

**ONTARIO PEST MANAGEMENT
RESEARCH & SERVICES COMMITTEE**

2005 ANNUAL REPORT

TO

**ONTARIO AGRICULTURAL SERVICES
COORDINATING COMMITTEE**

February, 2006

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Executive Summary

The 3rd Annual Ontario Pest Management Conference was held November 10, 2005, in union with CropLife Canada, Ontario Branch. There were 15 oral presentations, including keynote addresses by Dr. Jonathan Newman of University of Guelph “Climate Change and Agricultural Insect Pests” and Mr. Marc Knight of Family Tradition Foods Inc. “Pest Management from a Processor’s Perspective”. There were two industry presentations on new pest control products, Pristine and Switch and nine poster presentations. The student award winners for 2005 were Jamshid Ashigh of the University of Guelph for the best poster and C.A. Bahlai of the University of Guelph for the best oral presentation.

The Ontario Pest Management Research & Services Committee (OPMRSC) met on December 8, 2005 at the Ontario Government Building, 1 Stone Rd. W., Guelph, Ontario to consider cross commodity pest management issues. Dr. Ken Campbell of the Pest Management Centre (PMC), Agriculture & Agri-Food Canada (AAFC) presented an update on the progress of the PMC relating to minor use research. Issues identified by the technical working groups were considered along with those forwarded from the Ontario Horticultural Crops Research and Services Committee, the Ontario Field Crops Research and Services Committee and the Ontario Weed Committee.

Several issues were identified and discussed, including the increased incidence of invasive alien species (insects, diseases and weeds) and their continued use as non-tariff trade barriers. The need for improved access to low risk, environmentally friendly crop protection materials, including biological and biorational materials, continue to affect the industry at all levels. The delivery of IPM services is still a concern, especially in areas of the province where there is no IPM consultant available. While AAFC and the Pest Management Regulatory Agency (PMRA) continue their activities related to the development of reduced risk strategies, these can only be implemented if there is an adequate IPM infrastructure in place. Concern was expressed over a perceived shift in pesticide application. That is, the new lower risk pesticides now being registered are being marketed with the concept of insurance instead of controlling the pest when it is present at economic levels. This approach could potentially lead to increased pesticide use. Human resource issues in the research and technology transfer communities continue to concern the committee. Finally, extreme disappointment was expressed by the Ontario Field Crop Protection Sub-Committee regarding the response to Recommendation # 2 from last year regarding Integrated Pest Management Research in the new OMAFRA – University of Guelph Research Program Structure.

Four recommendations were formulated from the reports and discussions.

- Lack of a strategy for delivery of IPM programs and reduced risk strategies for Ontario,
- Loss of current registrations for minor crops as a result of the additional cost of registration for changes in formulation to currently registered products,
- Occupational exposure data requirements for greenhouse related URMULEs and their lack of harmonization with the US requirements, and
- Request that PMRA approach municipalities that are making illegal recommendations of non-registered pest control products.

In response to concerns expressed in 2004, an ad hoc committee of the OPMRSC was struck to develop general guidelines for the technical working groups (TWG). This was completed and presented to the committee for comment/approval.

Mandate

The mandate of the OPMRSC is to review and consider pest management and crop protection issues that may affect several different commodities within Ontario plant agriculture. The committee then identifies issues and formulates recommendations to address deficiencies and needs within the system. A second activity is the co-ordination of the Ontario Pest Management Conference, where industry representatives and researchers can share information on pest management issues.

The committee also accepts the reports of the Ontario Horticultural Crops Research and Services Committee, the Field Crops Research and Services Committee (including tobacco) and the Technical Working Groups that review and update the OMAF crop production publications. These are:

- The Ontario Weed Committee
- Technical Working Groups which formerly reported to the Ontario Crop Protection Committee:
 - Field Crops
 - Fruit
 - Greenhouse Vegetables
 - Greenhouse Floriculture
 - Nursery, Ornamentals and Turf
 - Ginseng
 - Vegetables

Committee Activities

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The Ontario Pest Management Research & Services Committee (OPMRSC) met on December 8, 2005 at the Ontario Government Building, 1 Stone Rd. W., Guelph, Ontario to consider cross commodity pest management issues. Dr. Ken Campbell of the Pest Management Centre (PMC), Agriculture & Agri-Food Canada (AAFC) presented an update on the progress of the PMC relating to minor use research. Issues identified by the technical working groups were considered along with those forwarded from the Ontario Horticultural Crops Research and Services Committee, the Ontario Field Crops Research and Services Committee and the Ontario Weed Committee. The committee also reviewed the responses to last year’s recommendations which are highlighted in the next section.

Several issues were identified and discussed, including the increased incidence of invasive alien species (insects, diseases and weeds) and their continued use as non-tariff trade barriers. The need for improved access to low risk, environmentally friendly crop protection materials, including biological and biorational materials, continue to affect the industry at all levels. Concern was expressed from the greenhouse sector regarding the potential negative impacts of registration requirements of biocontrol agents. The delivery of IPM services is still a concern, especially in areas of the province where there is no IPM consultant available. While Agriculture and Agri-Food Canada (AAFC) and the Pest Management and Regulatory Agency (PMRA) continue their activities related to the development of reduced risk strategies, these can only be implemented if there is an adequate IPM infrastructure in place. Concern was expressed over a perceived shift in pesticide application. That is, the new lower risk pesticides now being registered are being marketed with the concept of insurance instead of controlling the pest when it is present at economic levels. This approach could potentially lead to increased pesticide use. Human resource issues in the research and technology transfer communities continue to concern the committee.

The Field Crop Protection Sub-Committee expressed disappointment with the response from the recommendation brought forward by the OPMRSC to OMAFRA and the U of G. The committee continues to be very concerned that the pest management portion of OASCC system is not being represented properly in the new program. The FCPSC believes that if something does not change in the structure, the future of pest management research in Ontario will be in jeopardy. Overhead fees and other differences in funding structure vary greatly from other universities and jurisdictions. Research contracts with industry are being lost to the US and other cheaper research sites. Technical positions can not be secured, causing researchers to focus on the physical field work rather than the research particulars.

In response, the FCPSC has created an ad hoc committee that will create a report documenting the discrepancies and structural problems in the new OMAFRA/U of G Research Program, comparing it to other existing university research programs. It will also include suggestions on how to improve the program structure so that it better represents Pest Management research. The FCPSC will also elicit CropLife Canada's support. This document will be presented to the OPMRSC, to be carried forward to OASCC. All other technical working groups were encouraged to participate on this ad hoc committee, giving examples of problems in the horticultural pest management research sector. Unified support from all of the Commodity Groups impacted would also ensure a more effective response from U of G and OMAFRA.

As a result of last year's discussion regarding the role of the technical working groups vis a vis the incorporation of products/changes to the recommendation sections of OMAFRA publications, an ad hoc committee was struck to develop general guidelines for use by all TWGs. The key point in the guidelines is that Ontario efficacy data will no longer be a condition of listing products in OMAFRA publications unless there is a counter indicator such as resistance.

Four recommendations were formulated from the reports and discussions.

- Lack of a strategy for delivery of IPM programs and reduced risk strategies for Ontario,
- Loss of current registrations for minor crops as a result of the additional cost of registration for changes in formulation to currently registered products,
- Occupational exposure data requirements for greenhouse related URMULEs and their lack of harmonization with the US requirements, and
- Request that PMRA approach municipalities that are making illegal recommendations of non-registered pest control products.

The committee reviewed its membership with the following additions/changes: Scott Macdonald to replace George Annette as the CropLife representative and Gilbert VanSteelandt to replace Quentin Martin as the AGCare representative. Other suggestions for possible representation include; Canadian Food Inspection Agency, Agriculture and Agri-Food Canada research stations across Ontario and the Ministry of the Environment. Offers will be made to the appropriate person in each organization.

RESPONSES TO 2004 RECOMMENDATIONS:

OPMRSC Recommendation #1.

Target Agencies:

Gary Whitfield, AAFC

Annette Anderson, Chair OHCRSC

Hugh Berges, Chair OPMRSC

Issue: Human Resources for Pest Management Research in Ontario.

Recommendation:

Given the range of crops under the purview of the OHCRSC and the OPMRSC that are concerned by the lack of expertise specific to the areas of nematology, population ecology, entomology and plant pathology. it is recommended that OHCRSC & OPMRSC coordinate and develop a business case to support the hiring of one of these positions by AAFC. This will be a test case to determine AAFC's response to their request that a business case be developed to justify needs.

Response:

Human Resources for Pest Management Research in Ontario: This is a long standing issue that is coming forward in the Ontario OASCC system where various commodity groups are asking that AAFC refill positions that become vacant. We are in the process of conducting regional and a national consultation exercise with the Ag sector regarding needs, future etc of AAFC research. As such a "business case" is now probably not needed as it is expected that new positions etc will depend on the results of this consultation exercise.

OPMRSC Recommendation # 2.

Targeted Agencies:

Maurice Bitran, IRMB, OMAF

Rob McLaughlin University of Guelph

Issue: Integrated Pest Management Research in the new OMAF–U of G Research Program Structure.

Recommendation:

That OMAF–U of G Research Program Administration conduct formal discussions of the future place of IPM research in the new Value Chain Series of research programs and that faculty members currently conducting research related to IPM be included in such discussions.

Response:

Thank you for conveying the nature of the discussions within OPMRSC and their recommendation regarding how pest management research may fit within the new 'integrated research teams' structure of the OMAFRA/UG Research Program. We have heard the same concerns as noted in your letter on several occasions where the new structure was being presented and explained to researchers and commodity groups at various fora over the past year since this change has been in the planning.

The issues raised by OPMRSC have been openly discussed on numerous occasions over the past year in both formal and informal settings. However, based on the rationale detailed above, we have not modified our emphasis on 'integrated teams' structure. As noted above the onus is on the researchers themselves to determine the best team structure for their particular research endeavors and we believe the program guidelines and strategic directions allow ample latitude to accommodate the researchers' needs. The call for Letters of Intent has already been issued (on July 8, the same day your letter is dated) and the program documents and templates are available at <http://www.uoguelph.ca/research/omafra/forms/index.shtml>. A couple of 'program information sessions' are being planned for early September to further inform interested faculty and regional campus researchers. We will be extending an invitation to representatives of commodity organizations and OASCC sub-committees to attend these sessions to learn more about the program directions and structure.

Although 'value-chains' has been a commonly used term in describing the new structure for research proposals, we have tried to emphasize the 'integrated, issued-based' nature of the teams. This latter lends itself more readily to understanding that the multi-disciplinary teams that can be formed cross-commodity, i.e., based on a 'cropping systems' approach rather than being built around a single commodity 'chain'. Indeed, from day one we have consistently indicated that researchers themselves need to determine whether a systems-based (cross-commodity team) or a commodity-based proposal is going to best serve their approach towards targeting the identified priorities/strategic directions.

Our experience is that researchers respond much more creatively when given the latitude to choose their own direction, rather than have it dictated by an administrative body. And it is clear that there is sufficient breadth within the identified strategic directions for the Sustainable Productions Systems research program as outlined by OMAFRA, and described in the call for letters of intent (LOI) recently issued by the University, to accommodate whichever approach researchers wish to choose.

As for researchers' concerns about having to be involved in more than one team, we would counter that most researchers are already involved in multiple teams and collaborations to solicit funding and support from a wide variety of sources, so we do not see this structure 'spreading them even thinner'. If anything, with the integrated issues-based teams, we would suggest that many researchers will have fewer 'individual projects' underway, since applicants to the OMAFRA/UG program are expected to identify funding (and in-kind) resources from all sources in support of the research proposed, and demonstrate how these resources complement and leverage each other. Thus, researchers are likely to have a larger, integrated research program, with hopefully, generally similar reporting and accountability requirements from many of the funding partners.

We trust that through this continuing dialogue researchers will more clearly understand how they can effectively manage their participation in the OMAFRA/UG Research Programs. Please do not hesitate to contact either of us if you wish to discuss this further, and please accept our apologies for the tardy response to

your letter.

OPMRSC Recommendation: #3

Issue: Gaps of delivery and implementation of IPM programs in Ontario.

Target Agency:

Bill Ingratta
Director, Crop Technology Branch
OMAFRA

Recommendation:

It is recommended that OMAF investigate, review and evaluate existing delivery models and move to adapt a model to address the gaps in IPM delivery in Ontario.

Response:

Through the Expert Committee on Integrated Pest Management (ECIPM) a quick review was done regarding the various delivery mechanisms across Canada. It is readily apparent that while there are various delivery mechanisms none are government funded or conducted. Programs are delivered through various private industry sectors or consultants.

At this point it may be prudent to wait until the Pest Management Centre of Agriculture & Agri-Food Canada holds its planned national workshop on barriers to IPM implementation. There may be some concrete initiatives which may come from this session and perhaps some funding as well.

OPMRSC Recommendation: #4

Issue: Lack of resolution regarding crop residue sub-zones.

Targeted Agency:

Richard Aucoin
Chief Registrar
PMRA

Recommendation:

The OPMRSC recommends that PMRA expedite the resolution of the crop residue sub-zone issue with limited and cost-effective field trials in 2005 with a commitment to decision by late 2006.

It is further recommended that PMRA continue to consider all available residue data from the sub-zones that is currently being generated under the national minor use program and that this be given equal consideration.

Furthermore it is recommended that PMRA give consideration to the most current ecozone maps which demonstrate that the Canadian sub-zones are equivalent to the primary zones to which they belong.

Response:

No response to date, however it has been reported that changes are being considered.

OPMRSC Recommendation #5.

Targeted Agency:

Richard Aucoin
Chief Registrar
PMRA

Issue: Fees for User Requested Minor Use Registration (URMUR).**Recommendation:**

It is recommended that the PMRA reconsider the proposal submitted by the minor use coordinators in 2004 which recommends that base fees for URMUR submissions be reduced by 50% and that the fees be charged after 3 years (following registration) based upon real sales of the registered pest control products.

Response:

No response to date, however it has been reported that changes are being considered.

ISSUES

Numbers of invasive alien species of insects, diseases and weeds continue to rise in Ontario. Introductions of these pests result in economic loss to growers in several ways: rarely, if ever, is there a control measure available to mitigate losses; if an emergency registration is possible, they are not usually IPM compatible, forcing the grower to change production practices over the short term; eradication practices result in crop loss often without compensation and presence of these pests may result in non-tariff trade barriers and consequently, loss of markets. Last year, the committee reported on Swede Midge, Pea Leafminer, Asian Long-horned Beetle, and Emerald Ash Borer. New pests (or potential introductions) include *Duponchelia fovealis*, *Ralstonia solanacearum*, Sudden Oak Death, Soybean Rust, giant hogweed, dog strangling vine and waterhemp. OMAFRA specialists, researchers and the Canadian Food Inspection Agency (CFIA) staff are working closely to develop strategies to eradicate these pests and mitigate losses.

While domestically grown cut flowers are not a major export into the U.S.A., there is an issue with the importation of cut flowers from South America and then exporting them as mixed flower bouquets into the U.S.A. The exporters are required to label the product with “country-of-origin” information. Many of the South American “countries-of-origin” have some serious quarantine pest problems of importance to the U.S.A., so that the detection of any pests result in unacceptable delays at the border or outright rejection of the shipment. The industry developed and implemented a cut flower certification program. This should expedite the inspection and clearance of these types of flower shipments.

