

**ONTARIO PEST MANAGEMENT
RESEARCH & SERVICES COMMITTEE**

2004 ANNUAL REPORT

TO

**ONTARIO AGRICULTURAL SERVICES
COORDINATING COMMITTEE**

February, 2005

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Executive Summary

The 2nd Annual Ontario Pest Management Conference was held November 4, 2004, in conjunction with the CropLife Canada, Ontario Branch. There were 18 oral presentations, including keynote addresses by Dr. Pamela Marrone of Agra Quest Inc., “Discovery, Development and Marketing of Biological Pesticides” and Dr. Terry Daynard of the University of Guelph, “The Future of Agriculture in Ontario”. There were two industry presentations on new pest control products, namely, APOGEE and CRUISER and eleven poster presentations. The student award winners for 2004 were Jamshid Ashigh of the University of Guelph for the best poster and Laura Timms of the University of Guelph for the best paper/presentation.

The Ontario Pest Management Research & Services Committee (OPMRSC) met on December 9, 2004 at the Ontario Government Building, 1 Stone Rd. W., Guelph, Ontario to consider cross commodity pest management issues. 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 alien species (insects, diseases and weeds) and the continued use of these 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 for 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 achievable 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. Human resource issues in the research and technology transfer communities continue to concern the committee.

Five recommendations were formulated from the reports and discussions. Lack of a strategy for delivery of IPM programs and reduced risk strategies for Ontario, development of a business case for replacing a nematologist, resolution of the crop zone issue, restructuring of fees for the User Requested Minor Use program to improve availability of pest control products and a request for formal discussions regarding the new Value Chain approach for research programs.

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

The 2nd Annual Ontario Pest Management Conference was held November 4, 2004, in conjunction with the CropLife Canada, Ontario Branch. There were 18 oral presentations, including keynote addresses by Dr. Pamela Marrone of Agra Quest Inc., “Discovery, Development and Marketing of Biological Pesticides” and Dr. Terry Daynard of the University of Guelph, “The Future of Agriculture in Ontario”. There were two industry presentations on new pest control products, namely, APOGEE and CRUISER and eleven poster presentations. The student award winners for 2004 were Jamshid Ashigh of the University of Guelph for the best poster and Laura Timms of the University of Guelph for the best paper/presentation.

The annual meeting of the OPMRSC was held at the Ontario Government Building, Guelph, Ontario on December 9, 2003. The committee accepted the reports of the Technical Working Groups representing Fruit, Ginseng, Nursery, Ornamentals and Turf, Greenhouse Vegetables, Greenhouse Floriculture, and Vegetables, and the Minor Use Update. The committee also reviewed the research priorities and recommendations forwarded to the OPMRSC from the Ontario Field Crops Research and Services Committee (including Tobacco) and the Ontario Horticultural Crops Research and Services Committee. The committee also reviewed the responses to last years recommendations which are highlighted in the next section.

Significant discussion was had regarding the role of the technical working groups vis a vis the incorporation of changes to the recommendation sections of OMAF publications. Since these publications are OMAF recommendations and not simply a list of registered products, OMAF has developed guidelines e.g. toxicity, efficacy, environmental impact etc., which each product must meet before being included. Over time, the various technical working groups have become inconsistent in their approach to these guidelines. Given this background it was decided that an Ad Hoc committee be struck to develop common guidelines which all technical working groups will use.

Several issues were identified and discussed, including the increased incidence of invasive alien species (insects, diseases and weeds) and the continued use of these 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 achievable 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 serious concern was expressed regarding the fit of traditional pest management research into the new Value Chain approach for research programs.

Five recommendations were formulated from the reports and discussions. Lack of a strategy for delivery of IPM programs and reduced risk strategies for Ontario, development of a business case for replacing a nematologist, resolution of the crop zone issue, restructuring of fees for the User Requested Minor Use program to improve availability of pest control products and a request for formal discussions regarding the new Value Chain approach for research programs. While not a specific recommendation, the OPMRSC will attempt to bring all parties related to the development and implementation of national reduced risk strategies in order to clarify expectations and roles of all stakeholders.

The committee reviewed its membership with the following additions/changes: Marc Sabourin will be added as the Laboratory Services Division representative, Gary Ablett will replace Clarence Swanton as the new Chair of Plant Agriculture, University of Guelph, and Darren Robinson will replace Francois Tardiff as the new chair of the Ontario Weed Committee. Some discussion was had regarding the possibility of adding representation from the Ontario Pesticide Advisory Committee, Canadian Food Inspection Agency and Agriculture and Agri-Food Canada's Pest Management Centre. Offers will be made to the appropriate person in each organization.

RESPONSES TO 2003 RECOMMENDATIONS:

OPMRSC Recommendation #1.

Target Agencies:

William Ingratta
Director, Crop Technology Branch
Ontario Ministry of Agriculture and Food

Issue: Lack of Development, Implementation and Delivery of IPM Programs in Ontario.

Recommendation:

The committee recommends that OMAF address the barriers to IPM development, implementation and delivery in Ontario. It is further recommended that OMAF implement the recommendations of the Food Systems 2002 Report as the foundation in addressing this issue.

Response:

Development, implementation and delivery continue to be a significant effort on the part of OMAF in collaboration with research, industry representatives, private consultants and grower organizations staff. The existing IPM programs require continuous change for the challenges of new invasive species and the opportunities of lower risk pesticides and alternate pest management technology. Numerous projects are carried out with industry partners to refine strategies.

In the implementation and delivery of IPM, OMAF has continued to provide scout training, in class and in the field, with significantly increased numbers trained in 2004. Staff have worked with several new consultants to increase their knowledge base and experience with a wider group of crops. A second IPM seminar for crop consultants was held in March 2004 with an attendance of 55.

It may be not realistic to expect that all growers with all crops will have access to consultant and scouting services. There is a wide variation in the levels of adoption of IPM and an even wider variation in the requirements that individual growers have for advice and scouting service. Consultants require support to build expertise and this will only develop through growers willing to contract with them for services.

IPM research is continued under the new directions program, administered by the IRMB.

OMAF continues to explore funding opportunities to achieve the outcomes suggested in the recommendation for a Centre of Excellence. Any provincial funding would need to contribute to the priorities as set by the provincial government. Programming as outlined in the next paragraph is assisting some of the functions.

Agriculture and Agri-Food Canada has established a risk reduction program as part of Pest Management Centre. There may be opportunities available for project funding and information transfer through this group. Another recent development has been the approval of funding from USDA for a Great Lakes Vegetable Working group project. The group including Ontario counterparts, will focus significant attention on the adoption of IPM practices. Specialists working in IPM have already been connected to a listserv to facilitate the posting of real time questions, solutions and observations. A web page will be developed to display presentations, research findings and project updates for vegetable IPM specialists and practitioners. These two developments contribute significantly to the recommendations of the Food Systems 2002 report.

OPMRSC Recommendation #2.

Target Agency:

Mr. Bob Carberry
Vice President, Programs
Canadian Food Inspection Agency

Issue: Lack of a Compensation Program to Address Direct and Indirect Losses Due to Quarantine issues/actions.**Recommendation:**

The Committee recommends that the Canadian Food Inspection Agency develop a financial compensation program, which is triggered upon the discovery of a quarantine pest which requires control action on the part of the producer.

Response:

“There is no automatic compensation for control actions with regard to quarantine pests. The *Plant Protection Act*, allows for the development of regulations prescribing the terms and conditions on which compensation may be ordered and the maximum levels of compensation allowed. It allows the Minister of Agriculture and Agri-Food Canada to order compensation to be paid in accordance with the regulations. Several sets of regulations have been approved within the last four years that are applicable to producers or growers who have incurred specific losses. These include regulations for Plum Pox Virus (PPV) and Potato Wart (PW). While compensation regulations can be developed under provisions of the Act, the Minister cannot compensate for future losses incurred by producers or growers. This presents broader challenges within existing national policy frameworks in terms of coordinating the development, approval and implementation of a comprehensive financial program for producers or growers. This challenge becomes greater given the budgetary pressures within the fiscal frameworks at both provincial and federal levels of government.

Recently, different approaches have been used in the development of compensation regulations. For example, PPV compensation regulations for 2000 to 2003 were developed with a multi-year approach. This four-year span, for the planned control and eradication of PPV, is the first of its kind for such compensation regulations.

A different approach was used for the Potato Wart compensation regulations for 2003, which were recently published in Canada Gazette Part I. They are more broad-based and will not only provide compensation for the 2002 discovery of potato wart but will also provide compensation for future detections of this disease.

Please be assured that the CFIA will continue to work with industry in the development of compensation regulations pursuant the *Plant Protection Act* if and when required. The interest expressed by your organization as well as your support is greatly appreciated.”

