect netting and Hiwer row cover equipment at Wright’s Family Farm in Pasadena, Newfoundland.



Hiwer equipment removes and rolls up the netting. Credit Leah Madore

MINOR USE STAFF RESPOND TO GROWING DEMAND FOR SPECIALTY CROPS

Rice

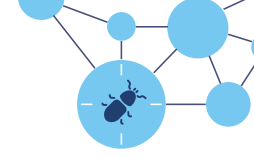
This past summer the Pest Management Centre’s Minor Use Pesticides Program (MUPP) branched into rice production in order to address the needs of growers of this emerging Canadian crop. MUPP staff in Agassiz, British Columbia, began with research on production practices. They established small plots using the “water rice” method of cultivation. This involves flooding the field from the time the seedlings are transplanted until one month before harvest. The work served as a proof-of-concept test that gave staff valuable experience. It also delivered data that can be combined with data expected from upcoming herbicide trials in 2017. The MUPP weed science team will conduct the trials.



Early season rice plot at the Agassiz Research and Development Centre.

Quinoa

Production of quinoa is rapidly expanding in Canada due to growing demand for gluten-free grains. The crop has been grown in the prairie provinces for the past 24 years but is moving east into Ontario. In 2015, stakeholders at Pest Management Centre’s annual priority-setting workshop identified quinoa as a priority for the first time. They wanted solutions for various weeds.



In response, the Minor Use Pesticides Program staff conducted two projects to evaluate and generate data on herbicide solutions for weed control. In addition, the first insect priority in quinoa, beet webworm, has been identified and insect-control trials are expected to start in 2017.



Harvesting quinoa at the Scott Research Farm.

Wasabi

Wasabi is a shade- and water-loving cruciferous plant. It is traditionally cultivated in water beds and streams in Japan and now other countries including Canada have started growing this cousin to horse-radish. In British Columbia wasabi is grown in gravel beds, housed in plastic hoop-houses, and kept moist with overhead mist systems. The MUPP pathology team have two fungicide projects in progress for control of root rot of wasabi. This work is being conducted at Agriculture and Agri-Food Canada’s Agassiz Research and Development Centre, where a dedicated hoop-style greenhouse was built for this purpose.

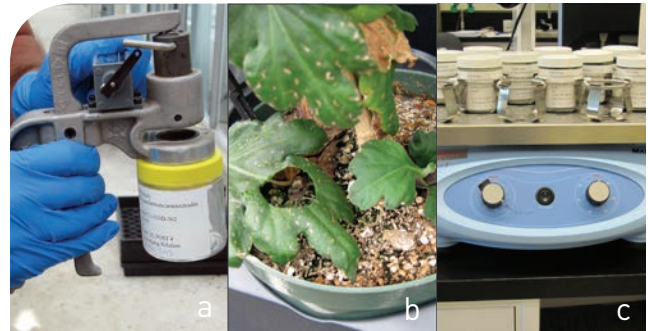


Wasabi production. a) Young plants in gravel bed in hoop house; b) view of hoop house with overhead misting system; c) hoop house of one year old plants; d) detail of one year old plant; e) harvested wasabi plant; f) trimmed stem.

ALSO IN THE SPOTLIGHT

PROVIDING THE DATA TO KEEP GREENHOUSE WORKERS SAFE

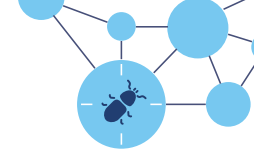
Pesticides sprayed on plants can be transferred to workers’ skin and clothing. This is known as “dislodgeable foliar residue”. Because of the potential health risk, the Pest Management Regulatory Agency (PMRA) has regulations in place that restrict the level of residue that can remain on plants after spraying.



Dislodgeable foliar residue (DFR) study. a) Close up of leaf punch and sample jar for collecting leaf samples; b) punched chrysanthemum leaf in a DFR trial; c) DFR sample rinsate on a shaker being prepared for the freezer.

Because of a lack of data for greenhouse crops, the PMRA has relied on default values for conducting its risk assessments and setting acceptable residue levels. Default values assume that the likelihood of pesticide transfer from plants to workers is high.

The Minor Use Pesticides Program (MUPP) is working on two projects in order to provide PMRA more information on dislodgeable foliar residue in greenhouses.



One project, conducted in partnership with Flowers Canada on chrysanthemums, produced data on three active ingredients found in commonly used pesticides for greenhouse ornamentals. A second study was conducted on greenhouse tomatoes. Additional tests are planned going forward.