The pesticide issue continues to plague the turf industry in Ontario. Municipalities are moving to ban pesticide use in one form or another. Municipal approaches are all different, which makes it difficult for lawn care operators and golf courses to know where they stand. The Urban Pest Management Council of CropLife Canada lost its appeal of the court’s decision to uphold the City of Toronto’s pesticide bylaw. This will open the door for other municipalities to implement their own bylaw. One specific concern about this is that municipalities are, by virtue of their listing specific control products identified on their websites, are recommending illegal uses to homeowners.

The continuing evolution of field diagnostics, extension services and delivery of Integrated Pest Management (IPM) programs in Ontario continues to be an issue for growers. Many commodities do not have pest management programs and there is continued demand for training of scouts, agri-business and consultants.

OMAF continues to play a pivotal role in the development of programs and training, however, increased capacity and expertise is needed as qualified consultants are leaving this field of work. It is more important now than ever to establish a co-ordinated approach throughout the agriculture practitioner continuum in Ontario.

Maintaining research teams and succession planning for research programs continues to be a concern. There is an important synergy that results from having a research team in a single location. As a significant proportion of the Ontario based pest management research community prepares for retirement, plans to maintain research programs and effective teams should be developed by research managers in consultation with the industry.

The issue of drift, either of 2,4-D like herbicides or of glyphosate was identified as a growing area of concern in the context of more intense glyphosate use and of urban-rural interface (e.g. lawn applications drifting into grapes) was addressed through a series of extension articles and presentations.

The need for improved accessibility of Ontario growers to crop protection materials, including IPM friendly

materials and biological and biorational products, was identified by virtually every commodity group. This includes access to products used by growers of similar crops in the United States.

While AAFC and the PMRA continue their activities related to the development of reduced risk strategies, it must be noted that these can only be implemented if there is an adequate IPM infrastructure in place. There appears to be a disconnect between the development and the implementation of these programs. The Committee feels there needs to be a greater clarification of the roles of AAFC, PMRA, researchers, provinces and the industry. In response to this issue, the Pest Management Centre, in conjunction with the Expert Committee on Integrated Pest Management, held a workshop this past fall which was intended to identify gaps in IPM adoption and develop an action plan to address these. More analysis needs to be done with the information presented at the workshop in order to move forward on this project.

Finally, the structure of the new OMAF-University of Guelph research program is of great concern to the Committee. The pest management research community has expressed serious concerns about how their traditional activities will fit into the new value chain approach being promoted for the of research programs. The Field Crop Protection Sub-Committee expressed disappointment with the response from the recommendation brought forward by the OPMRSC to OMAFRA and the U of G. The committee continues to be very concerned that the pest management portion of OASCC system is not being represented properly in the new program. The FCPSC believes that if something does not change in the structure, the future of pest management research in Ontario will be in jeopardy. Overhead fees and other differences in funding structure vary greatly from other universities and jurisdictions. Research contracts with industry are being lost to the US and other cheaper research sites. Technical positions can not be secured, causing researchers to focus on the physical field work rather than the research particulars.

In response, the FCPSC has created an ad hoc committee that will create a report documenting the discrepancies and structural problems in the new OMAFRA/U of G Research Program, comparing it to other existing university research programs. It will also include suggestions on how to improve the program structure so that it better represents Pest Management research. The FCPSC will also elicit CropLife Canada's support. This document will be presented to the OPMRSC, to be carried forward to OASCC. All other technical working groups were encouraged to participate on this ad hoc committee, giving examples of problems in the horticultural pest management research sector. Unified support from all of the Commodity Groups impacted would also ensure a more effective response from U of G and OMAFRA.

RECOMMENDATIONS ARISING FROM GAPS/BARRIERS, 2005

OPMRSC Recommendation #1.

Target Agencies:

Richard Aucoin, PMRA
Ken Campbell, PMC

Issue: Non-Harmonized requirements for occupational exposure studies for greenhouse pesticides

Recommendation:

The Committee strongly feel that the greenhouse industry (ornamentals and vegetables) needs support in addressing the deficiencies identified by PMRA in these products, and requests of PMC that they continue to accept that they have a role to play in generating DFR data required by PMRA for the registration of priority pesticides in the future. Additionally, the industry requests that the PMC take a lead role in negotiating with the PMRA the reasonableness of their demands for OE data and whether other scientific approaches could equally well satisfy their demands for DFR and other OE data.

Background:

Over the past 5-6 years, a number of products, submitted as URMULEs for greenhouse crop use, have been rejected for registration by PMRA, based on the need for occupational exposure (OE) data, specifically Dislodgeable Foliar Residues (DFRs). To our knowledge, these data are not now regularly required by regulatory agencies in the USA and Europe.

Since the year 2000, the following products submitted for registration in greenhouse ornamentals have been refused minor use label expansion registration for the same reason – the lack of DFR data:

- Ethrel (ethephon)
- Success (spinosad)
- Apollo (clofentezine)
- Heritage (azoxystrobin)
- Previcur N (propamacarb)
- Acrobat (dimethomorph)

The greenhouse industry received no formal notice of the imposition of, nor any explanation of the rationale for, these apparently new OE data requirements beginning in 2001/2. A summit meeting with PMRA representatives and other interested stakeholders in the fall of 2003 was unproductive in resolving the impasse. The PMRA suggested that pressure be put on registrants to supply the OE data.

In March, 2004 at the annual Minor Use Priority Setting Meeting in Ottawa, the PMC accepted the greenhouse ornamental industry's argument, that the generation of DFR data was not dissimilar to the generation of pesticide residue data required by food crops for product registration. Since the greenhouse ornamental industry does not place demands on PMC for the type of residue data required of food crops, it was argued that PMC should agree to generate DFR data for the ornamental industry where necessary. As a result of this negotiation, three industry priorities were put forward that required the generation of DFR data:

- Spinosad for the control of thrips in greenhouse ornamentals and vegetables.
- Ethephon to promote branching and cutting production in greenhouse ornamentals.
- Tanos for control of downy mildew in lettuce and bacterial canker in greenhouse tomatoes.

All of the above products were submitted to PMRA a number of years ago and decisions have been stalled because of the need for DFR and other studies. (As an interesting aside, spinosad has recently been registered

(Dec 2005) by PMRA, before the DFR studies being carried out by PMC, could be completed).

At the 2005 Minor Use Priority Setting Meeting, PMC requested of our industry that we not put forward any more priorities that needed DFR studies until the studies from the previous year were finalized. The floriculture industry complied with that request and its priorities in 2005 included the product dimethomorph (Acrobat, for control of downy mildew in greenhouse ornamentals). As a result of this priority, an URMULE for Acrobat was subsequently submitted to PMRA by PMC, however, in November 2005, notification was received that it too was rejected for registration and additional DFR studies requested.

OPMRSC Recommendation # 2.

Target Agency:

Richard Aucoin, PMRA

Trish MacQuarrie, Chair Healthy Lawns Working Group

Issue: Illegal municipal recommendations of home remedy products.

Recommendation:

The committee recommends that the PMRA show leadership on this issue and educate the municipalities on the requirements of the Pest Control Products Act and where necessary enforcement of the Pest Control Products Act as it does when the agricultural community contravenes the act.

Background:

Many municipalities, in an attempt to promote organic lawn care are supplying homeowners with information brochures as well as information on municipal web sites regarding organic pesticide alternatives. Many of these recommendations are illegal according to the Pest Control Products Act. Many of the pesticides are not registered at all and others are not registered for the uses recommended by the municipality. The committee would like to see some leadership from the Pest Management Regulatory Agency on this issue as well as some enforcement of the Pest Control Products Act where municipalities are contravening the Act.

OPMRSC Recommendation #3.

Targeted Agency:

William Ingratta,

Director, Crop Technology Branch

OMAFRA

Issue: Gaps of delivery and implementation of IPM programs in Ontario.

Recommendation:

It is recommended that OMAFRA investigate, review and evaluate existing delivery models and move to adapt a model to address the gaps in IPM delivery in Ontario.

Background:

Integrated Pest Management (IPM) programs have been developed for many high value crops. The new

reduced risk products require more intensive pest monitoring, more understanding of the pest complexes and an understanding of the activity of these products. IPM programs, which include resistance management strategies, help to prolong the effective life of pest control products. IPM is an integral part of risk management and essential for market access globally. With the loss of regional OMAF advisors, there has been a backslide in adoption and availability of IPM programs in some areas of the province. Other jurisdictions in Canada have developed innovative models to deliver IPM programs to growers.

OPMRSC Recommendation #4.

Targeted Agency:

Richard Aucoin
Chief Registrar
PMRA

Issue: Loss of pest control products resulting from business decisions regarding the additional costs of developing “bridging data” for new formulations.

Recommendation:

The committee recommends that the PMRA reduce the data requirements for bridging data required to add uses from an old to a new pesticide formulation. The additional costs force manufactures to drop some uses which are critical to minor crop areas.

Background:

Various pesticide products continue to be de-registered for use on outdoor ornamentals due to unfulfilled requirements for bridging data. Many of the newer formulation pesticide products that were previously registered on ornamentals do not make it to the new formulation label (e.g. Banner Maxx). The registrant is required to supply bridging data for the new product formulation that can be quite costly and time consuming to procure for the various species of outdoor ornamentals on the previous label. Quite often, bridging data requirements can be as much work as providing efficacy data for the original product registration. Unusual weather conditions can also delay efficacy data for years. The result is loss in major pesticide tools for outdoor ornamentals.

Minor Use Program - Update for Ontario Commodity subcommittees and OPMRSC

J. Chaput, OMAFRA Provincial Minor Use Coordinator

December, 2005

URMULE registrations to date 2005 – all crops

Pursuit at reduced PHI on processing peas
Agri-mek for pea leafminer on celery
Pursuit for weeds on adzuki beans
Dual Magnum for weeds on bell peppers
Glyfos + 2, 4-D for weeds on xmas trees
Headline for rust and gray leaf spot on all corn types
Pyramite for mites on cherries
Basagran for weeds on cranberry beans and black beans
Frontier, Reflex, Poast Ultra, Assure II, Dual Magnum for weeds on otebo beans
Endeavor for aphids on GH peppers and GH tomatoes and outdoor ornamentals
Oil + Lime Sulphur for Lecanium scale on highbush blueberries
Matador/Warrior for insects on crop group 6, Legumes
Headline for diseases on remainder of crop group 6, Legumes
Intercept for grubs on field and containerized nursery stock
Dual Magnum, Reflex, Frontier for tall waterhemp on soybeans
Distinct, Callisto + Primextra II Magnum, Callisto + Aatrex for tall waterhemp on field corn
Distinct + Ultim for field horsetail on field corn
Sanmite/Dyno-mite for mites on outdoor nursery stock
Floramite for spruce spider mite on xmas trees
Heritage for daylily rust on daylilies
Elevate for *Botrytis* on ginseng
Success for thrips on nectarines
Surround for leafhoppers on grapes
Surround for cucumber beetles on cucurbits
Surround for insects on tree nuts
Ripcord for MALB on grapes
Malathion for MALB on grapes
Quadris for Rhizoctonia on sugarbeets
Dipel for cherry fruitworm & cranberry fruitworm on highbush blueberries
Quadris for downy mildew on spinach
Venture for grasses on lowbush blueberries
Aliette for Anthracnose on turf
Decree for *Botrytis* on field tomato transplants in the greenhouse
Command on sweet potatoes
Roundup on RR sugarbeets
Nova for powdery mildew on strawberries
Apollo for two-spotted mites on deciduous nursery stock
Quadris for purple spot on asparagus
Bravo for purple spot and rust on asparagus

Emergency use registrations 2005 – all crops

Folicur (wheat) – Fusarium
 Senator (tobacco) – Rhizoctonia
 Tilt, Quadris, Folicur, Headline (soybeans) – soybean rust
 Floramite (GH cucumbers) – 2 spotted mites
 Evolve (potatoes) – seed piece late blight
 Chloropicrin (potatoes) - scab
 Command (cucumbers, processing pumpkins & squash) – weeds
 Admire (pumpkins and squash) – cucumber beetles
 Checkmite (honey bees) – Varroa mites
 Tristar (Brassica GH transplants) – swede midge
 Quadris (spinach) – downy mildew
 Nova (strawberries) – powdery mildew
 Agri-mek (day neutral strawberries) - mites
 Senator (mushrooms) – green mould
 DDVP (GH ornamentals) – *Duponchelia fovealis*
 Dipel (GH ornamentals) – *Duponchelia fovealis*
 Pounce (GH ornamentals) – *Duponchelia fovealis*

Active URMULE projects underway

Approximately 250 active minor use submissions currently in the system. Many have significant efficacy, tolerance and residue data requirements. A number have major crop metabolism, occupational exposure, storage stability or other onerous data requirements to fulfil.

Approximately 15 % of projects are joint with US IR-4 program
 Approximately 14 % are minor uses for field crops
 Approximately 40 % are minor uses for field vegetables
 Approximately 10 % are minor uses for greenhouse vegetables
 Approximately 26 % are minor uses for fruit crops
 Approximately 10 % are minor uses for ornamentals

Current & On-going Minor Use Issues:

- Crop residue subzones
- Non-harmonized data requirements
- URMUR fees
- Non-harmonized MRLs
- Occupational exposure data requirements on seed treatments and protected crops submissions
- AAFC – PMC communications with stakeholders

Re-evaluation Impacts:

- Notable PACRs issued in 2005: 2, 4-D, phosalone, oxyfluorfen, terbacil, metribuzin, gibberellic acid
- Notable REV's issued in 2005: diazinon
- Notable RRD's issued in 2005: No major pesticide RRD's
- OMAFRA officially responded to diazinon, oxyfluorfen, terbacil, metribuzin

- Impacts include complete loss of uses, reduction in uses & applications, changes in REIs, PHIs, mitigation measures such as buffer zones, protective clothing, posting requirement, dates of last sale and last use
- Not always harmonized with US EPA REDs and concerns about lack of alternatives, resistance and IPM programs typically not taken into consideration
- PMRA has instituted more regular conference call updates on re-evaluation program and is planning on an improved website outlining all re-evaluation programs

For summaries of minor use crop registrations, priorities and active projects visit:

<http://www.omafra.gov.on.ca/english/crops/minoruse/index.html>

- The role of the OASCC committees in collaboration with commodity organizations is to annually prioritize key minor use pests and potential solutions.
- These priorities are then added to the provincial minor use priority list for all commodities and then collated by AAFC-PMC into a national minor use priority list.
- Priorities are compared to other provinces and in some cases the US priorities at IR-4.
- All priorities are reviewed by registrants.
- Top priorities chosen for AAFC-PMC work at the national minor use priority-setting meeting held in March each year.
- Remaining priorities deferred or submitted by province, resources permitting.

FRUIT TECHNICAL WORKING GROUP

Activities of the Committee

The Fruit OCPC subcommittee met on November 7, 2005 in Simcoe.