OPMRSC Recommendation #3.

Target Agency:

Dr. Patricia Collins
General Manager
Laboratory Services Division, University of Guelph

Issue: General Level of Dissatisfaction with Pest Diagnostic Services and Support.**Recommendation:**

The Committee recommends that the Laboratory Services Division (LSD) work with the OPMRSC and strike a working group to identify and study specific areas of concern to determine what actions, if any, can be taken to address this situation.

Response:

"The background you provided suggests that there is a fundamental difference between the current mandate of the laboratory and the expectations of the OPMRSC. It is unfortunate that there was no representative from the Laboratory Services Division on the committee as that person may have been able to address some of these concerns.

The Laboratory Services Division is certainly willing to meet with a subgroup of the OPMRSC to discuss the committee's concerns. John Melichercik and Marc Sabourin will represent the laboratory on the working group.

The pest diagnostic laboratory is funded through user fees and a small transfer payment from the Ontario Ministry of Agriculture and Food. The latter determines the services that are delivered in exchange for the transfer payment. Given the current requirements, the pest diagnostic laboratory would require a significant increase in funding to be able to develop and maintain expertise in the definitive identification of exotic pests and diseases. The working group needs to consider" how funding will be obtained to support the desired services."

OPMRSC Recommendation #4.**Target Agency:**

Charalyn Kriz
A/Chief Registrar
Pest Management and Regulatory Agency

Issue: Registration of Biocontrol Agents, and Pheromone Monitoring Devices and Growth Regulators.**Recommendation:**

The committee recommends that PMRA reconsider movement toward the registration of biocontrol agents and pheromone monitoring devices. Further, the committee recommends that the PMRA ensure that growth regulator registration requests be reviewed by personnel with the appropriate expertise.

Response:

1) Pheromone-Baited Monitoring Devices:

As you may be aware, pheromone-baited devices (traps) represented and sold for monitoring purposes only are not considered to be pest control products and therefore not subject to regulation under the authority of the *Pest Control Products Act (PCPA)*. However, as per item 5 of Schedule I of the *Pest Control Product Regulations (PCPRs)* "Devices that are manufactured, represented or sold as a means of providing the automatic or unattended application of a control product" are subject to registration. This definition would include pheromone-baited devices represented and sold with pest control claims (rendering both the device and the semiochemical which it contains subject to registration). You may be aware that the PMRA consulted with manufacturers, researchers and user groups in 2003 to address concerns and regulatory requirements regarding these latter types of products (i.e., devices containing solely pheromones or other semiochemicals as active ingredients represented and sold with pest control claims). Regarding devices of this nature which are used in agricultural or forestry IPM programs or for stored product pests in certain situations (e.g., commercial grain elevator operations) the Agency has decided not to take any regulatory action for the 2004 season while clarifying its policy on these products because of their low-risk nature. Further guidance will be provided in 2005.

2) Biocontrol Agents:

The PCPA currently defines a pest control product as "any product, device, organism, substance or thing that is manufactured, represented, sold or used as a means for directly or indirectly controlling, preventing, destroying, mitigating, attracting or repelling any pest." This definition includes organisms such as invertebrate biological control agents (IBCA) which are used for pest control. Although the PMRA legally has the authority to regulate IBCA agents such as beneficial arthropods and nematodes, the Agency does not require their registration at this time. We are working cooperatively with CFIA and AAFC to monitor the importation and use of these products. We are also monitoring international developments in regulation (e.g. via OECD) to ensure any proposals are in Canada's best interests. The PMRA recognizes that any change proposed in the future regarding the way to which IBCAs are regulated will require extensive multi-stakeholder consultation.

3) Plant Growth Regulators:

It is not clear from your letter what the particular concern is with the way in which plant growth regulators are being evaluated by the PMRA. If you have specific concerns regarding the regulation of these products, including how data are interpreted, please provide further information. With registrant permission, we would be pleased to share with you specific reviews of plant growth regulator submissions or products so that you can be fully informed about how these assessments are being made. Relatively recent consultation documents (PRDD 2001-04 Ethylene Eco Sprout Guard and PRDD 2001-05 Trinexepacetyl) available on PMRA's web site give insight into how this category of product is being evaluated.

OPMRSC Recommendation #5

Target Agency:

Dr. Yvon Martel
Chief Scientist
Agriculture and Agri-Food Canada

Issue: Concerns Regarding the Research Being Conducted Relative to Priorities as set by the Risk Reduction Strategy

Recommendation:

The Committee recommends that AAFC communicate which research proposals were selected in 2003 and the criteria used to determine these successful projects.

Response:

“The recommendation of the Committee is that AAFC communicate which research proposals were selected in 2003 (under the Pesticide Risk Reduction and Minor Use Research programs) and the criteria used to determine these successful projects.

For the Risk Reduction Program, the request for proposals targeted priority commodities identified to date including potatoes, apples, canola, cranberries, pulses, dry beans. Comprehensive proposals on other crops were considered. Proponents were asked to focus on the development of alternative pest management tools and methods to foster their adoption, including the development of beneficial management practices and training modules, economic analyses, and communication activities to support technology transfer to industry. In addition, the following research areas were identified as high priority gaps in current knowledge:

- Research and development of new tools (Beneficial Management Practices) for IPM development, implementation and assessment;
- Discovery, research, evaluation, development and implementation of microbial and Biological Control Agents (BCA's) as alternative reduced-risk pest control options.
- Assessment of adoption, efficacy, economics and environmental impact of pest control practices and IPM programs to provide information on success of adoption of IPM and to perform risk assessment analyses.
- Implementation of BCA's for new or existing IPM programs to improve efficacy, reduce impact on non-targets, improve integration/compatibility of multiple pest controls, and increase use of reduced-risk products in IPM.
- Evaluation of existing Decision Support Systems under Canadian growing conditions, for major commodity-specific crop-pest complexes.

For the Minor Use Research Program, the request called for research to support the introduction of minor uses pesticides that pose a reduced risk to the environment. Specific areas of interest were identified as:

- Research and development of new reduced-risk products/technologies for use in minor crops with a priority given to crops where currently no or limited pest control options are available or where it is expected that current pest control options will be restricted.
- Research in relation to pest biology, especially for new or potential pests and for secondary pests that arise as a result of the use of a new technology in minor use crops.
- Research related to screening of new minor use pest control products or techniques in terms of production practices, phytotoxicity, crop tolerance, plant back, efficacy, compatibility, determination of factors to improve use, and integration and implementation into existing crop production systems.
- Development of new pest control application technologies in minor use crops including those for use of chemical pesticides and biopesticides.

- Research to assess methodologies and/or determine effects and impact of minor use pest control products on non-target organisms and health of the environment.

The criteria used to evaluate the proposals and make funding decisions were those normally used by AAFC e.g., scientific originality and quality of the research, strength of the team, sound methodology, budget, likely impacts. A summary of successful projects has been posted on the Pest Management Centre website (<http://www.agr.gc.ca/prrinup>).”

ISSUES

There is a continuing need for enhancement of crop protection research capacity and development to address important insect, mite, nematode, weed and disease problems. For many fruit crops in Ontario there is very little publicly funded crop protection research. Positions at research facilities need to be filled promptly so that

important pest management research can be conducted and delivered in a timely fashion. This research capacity is also eroding in other jurisdictions with similar pest complexes. For example, a study has shown that the full time equivalents of tenured track or government scientists committed to applied research in tree fruit IPM in North Eastern USA has shrunk by half over the last 25 years.

Numbers of invasive alien species of insects, diseases and weeds continues 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 and Emerald Ash Borer. New pests (or potential introductions) include Asian Long-horned Beetle, *Ralstonia solanacearum*, Sudden Oak Death, Soybean Rust and waterhemp. OMAF specialists, researchers and the Canadian Food Inspection Agency (CFIA) staff are working closely to develop strategies to eradicate these pests and mitigate losses.

The U.S. Biosecurity Act has heightened security concerns in the U.S.A. increasing delays at border crossings and development of programs such as Partners in Protection (PIPs) and Customs-Trade Partners Against Terrorism (C-T PAT) requiring more paperwork and security measures for growers and wholesalers wishing to export product to the U.S.A.

In the fall of 2004, U.S. border inspectors implemented a 100% inspection policy on cut flowers entering from Canada, irrespective of the country of origin of the product. Any insects found were referred for identification before allowing entry. Given that this process could take several days, it effectively resulted in rejection of the shipment. Flowers Canada, working with CFIA and USDA eventually resolved the issue in November.

While domestically grown cut flowers are not a major export into the U.S.A., there is an issue with the import of cut flowers from South America into Canada and then the re-export of 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 results in unacceptable delays or rejection of the shipment. The industry is currently working on a Cutflower Export Certification Program.