This data will be provided to PMRA to help them update and improve the default residue values for greenhouses grown plants and help ensure healthy workplace environments.

HANDS-ON TRAINING IN GOOD LABORATORY PRACTICE

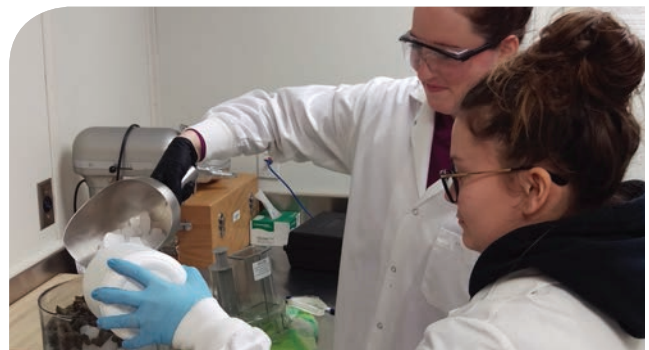
Pest Management Centre staff from across the country met in Ottawa for a two-and-a-half-day training session at the start of 2016. This is one of the ways that the PMC ensures that staff maintain skills to do the work prioritized by growers each year. The training focused on good laboratory practices when conducting pesticide residue studies. Staff were exposed to hands-on training at the Ottawa Research and Development Centre in Ontario where participants conducted a mock pesticide spray study on greenhouse lettuce. The exercise covered every stage of a residue trial, from receipt of the test product through to application of the pesticide and even harvest.



Research technician Robert Wismer demonstrating a water application to greenhouse lettuce plants during the Pest Management Centre's hands-on mock pesticide residue training session.

THE ART OF PRECISION LEADS TO STRONGER PMRA DATA PACKAGES

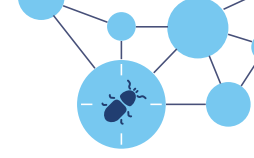
Minor Use Pesticides Program (MUPP) field work is only part of the package of scientific information sent to the Pest Management Regulatory Agency (PMRA) for registering a new pesticide use. The other portion comes from work that takes place in analytical chemistry labs across the country, including the Pest Management Centre's (PMC) analytical lab in Vineland, Ontario.



Haylee Blythe and Nicole Bullock, macerating a hemp presscake sample in the lab.

In 2016, PMC chemists and technicians analyzed 16 active ingredients in pesticides on 18 different crops including bulb vegetables, berry and small fruits, and grasses. These included industrial hemp and wasabi, two unusual crops which pose their own challenges.

Because of the way these two crops are used, several different parts of the plants and plant products ('matrices') needed to be analysed. In wasabi this included the leaves and roots. In hemp, the seed, meal, oil, hearts, and flour were all analysed.



New methods had to be developed to ensure that trace amounts of pesticide residues and their breakdown products could be quantified accurately in these different materials. Altogether, the PMC lab generated analytical data for 27 different crop matrices and 34 unique chemical residues.

This due diligence at the parts-per-billion level enables the MUPP to deliver high quality regulatory submissions to the PMRA, helping the Agency to safeguard public health.

ABOUT THE PEST MANAGEMENT CENTRE

In 2003 Agriculture and Agri-Food Canada (AAFC) established the Pest Management Centre (PMC) as a unique partnership of growers, grower associations, federal and provincial governments and the crop protection industry to deliver two national programs:

- Pesticide Risk Reduction Program (PRRP) — A joint initiative of AAFC and Health Canada's Pest Management Regulatory Agency (PMRA) that focuses on the development and delivery of risk reduction strategies for the Canadian agriculture and agri-food sector; and
- Minor Use Pesticides Program (MUPP) — A joint initiative of AAFC and PMRA that responds to the needs of Canadian growers for increased access to new minor uses of pesticides.

PMC's headquarters are located in Ottawa but research and trials are also conducted in field, greenhouse and growth chambers at research centres and minor use pesticides trial sites across the country. These sites are located in Kentville, Nova Scotia; Saint-Jean-sur-Richelieu, Quebec; Vineland, Ontario; Harrow, Ontario; Scott, Saskatchewan; Summerland, British Columbia and Agassiz, British Columbia.

Contact Information

For more information, please contact PMC via email at pmc.cla.info@agr.gc.ca or call 613-759-1725.

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