Our agenda included the following:

- Review of submissions and changes to Publication #360, Fruit Crop Recommendations. This is a reprint year for this publication. Submissions and changes for pesticides to the calendars, charts and tables were reviewed and have been organized in chart form for this report.
- Discussion of emerging issues and recommendations in pest management. These are outlined in this report.
- Review of research priorities. These were not ranked and were passed to the appropriate OHCRSC subcommittee for their consideration
- Membership of the committee- this was updated and membership list is included in this report.

Pest Management Issues and Recommendations.

The Fruit Technical working group still feels that these issues are important and has submitted these recommendations again to OPMRSC.

Enhancement of Research and Development Capacity for Crop Protection in Fruit in Ontario

There is a continuing need for enhancement of crop protection research capacity and development to address important insect, mite, nematode, weed and disease problems in fruit crops in Ontario. For many fruit crops in Ontario (i.e. grapes), there is very little publicly funded crop protection research supporting the fruit industry in Ontario. Positions at facilities listed need to be filled promptly so that important pest management research can be conducted and delivered in a timely fashion. And it should be acknowledged that there are experienced and qualified privately funded professional research entities exist and are active in the Ontario industry.

This research capacity is also eroding in other jurisdictions with similar pest complexes and so reliance on this research is becoming less. In a study looking at the full time equivalents of tenured rack or government scientist committed to applied research in tree fruit IPM, the preliminary results shows that this commitment has been shrunk by half over the last 25 years in North Eastern USA.

Recommendations:

- We strongly urge AAFC to maintain the position of entomology toxicologist and that this position remains at Vineland. Many of the key resistance management issues and new pesticide risk reduction programs in fruit especially in tree fruit are central to the research needs of the Ontario industry and can not be adequately or safely be addressed in facilities outside of Ontario or fruit growing region.
- We strongly urge AAFC to fill the vacant population ecologist entomologist in Vineland. This position has been vacant since 1998 and after two rounds of searches and interviews, the position remains unfilled. Ontario has unique pest complexes, such Oriental fruit moth, and Asian Ladybird beetle that requires an Ontario based insect ecologist to address these unique and changing pest complexes and the new and sophisticated, reduced risk technology to manage these pests. Using grapes as an example, AAFC has no new field investigation projects or senior research scientists addressing the multicoloured Asian lady beetle, mite and leafhopper pest complexes.
- We strongly urge AAFC to fill vacant nematologist positions at the Vineland location as soon as possible. Lack of expertise is forcing commodities to seek nematology identification and research initiatives in the United States. With no expertise in nematology in Canada, makes the fruit industry and Canadian agriculture industry as a whole vulnerable to trade restrictions and without a "made in Canada" solution.
- We strongly urge that there be AAFC research capacity in plant pathology be expanded to address not only tree fruit plant pathology but grape mycology needs for Ontario in Vineland.

- We strongly urge that the two OMAF positions, Sprayer Application Technology Specialist and IPM Modeling specialist have been vacant for several years be filled. As old broad-spectrum products become phased out with new technology in reduced risk products and techniques, expertise in application and timing of this new technology is essential to produce quality fruit that will compete in the global marketplace. As well the urban/ rural interface dictates that pesticide drift be non-existent and overuse of pesticide due to poor calibration will have huge economic losses to growers using these very expensive and short residual reduced risk pesticides.
- We encourage research and extension personnel to continue to develop and refine viable and sustainable pest control strategies that are consistent with the objectives of IPM and risk reduction
- We urge further work to evaluate the “fit” of newer pesticide alternatives and reduced risk products
- We recommend additional research to demonstrate the “fit” of the older more traditional products including carbaryl, phosmet and fungicides such as iprodione and the EBDC’s
- We strongly recommend research to support minor use and harmonization of control products that are available to our U.S. counterparts
- We recommend that OMAF work with growers to raise the profile of IPM. Highlight the achievements of the IPM programs to the consumer and the message that Ontario fruit growers take very seriously the health and safety of the products they provide for consumers.

Target Agency:

- Gary Whitfield, AAFC
- Bill Ingratta, OMAFRA

Gaps of delivery and implementation of IPM programs in Ontario

Integrated Pest Management (IPM) programs have been developed for many high value crops, and new reduced risk products need more intensive pest monitoring, understanding of the pest complex and the activity of the product. IPM programs, which include resistance management strategies, help to prolong the effective life of pest control products. IPM is an integral part of agricultural risk management and essential for market access globally. With the loss of regional OMAF advisors, there has been a backslide in adoption and availability of IPM programs in some areas of the province. Other jurisdictions in Canada have developed innovative models to deliver IPM programs to growers.

- **We urge OMAF to investigate, review and evaluate these models and move to adapt a model to address the gaps in IPM delivery and adoption in Ontario.**

Target Agency:

- Bill Ingratta, OMAF- Crop Technology

Research Priorities

RESEARCH PROJECTS were reviewed from last year and following list was assembled. These suggestions to be passed onto the specific commodity research and services meeting.

Pest Management Research Projects Identified at the Fruit Technical Working Group: November 7, 2005 (Not Ranked)

Apple:

- Development of sustainable IPM practices and resistant management for internal lepidoptera pests that includes the following: OFM and CM resistance strategies and management
- Development of IPM for control of apple scab and other foliar & fruit diseases of apple
- Assessment of IFP programs for apple orchards
- Storage rots and physiological disorders of pome fruit: Efficacy of current and potential new controls and strategies
- Traditional Breeding & Genetic Transformation for Fire Blight resistance in commercially important apple and pear cultivars
- Use of antibiotic alternatives for Fire Blight management on pome fruit
- Efficacy testing, Pesticide Timing and Evaluation of Biological Controls for Managing European apple sawfly and Woolly apple aphid
- Field validation of developmental models for insect and disease for Ontario conditions
- Validation of mating disruption strategies for apple insect pests such as codling moth, dogwood borer & OFM
- Efficacy testing for reduced-risk products and their incorporation into IPM programs

Berries:

Development and implementation of IPM programs and resistance management strategies for berry crops to include:

- Control and management of anthracnose and angular leaf spot of strawberry
- Control and management of root weevil on strawberry and raspberry
- Management strategies for cane diseases
- Damage surveys economic threshold development and control for white grubs in berry crops
- Development of economic thresholds for cyclamen mites in strawberry
- Investigation of the life cycle of tarnished plant bug and damage on day-neutrals strawberry and raspberry and identification of insecticides for tarnished plant bug on day neutrals
- Development of new pesticide application technology
- Validation of economic thresholds and forecasting models for strawberry leaf diseases
- Alternatives to fumigants for nematode control
- Investigation of virus and virus- like diseases on blueberry

Grapes:

Development and implementation of an IPM program and pesticide resistance management strategies for grapes to include:

- Development of fungicide resistance management programs for powdery mildew, downy mildew and botrytis bunch rot of grapes
- Efficacy testing of new fungicides and alternative strategies for control of diseases of grapes
- Management and control of crown gall
- Development of mite and leafhopper management strategies and
- Survey of leafhopper species in grape
- Survey of grape phytoplasmic and virus diseases in Ontario and evaluation of methods to eliminate them in the nursery
- Evaluation of bird control techniques in grapes

- Management strategies of multi-coloured Asian ladybird beetle in grape
- Development of organic and reduced input systems for grapes
- Efficacy trials for alternative products for grape berry moth management
- Management strategies for yellow jackets
- Management strategies for grape phylloxera

Tender Fruit:

- Development and Implementation of an IPM Program and Pesticide Resistance Management Strategies for Pear
- Development of sustainable IPM practices and resistance management for internal lepidoptera for tender fruit
- Survey of Bacterial Canker in Sweet Cherries.
- Traditional breeding and Genetic Transformation to Increase Fire blight Resistance in Commercially Important Apple and Pear Cultivars
- The development of sustainable control strategies for Bacterial Spot of Stone Fruit Integrating Cultural and Chemical Control and Host Resistance
- Efficacy Testing of New Fungicides for the control of diseases of Stone Fruit to support registration
- The development of control strategies for Brown Rot of Stone Fruit Integrating Cultural and Chemical Control and Host Resistance
- Eradication of Plum Pox Virus in Ontario
- Evaluation of monitoring techniques and sustainable control strategies for Plum Curculio in Tender Fruit.

Tree Nuts:

Development and implementation of an IPM program and pesticide resistance management strategy for tree nuts to include:

- Management of Butternut Curculio, husk maggot and codling moth on Walnut
- Management of harvest weevil and potato leafhopper on Sweet Chestnut
- Management of Eastern Filbert Blight and bud mite on Hazelnuts
- Management of birds in Pecans and Hazelnuts

General:

- The development of techniques to survey, preserve, conserve and augment predatory mites in Ontario fruit IPM programs
- Identification and Development of Alternatives to Soil Fumigants
- Evaluation of Bird Repellants and controls in fruit crops
- Identification of new insecticides suitable for minor use registration for the control of fruit insects to compensate for the expected loss of insecticides
- Traditional breeding & Genetic Transformation to increase disease and insect resistance in fruit crops.
- Identification and management of vector borne viral and phytoplasmic diseases.
- Management strategies for vertebrate pests (deer, turkeys & bears)

GINSENG TECHNICAL WORKING GROUP REPORT

Crop Production Issues: Pest management issues in ginseng centre around root and foliar disease and broadleaf weed control. Phytophthora, which is a disease of importance in wet season has not been of significance in 2005. The most important emerging disease at this time is rusty root. Symptoms of rusty root have been associated with Cylindrocarpon, Fusarium and a newly designated ginseng pathogen, Rhexocercosporidium, as well as abiotic factors. It is essential that the causes of rusty root be thoroughly examined and understood for the industry to move forward. The impact of this symptom has ranged from complete root loss due to massive decay, to superficial rust that primarily affects quality and downgrades the root value.

EMERGING PEST MANAGEMENT ISSUES:

1. The need for more products for Phytophthora control to better manage resistance in Phytophthora populations. There are only two products currently available to growers, Aliette and Ridomil and resistance to mefenoxam (the active isomer of Ridomil) was confirmed in ginseng gardens in 2004. New chemistry is needed to manage resistance issues.
2. A rescue treatment for Alternaria control. The main products, chlorothalonil and mancozeb, currently available for Alternaria control are most effective at low to moderate fungal populations. When 'hot spots' occur in gardens, Alternaria can become overwhelming in a short period of time and gardens can defoliate in 7-10 days. Effective chemistry is needed to as a rescue treatment to deal with these hot spots.
3. Research on pesticide reduction, organic production and biocontrol is needed to move the industry towards risk reduction protocols. Disease control is currently managed primarily by fungicide applications.
4. Rusty root is the most important emerging disease issue in this crop. In a market climate where profit margins are narrow root quality must be addressed to optimize root value.
5. The lack of laboratory standards has become a trade barrier for this crop. There is a need for guidance on selection of laboratories and discussion of lab accreditation so growers can be confident in analytical procedures.

PEST MANAGEMENT RESEARCH PRIORITIES:

Diseases (in order of need for control products/strategies):

- 1) Phytophthora
- 2) Rusty root (Cylindrocarpon, Fusarium, Rhizoctonia, Rhexocercosporidium)
- 3) Alternaria
- 4) Pythium
- 5) Post harvest diseases (Rhizopus, red root, cooler rots, colour)

Weeds:

Broadleaf

1. Control of chickweed in gardens. Chickweed and other “early” weeds are increasing in ginseng gardens. More research is needed to identify useful broadleaf herbicides.

RECOMMENDATIONS:

The technical working group recommends that:

- 1) **That the University of Guelph maintain a focus on ginseng research.** *Directed to Don Taylor, OMAF and Al Wildeman, U of G*

Background: The U of G staff most involved with ginseng research are currently both retired and are adjunct professors. This has led to concern in the industry that the OGGA/U of G connection may be lost. The research provided by John Proctor in the past has assisted this industry in many ways. The industry is concerned that the current situation vis a vis ginseng research at U of G is not sustainable and that access to funding will prevent future research endeavours.

- 2) **That CFIA develop a set of SOP's for detection of pesticide residues that are made available to laboratories used by growers to provide quality assurance to buyers.** *Directed to CFIA, Rene Cardinal.*

Background: The lack of laboratory standards has become a trade barrier for this crop. There is a need for guidance on selection of laboratories and discussion of lab accreditation so growers can be confident in analytical procedures.

- 3) **That laboratory accreditation be clearly identified and understandable for growers.**

Background: There is a need for guidance on selection of laboratories and discussion of lab accreditation so growers can be confident in analytical procedures.

REPORTS SUBMITTED:

Research reports were submitted by R. Reeleder

The 2005 OMAF services report was submitted by J. Schooley.

U of G report on the Simcoe research garden for Phytophthora control prepared by A. Stechyshyn

GREENHOUSE FLORICULTURE TECHNICAL WORKING GROUP

GREENHOUSE FLORICULTURE TECHNICAL WORKING GROUP

- REPORT TO OPMRSC- 8th December 2005

Issues

1. Border Issues

This remains as the most important pest management consideration for the industry

- Export crops crossing the border continue to face uncertainties in delays and crossing times. The industry developed cut flower certification program has been put into place (Dec 05). This should expedite the inspection and clearance of shipments of cut flowers that originate in Canada, the US, or from other countries but which have come through the US and been inspected by USDA.
- Pests and diseases are a major part of the ongoing border concerns. New pests threaten export markets in the US, and pests and diseases in the US present a threat to the local industry here.
 - The moth *Duponchelia fovealis* was found in 3 Ontario flower greenhouses in the spring of 2005. It appears that the insect arrived in plant material from Europe. The US has declared this a pest of quarantine significance and CFIA in conjunction with OMAFRA and the industry developed a treatment protocol to eradicate the insect while allowing the affected growers to continue shipping. Three Emergency Use applications were successful with a possible fourth in the near future. One greenhouse has been declared free of the pest, but the other two have not yet been successful. This pest has the potential to become a pest of other crops although it does not overwinter in Canada.
 - The whitefly *Bemisia tabaci* has been present in poinsettia for many years. There are a number of biotypes of this species and one, the Q biotype which originated in the Mediterranean, was found for the first time in the US in Dec 2004 in Arizona. Since then it has spread to a number of other states. This biotype is characterized by its resistance to many commonly used pesticides (including newer families), its wider host range and its ability to vector plant viruses. It is distinguishable from other biotypes only by molecular means.
 - Chrysanthemum white rust was reported in an Ontario greenhouse in the spring of 2005 and there have been two outbreaks in BC in the fall of 05. This is a quarantine disease that results in immediate crop destruction and a heavy financial loss for the affected grower.

- Sudden Oak Death – has affected imports of roses and bulbs and is likely to have a huge impact on retail garden centres selling host plant material.
- Leek moth was not seen as a major issue for the industry, but the discussions around a national leek moth certification program have raised concerns about ornamental allium production, primarily in BC.
- Swede Midge – although regulated areas in Ontario continue to expand, there doesn't seem to have been any major disruption to ornamental production although some growers are contracting the growing of affected crops to growers outside the regulated areas.

RECOMMENDATION #1.

Issue: There is an immediate need for pathology expertise at University of Guelph in greenhouse ornamentals

Background: The greenhouse ornamental industry is the largest horticultural sector by farm gate sales in Ontario and Canada with 2004 sales of \$734 million and around \$1.5 billion respectively. As an industry of great economic importance provincially and nationally, it is important that governments and universities support it with appropriate research. From a pathology point of view in particular, there is an immediate concern. A major priority for the industry in recent years has been the responsible use of irrigation water through the use of recycling technologies. Recycling nutrient solutions greatly increases the spread of root diseases.