The pesticide issue continues to plague the turf industry in Ontario. Municipalities are moving to ban pesticide use in of 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 has filed suit against the City of Toronto regarding their pesticide ban. There was a hearing on Nov. 10, 2003 and the ruling was against CropLife Canada and in favour of the City of Toronto. This ruling is under appeal.

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.

Business activities within the crop protection industry have had a direct impact on the numbers of pest control products being marketed. As companies merge, competing products are removed from the market resulting in a smaller tool kit available to producers. Advances in biotechnology, while beneficial in reducing the needs for some pesticide sprays, has also resulted in the reduction of new product development. This is especially felt in the herbicide area. Increased use of “round-up ready” technology has virtually eliminated the need for other herbicides in a few large acreage crops thus reducing or eliminating the development of new herbicides. In 2003 the use of glyphosate represented over ¼ of all pesticides used in Ontario. Also, marketing strategies for the new reduced risk pesticides is leaning toward an insurance approach rather than to preferred option of applying pesticides only when pests are at economic levels.

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 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. The committee commends AAFC in their increased minor use development work and looks forward to benefiting from the fruits of their labour.

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, it must be noted that these can only be achievable 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.

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.

RECOMMENDATIONS ARISING FROM GAPS/BARRIERS, 2004

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.

Background:

A comprehensive plan to provide for orderly and effective replacement of the research expertise is needed. The emphasis must be on maintaining and enhancing the synergy that results when there are research teams with related disciplines that can address the complicated pest management and integrated crop management issues on crop groups. A commitment to long term, A-based research funding is needed to maintain research on sustainable production, and pest management systems including, IPM and resistance management.

A common theme that has surfaced in our review of pest management research projects in the horticulture sector is the need for research, development and implementation of comprehensive IPM programs and pesticide resistance management strategies. While an ambitious goal, it is needed to meet the challenges of the loss of pesticides, pest resistance, emerging pests and the growing public concern for safe food and a clean environment. This goal takes a team of people who will be able to do the work and work for the long-term goals of these sustainable projects.

Specific areas of concern are nematology, population ecology, entomology and plant pathology. AAFC has recommended that requests for resources at specific locations not be made as their new team approach to pest management research would allow for the required research to be completed from sites other than those in Ontario. If there Several difficulties arise from this approach. First, many horticultural issues are quite localized to very specific areas of the country. If the expertise is not located in this area, it will be difficult, if not

impossible, to conduct meaningful research. Second, technology transfer and subsequent implementation can be

problematic if specialists and growers cannot visit both the researchers and the sites to assess their applicability. Further to this, AAFC now requires a business case to justify the creation of any position, particularly one which

is to be associated with a specific location.

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.

Background:

Currently, University of Guelph faculty working in the pest management area under the OMAF–UofG Research Program participates in the Plants Program, which has three sub-programs, Field Crops, Horticulture, and Pest Management. The OMAF–Uof G Research Program is being restructured with the current Plant and Animal Programs being merged into a new “Sustainable Production Systems” Program. Researchers who are planning to apply to this program are being encouraged to design larger collaborative project proposals with multi-disciplinary teams focused on value chains.

Most integrated pest management researchers (entomologists, plant pathologists, weed scientists) conduct research on one or more specific pests or specific approaches to pest management, including investigations of the biology and ecology of the pests in question, and are not limited to particular crop groups as pests are often a problem in more than one crop. Further, IPM research involves working through cropping systems and ecology, rather than through a single value chain towards an end gain for one commodity such as grain corn. Researchers are also concerned that they could be required to be part of three, four or more different value chain projects with a subsequently large increase in administrative and reporting workload leaving little time for research. As such, it is unclear how IPM research would fit into the proposed value chain structure, particularly if value chains are formed along commodity lines.

OPMRSC Recommendation #3.

Targeted Agency:

William Ingratta,

Director, Crop Technology Branch

OMAF

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

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.

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: Lack of resolution regarding crop residue sub-zones.

Recommendation:

The OPMRSC recommends that PMRA expedite the resolution of the crop residue subzone 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 subzones 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 subzones are equivalent to the primary zones to which they belong.

Background:

Since 2001 the impact of the unique Canadian residue subzones on the Canadian minor use program has been clearly outlined to numerous stakeholders and to PMRA. Despite high level meetings and the formation of a zone amalgamation project for 5 and 5B, no resolution is forthcoming or imminent. In fact all data submitted to the zone amalgamation project has been discounted as unhelpful and any further data from joint Canada-U.S. trials is being dismissed as not rigorous enough.

The issue continues to be a major impediment to most minor use submissions from both Ontario and Quebec and now AAFC's Pest Management Center. It not only doubles the cost of many minor use submissions, but makes the placement of residue trials very difficult given the limitations on certified GLP contractors.

A meeting in Dec. 2004 with PMRA has indicated that they wish to proceed with a costly and 'unique' approach to generating residue data from zones 5, 5B, 1 and 1A to determine if the zones are justified. No consideration will be given to any of the original criteria used to establish the zones. Even updated ecozone maps are not being considered which indicate that the subzones are not unique.

Additionally PMRA has indicated that they will develop a system more rigorous than current GLP trials to attempt to validate or invalidate the need for these subzones. No criteria for this more rigorous system have been provided to the provinces and no clear timeline has been established. A letter in October, 2004 from the acting chief registrar of PMRA indicated that resolution of the subzones could be achieved by 2006, however the December 2004 meeting indicated that a decision may not be reached until late 2007 or 2008.

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.

Background:

Since the formation of the URMUR program in 1997, very few active ingredients and end-use products have been successfully registered through this program. Since 2001, provincial concerns about the ineffectiveness and perceived barriers to success within the URMUR program have been clearly outlined to stakeholders and to the PMRA. One of the key issues has been the fees associated with the URMUR program. Not only do the fees not reflect the minor use nature of the submissions; the fact that they must be paid up front by registrants remains as a significant barrier to the program's success. Fees must be paid up front based upon a guesstimate of 3 year's projected sales. Given the minor use nature of such submissions, most registrants cannot justify the time and investment in an URMUR submission. Re-formatting costs and additional, unique Canadian data requirements will also impede any progress. The result has been that many much needed active ingredients for minor crop producers are not available in Canada.

Minor Use Program - Update for Ontario Commodity subcommittees and OPMRSC

URMULE registrations to date 2004

Roundup for horsenettle on RR soybeans
Dividend seed treatment on seed corn & sweet corn
Distinct + Ultim for horsenettle on field corn
Refine Extra for fall application timing on winter wheat
Prism + Pinnacle for weeds on field tomatoes
Sulphur for powdery mildew on grapes
Quadris for Rhizoctonia on potatoes
Cabrio to add Septoria leaf spot to field tomatoes
Sovran for powdery mildew on pears
Coppers for eastern filbert blight on hazelnuts
Quadris for Rhizoctonia on ginseng
Assail on crop group 4 for pea leafminer
Assail on crop subgroup 5B for pea leafminer
Frontier for yellow nutsedge on dry bulb onions
Dual Magnum for weeds on sugarbeets
Subdue Maxx for Pythium on golf course turf and sod farms
Ridomil Gold for Pythium on GH cucumbers
Dipel for Cherry fruitworm on highbush blueberries
Accent for weeds on sweet corn variety GG 214
Admire for grubs on highbush blueberries
Apron for Pythium on spinach
Lontrel for vetch on lowbush blueberries

Emergency use registrations 2004

Folicur (wheat) – Fusarium
Senator (tobacco) – Rhizoctonia
Matador & Warrior (soybeans) – soybean aphids
Tilt, Quadris, Folicur, Headline (soybeans) – soybean rust
Previcur (GH Peppers) – Pythium
Command (cucumbers) – weeds
Checkmite (honey bees) – Varroa mites
Ridomil Gold (GH Cucumbers) – Pythium
Fulfill (GH Peppers) – aphids
Admire (highbush blueberries) – grubs
Tristar (Brassica GH transplants) – swede midge
Ridomil Gold MZ (ginseng) – foliar Phytophthora
Headline (green peas) – Ascochyta
Quadris (spinach) – downy mildew
Admire (ginseng) – grubs
Ripcord (grapes) – MALB
Malathion (grapes) – MALB
Nova (strawberries) – powdery mildew
Senator (mushrooms) – green mould
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 18 % of projects are joint with US IR-4 program
Approximately 18 % are minor uses for field crops
Approximately 40 % are minor uses for field vegetables
Approximately 9 % are minor uses for greenhouse vegetables
Approximately 23 % are minor uses for fruit crops
Approximately 8 % are minor uses for ornamentals

Current & On-going Minor Use Issues:

- Crop residue subzones
- URMUR fees
- Non-harmonized data requirements
- Non-harmonized MRLs
- AAFC – PMC pull back from crop group submissions
- AAFC – PMC communications with stakeholders

Re-evaluation Impacts:

- Notable PACRs issued in 2004: paraquat, acephate, endosulfan, sulphur, phosmet, ancymidol, diflubenzuron, naled, 1, 3 dichloropropene
- Notable RRD's issued in 2004: coumaphos, methyl bromide, terbufos, atrazine, malathion, azinphos-methyl, chlorpyrifos, phorate, sulphur
- OMAF officially responded to chlorpyrifos, azinphos-methyl, phosmet, endosulfan, acephate, 1,3 dichloropropene
- 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
- Rarely harmonized with US EPA REDs and concerns about lack of alternatives, resistance and IPM programs typically ignored
- Products currently known to be under re-evaluation include: all organophosphates, all carbamates, all EBDC fungicides, chlorothalonil, thiophanate-methyl, oxyflurofen, linuron, mcpa, 2,4 D, dicamba, GBM pheromone, ethephon

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

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

FRUIT TECHNICAL WORKING GROUP

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.