Details: AAFC has supported greenhouse ornamental research for many years, in particular through its research in diseases in sub-irrigation systems between 1998 and 2003. However, in 2003 with the departure of the pathologist working in ornamentals research ended this program. The University of Guelph has always supported the industry with pathology research in recirculating systems; however, the recent retirement of Dr. John Sutton, an expert in this field has left the industry with no resident pathologist.

Disease management issues can become a barrier to even wider adoption of recirculating technology. The environmental benefits of these systems have in many instances been offset by production losses as a result of serious infections by pathogens such as *Pythium*, *Fusarium*, *Erwinia* and *Rhizoctonia*. If the industry is to fulfil its environmental obligations under new nutrient management legislation, it is important that associated disease issues be resolved.

Recommendation: It is recommended that the U. of Guelph identifies and commit to continuing with its research support in greenhouse pathology, and the industry consider

partially funding a replacement for Dr. Sutton.

Target Agency: Flowers Canada, U. of Guelph.

RECOMMENDATION #2

Issue: Registration of new pesticides for the industry through the minor use registration program

Background: In recent years, the greenhouse industry has increasingly relied on the Minor Use Registration process for access to new active ingredients. The initiative of the industry itself in hiring a Pesticide Registration Coordinator in the late 1990s, and the establishment of the Pest Management Centre at the federal level were major milestones in moving new products forward.

However, a major concern in recent years has been the reluctance of PMRA to accept registration of new products for greenhouse use, because of perceived deficiencies in occupational exposure data, specifically their request for dislodgeable foliar residue data. Since about 2000, submissions for 6-7 products have been rejected based on the need for this type of data. Most recently, a product selected as an A priority at the annual PMC meeting in Ottawa in 2005, was rejected for this reason.

Registrants have indicated that they are not interested in generating the data, because the projected sales would not make the cost worthwhile.

Details:

With the federal government's increased investment into the Minor Use Registration Program, and the success of the priority setting exercises in Ottawa, there are promising signs of progress. The decision by PMC at the 2004 meeting to accept the argument of the floriculture industry, and agree to carry out occupational exposure data generation for two priority products, was much appreciated. At the 2005 priority setting meeting, the industry was advised that priorities would no longer be accepted for products requiring occupational exposure data, until the data generation costs for the previous year's priorities were determined.

Recent information suggests that PMC will no longer support this type of work because of the high costs.

Recommendation

It is recommended that:

- PMRA reconsider its position on occupational exposure data requirements for greenhouse pesticide registrations to bring it into line with requirements in the USA and other OECD countries
- PMC continues to generate dislodgeable foliar residue data for the greenhouse

industry for priority products where this data is required by PMRA

Target Agency: PMRA; AAFC

OASCC Linkages: Ontario Pest Management Research and Services Committee

VEGETABLE TECHNICAL WORKING GROUP

The Vegetable Technical Working Group met on Tuesday November 1, 2005 at the Woodstock Resource Centre in Woodstock, Ontario.

Current & On-going Minor Use Issues:

- Crop residue subzones – preliminary response from the PMRA (K. Dodds) is that this issue is ‘partially resolved’; however, there has been no official word. There will be a NAFTA meeting in December where a final decision will be provided.
- URMUR fees – this remains a big issue. Fees are far greater than the value of some crops. Also, Canadian fees are also substantially greater than the U.S. There is a far higher cost of registration. Fee reductions do not apply to URMURs. Also, fees are based on a fee schedule, charged upfront and not based on retail sales. All fees are currently under review and will likely go up once the review is complete.
- Non-harmonized data requirements – the PMRA requires environmental, metabolism, and occupational exposure data which are not required anywhere else in the world. This is resulting in the loss of registrations.
- Non-harmonized MRLS - Maximum residue limits (MRLs) remain a huge issue. There is currently a lot of work at the NAFTA level to bring current requirements in line but this is still a concern with respect to trade barriers. Also, the revocation of the 0.1 value is a concern.
- Re-evaluation impacts – Margaret Appleby is currently handling this file. Expect a number of decisions in the next year. Mitigation measures are a key issue (e.g. buffer zones, timing of application). While the product will still be available many of the mitigation measures are precluding some growers from using the product.

Comments from the floor:

It is important that during a re-evaluation period all stakeholders respond with comments to the PMRA. A consistent message from OMAFRA, commodity/industry groups and registrants is needed. Comments can and do help to change proposed use patterns.

- AAFC – PMC communications with stakeholders. Growers from a number of provinces are concerned with the lack of communication as to what is being done by AAFC – PMC. It is important to note that on average it takes anywhere from 30 to 40 months to get a minor use through the system and we are currently 24 months into the program. This mirrors the timeline of U.S. IR-4 system. To date, 5 of 18 submissions have been registered. A new technical working group has been formed including provincial government, PMRA and representatives which meet regularly, and report to the scientific advisory committee. The efficacy trials are holding up

submissions. It is difficult to get the pests at the appropriate time to do the trials. The PMC will ask PMRA for flexibility on the requirement for efficacy data if the company will support the submission.

Question from floor:

Where are crop groups sitting?

J. Chaput – there have been some positive changes. Residues for representative group crops are being accepted. Pierre Beauchamp of the PMRA has mentioned that there will be relaxed efficacy requirements for minor use registrations pending an agreement with Crop Life.

For summaries of minor use crop registrations, priorities and active projects visit:

<http://www.gov.on.ca/omaf/english/crops/minoruse/index.html>

New chair – J. Allen

New vice-chair – S. McDonald

2004 minutes circulated.

Submissions and Changes for Publication 363 for 2004-2005 Supplement

Research and Service Recommendations – 2005

Recommendation 1

Target Agencies: OMAFRA, PMRA

Issue: Obstacles to the implementation of IPM programs in Ontario

Recommendation:

Integrated Pest Management (IPM) programs have been developed for many high value crops; however, with the loss of older chemistries and the addition of new reduced risk products, a thorough understanding of the pest complex, the seasonal dynamics of the pest through intensive scouting and the product's activity, is required to ensure these products are used effectively. As the pesticide industry moves away from broad spectrum pesticides with wide windows of application and nearly 100% control to more pest specific chemistries that do not provide the same level or speed of control, other IPM strategies must be used in combination in order to protect yield and quality.

Unfortunately IPM programs have not been fully adopted or available to growers and

processors due to lack of available resources including trained consultants and registered products, lack of the economic viability of privately delivered IPM services and the fact that services are not economically feasible for growers.

We live in a global village. We deal in an international market but do not have international registrations. Limited harmonization with the United States, the lack of registration of new products, the continuing requirement of data during the registration process that are not required by any other OECD country continue to limit the implementation of IPM programs in Ontario. There should be commitments from: 1) OMAFRA to effectively address the barriers to IPM implementation and delivery; and, 2) to increase the profile of IPM for consumers through education and IPM branding. Additionally, there should be a commitment from the PMRA to streamline/harmonize the registration process for products currently registered in the United States.

Background:

Many of the crop protection products currently used by horticultural producers have a wide window of application, are broad spectrum, and provide nearly 100% control within hours of application. New, reduced risk crop protection products require tighter application timings, are generally more species-specific, and do not provide immediate kill. In order for products with these characteristics to be used effectively, users require a higher level of knowledge of the exact pest species attacking the crop, the biology of the pest, and how the product will affect the pest (speed of control, % control) in conjunction with intensive scouting.

With the adoption of these reduced risk products, there is a need for IPM systems research to ensure these products are successfully used and integrated into IPM programs.

Recommendation 2

Target Agencies: Dr. Alan Tomlin, AAFC Pest Management Centre (PMC)

Issue: Lack of communication on minor use issues

Recommendation:

Growers are angry about the lack of communication/information from the PMC. Additionally, they are concerned about the limited number of minor use registrations to-date. It is the feeling of this committee that a line of communication must be opened between the PMC and stakeholders.

OMAFRA should act as the catalyst in bringing PMC, the PMRA, growers, industry, the Canadian Horticulture Council and Crop Life Canada to the table so that these concerns can

be addressed.

Recommendation 3

Target Agencies: OMAFRA

Issue: Need for research into the development of new thresholds and models to aid in the adoption of newer pesticide products.

Recommendation:

As mentioned in Recommendation 1, reduced risk products target a narrow spectrum of pest species, require detailed pest monitoring information and, may require application during a specific stage of development. Currently, recommended thresholds are based on older chemistries. Newer products may require different thresholds or different spray parameters to achieve similar levels of control. Therefore, research is required to develop and validate action thresholds for these products under Ontario conditions. Models are becoming a more integral component of IPM programs worldwide. While many models are available in the scientific literature, few have been validated under Ontario conditions. Research is required to develop and validate models for Ontario growers. In addition to research into thresholds and models appropriate for newer products and today's pest populations, a better understanding of sprayer technology is needed. Not only is timing critical but method of delivery and the use of newer technologies can help make the transition to reduced risk products easier for producers.

Recommendation 4

Target Agencies: OMAFRA

Issue: Need for more on-farm demonstrations of minor use products prior to product registration.

On-farm demonstrations will allow OMAFRA specialists and leads to learn how newer products can fit into existing IPM programs which benefits both producers and industry. On-farm trials, conducted under different management practices and in different growing regions, will provide hands-on experience with these products, and allows industry to provide information on how best to use their products. In the end, this will allow OMAFRA staff to make recommendations that maximize efficacy for growers, which is especially critical in today's market.

Communication between industry and OMAFRA staff on newer products is essential for this to work. The creation of sessions/meetings where interested staff can meet with industry representatives to discuss these products should be further explored.

GREENHOUSE VEGETABLES TECHNICAL WORKING GROUP

Pest Management Update for 2005

In general, there were no unusual incidences of pests or diseases. Many IPM programs using biological control as the major strategy were again generally successful. However, fluctuation in climatic conditions and surges in populations due to external pest pressure did challenge many pest management programs. There was also a generally high incidence of bacterial infections during the early part of the year likely due to the moist conditions that prevailed at that time of year.

Tomatoes

The major pest problems were mites (both spider and russet), cabbage loopers, and whiteflies. Whiteflies became a problem mainly when harvesting of field tomatoes began in late summer. Tomato pinworm was also observed in a few operations. Moist humid conditions favoured development of *Erwinia* early in the season. There was a relatively low incidence of bacterial canker but substantial losses were suffered in a few operations. Pepino mosaic virus was present in several operations but symptoms were generally mild. Later in the year, vegetative growth combined with reduced heating caused high incidence of botrytis in some crops.

Cucumbers

Consistent with 2004, the two-spotted spider mite and powdery mildew were the most significant pest problems. Other disease problems included *Pythium* root rot during the hot, summer months and CMV during the fall. Although there was incidence of *Fusarium* stem and root rot, the severity of such occurrences was reduced, likely due to better management techniques. Cabbage loopers were prevalent during the summer months and broad mites were observed during the latter part of the year. The area that used biological control was reduced somewhat due to a combination of cost and inconsistent results in previous years in some operations.

Pepper

Biological control programs were generally successful but several operations incurred higher costs due to higher pest incidence. Major pest problems included spider mites, aphids and cabbage loopers. Thrips were also a problem early in the year in some operations that appeared to have carryover populations. *Lygus* bug incidence was observed as early as February in some operations. Unusual pest incidence included mealy bugs and the red-banded leaf-roller. European corn borer damage was present in most operations but was not as severe as in previous years. There was a relatively high incidence of *Erwinia* stem rot in early spring, but for the remainder of the year, *Fusarium*, *Pythium*, and powdery mildew were the major disease problems.

Major Activities

Results from National Priority-Setting Meeting, Ottawa, March, 2005:

Entomology

Category A for Cabbage looper on Cucumber: Solution = E2Y45 from Dupont

Pathology

Category A for Bacterial Canker on Tomato: Solution = Tanos (famoxadone + cymoxanil) from Dupont

Category A for Downy mildew on Lettuce: Solution = Tanos (famoxadone + cymoxanil) from Dupont

Category B for Fusarium on Pepper: Solution = Medallion (fludioxinil) from Syngenta (need to work with IR-4 to bridge data from foliar use to root application)

Major Concerns

- A. The greater number of products that are registered and available to greenhouse vegetable producers in other jurisdictions is a major concern because this situation places Canadian producers at a distinct disadvantage. Moreover, lack of harmonized registrations and tolerances can contribute to trade barriers. There is need by PMRA to provide incentives that would encourage companies to bring new active ingredients to Canada.
- B. The potential of more new invasive pests and diseases to establish in greenhouse vegetable crops is much cause for concern. Often there is a lack of management strategies for new pests, and moreover, they can have a negative impact on trade. Within recent years, there have been several incidences of new invasive pests (tomato pinworm (*Keiferia lycopersicella*), potato psyllids (*Paratrioza cockerelli*), tomato bug (*Engytatus modestus*) and diseases (Tomato powdery mildew (*Oidium neolycopersici*), Fusarium crown and stem rot in cucumber (*Fusarium oxysporum* f.sp. *radicus-cucumerinum*), Pepper powdery mildew (*Leveillula taurica*), Pepino Mosaic Virus in the greenhouse vegetable industry. It is believed that increased movement of personnel and produce across borders without adequate monitoring has contributed to this recent surge in invasive pest species.
- C. There is concern that retirement of plant pathology personnel at the Greenhouse and Processing Crops Research Centre, Harrow, would compromise the research needed in the area of disease management for greenhouse vegetables. Intensive year-round production in greenhouse vegetables and high production costs are rendering producers more vulnerable to any losses. Growers require research support in all

areas of crop production, including disease management, particularly because they are constantly threatened with pathogenic organisms already existing in other greenhouse vegetable-producing areas.

- D. Research on development of new biological control agents and low-risk products is needed for both insect and mite pests, and diseases, to assist growers in strengthening their existing IPM programs.

Revisions to Publication 371

No revisions were proposed because all recent changes were already incorporated in the most recently revised version of the entire publication that was completed and printed in spring, 2005.

Ornamentals, Trees, Turf and Home Gardens Technical Working Group

1. Nursery/Landscape

1. a) Research and Service Accomplishments 2005

Successful URMULE's and Pesticide Registrations

- Intercept for grubs on field and container nursery stock
- glyphos + 2,4 D on Xmas trees
- Dyno-mite on mites on outdoor nursery stock
- Heritage for daylily rust
- Endeavor for aphids on outdoor ornamentals
- Floramite for spruce spider mites on Christmas trees
- Apollo on two spotted mites on outdoor, deciduous nursery stock
- Entrust (organic form of Success) on outdoor ornamentals for various insects
- OMAFRA specialists actively participate on science committees and taskforces related to Invasive Alien Species, often communicating impacts of draft regulations to government and technology transfer (e.g. biology, detection) to industry stakeholders.
- OMAFRA specialists have given numerous presentations to industry stakeholders on SOD biology and BMP's for nursery production.
- Industry awarded CORD funding will be used to support research regarding the disinfection of recycled water for water born pathogens (e.g. *Phytophthora* and *Pythium*) and also Tar spot of maple research (epidemiology and management) at the University of Guelph.

1.b) State of the Industry:

Industry statistics point to continued growth in the nursery and landscape sectors. The continued decline of the U.S. dollar relative to the Canadian dollar and border issues were reflected in a continued strain on the export market for ornamental nursery stock. Land use for nursery stock production increased slightly in the year 2004, farm gate sales were also up by 7%. Increased fuel prices have snowballed into increased costs for most nursery supplies (e.g. plastic pots, greenhouse plastics).

1.c) Invasive Alien Species

Quarantined pests have had an enormous impact on nursery production in the last few years. Emerald ash borer (EAB) continues to plague ash trees in Essex, Chatham-Kent, Lambton and now Elgin county. It is estimated that over 15 million trees have been killed by EAB so far in Michigan and Ontario (ash trees make up 25-80% of woodlots). Because of EAB, many Ontario nurseries are unable to sell inventories of ash since they have been removed from planting lists in many municipalities. Before EAB was found in 2002, ash trees comprised 10-30% of the total sales of Ontario shade trees. Since 2003, growers have been

destroying young ash nursery stock while holding the higher value ash caliper trees in hopes that the market will turn around. If the market for ash continues to decline, Ontario growers may have to destroy several thousand ash caliper trees in 2006.

Since Asian Long Horned Beetle (ALHB) was found infesting trees within the City of Toronto and Vaughn, new detections have been small and close to the original zone, which seems to indicate that the eradication program has been effective. No nursery production within quarantine zones (just garden centres). ALHB presents a huge threat to the urban forest and nursery industry since a) so many of the host tree genera (e.g. maple) are found in the landscape and sold in the nursery industry and b) the centre of infestation is not very far away from large caliper tree nurseries. The action of quarantine at a nursery (e.g. moratorium on shipping for ALHB host trees) could easily put a caliper tree nursery out of business within a period of a few months. The host species for EAB and ALHB make up the top 10 to 15 species of trees grown in Ontario nurseries.

Positive detections of *Phytophthora ramorum* (Sudden Oak Death, SOD) in west coast nurseries (CA, OR, WA, B.C.) have contributed to the probability of Ontario growers importing this disease via nursery trade. The unpredictable behaviour of this pathogen and the every-increasing host list make it a real threat to Eastern forests and horticulture. U of G Pest Diagnostic Clinic is on standby should *P. ramorum* testing become a needed service for Ontario. To help prevent further spread of this disease, systems-based, voluntary certification programs are being developed by the B.C. nursery industry and CFIA. Disputes over the new Japanese Beetle infestation zones continue, as growers in previously uninfested zones are required to be certified and Ontario-Quebec growers could face restricted access to maritime markets.

Borers and scale insects present some of the greatest challenges to pest management in the nursery and landscape. Spider mites continue to reduce quality of nursery stock, especially spruce spider mite on many evergreen species. Thankfully, there many new minor use registrations). White grubs continue to cause economic losses in field grown nursery stock, especially on sandy soils. Intercept has received a registration, but growers complaining that it is very expensive for field production. OMAFRA Nursery Crops Specialist is helping to coordinate efficacy crop tolerance trials for label expansion (e.g. advise registrant and private consultants). OMAFRA is also investigating use of biological control for spruce spider mite in field grown conifers.

Anthrachnose (e.g. anthracnose on Euonymous, maple, ash) and other leaf diseases continue to cause significant injury to nursery ornamentals. OMAFRA specialists

working to screen new fungicides for euonymus anthracnose and clematis wilt (Ascochyta) this winter and spring.

2. Turf

2.a) Research and Service Accomplishments 2005

- URMULE for cyhalothrin lambda submitted for hairy chinch bugs and ants
- Registration of fosetyl-al for anthracnose basal rot sponsored by AAFC
- Biological control of snow moulds – In final stages of formulation and registration of this product - Hsiang
- Biological control of snow moulds with antagonists and plant by-products- Hsiang
- Evaluation of corn processing products on survival of European crane fly larvae- Lyons
- Evaluation of nematodes on survival of European crane fly larvae- Charbonneau
- Evaluation of efficacy of different formulations of post-emergent broadleaf weed herbicides- Lyons
- Evaluation of two sources of beet juice extract on post-emergent broadleaf weed control- Charbonneau
- Overseeding and IPM techniques in sports fields – Elford (M.Sc. student/ Lyons)
- Evaluation of edaphic factors leading to moss invasion on golf course putting greens- McGowan (M.Sc. student, Lyons)

2.b) State of the Industry:

The amount of land devoted to the production of sod dropped only slightly in 2004 and prices stayed static. There is continued growth in the golf course construction sector. These are mainly high end golf courses in Muskoka, Georgian Bay and Niagara Falls areas. The new Health Promotion Ministry could increase interest in outdoor sports which could lead to a demand for more sports fields.

Pesticide use on turf continued to be an issue in Ontario in 2005, with more pesticide by-laws adopted. To date in Ontario there are eight municipalities with some restrictions of pesticide use on home lawns. These are Cobalt, Perth, North Bay, Parry Sound, Thorold, Caledon, Waterloo Region and Toronto. As of Sept. 2005, lawn care operators in the city were issued fines for applying pesticides (\$255.00). Enforcement for homeowner applied pesticides will not begin until September 1, 2007. The City of Toronto adopted the OMAFRA thresholds for insect infestations on home lawns. The Ontario Allied Golf Associations have been working closely with the City of Toronto to come up with a system that works for golf courses. The Region of Waterloo is the most recent municipality to vote to ban pesticides. They have banned applications during the months of July and August unless there is an infestation. Insect infestations can be treated only if verified by a lawn care professional. In addition, in November of this year, CropLife was refused their request for leave to appeal the City of Toronto's

Pesticide by-law.

The IPM/PHC Council of Canada voluntary turf IPM accreditation program has been in place for four years for lawn care and three years for golf courses. Approximately 200 lawn care companies and 160 golf courses are enrolled in the program. Many of the municipal bans are directed at the entire landscape and not just home lawns. IPM accreditation for landscape and nurseries will be much more challenging due to the huge range of crop species grown and their related array of pests. Because of this diversity, much needed action thresholds do not exist for outdoor ornamentals.

3. Emerging Issues

3.a) Invasive Alien Species

EAB, SOD and ALHB have huge implications for the nursery and landscape sectors. The agencies devoted to the management of quarantinable pests do not seem to have adequate resources to deal with the high volume of issues. In addition, there are still major research gaps regarding the pest biology in its new environment (e.g. emerald ash borer, Asian long horned beetle), mechanisms for dispersal, host range, detection and management strategies. Although these two pests are urban forestry issues to date, they have already had a huge impact on the nursery industry (e.g. significant decrease in ash sales). Quarantines (e.g. moratorium on shipping) against shipment of ALHB host species could put caliper tree nurseries out of business within one growing season. CNLA has been working with CFIA and APHIS to develop national nursery certification programs that will deal with invasive alien pests preventatively with a systems-based approach that is based on sanitation. Certification should reduce the amount of time growers are prohibited from shipping, and also increase the efficiency of eradication. The Ontario nursery industry is very concerned about the movement of SOD (Sudden Oak Death, *Phytophthora ramorum*) into Eastern Canada. Growers are very keen to support research projects that will help eradicate or slow the spread of this waterborne pathogen. Industry-awarded CORD funding will be used to support research into disinfection of recycled irrigation water (nursery, greenhouse) at the University of Guelph. The impact of exotic/introduced pests on outdoor ornamentals is often difficult to quantify due to lack of industry statistics. There is a need to develop more data regarding plant groups (e.g. deciduous trees, value, acreage and pests).

3.b) Turf Pests

During the summer of 2005 a new disease was confirmed in Ontario. The disease is bentgrass dead spot (*Ophiosphaerella agrostis*). Other diseases of note for 2005 included summer patch and take-all patch. There is no fungicides currently registered for use in Ontario against take-all patch. Take-all patch is on the myclobutanil, azoxystrobin and propiconazole labels in the US and an URMULE should be pursued.

European crane fly populations continue to spread in southwestern Ontario. In addition to being a turf pest problem, in Europe, the larvae of European crane flies feed on spring and winter wheat, pastures as well as various vegetables in the brassica family. There is a potential for this new pest to become an important agricultural pest. Currently, there are two products registered for control of leatherjackets. Chlorpyrifos is registered for use on golf courses and sod farms and carbaryl is registered for use on golf courses only. Turf URMULE wish list lists this as the number priority. Suggested solutions are imidacloprid or cyhalothrin lambda.

Moss on golf greens is another growing problem without a solution. Coordinated efficacy trials are being conducted in B.C. and Ontario to generate data for an URMULE application for Kocide 2000.

3.c) University of Guelph/OMAFRA Research

University of Guelph researchers are very concerned about the future of their programs. The University of Guelph announced overhead costs of 25-35% on all research funds (which puts them at a competitive disadvantage to other organizations). The subcommittee was very concerned over the pending retirement of two nursery professors and the redundancy of two technical support staff in nursery and ornamental pathology. There is no indication that the faculty positions will be filled upon retirement. (It should be noted that aside from these two positions, there are no other university-level research programs for nursery crops in Canada).

3.d) Other Business

The sub committee decided to amalgamate “Christmas Trees” into the “Outdoor Ornamentals” crop grouping for future Minor Use Label Expansions. Aside from harvesting technique, there is virtually no differences between the production of field grown conifers sold as Christmas trees compared to those grown for planting and therefore should not necessitate separate efficacy and crop tolerance trials.

4. Gaps/Barriers/Deficiencies for Turf, Nursery and Landscape

4.a) Loss of Old Formulation Pesticides

Many of the older formulation pesticides are the backbone of chemical pest management for nursery and turf producers/maintenance professionals. PMRA’s re-evaluation and manufacturers voluntary removal of actives are leaving the industry with gaps in pest management (e.g. there are no products currently registered for pine shoot beetle). Old formulations are being replaced by new ones and often, outdoor ornamental uses have been lost due to lack of “bridging data”. Companies who produce biopesticides often complain that they are too small to meet the requirements to register their product in Canada. The turf industry is concerned about the over-reliance on Sevin T&O as one of the only

curative insecticide available. Increasing requirements for occupational health and exposure data by PMRA are also bogging down label expansion requests. Chemical registrants have reported lack of industry data on ornamentals with which to make business decisions regarding new product uses. The industry needs to develop more data regarding plant groups (e.g. deciduous trees, value, acreage and pests).

- 4.b) **Integrated Pest Management and Registration of Low Risk Products**
With the industry focusing on IPM as the solution to pesticide bans, it is becoming apparent that there are information gaps on pest biology, monitoring and detection techniques and thresholds. The registration of low risk, IPM friendly pesticides is also crucial to the adoption of IPM in maintenance and plant production. For landscape plants, a lack of pest population/pest damage action thresholds is preventing the acceptance of IPM as an alternative to pesticide bans. Research is needed to verify the action thresholds in the literature for pests on turf in Ontario. Action thresholds need to be established for outdoor ornamentals. There is a need for information and a delivery system to citizens/municipalities (in addition to industry groups) to balance risk with benefit of using pesticides responsibly.

4.c) Municipal Recommendations of Illegal Uses and Home Remedy Products

The industry is concerned about the illegal use of alternatives products (i.e. those without PCP numbers) and off label recommendations from municipalities for homeowners (e.g. acetic acid, hot water, horticultural soaps, rhubarb leaves, etc.).

This committee would like to see PMRA take action to get these recommendations out of literature that is distributed by the municipalities and off of municipal web sites.

5. RECOMMENDATIONS ARISING FROM GAPS/BARRIERS/DEFICIENCIES

5.a) Title: Biology and Management of New and Emerging Pests Research

Recommendation:

The subcommittee on Nursery, Landscape and Turf recommends support of research efforts into the detection, biology and management of emerging pests which have the potential to become economically damaging. This research request includes necessary efficacy trials for quarantined pests as these trials can only be carried out at registered government quarantine pest facilities. Pests of concern include Asian Long Horned beetle, emerald ash borer, sudden oak death, bentgrass dead spot and European crane fly.

Details:

Many of the emerging pests are new to Ontario and their biology, detection and management are not well understood in our region. There is real concern as to the

eradication and management practices that will keep the pest population from expanding. To ensure the economic sustainability of the industry, these pests need to be managed. The Canadian Food Inspection Agency needs more resources to act in a more effective and timely manner (e.g. support certification and auditing or verification of audit process of such programs). The industry needs access to more university-level research into pest management solutions for these high priority pests.

Background:

New and emerging pests are responsible for significant losses in sales (e.g. EAB causing decreased ash sales) as well as crop losses each year. Quarantinable pests have a great effect on access to markets (e.g. moratorium on shipping). Registered pesticides are not available for most of the quarantined nursery and emerging turf pests. The economic future of these industries is at risk unless more rapid pest management solutions to these new and emerging pests are found.

Target Agencies: Canadian Food Inspection Agency. University of Guelph

5.b) Title: Registration of Reduced Risk Pesticides
Research/Service

Recommendation:

The subcommittee of Nursery, Landscape and Turf recommends continued support for research on the development and registration of new, lower risk, IPM-friendly pesticides (e.g. curative insecticides) for the turf and nursery production and landscape.

Details:

The aim of this recommendation is to improve the ability to manage insect, disease and other pests in the in the face of reduced availability of registered pesticides and increasing concern about their effect on the environment. The committee is looking for increased collaboration with government and universities to fill research gaps and product registration gaps.

Background:

Despite the loss of older formulation pesticides (e.g. organophosphates) and possibility of municipal pesticide bans, landscape/turf maintenance and nursery growers are still expected to produce high quality plants with reduced pest management tools. Research should address the registration of pesticides as a component of an IPM program, as well as the development and adoption of low risk alternatives.

Target Agencies: Pest Management Regulatory Agency, Agri-chemical industry, University of Guelph

**5.c) Title: Development of Stronger IPM Programs
Research/Service**

Recommendation:

The subcommittee on Nursery, Landscape and Turf recommends that more information on pest biology in Ontario (with emphasis on action thresholds for pest populations and pest damage) be developed for outdoor ornamentals and turf.

Details: The industry has spent a great deal of time developing an IPM accreditation program to give more confidence in the responsible use of pesticides by licensed applicators. In many cases, the lack of pest population and/or damage action thresholds for landscape plants are preventing the acceptance of IPM as an alternative to pesticide bans.

Background: It is becoming apparent that there are information gaps on pest biology, monitoring and detection techniques and thresholds. The registration of low risk, IPM friendly pesticides is also crucial to the adoption of IPM in maintenance and plant production. Research is needed to establish action thresholds for pests on turf and outdoor ornamentals.

Target Agencies: University of Guelph (and other institutions for horticultural research)

**5.d) Title: Municipal Recommendations of Illegal and Home Remedy Products
Service**

Recommendation:

The subcommittee on Nursery, Landscape and Turf recommends that the PMRA take action to insure that municipal web sites are only promoting legal uses for pesticides and that illegal home remedies be removed.

Details:

Many municipal web sites have off-label recommendations for products such as acetic acid, hot water and soaps. Some of the off-label recommendations are being made from municipalities to homeowners in brochures that support organic turf management. Municipalities are also promoting the use of potentially harmful home remedies.