This recommendation is being submitted again as the committee does feel that there is a need and that previous responses and actions have fallen short of expectations of the committee.

Recommendations:

- 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.

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 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 Priorities Identified at the Fruit Technical Working Group:
November 1, 2004 (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
- Development of an advanced IPM and 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
- Development 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

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
- 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 mycoplasmic diseases.
- Management strategies for vertebrate pests

GINSENG TECHNICAL WORKING GROUP REPORT

EMERGING PEST MANAGEMENT ISSUES:

1. Grubs and mice are increasing problems in ginseng plantings. Grubs are becoming common in crops on sandy soils.
2. Lack of disease control in some gardens has raised the issue of emerging resistance to the fungicide Ridomil. Ridomil is one of 2 products used in tandem for the control of *Phytophthora* root rot. Ridomil resistance was found to be widespread in 2004. The industry needs new chemistries for *Phytophthora cactorum* and *Pythium* spp. Effective seed treatments might help reduce introduction of pathogens into gardens.
3. Broadleaf weed herbicides are needed to combat increasing chickweed and other weed infestations.
4. Reduction of a North American seed supply may lead to the use of China and other areas as a source of seed for Ontario gardens. There is a possibility that diseases not found in Ontario may be imported on this seed. Market intelligence and evaluation of pests on imported seed of *Panax* species is needed to assess the phytosanitary threat.
5. Issues relating to pesticide residues are becoming of increasing importance to trade in all medicinal herbs. There is a lack of shared international standards and currently no agreement on what levels are acceptable.
6. Atypical rust is becoming more common. The extent and cause needs to be determined. Symptoms differ from typical rusty root symptoms.

PEST MANAGEMENT RESEARCH PRIORITIES:

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

- 1) *Phytophthora*
 - 2) Rusty root (typical and atypical)
 - 3) *Cylindrocarpon*
 - 4) *Pythium*
 - 5) *Rhizoctonia*
 - 6) *Botrytis*
 - 7) *Alternaria*
 - 8) *Rhizopus*
1. Identification of efficacious new chemistries that can be efficiently used for control of *Phytophthora cactorum* is urgent. This fungus can be explosive under the right circumstances
 2. Rusty root (typical and atypical): determine extent and cause of these problems
 3. *Cylindrocarpon* root rot: Continuation of the Agriculture and AgriFood Canada study on DNA soil extraction to provide growers with the means of identifying high risk fields before planting. *Cylindrocarpon* root rot is appearing with increasing frequency in gardens. The lack of adequate control products for *Cylindrocarpon* remains a concern.
 - a. Note: Seed treatment products would improve control of *Cylindrocarpon* and *Fusarium* seed rots. One product, thiophanate-methyl (Senator PSPT), has been shown to be efficacious, but the active is currently under review by PMRA. Acceleration of this review process is requested.
 4. Identification/determination of Ridomil resistance in *Pythium* populations in ginseng soils.

Measurement of the impact of fumigant replacements and nutrients on the incidence of *Pythium* diseases.

5. As Quadris is a strobilurin fungicide and susceptible to the development of resistant strains, an alternative product is desirable.
6. Efficacy and residue trials to support registration of additional control products for *Botrytis* and *Alternaria*

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.

Insects / Rodents:

1. Grubs

2. Slugs

1. Mice

- bait and application timing, new products, label expansions

RECOMMENDATIONS:

The technical working group recommends that:

- 1) **AAFC establish research programs to develop unique ginseng cultivars.**

Directed to AAFC ADM-Research and AAFC Science Directors (Sustainable Crop Production Systems; IPM; Food Quality and Nutrition)

As the development of unique Canadian ginseng cultivars would provide the Canadian ginseng industry with competitive advantages in the global ginseng market, it is recommended that **AAFC** develop research programs to exploit the germplasm collection at Delhi with the aim of releasing cultivars beneficial to the industry. Staffing a ginseng germplasm research scientist position at the Delhi research farm would be a positive step in this direction.

Background:

Increasing competition from growers of *Panax quinquefolius* in China may place additional price pressure on the Canadian industry. Creation of *P. quinquefolius* cultivars with unique characteristics that appeal to either consumers (taste, root shape, ginsenoside profiles, nutraceutical and pharmaceutical applications) and/or growers (disease and drought resistance, increased yields, uniform seed height and seed set) would give our growers competitive advantages. The Delhi research farm of AAFC has a germplasm collection of about 600 accessions. These lines possess a range of characteristics from which superior lines can be selected and micropropagated using techniques being developed at AAFC-London. These lines are the product of 10 years of effort; this work may be lost if action to increase research human resources does not soon occur. The Delhi research farm currently requires additional scientific resources to manage and evaluate these lines.

2) Research programs be established to deliver optimum agronomic practices and sustainable pest management solutions for pests affecting ginseng.

Directed to AAFC

Science Directors (Sustainable Crop Production Systems; IPM) and the University of Guelph.

Background:

Scientific information is lacking with respect to crop requirements for organic matter, water delivery systems, and mechanization of ginseng production. Optimal use of organic matter / crop amendments / mulches may improve pest management and reduce adverse impacts on water quality resulting from use of organic matter in ginseng production. Certain crop rotations may suppress soilborne pests sufficiently that fumigation may no longer be required. Development of a mechanized seed harvester would reduce labour costs.

3) CFIA assess the phytosanitary threat of China-grown ginseng (*P. quinquefolius* and *P. ginseng*) seed to Canadian growers.

Background:

Production of *P. quinquefolius* in China will have a major impact on trade in the future. Both this production and the potential use of China as a source of seed are of interest to the ON industry. What are the phytosanitary implications of such seed imports? As *Panax ginseng* has pathogens in common with *P. quinquefolius*, **CFIA** is asked to assess the phytosanitary threat of all species of imported ginseng (*P. quinquefolius* and *P. ginseng*) seed.

Emerging Issues

1. *Border Issues*

This remains the major issue facing the industry, with a number of recent challenges associated with movement of plant material into the US.

- Heightened security concerns have resulted in delays at border crossings and development of programs such as PIPs (Partners in Protection) and C-T PAT (Customs-Trade Partners Against Terrorism) have required more paperwork and security measures by growers and wholesalers wishing to export product.
- In the fall of 2004, US border inspectors implemented a 100% inspection policy on cut flowers entering from Canada, irrespective of the country of origin of the product. Any insects found were referred for identification before allowing entry. Given that this process could take several days, it effectively resulted in rejection of the shipment. Flowers Canada, working with CFIA and USDA eventually resolved the issue in November.
- Flowers Canada has also been working on a cut flower certification program for Canadian wholesalers with OMAF, CFIA and USDA. This has involved a HACCP-type program and has included preparing handbooks and manuals and running a one day IPM workshop. A pilot project has commenced with two wholesalers.
- Other commodities affected by border delays are commercially produced biocontrol agents (BCAs), which as of Jan 1 2004 could only enter the US through a limited number of ports of entry, all of which are at airports. Most producers seem to have worked out how to deal with the added inconveniences which have included the use of bonded carriers, but there is ongoing concern over what the next obstacle will be.
- Quarantine issues continue to hang over the industry from the standpoint of both imports and exports.
 - Chrysanthemum white rust – has been reported in a number of north-east states and there have been some suggestions from CFIA that it be deregulated
 - Sudden Oak Death – has affected imports of roses and bulbs
 - Swede Midge – regulated areas in Ontario continue to expand and shipment of host material into the US is threatened. It is unknown how the recent discovery of SM in NY state will affect the export of host plant material.
 - Ralstonia - did not cause the disruptions it did in 2003, but nonetheless, the issue was never far from growers' minds, reinforced by a recent incident in Florida, which resulted in the destruction of a grower's crop even though the pathogen was eventually identified to be a non-quarantine strain.