Background:

Many municipalities, in an attempt to promote organic lawn care are supplying homeowners with information brochures as well as information on municipal web sites regarding organic pesticide alternatives. Many of these recommendations are illegal according to the Pest Control Products Act. Many of the pesticides do not have a PCP # and others have a PCP #, but turf pests are not on the label. The committee would like to

see some leadership from the Pest Management Regulatory Agency on this issue as well as some enforcement of the PCP Act in municipalities that are contravening the act.

Target Agency:

PMRA/Healthy Lawns Working Group

RESEARCH PRIORITIES AND RECOMMENDATIONS FORWARDED FROM THE FIELD CROPS AND HORTICULTURE CROPS COMMITTEES

A) Revisions to the Terms of Reference for the FCPSC

Based on the “General Guidelines for Technical Working Groups” recently created by the OPMRSC, the FCPSC discussed making some changes to their Terms of Reference. It was agreed upon that the FCPSC will continue to request data from Ontario trials, with the understanding that if none exists, trials from other jurisdictions as well as expert opinions from members of the committee may also suffice when considering product submissions in our publications. The FCPSC will also keep efficacy as the priority when ranking products in the book, but will include safety to the applicant and environment including biological options, reduced risk, IPM compatibility and safety to beneficials as additional considerations. Products will now be listed by chemistry group to promote resistance management strategies and products with same active ingredient will be listed first by least hazardous and then alphabetically. A short section explaining how to interpret our tables and ranking system will also be included in the publication.

B) State of the Industry/ Research and Services Accomplishments in 2005

Corn Cruiser seed treatment is now registered on corn, with a similar pest spectrum as Poncho, with the exception of black cutworm and a high rate option for corn rootworm. Researchers and extension continue to be concerned about the use of these new seed treatments as insurance without knowledge of the existence of problem pests. Also, plant health benefits in the absence of pests are being promoted by some companies which disregards sound IPM practices. G. Stewart is working on determining the potential yield increase occasionally experienced with these new seed treatments under various stresses in the absence of pests. Work is indicating that planting date plays a significant role in such benefits. Survey work done by A. Schaafsma in 15 first year corn fields, looking for the rotation variant of corn rootworm has indicated there is still no significant/economic levels of the variant here in Ontario. G. Quesnel has found similar results in Eastern Ontario. B. Broadbent continues to monitor ECB populations for resistance to Bt hybrids with no suspect populations existing at this time. Surveys by A. Tenuta are showing an increase in incidences of leaf diseases in corn. In particular there was a rise in gray leaf spot, northern leaf blight and Anthracnose possibly due to less tolerance in available hybrids.

Soybeans June Beetle larvae (3 yr cycle) is an emerging issue in soybeans, particularly in the Highgate area. Cruiser seed treatment has been registered on soybeans for seedcorn maggot, wireworms and European Chafer grubs (but not June Beetle grubs). Work will need to be done to prove it's effectiveness at controlling June beetle larvae too. Will also need to educate growers on when to use Cruiser. Matador received full

registration this year for aphid control. Data from 56 grower strip trials across the province was collected by T. Baute, G. Quesnel and H. Bohner. Only an approx. 4-5 bushel increase in yield was experienced this year. Greater heat forced aphids down into canopy and soybean canopies were tall and dense making it harder to reach the aphids with spray equipment. Also, the crop was less stressed than other years. The SBA consensus group is staying with threshold of 250/plant with increasing pops. Increased education on the variables that are at play when deciding whether to spray will be done this winter. Dimethoate worked better than Matador in some fields though yield was not sign. greater than Matador strips. Syngenta is now looking at getting the higher rate (equivalent to the US rate of Warrior) registered for soybean aphids next year. Spidermites were also a significant pest this year causing increased confusion as to which product to use when both aphids and mites are in the same field. In this situation, dimethoate is the product of choice. Soybean aphid parasites and predators were active in many locations. The impact of parasitoids was measurable in local areas. Grad work through A. Schaafsma is looking into the impacts of seed treatments on parasitoids. B. Broadbent looked at 4 predators in a caged soybean trial. *Harmonia* was the most effective in reducing the pops of aphids. *Beauvaria* & *Verticillium* parasitic pathogen of aphids are being investigated. Surveys done by A. Tenuta, T. Baute and R. Michelluti found a higher incidence of soybean mosaic and alfalfa mosaic from previous years. Seed source may be the reason for greater incidence, with aphids helping to move the virus around. Bean leaf beetle may also provide greater spread of bean pod mottle virus. SCN has not been found in eastern Ont yet. Soybean rust has been reported in Texas and possibly Mexico so the likelihood of spores arriving in Ontario is greater than before – probably a higher risk to southern Ont than the SE states.

Wheat Grad work though A. Schaafsma has shown that barley yellow dwarf may not be entirely attributed to aphids. There is a virus complex and a bridge to weed populations and volunteer wheat in area may allow carry over to new planted fields. Fungicide work for control of dwarf bunt has found Dividend to be very effective. The future of DonCast depends on Folicur receiving full registration.

Forages No emerging pest issues were reported this year.

Edible Beans Seeing an increase in tarnished plant bug in edible beans.

Canola M. Sears, T. Baute, R. Hallett, H. Earl and D. Hume working on cabbage seedpod weevil (CSW) and swede midge research in canola. Foliar work on CSW has shown that two applications may be necessary. Timing of applications is critical. Work will continue to refine management recommendations. Sticky traps are proving to work well for indicating when populations move into the crop. An application to New Directions on trap cropping and monitoring with traps has been put forward. CSW and

other insects may have contributed to the brown seed damage experienced by the canola industry this year. New foliar products for both CSW and SM are being investigated.

C. Emerging Issues and Needs for 2006

Integrated Pest Management Research in the new OMAF–UofG Research

Program Structure. The FCPSC was very disappointed with the response from the recommendations brought forward by the OPMRSC to OMAFRA and the U of G. Our committee continues to be very concerned about the pest management portion of OASCC system not being represented properly in the new program. If something does not change in the structure, the future of pest management research in Ontario will be in jeopardy. Overhead fees and other differences in funding structure vary greatly from other universities and jurisdictions. Research contracts with industry are being lost to the US and other cheaper research sites. Technical positions can not be secured, causing researchers to focus on the physical field work rather than the research particulars. In response, the FCPSC has created an ad hoc committee that will create a report documenting the discrepancies and structural problems in the new OMAFRA/U of G Research Program, comparing it to other existing universities research programs. It will also include suggestions on how to improve the program structure so that it does better represent Pest Management research. We will also elicit CropLife's support with documentation of their concerns with the new structure and losing pest management research in Ontario. This document will be presented to the OPMRSC, for it to be carried forward. All other technical working groups are encouraged to participate on this ad hoc committee, giving examples of problems in the horticultural pest management research sector. Unified support from all of the Commodity Groups impacted would also ensure a more effective response from U of G and OMAFRA.

Alien Invasive species continue on the rise in field crops. Monitoring, forecasting and management strategies have to be in place to ensure readiness when problems arrives.

Seeing a shift in pesticide applications. "Lower risk" pesticides are being registered and marketing strategies are tending towards the concept of insurance instead of controlling the pest when it is present at economic levels. Need to determine how to respond to such shifts and bring an optimizing prescription to the situation. Thresholds and monitoring strategies, prediction models and economic evaluation of treatments are necessary.

Non pest control benefits in the absence of the targeted pest (plant health) - seeing marketing/promotion of pest control products and their plant health properties (growth promotion). Ie. yield enhancement in the absence of the pest.

This requires research and clarification to ensure growers are using these products wisely.

Pesticide Stewardship – Risk of resistance with use of similar seed treatments and foliar chemistries across commodities. Need to go back to promoting IPM and finding solutions to make IPM practical for the grower.

D. Research and Services Priorities

Rating system:	A	High priority – major concern
	B	Moderate priority
	C	Low priority
	1	Increase existing or establish new funding
	2	Maintain funding
	3	Decrease or drop funding

- A1 **Soybean rust:** monitoring, spray application and timing, breeding for resistance, fungicide resistance, prediction methods, alternate hosts
- A1 **Soybean aphid** - econ. impact, threshold evaluation, control, life cycle, wintering on primary host, prediction and monitoring presence, virus vectoring, biocontrol.
- A1 **Canola insect pests:** Cabbage Seedpod Weevil, Swede Midge, Lygus spp. surveys and potential biological control agents, threshold/yield interaction, evaluation of control products especially seed treatments, management practices, resistance breeding, climate modeling for prediction of dispersal potential
- A2 **Soybean Cyst Nematode** – biocontrol, population dynamics, race-shifts, spread of SCN, management procedures
- A1 **Fusarium:** resistance breeding, new chemistries, validation of prediction models
- B1 **Seed stinging pests on soy, and edible beans:** Tarnished plant bug, Lygus spp., Stink bugs thresholds and management
- B1 **Slugs:** management strategy for no-till field crops, edible beans, soybeans and corn, monitoring technique for prediction method, impact of tillage practices
- B1 **White mould:** across many field crops, resistance management, clonal types in relation to varietal types, early warning (prediction) and management tools
- B1 **Anthraxnose on edible beans:** seed treatments, evaluate new products
- B1 **Fusarium crown rot, brown root rot** in alfalfa: surveying, testing?, economic impact assessment
- B2 **Bacterial blight on soybeans:** econ. impact, resistance breeding, seed treatments
- B2 **Corn leaf diseases:** (Gray leaf spot, Stewart's wilt, Northern leaf blight) monitoring, prediction of outbreaks, resistance breeding, selection of resistant varieties
- B2 **Bean leaf beetle:** econ. impact, threshold, vector importance model
- B1 **Dwarf bunt:** resistant varieties
- B1 **Corn Ear Rots and Moulds** – breeding research for resistance
- B2 **Western corn rootworm** - monitoring for variant continues, transgenic stewardship

- B2 **Grubs in wheat, corn and soybeans** – decision thresholds, biology, control measures, practical seed treatment rates
- B2 **Root rots on soybeans and edibles**– (*Pythium*, *Phytophthora*, *Rhizoctonia*, *Fusarium*) threshold, management tools, biology
- B1 **Planting Dates and Pests in Wheat** – economic impact, prediction forecasting, effect of changing cropping/rotational practices, seed treatment, best management practices, plant resistance
- C1 **Alfalfa weevil**: survey to determine status of biocontrol agents,
- C3 **Corn stalk rots**: (*Anthracnose*, *Fusarium*, *Gibberella*) management and relationship of cropping systems to disease incidence
- B1 **Millipedes, Garden Symphylans in Corn**
- B1 **Soybean Viruses**
- B1 **Yield enhancements from products in the absence of pest**

FCPSC Objectives for 2006:

1. Folicur registration
2. Soybean Aphid chemical control options and thresholds/guidelines. Sorting out impact, seed quality, pest complex of soybean aphids
3. Keeping track of emerging and cyclic pest issues (ie. aphids, chafer, grey leaf spot, stewart's wilt, rust etc)
4. Minor use applications (send priorities to Jim Chaput by Dec 1st)
5. Revise Publication 812 online and paperback
6. Investigate/Education Pesticide Stewardship plan for seed treatments.
7. Educate PMRA on major pest issues for field crops
8. Grower education for soybean rust. Chemical control options and guidelines. Sorting out the impact.
9. Canola Insect Management - chemical control options and thresholds/spray timing work for cabbage seedpod weevil and swede midge. Sorting out impact on yield, crop quality. Find IPM strategies including cultural and biological, crop timing etc.
10. Determine role of Crop Protection in the OMAFRA/Uof G contract. Create an ad hoc committee report documenting concerns regarding pest management exclusion in new structure. Carry report forward to OPMRSC.

2005 ANNUAL REPORT of the ONTARIO TOBACCO COMMITTEE
presented to
ONTARIO FIELD CROPS RESEARCH AND SERVICES
COMMITTEE

The OFCRSC report was revised for the Ontario Pest Management Research and Services Committee (Dec. 8, 2005) to address the pest management and crop protection issues.

EMERGING ISSUES

- Leaf Drop – There was a significant amount of leaf drop in the 2005 crop, especially with the variety CT157. Deep sucker control burn can be a contributing factor to leaf drop. There appears to be an increase in the number of applications of sucker control with the change to mechanical harvesting. Currently there are no other options besides the fatty alcohol-based sucker controls in Canada. Fatty alcohol-based sucker control products are expected to increase in price in 2006. Also, these products can be sold for more money to the lumber industry (wood preservation). Possible alternatives are: BASF 131 (diflufenzopyr); MH (maleic hydrazide) at lower application rates; butralin and flumetralin. There were concerns raised as to the future availability of the sucker control products.
- Sucker control – *concerns are outlined above in “Leaf Drop” section*
There is a lot of construction taking place in the US due to the hurricane damage. Therefore, the fatty alcohols are in demand from the wood industry; where the fatty alcohols can be sold for more money.
- Tobacco Moth (*Ephestia elutella*) – still a concern. More information about this pest is needed to better understand the situation. AgriCorp does not insure carryover tobacco. The current recommendation is to destroy any infested tobacco; preferably by burning. A burning permit is needed in some tobacco-growing areas. Also, MOE has received some complaints regarding the burning of tobacco.
- Re-evaluations of 1,3-dichloropropene and acephate – These products are under re-evaluation by PMRA. Many growers use these products for control of major diseases and insects in Ontario. The loss of these products is of great concern to the tobacco industry.
- Tobacco Mosaic Virus (TMV) – this continues to be a problem. The number of growers with TMV is rising and there is no geographical isolation of this virus.
- Weed control – concern was expressed by a grower that Devrinol doesn't seem to work as well as it did before. Extra time and money was invested into

hoeing weeds. There are problems with both broadleaf and grassy weeds, in particular summer grass (crabgrass).

- Energy costs – the 2005 crop was an expensive crop to harvest. Also, input costs (i.e. fertilizer, fuel) are going up.
- Kiln fires – there were reports of kiln fires again this year.

RESEARCH PRIORITIES

Ranked in order of importance (1= most important; 13 = less important)

1. Development of high quality cultivars with: a) good manageability, balanced leaf chemistry, mature leaf style, and less off-grades; b) resistance to pests and diseases (Root-Lesion Nematode; Black Root Rot; Blue Mould, curing disorders- Bacterial Soft Rot, Pole Rot, *Aspergillus*; Target Spot; *Rhizoctonia* Damping-Off; Tobacco Mosaic Virus (TMV); Aphids; and White Mould) and, c) suitability for machine harvesting. Traits to consider are: uniform leaf maturity, reduced sucker growth, minimal leaf drop, high yield and returns (CTRF) (long term research priority, ongoing project).
2. Development and evaluation of improved methods of sucker control that are economical and longer-lasting, and minimize leaf drop and the occurrence of injury related disorders (i.e. Bacterial Soft Rot) (CTRF) (Short term research priority, new).
3. Development of integrated strategies for the monitoring and control of the Tobacco Moth (*Ephestia elutella*) in the tobacco production chain (CTRF) (Short term research priority, new).
4. Evaluate and develop control measures for Bacterial Soft Rot, *Aspergillus* and moldy tobacco including the evaluation of sucker control products with improved efficacy and refinement of sucker control practices for use in a pest management program (CTRF) (Short term research priority, ongoing project).
5. Development of fumigant replacements, i.e. millet, or other nematode suppressing crops to control nematodes. Integrate biological control of nematodes into a pest management program (CTRF) (Short term research priority, ongoing project).
6. Fungicide screening for Damping-Off of tobacco caused by *Rhizoctonia solani* with a focus on resistance management (CTRF) (Short term research priority, ongoing project).