Other quarantine concerns such as Emerald Ash Borer and Asian Long-Horned Beetle, while not directly related to the industry, continue to focus attention on the need for border vigilance.

Recommendations:

Recommendation 1.

Issue:

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

Background:

The Minor Use Registration process has made great strides in recent years with the establishment of the PMC and the minor use priority setting process. However, now there is a need to see progress with the actual registration of new uses. The industry needs new actives in its fight against pests and diseases, and those with an IPM fit and biocompatibility are high on the priority list. There is also concern that many smaller companies have a negative opinion of the Canadian registration process, and that this opinion has affected their decisions as to whether to enter the Canadian market.

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.

In particular, 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, was much appreciated.

The greenhouse industry's needs for new pesticides are focused on those that can be classed as IPM- or biocontrol-friendly. Many of the products falling within this category belong to small companies who are unfamiliar with the Canadian registration system, but who have expressed concerns about submitting applications to the PMRA based on anecdotal evidence.

Recommendation

It is recommended that:

- 2) PMRA actively encourages the participation of small companies with microbial and other environmentally friendly pesticides. This should be done through incentives and processes that not only promise to make the submission and registration of new actives easier, but is accountable for meeting stated timelines and objectives.

Target Agency:

PMRA;

OASCC Linkages

Ontario Pest Management Research and Services Committee

Recommendation 2.

Issue:

The need for pathology expertise in greenhouse ornamentals

Background:

The greenhouse ornamental industry is the largest horticultural sector by farm gate sales in Ontario and Canada with 2002 sales of \$745 million and \$1.42 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 concern. A major priority for the industry in recent years has been the responsible use of irrigation water through the use of recycling technologies. A side issue to this

has been the increased problems of root diseases spread through recycled water.

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, the program has been drastically reduced. Likewise, the University of Guelph has supported the industry with pathology research in recirculating systems, however, the recent retirement of a key researcher in that field has left the industry with limited pathology resources.

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:

- Flowers Canada develop a case for addressing the industry's pathology research needs and work with AAFC and the University of Guelph to fill the research gaps.
- AAFC addresses the issue of the research gap in greenhouse ornamental pathology
- U. of Guelph commit to continuing with its research program in greenhouse pathology

Target Agency: Flowers Canada, AAFC, University of Guelph

OASCC Linkages: Ontario Pest Management Research and Services Committee

VEGETABLE TECHNICAL WORKING GROUP

Current & On-going Minor Use Issues:

- Crop residue subzones – A meeting will occur in December. Research projects are being conducted to determine if there are differences between subzones, results should be available late 2006 or 2007. Some data has been submitted to PMRA, however; there were no detectable residues, so the PMRA will not use this information to show there are no differences between sub-zones. The PMRA has not defined “equivalence” and no residue was used to define zones in the past, but the PMRA is asking for residue data. Currently, there is a Crop Life industry working group looking for residue data from crop sub-zones 5A and 5B.
- URMUR fees – The PMRA has been asked to charge fees at the end of three years, not all up front based on company projected sales costs.
- Non-harmonized data requirements – this has even occurred with biopesticides. PMRA has unique data requirements globally. This keeps Canadian producers at a competitive disadvantage. This has become a big discouragement for small companies.
- Non-harmonized MRLs – result in non-tariff trade barriers. Once Canada achieves a zero MRL for chemicals not registered in Canada on imported products from the U.S., we will see some companies no longer shipping. There are many products registered in the U.S. that are not registered in Canada.
- Re-evaluation impacts – Kristen is currently handling this file with the PMRA. We are seeing more and more proposed continuation of use based on mitigation measures that will actually preclude some growers from using the product (ie. re-entry intervals, buffer zones, etc..).
- AAFC – PMC pull back from crop group submissions
- AAFC – PMC communications with stakeholders. 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.

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

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

No idea where the trials are being done by AAFC, PMC. There needs to be more communication with the industry from PMC. Apparently, a lot of trial have been done by AgQuest.

Ecozones? Why will the PMRA allow us to use data from Maine and not Western New York?

Research and Service Recommendations

The Vegetable Technical Working Group needs a copy of the guidelines for making the list of recommendations

Recommendation 1

Target Agency: Dr. Al Tomlin, AAFC Pest Management Center (PMC)

Issue: The movement away from conducting minor use projects and registrations on crop groups by AAFC's minor use program will have a significant negative impact on many of the vegetable crops including lima beans, pumpkins, squash, watermelons, muskmelons, specialty crops, spinach, leafy greens etc... These commodities are in dire need of new chemistries to assist with key pest control issues, OP replacements and resistance management.

Recommendation: The committee recommends that the AAFC-PMC continue to work towards minor use registrations on crop groupings, rather than individual minor crops. Crop group registrations are a vital registration need for many small minor crops that may not otherwise achieve much needed pest management tools.

Recommendation 2

Target Agency: OMAF

Issue: Lack of delivery and implementation of IPM programs in Ontario

Recommendation:

Whereas Integrated Pest Management (IPM) programs have been developed for many high value crops,

and new reduced risk products need more intensive pest monitoring and understanding of the pest complex and the activity of the product,

and IPM programs, which include resistance management strategies, help to prolong the effective life of pest control products

and IPM is an integral part of agricultural risk management,

and IPM programs have not been fully adopted or available to growers and processors due to:

- 1) lack of availability of training opportunities and trained IPM consultants and scouts
- 2) lack of economic viability for privately delivered IPM consulting/scouting services
- 3) lack of affordability of such services for growers

therefore,

there should be a commitment from OMAF to effectively address the barriers to IPM implementation and delivery in Ontario, including those identified above.

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.

Many new reduced risk crop protection products have one or more of the following characteristics:

- need to be applied at early growth stages of the pest
- target a narrow spectrum of pest species
- do not provide immediate kill
- do not provide close to 100% 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). They also require intensive scouting, sufficient to detect the pest at an early growth stage, accurately identify the pest, and determine the level of infestation. For products that do not provide sufficient speed of control or levels of control of the pest, other IPM strategies must be used in combination in order to protect yield and quality (marketability).

Improper use of these crop protection products may also lead to the development of pest resistance to the product, a consequence of importance to the wider crop production industry.

Further, integrated pest management is an integral part of agricultural risk management, an essential part of a responsible agricultural industry.

Presently in Ontario, IPM consulting and scouting services are not available to growers in some areas and some commodities. Where acreage of a given commodity is scattered, rather than concentrated, travel time and expense make it uneconomical for private business to deliver service. In other cases, the time and expense required to adequately scout a commodity make the service unaffordable to the producer due to the economic realities of the commodity. In many cases, private businesses are unable to find and retain well-trained, knowledgeable scouting staff. This is due to the seasonal nature of the work and the lack of people with these skills in the labour pool. An IPM consulting service that has to spend significant resources training staff, only to retain them for one or two seasons, is unsustainable.

A further background issue is that with the loss of older crop protection products and the registration of new products with the characteristics described above; there will be a requirement for a significant research effort into enhanced IPM systems for many crop/pest complexes. This will be crucial in commodities where new crop protection products do not provide the level of control necessary to maintain the viability of the industry due to losses in crop yield and/or quality (marketability). IPM systems research will be needed to develop effective combinations of IPM strategies.

The Food Systems 2002 Final Report addresses many of these issues, and provides additional background on the challenges ahead. The Food Systems 2002 Review Committee's

recommendations are as follows:

- “It is recommended that a Centre of Excellence for IPM be created to coordinate the diversity of IPM into a central focus and enhance the position of Ontario as a world leader in IPM.
- It is recommended that government funding of pest management research continue for applied, practical research based on partnerships between governments, universities, consultants and industry groups.
- It is recommended that development of IPM programs should continue as a key component of the IPM continuum:
- It is recommended that delivery of IPM programs should be available to all Ontario growers:
- It is recommended that IPM be used to promote Ontario products as having been grown based on safe and responsible choices for consumer, grower and the environment.”

GREENHOUSE VEGETABLES TECHNICAL WORKING GROUP

Pest Management Update for 2004

In general, pest problems were less than in previous years. Cool, wet conditions outdoors likely contributed to lower pest pressure in the greenhouse but disease pressure due to some diseases increased.

Tomatoes

The major pest problems were cabbage loopers, whiteflies and tomato russet mites. Increasing incidence of the carmine mite is suspected due to leaf chlorosis observed in association with such infestations. This may pose increasing problems with their control. Whiteflies became a problem mainly when harvesting of field tomatoes began in late summer. Tomato pinworm was also observed in several operations. There was one incidence of potato psyllids. Moist humid conditions favoured development of botrytis. Incidence of bacterial canker was much reduced from the previous year. Pepino mosaic virus was present in several operations but symptoms were generally mild until recently with shorter days and cloudy conditions. Generally, beef varieties showed more severe symptoms.

Cucumbers

Of the common greenhouse pests, the two-spotted spider mite was the most problematic this year. Use of IPM techniques such as scouting and biological control was successful but further adoption by additional operations is being done with much hesitation and caution. The acreage using IPM techniques and biological control is the same as last year. The major disease problems were powdery mildew and botrytis. Although there was incidence of Fusarium stem and root rot, the severity of such occurrences was reduced, likely due to better management techniques.

Pepper

Major pest problems included aphids, particularly the foxglove aphid, spider mites, thrips and cabbage loopers. Incidence of the European corn borer was down this year. Mealybugs, crane flies, broad mites, and cyclamen mites were also observed this year. Major disease problems included Fusarium and powdery mildew.

Major Concerns:

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Potentially increased regulation of biological agents in a manner similar to chemical pesticides in Canada. This may impose undue financial burden on biological control companies making it prohibitive for them to develop new biocontrols, or even to continue use of existing ones. Such a situation could render use of biocontrols very expensive and uneconomical, thereby possibly reducing use of, or even preventing, continued use of biological control by growers. The undesirable consequence of this situation is a reversal in trends away from biocontrols towards increased reliance on pesticides.

The lack of harmonization of the registration process between EPA and PMRA not only prolongs the minor use registration process, but also serves to discourage manufacturers from registering products in Canada. Lack of IPM-compatible products continues to be an issue for

growers that strive to maintain season-long biocontrol programs.

Increasing incidence of new invasive pests and diseases. 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.

Potential trade barriers due to pests or residues for which there are no tolerance in the US.

Research on development of new arthropod biological control agents and on potentially useful new microbial biological control agents is considered necessary in light of the need to supplement current biological control programs.

Ornamentals, Trees, Turf and Home Gardens Technical Working Group

Pest Management and Crop Protection Issues:

Nursery/Landscape

The 2004 growing season was characterized by greater than average precipitation with cooler than average temperatures. As a result, the growing conditions were good, however, there was also an extended period of leaf emergence with increased disease infections. In spite of the cold weather, overwintering insects survived well. Leaf blights such as anthracnose, scab and tar spot reached high levels.

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 (only one pesticide registered). White grubs continue to cause economic losses in field grown nursery stock, especially on sandy soils, and there are still no pesticides registered for their control. OMAF has carried out some efficacy trials for white grubs and AAFC (minor use) has the lead on this priority.

Anthracnose (e.g. anthracnose on Euonymus, maple, ash) and other leaf diseases continue to cause significant injury to nursery ornamentals. The Canadian Nursery Landscape Association has hired a national IPM coordinator (with duties in minor use) to help identify chemistries and work with PMRA to aid in the registration of new and replacement pesticides for this industry.

Quarantine 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 and Chatham-Kent county, due to rapid tree mortality and an ever-expanding detection zone. Because of EAB, many Ontario nurseries are unable to sell inventories of ash because they have been removed from planting programs 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 10's of thousands of ash caliper trees (@ 150.00) in 2005-2006.

Since Asian Longhorned Beetle (ALHB) was found infesting trees within the City of Toronto and Vaughn, new detections have been small and close to the original zone. ALHB presents a huge threat to the urban forest and nursery industry since a) so many of the host tree species 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. A quarantine for ALHB host trees could easily put a caliper tree nursery out of business within a period of a few months. The hosts species for EAB and ALHB make up the top 10 to 15 species of trees grown in Ontario nurseries.

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. Positive detections of *Phytophthora ramorum* (Sudden Oak Death) in B.C. nurseries have contributed to the probability of Ontario growers importing this disease via nursery trade. To date, there are 39 genera of ornamentals and related horticultural plants that are regulated for SOD. To prevent further spread of this disease, detailed certification

programs are being developed by APHIS and CFIA.

Emerging Issues:

Exotic Pests

EAB, SOD and ALHB have huge implications for the nursery and landscape sectors. The agencies devoted to the management of quarantinable pests do not currently 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 longhorned 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. loss of ash sales to markets west of Toronto). Quarantines against shipment of ALB host species may 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 exotic pests (invasive aliens) preventatively with a better system of record keeping that will streamline trace back and trace forward activities. Certification should reduce the amount of time growers are prohibited from shipping, and also increase the efficiency of eradication. Also, the impact of exotic/introduced pests on outdoor ornamentals is often difficult to quantify due to lack of industry statistics. The industry needs to develop more data regarding plant groups (e.g. deciduous trees, value, acreage and pests).

Turf:

The lawn care industry has had another difficult year because of municipal pesticide bans. To date in Ontario there are seven municipalities with some restrictions of pesticide use on home lawns. These are Cobalt, Perth, North Bay, Parry Sound, Thorold, Caledon and Toronto. In April 2004, the City of Toronto changed the time of enforcement of the by-law for lawn care operators. As of April 2005, lawn care operators in the city will be fined for applying pesticides. Enforcement for homeowner applied pesticides will not begin until 2007. The City of Toronto is currently working on their definitions of infestations for insects on home lawns and insects and diseases on golf courses. Once these definitions are in place, the city will allow pesticide applications if there is an infestation. There will be no pesticide applications allowed for weeds in home lawns. It appeared at first that golf courses would be exempt from the by-law in Toronto, but that is not the case. 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 IPM/PHC Council of Canada voluntary turf IPM accreditation program is in its third year for lawn care and its second year for golf courses. To date roughly 190 people have written the lawn care IPM exam and roughly 80 golf course superintendents have written the golf IPM exam. Desk audits for the lawn care sector were conducted in 2004 and the first desk audits for golf will be conducted over the 2003/2004 winter season.

Pest Management and Crop Protection Issues:

Diseases of note for 2004 included anthracnose basal rot and take-all patch. There are no fungicides currently registered for use in Ontario against these two diseases. There is some work being done by AAFC to determine the efficacy of azoxystrobin for anthracnose basal rot. Take-all patch is on the azoxystrobin label in the US and an URMULE for that should be pursued.

There were new reports of European crane fly infestations on home lawns and golf courses in 2004. It has moved from its initial areas of infestation from Niagara Peninsula to the Kitchener/Cambridge /Guelph area, York Region, Barrie, Richmond Hill and Oshawa area. There were many reports of lawn damage from leatherjacket feeding in the spring and reports of abundant European crane fly adults flying in the fall. This is a problem because currently there is no insecticide registered for use for home lawns in Ontario. In addition, 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.

Moss on golf greens is another problem. An URMULE application for Kocide 2000 has been submitted to PMRA. Last fall and this fall, some trials have been conducted in Ontario to determine the timing for this product for moss control in Ontario.

Recommendations

Title: Biology and Pest Management of New and Emerging Pests

Recommendation:

The Technical Working Group for Nursery, Ornamentals and Turf recommends support of research efforts into the biology and control 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 longhorned beetle, emerald ash borer, sudden oak death, white grubs (in field nursery production), daylily rust, plum pox virus, European crane fly and anthracnose basal rot.

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 insure 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. 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 greater ramification on access to markets (e.g. moratorium on shipping). Registered pesticides are not available for all 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.

Title: Registration of Reduced Risk Pesticides and IPM

Recommendation:

The Technical Working Group for Nursery, Ornamentals and Turf recommends continued support for research on the development and adoption of integrated pest management and registration of new, lower risk, IPM-compatible pesticides (e.g. curative insecticides) for turf, nursery production and landscape. Municipal pesticide bans on private property often encompass the whole landscape. There is interest from the City of Toronto in implementing a threshold based action plan for treating landscape plants. Information on thresholds for the diverse landscape plant species and diverse landscape plant pests is not available. Further research into this is necessary if municipalities are going to adopt these types of pesticide by-laws.

Details:

The aim of this recommendation is to improve the ability to manage insect, disease and other pests in the face of reduced availability of registered pesticides and increasing concern about their effect on the environment and municipal pesticide bans. 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, the development and adoption of low risk alternatives to current practices and the development of IPM programs for landscape plants and landscape plant pests.

Title: The Role of Alternative Pesticide Products

Recommendation:

The subcommittee on Nursery, Landscape and Turf recommends that the role of alternative pesticide products be clarified for legal use in Canada.

Details:

The industry is confused over the legal use of alternatives to registered pesticides. There has been some off-label use of 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.

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. The problem is that 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.