7. Investigate and test products that inhibit the growth of algae and control Black Root Rot in used plant production cell trays (i.e. algae - copper products) (CTRF) (Short term research priority, ongoing project).
8. Determine the effects of different nitrogen rates on recommended and promising varieties on tobacco yield and quality (CTRF) (Short term research priority, ongoing project).
9. Herbicide screening in tobacco and rye crops. (CTRF) (Short term research priority).
10. Investigate insecticides with different chemistries for the control of aphids, wireworms, white grubs, seed maggots and cutworms for the purpose of resistance management, reduced active product per hectare, and integrate into a pest management program (CTRF) (Short term research priority).
11. Fungicide screening for control of metalaxyl-insensitive blue mold, and greenhouse and field control of Target Spot and *Alternaria* with a focus on resistance and integrate into a pest management program (CTRF) (Short term research priority, ongoing project).
12. Identify the cause(s) and solution(s) of tobacco bruising (CTRF) (Long term research priority, ongoing project).

Quality Assurance Priorities

- 1) Leaf Quality Assurance Program (including control of the Tobacco Moth) (CTRF) (ongoing project).
- 2) Non-Tobacco Related Materials program.
- 3) Analysis of green and cured tobacco leaves for the presence of Blue Mold oospores (CTRF) (ongoing project).
- 4) Further development of measures to reduce TSNA's in cured tobacco (CTRF).

Service Priorities

- 1) OMAFRA to provide consultative extension and act as the lead in transferring research results to growers.
- 2) OMAFRA to continue to provide adequate staffing levels and farm visits.

- 3) Increase OMAFRA tobacco PY's to historical levels.
- 4) Continue the publication of Publication 298: Flue-Cured Tobacco Production Recommendations every year if required, and include the year of publication on the front cover (OMAFRA).
- 5) Publication 298 should be made electronically available on the OFCTGMB website (OMAFRA/OFCTGMB).
- 6) Consultative services to be provided to growers to assist with curing techniques and skills (OFCTGMB).

SIGNIFICANT RESEARCH ACCOMPLISHMENT

Breeding

1. Development of CTH2 - In 2005, yield, agronomic, chemical and quality traits of CTH2 were collected from regional and registered trials. In addition, CTH2 was tested at 9 farms as part of a small scale on-farm evaluation. The results strongly suggest that CTH2 has high yield potential, good quality traits and high economic return. It is also immune to Black Root Rot. The yield potential of CTH2 is of special interest to some of the growers who are concerned about the low yielding ability and higher production costs associated with CT157 - the most dominant tobacco variety grown in Ontario. CTH2 will be proposed for registration during the annual variety meeting on March 2, 2006.
2. Haploid plants were recovered from crosses between F1 hybrids and *Nicotiana africana* and chromosome numbers of the haploid plants were doubled using leaf midvein culture. Double haploid lines immune to Tobacco Mosaic Virus (TMV) were developed and tested in the field in 2005. The haploid breeding technique is becoming an integral part of the breeding program. The advantage of this method is that it shortens the time required to develop varieties. Stable lines can be produced in one generation.

Agronomy

1. Forage millet cultivar CFPM-1 and grain millet hybrid CGPMH-1 have met industry requirements for use as a biological alternative to chemical fumigation.

Protection

1. It was found in 2005 that treatments employing strobilurin fungicides or boscalid or Actigard lessened the occurrence of Target Spot disease (*Thanatephorus cucumeris* causal agent) in the field.

2. Greenhouse applications of strobilurin fungicides (Cabrio, Quadris or Flint) to control Rhizoctonia Damping-Off disease (*Rhizoctonia solani* causal agent) could alter subsequent plant development in both the greenhouse and the field, leading to reduced plant height. The growth of boscalid or Pristine-treated plants was similar, however, to plants which were not treated or were treated with Benlate. Although growth effects were observed, the use of any of these fungicides did not adversely affect grades or yield.
3. Steaming Black Root Rot (*Thielaviopsis basicola* causal agent) contaminated Styrofoam transplant production trays provided the best control of this disease in plants later grown in the field. Applications of the fungicide Senator 70WP (thiophanate-methyl active ingredient) provided intermediate levels of control.
4. The Tobacco Moth (*Ephestia elutella*) and the Indian Meal Moth (*Plodia interpunctella*) were captured in on-farm pheromone traps and were widely distributed through the tobacco growing region of Ontario. The Tobacco Moth is a known pest of tobacco; the Indian Meal Moth may be resident in storages as a pest of grain products and is not known to affect tobacco.
5. Blue Mold disease (*Peronospora tabacina* causal agent) was not detected in trials or on-farm in Ontario in 2005.
6. Tobacco Mosaic Virus resistant breeding lines produced using haploid breeding techniques were evaluated in the field for the first time in 2005.

Alternative Uses of Tobacco - Update

Two research projects are being proposed for the 2006 field season at the Delhi research station by Dr.'s Chris Hall, Jim Brandle and Jim Todd. These projects will draw on resources from the public and private sectors to address the potential of using tobacco as a "plant factory" for production of bio-products and use of the residual biomass as a feedstock for ethanol production. Growing tobacco as a biomass crop has the potential to be economical, but only if value can be captured by marketing the high quality protein. Both bio-product and biomass uses require tobacco to be grown at high density (~100,000 plants/ac vs. the current practice of ~6000 plants/acre), and this research will address the details of planting, growing, harvesting and processing high density stands of tobacco, and amaranth, another plant that produces high quality protein and large amounts of biomass. In parallel, tobacco genetically engineered to produce recombinant antibodies with medicinal or industrial utility, will be grown at high density in the greenhouse and in the field, to determine the most cost effective and efficient way to isolate small, high value proteins from large amounts of plant material.

ONTARIO WEED COMMITTEE

A. Executive summary

The Ontario Weeds Committee met in April and November. At its fall meeting, the committee approved editorial comments that will be included in the newest version of OMAFRA Publication 75, 2006-2007. The subcommittee on glyphosate responsible that was convened in 2004 has developed 7 Steps to Responsible Glyphosate Management found online at <http://www.plant.uoguelph.ca/resistant-weeds/resources.html>. In addition to this, an updated inventory of resistant weeds in Ontario developed can be found at <http://www.plant.uoguelph.ca/resistant-weeds/index.html>. This list will also be included in Pub. 75. Future plans are to post Ontario maps by weed.

In general, weed control with herbicides was inconsistent in 2005. Soil applied herbicides worked well in those areas that received timely rains, but early season moisture was not adequate in all areas of the province. In particular, the southwestern portion of Ontario faced a dry spring. The efficacy of post-emergent herbicide programs was also inconsistent, as weed growth was slowed during application in some areas due to hardening off of weeds caused by temperature and moisture stress.

The Ontario Weed Committee will hold future fall meetings in the third week of September rather than the first week of November, to provide additional time to allow new versions and supplements to be updated in time for printing in January.

B. Committee Activity

The spring meeting was held in London on the 14th of April. François Tardif reported that mostly pigweed samples were submitted for testing for Group 2 resistance (many positives), with some also resistant to atrazine. Foxtail (yellow and giant) resistant to Pursuit – may have different genetics so cross-resistance to Accent and Ultim may be expected. While concern exists, no glyphosate resistance has yet been documented.

The Ontario Weed Tour was held in Exeter, Ridgeway, Simcoe, Woodstock and Elora in the week of July 18th. The fall meeting took place in Guelph on November the 9th.

The issue of drift, either of 2,4-D like herbicides or of glyphosate, which was identified as a growing area of concern in the context of more intense glyphosate use and of urban-rural interface (e.g. lawn applications drifting into grapes) was addressed through a series of extension articles and presentations.

The Glyphosate Responsible Use Subcommittee has met and has produced a working

document online (see link in Executive Summary).

The Canadian Weed Science Society meeting was held in Niagara Falls from November 28-30th, with excellent attendance from society members across the country and Ontario agri-business representatives. The local arrangements committee chaired by Dr. Al Hamill put together a wide-ranging agenda and put on an excellent conference.

The new buffer zone proposal written by the PMRA is now available for comments and recommendation. A subcommittee was formed provide comments on behalf of the PMRA, and CPAC will also be informed to request their input. Gerry Stephenson to chair, Nancy Cain & Ken Nixon volunteered. The proposal can be found at the following URL:

<http://www.pmra-arla.gc.ca/english/pdf/pro/pro2005-06-e.pdf>.

C. Sector scan

1. Weed Control Results and Overall Crop Report

Overall weed control was fair, as there was poor moisture during the spring months, and extremely dry conditions through mid-summer, which caused stress to plants, reducing herbicide efficacy. Those who were able to get the crop and PRE herbicides in with timely rains did find the weed control to be acceptable.

Delayed crop establishment combined with poor PRE herbicide performance allowed weeds to escape, which put greater stress of POST herbicides. The hot, dry weather reduced the activity of POST herbicides, as the weeds were not hardened off.

About 15% of the corn acres and 60% of the soybean acres in Ontario were planted with glyphosate-tolerant seed. Glyphosate drift onto non-target crops was a significant concern this past season as well, and extension was conducted (i.e. articles and presentations) across the province on methods and technology useful for drift mitigation.

2. Problem Weeds

The University of Guelph (Guelph and Ridgetown campuses) continues to do a number of herbicide trials on problem weeds including:

- Tufted vetch
- Perennial sowthistle
- Downy brome
- Wild garlic
- Wire-stem muhly
- Dandelion
- Wild carrot
- Large crabgrass

- Yellow whitlow grass
- Prostrate knotweed

Waterhemp (*Amaranthus tuberculatus* var. *rudis*), the scourge of Midwest growers, appears to be spreading further in Ontario. After three sites were initially found in 2002 and 2003 in Essex, Lambton and Kent Cty, a survey conducted by Susan Weaver (AAFC Harrow) has revealed 16 additional sites in Essex Cty. This confirms this weeds ability to spread rapidly. A team including Susan Weaver, Peter Sikkema and François Tardif has begun work to better understand the biology molecular genetics and control of water hemp. Native populations also exist and may cross-pollinate with resistant types. A Problem Weed CD is now available online in English, and the French is in preparation. The following is the link for the English version:

http://www.omafra.gov.on.ca/english/crops/field/weeds/problem_weed.htm

A number of weeds attracted attention this summer in the form of requests to the OMAF Weeds Lead. Many of those are the subjects of research as outlined above: wild carrot, prostrate knotweed, annual and spiny annual sow-thistle, tufted vetch, common chickweed and field violet. Spotted knapweed, downy brome and cleavers were also identified as potential future problem weeds. Giant hogweed and dog strangling vine are two invasive species that are triggering more inquiries, especially following the presentation by Dave Bilyea on poisonous or shelterbelt weeds given at the Southwest Diagnostic Days early in July. Palmer amaranth was found in Hamilton on a rail bed.

3. Herbicide Resistance

Dr. François Tardif reported that samples provided through OMAFRA Call Centre continue to show Gr. 2 resistant pigweed, with some nightshade as well. Six samples of Green foxtail showed resistance to Gr. 2 herbicides. No ragweed samples were submitted, but Gr. 2 resistance is likely widespread in this weed.

Peter Sikkema reported on a Glyphosate Resistance Update he attended last month. Glyphosate-resistant waterhemp and ragweed are common in Missouri; glyphosate-resistant ragweed and lamb's-quarters are suspected to be widespread in Ohio. It is recommended to use a PRE residual herbicide in all RR crops, as well as planning herbicide rotations between crops. The Herbicide Resistance Working Group met at the CWSS conference in Niagara Falls on Nov. 29th to discuss research needs and priorities, as well as update everyone on the status of resistant weeds across the country.

4. Minor Use Program for Herbicides

Jim Chaput is the OMAF Minor Use Coordinator, located in Guelph, who maintains a website with updated information on Minor Use Proposals at <http://www.gov.on.ca/OMAFRA/english/crops/minoruse/index.html>.

D. Service recommendations

Susan Weaver reported a concern of misidentification of giant foxtail at mature stages. Due to addition of giant foxtail to list of prohibited seeds in seed lots, CFIA inspectors reported difficulty of separating giant foxtail from green foxtail (especially the robust biotype that has large nodding seedheads), and microscopic examination of seeds was required, as leaf hairs were lost at maturity. Mike Cowbrough is working on a pocket guide featuring ID of 16 annual grasses, and Fact Sheets will be put together to assist in identification of mature green and giant foxtail plants and seeds.

E. Research issues and priorities

The issues addressed by this working group fall under the categories of Sustainable Production Systems.

1. Field Crop

Ontario Weed Committee Field Crop Research Priority # 1

Evaluate weed control effectiveness and crop safety of herbicides to assist registration of new products, allow minor use registration in field crops and provide information on environmental impact.

Ontario Weed Committee Field Crop Research Priority # 2

Develop methods to improve weed control efficiency and reduce weed control costs by determining weed specific postemergence herbicide rates and critical factors affecting their performance, and evaluating site-specific methods of application.

Ontario Weed Committee Field Crop Research Priority # 3

Optimisation of Integrated Weed Management (IWM) systems that incorporate the components of alternative management methods, critical period, weed thresholds, competitive cultivars and planting patterns, cropping systems and alternative non-chemical control measures to reduce the negative impacts (e.g. weed shifts and resistance) that result from dependence on single weed control strategies.

Ontario Weed Committee Field Crop Research Priority # 4

Develop management strategies that will be sustainable in the long term for emerging problem weeds.

Ontario Weed Committee Field Crop Research Priority # 5

Document occurrences of herbicide resistance in Ontario and characterize their resistance spectrum and biology so as to develop effective management guidelines and strategies.

Ontario Weed Committee Field Crop Research Priority # 6

Determine the impact of nutrient management programs and of soil nutrient levels on weed thresholds, weed germination patterns weed population dynamics and the effectiveness of control measures on annual weed species.

Ontario Weed Committee Field Crop Research Priority # 7

Develop weed control strategies within organic cropping systems.

Horticultural crops priorities:

Ontario Weed Committee Horticultural Crops Research **Priority # 1**

Develop data supporting minor use herbicide registration, under the URMULE program, including tank mixtures of herbicides with fungicides, insecticides, surfactants or foliar fertilizers.

Ontario Weed Committee Horticultural Crops Research **Priority # 2**

Determine safe intervals between herbicide application and planting of sensitive crops (such as sugar beets, peas, sweet corn, tomatoes, etc.) by conducting re-cropping and plant-back studies and developing effective bioassays with appropriate indicator species for herbicides with residual activity.

Ontario Weed Committee Horticultural Crops Research **Priority # 3**

Develop Integrated Weed Management (IWM) systems that comprise mechanical control, mulches, delayed planting and no-till for horticultural and specialty crops, particularly where herbicide options are limited or unavailable.

Ontario Weed Committee Horticultural Crops Research **Priority # 4**

Develop comprehensive management strategies for the control of problem weeds in horticultural crops.

Ontario Weed Committee Horticultural Crops **Research Priority # 5**

Determine the impact of nutrient management programs on weed population dynamics and weed control in horticultural crops.