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

7. 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 Aphids/Vectors for Viruses:** Economic impact, chemical controls, efficacy, life cycle, overwintering, vectoring viruses and biocontrol agents
- B2 **Barley Yellow dwarf in winter wheat:** Economic impact, effect of changing cropping/rotational practices, seed treatments, best management practices, plant resistance.
- A2 **European chafer** in wheat
Decision thresholds, biology, control measures
- A2 **Fusarium:** include economic impact statement when sending this to FCRSC and OPMRSC. Resistance breeding, new chemistry, grading system - inconsistent
- A2 **Soybean Cyst Nematode:** Biocontrol, population dynamics, race-shifts, spread of SCN, management
- B2 **Root Rots on soybeans:** (*Pythium*, *Phytophthora*, *Rhizoctonia*, *Fusarium*), thresholds, better management tools, biology
- C1 **Alfalfa Weevil:** Survey to determine status of biological control agents - why they haven't been effective lately
- C1 **Cereal Leaf Beetle:** Survey to determine status of biological control agents - why they haven't been effective lately
- B1 **Seed Stinging Pests on soys and edibles:** - TPB, Lygus and Stink Bugs
thresholds, management
- A1 **Canola insect pests:** - Cabbage Seedpod weevil, swede midge- survey of pests and potential biological control agents, thresholds, yield impacts, production practice impact and resistance breeding
- C1 **Slugs:** New products for no till soybeans and corn
- B2 **Bean leaf beetle:** economic impact, thresholds, vectors
- B2 **Dwarf Bunt:** seed treatments, resistance
- B2 **Corn Rootworm:** risk assessment for soybean variant and transgenic stewardship
- B2 **White Mould:** resistance management, clonal types
- B2 **Corn leaf diseases:** ie. Gray Leaf Spot, Stewarts Wilt. monitoring, prediction model, resistance
- B2 **Potato Leafhoppers on edibles:** thresholds, products, economic impact on edibles
- B1 **Anthrachnose in edible beans:** - seed treatments, evaluate new products
- C3 **Corn Stalk Rots:** (*Anthrachnose*, *Fusarium*, *Gibberella*) looking into genetics
Implications of cropping systems to disease, management

Services Priorities

Potato Leafhoppers: thresholds, products, economic impact on alfalfa. Decision thresholds, biology, control measures

Corn Insect Complex - fall monitoring strategies set to better inform growers to make seed treatment decisions in fall

Fusarium Education - application methods, timing, rotation, IPM

Research Updates at Annual Meeting- continue presenting field crop protection research from last years funding

- have project list for funded research from commodity groups
- bring a handout discussing results of research (point form)

Emerging Issues:

Soybean Rust - not here in Ontario yet but has potential

On Farm Treatment options - need to clarify issues around why on farm is not an option. If it is possible, look into research on treaters or custom applicators role.

8. FCPSC Objectives for 2004:

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 12th)
5. Revise Publication 812
6. Clarify grower access to seed treatments for wireworms and seedcorn maggot
7. Educate PMRA on major pest issues for field crops

Pest Management Research Priorities From OFCRSC (Tobacco) - 2004

EMERGING PEST MANAGEMENT ISSUES:

- Black Root Rot (BRR -*Thielaviopsis basicola*) –During the 2004-growing season growers noticed stunted plants in the field approximately 3 weeks after transplanting. The transplants appeared normal in the greenhouse. Dr Brammall (pathologist – Canadian Tobacco Research Foundation) confirmed the organism (*T. basicola*) on the roots of the plants, in the greenhouse trays, and in greenhouse media. The pathogen was also isolated from new, unopened bags of peat rooting substrate. The 2004 problems with BRR were associated with dry tray greenhouses. Dr. Brammall mentioned that washing/dipping trays in a chemical sterilant may spread the disease throughout the trays. Steam sterilization of trays may be a control for this organism.

- Curing Diseases: Pole Rot (*Rhizopus arrhizus*) and Bacterial Soft Rot (*Erwinia carotovora*) The prevalence of these two diseases appears to be increasing. The temperatures and humidity associated with curing favour the development of these diseases. These diseases do not appear to be variety specific, however, some cultural practices (i.e. sucker control burn) may increase the risk of disease development (Bacterial Soft Rot).
- White Mold (*Sclerotinia sclerotiorum*) is becoming more common. To date there have not been significant yield losses from this disease. However, more growers are reporting this disease in their fields. Growers who have had this disease previously are seeing it spread throughout their crop and to other areas on their farm. Currently, there is no control for this disease. With the increase in susceptible crops (i.e. soybeans) being grown, there may be an increase in disease pressure from this organism in the tobacco crop.
- Tobacco Mosaic Virus (TMV) is still a concern. There was one new case reported to OMAF this year. TMV had not been a problem on this farm before and no equipment was borrowed. It appeared that the disease occurred very early, at or before transplanting.
- Aphid control – alternative chemistries need to be researched. Assail (neonicotinoid chemistry group) has been proposed as an alternative. Review of smoke tests is required.
- Leaf drop – There was a significant amount of leaf drop during the 2004-growing season. Some growers had it so severe that the leaves had fallen off up to the thirds. Growers who had this problem were growing either CT157 or an American variety. Some growers are considering changing varieties to get away from this problem.
- Wireworm control – the only option for wireworm control is Orthene. Lindane is not registered for the 2005-growing season, another option is needed.
- Damping-Off (Pythium) – is becoming more of a problem in float greenhouses. Research needs to be done to develop and evaluate control measures for this disease
- White grubs (European chafer) are becoming a more persistent problem. The insecticide, Poncho may have the potential as a transplant water treatment.
- Other emerging issues: increasing cost of production, the risk mitigation measures proposed for 1,3-Dichloropropene by PMRA and the loss of registered pesticides.

Minor Use applications:

- Current minor use priority wishlist was reviewed.
- Senator 70WP - emergency use registration for the 2004-growing season. The registration expired June 30, 2004. CTRF submitted Senator residue samples. The samples met the criteria for PMRA residue levels. The active ingredient is still under re-evaluation, therefore, no submissions can be considered at this time for this product. Growers still do not have a registered product for control of damping-off (*rhizoctonia*) in the greenhouse. An emergency use application is planned for early 2005.
- Damping-Off is still a concern. Currently, there is no registered product available for use in the greenhouse (Senator received an emergency use in 2004). CTRF is testing other products (Endura and Pristine) for control of Damping-Off in the greenhouse. Three strobilurins (Quadris, Flint, Headline) were researched. It is recommended from the smoke test results that Flint and Headline be retested.
- Assail – smoke tests have been completed and reviewed. If Assail 70WP is labeled for use on tobacco, its use on the crop will not be opposed.
- Weed problems – wild buckwheat is becoming more of a concern on farms. Growers are

expressing interest in having products for control of wild buckwheat in tobacco.

- Endura (U.S. name) and Pristine are being tested by CTRF for control of Blue Mold and Target Spot. These products have not been smoke tested.
- Bacterial Soft Rot control in the field has been tested with phosphate containing materials (e.g. trisodium phosphate).

PROTECTION AND PRODUCTION RESEARCH PRIORITIES:

Ranked in Importance (1 = most important; 13 = least important)

- 1) Development of tobacco varieties, with broad based, high tolerance to pests and diseases (i.e. blue mold, tobacco mosaic virus, black root rot), with high yield and quality, and good machine harvestability using conventional and novel approaches. Integrate disease and pest tolerant varieties into a pest management program (CTRF) (Long term research priority, ongoing project).
- 2) 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).
- 3) Fungicide screening for Damping-Off of tobacco caused by *Rhizoctonia solani* with a focus on resistance management (CTRF) (Short term research priority, ongoing project).
- 4) 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).
- 5) Herbicide screening in tobacco and rye crops. (CTRF) (short term research priority).
- 6) 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).
- 7) 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).
- 8) 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).
- 9) Insecticide screening for the control of harvester ants with the focus on resistance management (CTRF) (short term research priority).

PROTECTION AND PRODUCTION SERVICE PRIORITIES:

- 1) OMAF to provide consultative extension and act as the lead in transferring research results to growers.
- 2) OMAF to continue to provide farm visits.
- 3) Increase OMAF 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 (OMAF)
- 5) Publication 298 should be made electronically available on the OFCTGMB website (OMAF/OFCTGMB).
- 6) Consultative services to be provided to growers to assist with curing techniques and skills (OFCTGMB).

Ontario Horticultural Crops Research Services Committee Report to The Ontario Pest Management Research and Services Committee December 9, 2004

OHCRSC Research Priorities (16 subcommittees)

(ALL) Pest Management – Development of IPM, IPM Delivery, Reduced-Risk, Minor Use, Harmonization, research capacity

(14) Environmental Management – Nutrient Management + Water Management

(10) Production Systems

(6) Marketing (Market Access, Promotion, Market Intelligence, Economic Impacts

(5) Food Quality/Food Safety

(6) Post Harvest

Service Priorities

Research capacity (nematology, toxicology)

Development of Business Case for AAFC Nematology Position

Diagnostics

Training and Education

Nutrient Management Funding

Database- communication of research

IPM research in U of G Research Program Structure

Other Business

Minor Use Issues for Pome Fruit

Subcommittee structure – Request from Asparagus working group

Summary of Subcommittee Priorities and Recommendations (related to Pest Management)

Crucifer Crops

Research Priorities

1. Pest Management systems
 - Management of insect, disease and weed pests, including thresholds and monitoring practices
 - Reduced risk products
 - New and emerging pests
 - Established pests
2. Minor Use Registrations – crop groupings
3. Identify Diseases and Pest of Specialty Crucifer crops

Service Priorities – Swede midge ID; pheromone trapping, degree day model and alerts;

- OMAF support to scouting companies
- Diagnostics turn around and accuracy
- Swede Midge greenhouse certification

Recommendations

- Crop loss of rutabaga industry due to cabbage maggot
- Lack of delivery and implementation of IPM programs in Ontario
- CFIA Identification Swede Midge using DNA sequencing
- IPM research in OMAF-Uof G Research structure
- Nematode Research capabilities

Low Acreage

Research Priorities

- Pest Management (shortage of registered pesticides, lack of qualified IPM consultants, scouts)
- Food Safety (including chemical residues)

Recommendations

- Address barriers to IPM implementation and delivery
- Re-evaluate OASCC process for effectiveness
- Replacement of key research positions within AAFC (alternative crops research biologist position at Delhi, Ontario regional nematologist and toxicologist)

Asparagus Working Group

Research and Service Priorities

Breeding – improved disease tolerance

Minor Use Pesticides- asparagus beetle (most serious), aphids and cutworms

Rust is most serious foliar disease, purple spot, Fusarium root rot

Herbicide resistant pigweed and lambsquarters

Potato

Research Priorities

Service Priorities

-Registration of Pesticides for Potato Pests

Recommendations

-Research in Insect Toxicology at AAFC SCPRC-London

CFIA test for late blight in seed potatoes

Root , Bulb and Leafy Vegetables

Research Priorities

-Pest Management Systems -Integrated management of insect, disease and weed pest, including development of thresholds and monitoring practices, biology, ecology and disease-nutrient interactions

Recommendations

- Lack of delivery and implementation of IPM programs – address barriers
- IPM Research in new OMAF-U of G Research Program structure
- Nematode capabilities
- Proposed mandatory certification of crop advisors

Grape & Wine

Research priorities

-Development of advanced IPM tools – alternative pest controls, GLP trials, efficacy trials to support full and minor use registrations, develop and validate predictive and management models, rapid monitoring methods and thresholds, systems-based resistance management, mating disruption for GBM, product evaluation to minimize pesticide residue on fresh market grapes, bird control techniques, IPM strategies for mites, leafhoppers, crown gall

Grape & Wine (cont'd)

Recommendations

- Viticultural oenological and economic issues associated with Multicoloured Asian lady

beetle

- Harmonization of registration requirements for pest control products
- Enhancement of crop protection research capacity to address insect, mite, nematode, weed and disease problems
- Herbicide drift on grapes – highlight information in Pub. 75, grower pesticide safety course, and licensed applicators, ensure MOE training re: investigation of drift events, research on impact of 2,4_D drift on susceptible plants such as grapes

Tomato

- Access to Crop Protection Material/Minor Use Registrations
- IPM in field Tomatoes – bacterial diseases, new products, diagnostic services, erosion of IPM support from private sector, lack of var. cutworm control requires resistance testing and degree day model, Improved use of OWN, pesticide and greenhouse sanitation registrations for the greenhouse tomato seedling industry, effect of new cultural practices on pest management

Service priorities

- Transfer of information on new crop protection products

Greenhouse & Protected Crops

Greenhouse Vegetables

Research priorities

- Maintain research on pest management issues including integrated control techniques for current, new and emerging pests and disease of economic concern biocompatible products for registration and production systems for pest and disease control.
- Areas within food safety program that require research

Recommendations

- Status quo for regulation of invertebrate biological control agents
- Invite Appropriate CFIA personnel to next subcommittee meeting to address Invasive species
- Increased collaboration to improve communication and coordination of research efforts
- Research on new arthropod biological control agents and new microbial biological control agents.

Mushrooms

Commercial - Control products for Green mold and Verticillium diseases, Trichoderma, support minor use, determine relationship between La France and patch disease and browns

Specialty – controls for blotch and trichoderma

Service – ID of insect, disease and weevil moulds, workshops on insect and disease ID.

Agroforestry

Research priorities

- Continued support for minor use registrations to control unwanted vegetation, insects and other damaging agents for maple syrup production, christmas trees and nut orchards.

Greenhouse Floriculture

Research priorities

- Development and Implementation of IPM Programs
- Integration of Nutrient, Water and Disease Management Strategies

Recommendations

- Registration of new pesticides for the industry through the minor use registration program
- The need for pathology expertise in greenhouse ornamentals

Nursery-Landscape and Turfgrass

Research priorities

- IPM – lack of pest population/damage action thresholds is preventing acceptance of IPM as an alternative to pesticide bans
- Pesticide Bans
- Use of Alternative Products

Recommendations

- Registration of Reduced Risk Pesticides and IPM
- Biology and Management of New and Emerging Pests
- Acquisition of Current Industry Economic Data –needed for product registration as well

Tender Fruit

Research Priorities

- Plum Pox Research -additional research into pathways of virus transmission and role of aphid transmission and link to quality

IPM Including Minor Use for Tender Fruit Crops

Breeding and germplasm improvement for resistance to pests, diseases and abiotic stresses

Recommendations

Shrinking resource and personnel base in Tender Fruit Personnel – business case
Sprayer application, IPM modelling , nematology
Registrations of products through the Minor Use process by Crop groups

Berry

Research priorities

Food Quality/Safety

Production – Strawberries -Tarnish Plant Bug, Mildew, Anthracnose, mites

Raspberries – botrytis, cane diseases and insects, education program on disease and pest control

Other berry crops – weed and pest control – pursue minor use, survey blueberry scorch and stunt infection in highbush blueberries

Recommendations

Nematology research – business case

Agricultural research communication – communication channels between, food, marketing, production, environmental and medical groups be improved and facilitated, that greater priority be place on ICAR and new technologies be developed to enable efficient tracking of current research project titles and progress.

Apple

Research and Service Priorities

Sustainable IPM Systems – fireblight, biocontrols for European apple sawfly, Reduced risk product and fit with. IPM, storage rots and postharvest disorders and efficacy of current and reduced risk materials, integrated approach for black rot, apple scab, fireblight, field validation of predictive models, development of sustainable IPM practices and resistance management for internal Lepidoptera pests

Recommendations

-Gaps in Delivery and implementation of IPM Programs – need commitment from OMAF to effectively address barriers

Ginseng

Research Priorities

-Market Intelligent and research - phytosanitary threats that may arise from importation of Chinese-produce seed of *P. quinquefolius*.

Recommendations

-AAFC ginseng cultivar evaluation including disease resistance

-CFIA assess phytosanitary threat of China-grown ginseng seed to Canadian growers.

Services

Techniques to id high risk fields for *Cylindrocarpus* or residues

Pest management training

Sweet Corn, Bean and Pea

Research Priorities

- Pest Management
- Crop culture – including herbicide carryover

Recommendations

Management of Reduced Risk Pesticides – many of the new products require more intensive management and existing IPM programs do not reflect this – OMAF train producers in use and management

Apiculture

Research Priorities

- Effective IPM and food safety program for controlling parasitic mites, small hive beetles and infectious diseases of honey bees
- Development of varroa mite resistant bee stocks using different selection approaches and integrating resistance into Ontario tracheal mite resistant existing bee stocks
- To identify and develop alternative control strategies for insect pests that have minimal impacts on beneficial insects

Service Priorities – resistance surveys for coumaphos, fluvalinate and oxytetracycline
Maintain and enhance Ontario bee inspection program and apicultural lab services
Registration of Amitraz, Checkmite, renew temp registration of Formic Acid mite-away II, registration of Oxalic Acid, Tylosin and Lincomycin

Organic Advisory Committee

– support for alternative weed controls, insects and pathogen management, biopesticides and new products research, IPM, weed management

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MEMBERSHIP ONTARIO PEST MANAGEMENT RESEARCH AND SERVICES COMMITTEE 2003

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