Ontario Weed Committee Horticultural Crops **Research Priority # 6**

Develop weed management strategies within organic cropping systems.

3. The issues and priorities encompassing multiple commodities have been grouped in the Pest Management category:

Ontario Weed Committee Pest Management **Research Priority # 1**

To continue to evaluate new herbicides, new herbicide tank mixtures and new herbicide application timings for herbicide efficacy and crop tolerance in field and in horticultural crops.

Ontario Weed Committee Pest Management **Research Priority # 2**

Develop improved methods for the rapid and efficient detection of herbicide residues in relation to: (i) herbicide carry-over and crop rotation (ii) off-site contamination (drift, run-off, leaching), and (iii) applicator, grower, bystander exposure to dislodgeable foliar

residues on plants.

Ontario Weed Committee Pest Management Research Priority # 3

Evaluate and monitor the ecological and environmental impact of herbicide tolerant crops, including (i) shifts in weed populations, (ii) development of herbicide resistant weed biotypes, (iii) transfer of recombinant genetic material to other plant or microbial species, and (iv) changes in the composition of soil microbes.

Ontario Weed Committee Pest Management Research Priority # 4

Study the biology of herbicide resistant weed biotypes so as to optimize prevention and management strategies in order to prevent the development of multiple-resistance.

Ontario Weed Committee Pest Management Research Priority # 5

Evaluate the effectiveness of cultural (e.g. crop rotation) and mechanical methods of weed control in combination with weed specific herbicide rates (minimum lethal dose) to minimize herbicide use within integrated weed management (IWM) systems.

Ontario Weed Committee Pest Management Research Priority # 6

Develop weed management strategies within organic cropping systems.

Ontario Weed Committee Pest Management Research Priority # 6

Establish economic thresholds for problem annual and perennial weeds, with consideration for crop quality, dockage, harvest moisture, and weed seedbank issues.

Ontario Weed Committee Pest Management Research Priority # 7

Investigate weed biology and ecology including basic research on biology, physiology, population dynamics, and weed-crop interactions.

Ontario Weed Committee Pest Management Research Priority # 8

Evaluate advanced sprayer technologies, including site-specific applications, which have the potential to reduce herbicide rates, spray drift, spray volume, sprayed area and effects on non-target organisms, to meet the needs of custom applicators and growers.

Ontario Weed Committee Pest Management Research Priority # 9

Evaluate and monitor the impact of unsprayed buffer zones along field margins on weed population dynamics and crop yields, and develop vegetation management systems for field margins, roadsides and rights of way

Ontario Weed Committee Pest Management Research Priority # 10

Identify new invasive weed species that displace native vegetation in non-crop habitats and are difficult to control in field and horticultural crops and, and develop management strategies.

Ontario Weed Committee Pest Management Research Priority # 11

Determine the environmental variables affecting the production, release and dispersal of pollen from allergenic weed species such as ragweed and develop a model predicting the timing and severity of pollen load near major metropolitan areas. This will permit the development of an accurate Pollen Load Index ensuring medication is taken at the

optimum timing so it retains its effectiveness.

**Ontario Horticultural Crops
(OHCRSC)**

Research & Services Committee

**Report to The Ontario Pest Management Research and Services
Committee (OPMRSC)**

December 8, 2005

The focus of this report is to communicate the pest management related issues, priorities and recommendations that have been reported to OHCRSC in 2005. The full OHCRSC report will be presented to OASCC in February 2006. If anyone is interested in copies of the subcommittee reports please contact the subcommittee chairs.

Emerging Issues

IPM delivery, cost and availability of training in regions, possible financial incentives (awareness of EFP and Farm Business Advisory Services was discussed)

Diagnostics – concerns regarding turn around time. Some suggestion that more could be done with technology to have “better synergy” with researchers, rapid diagnostics and communications for border issues.

Overhead and Fees for research

- Ken Hough provided an explanation of the implementation of the overhead on grants in aid and fee structure.
- Important to note there is a general agreement at Universities in Ontario to charge overhead.
- There are exemptions to overhead on funding for grad students and contributions to research station fees
- Also a good discussion with guest from CR-SRED on R&D tax credits

IPM fit under OMAFRA/U of G structure – This was discussed at quite a few of the subcommittees and concern raised. As the Sustainable Production Systems LOI is currently in progress it may be premature to raise concern about this as there are some applications that have had broad multidisciplinary IPM focus as well as IPM related to specific commodities. There was no one way suggested by the University to submit application on any research area.

OHCRSC Research Priorities

(Remained similar to 2004 with a few changes)

The following are the Common Themes across all the subcommittees (The number in brackets indicates the number of subcommittees reporting this issue)

(16) Innovation in Pest Management

- Minor Use
- New and Emerging Pests (Invasives)

Environmental Management

- (13) Nutrient Management
- (8) Water Management

(6) Production Systems

- (12) Variety/Cultivar Development
- (2) Propagation
- (2) Mechanization/Engineering
- (2) Organic Production
- (2) Energy
- Cultural Practices

(4) Marketing

- Increasing market share
- Season extension
- New markets
- Industry Economic Data
- Promotion of benefits of buying local produce

(6) Post Harvest Storage & Quality

- Seed Storage

(5) Food Quality/Food Safety

- (4) Health Benefits
- Nutraceutical and Functional foods

**Summary of Commodity Specific Research Priorities related to Pest Management
(please refer to subcommittee reports for full details):**

Agroforestry

Continued support for minor use registrations to control unwanted vegetation, insects and other damaging agents is required by woodland owners, maple producers, Christmas tree growers and nut growers.

Recognition of conifers grown in nurseries as a single commodity “crop group” instead of being categorized by end use market (eg. Same species grown for Christmas tree and landscape use)

Apiculture & Pollination

Further development of an effective IPM and food safety program for parasitic mites, small hive beetles and diseases of honey bees (biocontrols, organic compounds)

Develop resistance testing methodology for organic mite treatment

Alternative control strategies for pests that have minimal impacts on beneficial insects
(Corn borer, wax moth)

Apple

Sustainable IPM Systems (see full report for rankings)

- strategies for management of fireblight
 - efficacy testing, evaluation of biocontrols
- -efficacy testing and evaluation of fit of reduced risk products in IPM programs
- Storage rots/postharvest disorders
- Integrated approach for control of black rot, apple scab, fireblight, and other disorders affecting fruit and/or foliage including resistance management
- Field validation of predictive models and controls developed for insect and disease under Ontario conditions
- Development of sustainable IPM practices and resistance management for internal Lepidoptera pests (Incl. OFM and CM) and the development of mating disruption strategies for apple insect pests such as codling moth and dogwood borer

Post Harvest Strategies for Quality and Safety Assurance

- Disease control, fungicide resistance
- field validation of predictive models

Berry Crops

Strawberries -Pest control methodologies for tarnished plant bug, mildew anthracnose, mites, weed control, minor use registrations, breeding for resistance to pests

Raspberries – monitoring systems for insects, minor use registrations esp. for Botrytis, cane diseases and insects, develop education program on disease and pest control

Other Berry Crops – weed and pest control, minor use registration, survey blueberry scorch and stunt infection in highbush blueberries.

Crucifer Crops

Pest Management Systems – pest control including development of thresholds and monitoring, reduced risk products, new and emerging pests, established pests.

Minor Use Registrations – crop groupings

Service – scout training, tech transfer (hortmatters) CFIA greenhouse certification

- Swede midge Pheromone Trapping, degree day model and alerts

Ginseng

Organic production – pesticide reduction through reduced risk products and use of biological and cultural control methods.

Grape

Development of advanced IPM tools (very detailed info in report) – alternative pest control products, support minor use and full registration, validate predictive and management models of MALB, GBM and diseases, rapid monitoring methods and thresholds, resistance management strategies esp. botrytis, powdery mildew and mites, mating disruption for GBM, efficacy of growth regulators for table grapes, minimize residues on fresh market grapes, bird control, IPM strategies, guidelines for efficient spray application

Greenhouse Floriculture

Hiring new pathologist at U of G for floriculture
Development and implementation of IPM programs
Integration of nutrient, water and disease management strategies

Greenhouse & Protected Crops

Maintain research on pest management issues including integrated control techniques for managing current, new and emerging pests and diseases, biocompatible products for registration and production systems for pest and disease control, interaction of field production practices and greenhouse pest & disease incidence

Mushroom – maintain research on pest management issues especially biocontrol

Low Acreage

Pest Management Systems – shortage of registered pesticides, lack of qualified IPM consultants

Viruses are becoming a significant problem

Asparagus Working group – rust resistance, fusarium control

Nursery, Landscape and Turf

Exotic Pest/Invasive Alien Species

Loss of Old Formulation products

IPM gaps

Pesticide bans

Alternative products

Root, Bulb & Leafy Vegetables

Funding crisis impacting on pest management research

Pest management systems- development of thresholds and monitoring practices, relevant biocontrol and ecological research and research on disease-nutrient interactions

Reduced Risk pesticides

New and emerging pests

Established pests – improving/updating IPM program

Diagnostic Screening – evaluation of new diagnostic tools (eg. New tool at PDC)

Potato

Research into seed and soil-borne diseases
Future research on IPM

Sweet Corn, Pea and Bean

Pest Management – product registration, loss of existing products, delays in registering replacement products, resistance to pesticides, biology, management and control of new pests, breeding for virus tolerance

Tender Fruit

Plum Pox Research
IPM including Minor Use for Tender Fruit Crops
Breeding and germplasm for resistance to pests and diseases
Service Priorities – training of IPM personnel, PPV strategies

Tomato

Access to Crop Protection Materials/Minor Use Registration
Breeding and cultivar development
IPM in Field Tomatoes (11 subpriorities under this priority)

OHCRSC Recommendations

As the OHCRSC met Dec 6th recommendations are not yet fully drafted. The following are recommendations that will be put forward by OHCRSC.

Funding – Overhead costs, etc. – will make the VP research aware of the concerns raised at the subcommittee meetings and request that there may be merit in revisiting the fee structure.

Recommendations related to Pest Management:

PMRA Issues
IPM Programs – lack of scouting services, training
Diagnostic Testing – turn around times, cost
Research Expertise/Capacity

Subcommittees Recommendations related to Pest Management**Apple**

AAFC Entomology position in Vineland
IPM Delivery Systems

Berry

Nematology research in Ontario
Ag research Communication

Crucifer

IPM in OMAFRA/U of G program structure
Cabbage maggot control options in rutabaga
Lack of delivery of IPM
Diagnostics and quick field tests/bioassays to id pests and determine management strategies quickly

Grape & Wine

Pesticide harmonization
AAFC and others staffing capacity – nematology, insect population ecology, plant pathology, insect toxicology
OMAFRA sprayer app. Technology, advanced IPM modelling

Greenhouse Floriculture

Greenhouse pathology expertise
New pesticides through minor use

Greenhouse & Protected Crops

Invite CFIA to meeting
Provide incentive that would bring new active ingredients for minor use in Canada
Greenhouse Vegetable Pathology

Nursery, Landscape Turf

Biology and Management of New and Emerging Pests
Registration of Reduced Risk Pesticides and IPM
Development of Stronger IPM Programs
Acquisition of Current Industry Economic/ Production Data

Potato

Research in Insect Toxicology at SCPFRC London

Root, Bulb & Leafy Vegetable

IPM Research in new OMAF-U of G program structure
Lack of delivery and implementation of IPM programs in Ontario
Nematode Research capabilities

Tender Fruit

Shrinking Resource and personnel in Tender Fruit

Minor use registration by crop groups and eliminate climatic subzones 5A 5B

Sweet Corn, Pea & Bean

Pesticide Harmonization

More stringent standards for pesticide residues coming into Canada from NAFTA and Non-NAFTA countries

Other comments:

A number of subcommittees indicated that there was lower grower turnout this year, perhaps due to warmer weather and delayed harvesting of some crops.

AAFC is undertaking Science Strategy consultations. E-consultation is an option until December 31, 2005. OHCRSC will be submitting information on Hort. Research priorities.

Vineland Research Station will be celebrating 100th anniversary in 2006.

Still actively looking for new chair for OHCRSC....

Submitted by Annette Anderson, Chair OHCRSC

MEMBERSHIP ONTARIO PEST MANAGEMENT RESEARCH AND SERVICES COMMITTEE 2005

ORGANIZATION/ADDRESS	REP	PHONE	FAX	E-MAIL
Marc Sabourin Laboratory Services Division 95 Stone Rd. W. Guelph, ON N1H 8J7	Laboratory Services UofG	519-767-6227		Msabouri@lsd.uoguelph.ca
Craig Hunter Ont. Fruit & Vegetable Growers' Association 355 Elmira Rd., Unit 103 Guelph, ON N1K 1S5	Stakeholder OPAC	519-763-6160 Ext. 119	519-763-6604	research@ofvga.org
Gary Ablett Department of Plant Agriculture Guelph, ON N1G 2W1	Researcher UofG	519-674-1505		gablett@ridgetownc.uoguelph.ca
Gary Whitfield, Agriculture and AgriFood Canada Harrow, ON N0R 1G0	AAFC	519-738-2251	519-738-2929	whitfieldg@em.agr.ca
Scott MacDonald BASF Canada 9 Pamela Place, GUELPH, Ontario N1H 8C8		519.824.2724	519.824.5632	macdonsr@basf.com
Hugh Berges Ontario Ministry of Agriculture and Food 1 Stone Road West, Guelph, ON N1G 4Y2	Prov Gov OPAC	519-826-3288	519-826-3567	hugh.berges@omaf.gov.on.ca
John O'Sullivan, University of Guelph Department of Plant Agriculture Box 587, Blue Line Road, Simcoe, ON N3Y 4N5	Researcher	519-426-7127 Ext. 336		josulliv@uoguelph.ca
Jim Chaput Ontario Ministry of Agriculture and Food 1 Stone Road West, Guelph, ON N1G 4Y2	Prov Gov	519-836-3539	519-826-4964	jim.chaput@omaf.gov.on.ca
Mark Sears, University of Guelph Department of Environmental Biology Guelph, ON N1G 2W1	Researcher	519-824-4120 Ext. 6244	519-837-0442	jim.chaput@omaf.gov.on.ca
Mary Ruth McDonald, University of Guelph Muck Research Station	Researcher	905-775-3783 or 519-824-4120	905-775-4546	mrmcdona@uoguelph.ca

R.R. 1, Kettleby, ON L0G 1J0		Ext. 2791 68		
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Gilbert VanSteelandt RR#2 Dublin, ON, N0K 1E0	AGCare	519-522-0648	519-522-1010	N/A
Ross Pettigrew Pest Management Regulatory Agency Canadian Food Inspection Agency 174 Stone Road West, Guelph, ON N1G 4S9	PMRA	519-837-9400 Ext. 2112	519-837-9973	pettigrewr@em.agr.ca
Stuart Budd Ontario Ministry of Agriculture and Food 1 Stone Road West, Guelph, ON N1G 4Y2	IRMB Liaison	519-826-4189	519-826-4211	stuart.budd@omaf.gov.on.ca
Wayne Roberts Tender Fruit Board & Apple Commission Box 100 Vineland Station, ON L0R 2E0	Stakeholder	905-688-0990	905-688-5915	grapeont@vaxxine.com