

**ONTARIO PEST MANAGEMENT
RESEARCH & SERVICES COMMITTEE**

2002 ANNUAL REPORT

TO

**ONTARIO AGRICULTURAL SERVICES
COORDINATING COMMITTEE**

February, 2003

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EXECUTIVE SUMMARY

The Ontario Pest Management Research & Services Committee (OPMRSC) met on December 9, 2002 at Kay House 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 Weeds Committee.

The OPMRSC organized the Ontario Crop Protection Meetings, held November 7, 2002, in conjunction with the Crop Life Canada, Ontario Branch. There were 11 oral presentations, including keynote addresses by Dr. Keith Solomon and Dr. Gord Surgeoner. Of significance was the return of industry presentations on new pest control products.

Several issues were identified and discussed, including the increased incidence of alien species of pests and diseases and the continued use of pests and diseases as non-tariff trade barriers. The need for improved access to low risk, environmentally friendly crop protection materials, including biological and biorational materials, continues 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 extension and IPM services continues to evolve albeit in an uncoordinated fashion. Human resource issues in the research community continue to concern the committee.

There have been significant announcements from both Agriculture and Agri-Food Canada (AAFC) and the Pest Management Regulatory Agency (PMRA) in regards to the Minor Use Program. AAFC has announced a six-year, \$60 million commitment to improve access to pest control products with a focus on reduced risk products through the Minor Use initiative. The PMRA has committed a further \$11 million for their reduced risk initiative to increase review staff for minor use and establish a minor use advisor.

The OPMRSC continues its action to address the issue of rapid diagnostics for Ontario. A committee, led by Ministry of Agriculture and Food (OMAF) is exploring opportunities with a private laboratory in London.

Five recommendations were formulated from the reports and discussions. Access to crop protection materials continues to be a top priority. Two recommendations address the need for continued research on crop protection issues, including an increase in funding for this research and maintaining the research teams needed to address the interrelated crop protection problems. Finally, one recommendation addresses the industry concern regarding capacity, expertise and implementation of IPM programs in Ontario.

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 Crop Protection Meetings, where industry representatives and researchers can share information on crop protection issues.

The committee also accepts the reports of the Ontario Horticultural Crops Research and Services Committee, the Field Crops Research and Services Committee 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
 - Tobacco

COMMITTEE ACTIVITIES

The 2002 Ontario Crop Protection Meeting was held on Thursday November 7, 2002, at the Victoria East Golf Club, Guelph Ont., in conjunction with the Crop Life Canada, Ontario Branch. There were 11 oral presentations, including keynote addresses by Dr. Keith Solomon and Dr. Gord Surgeoner. Of significance was the return of industry presentations on new pest control products, namely, Assail and Novaluron. Poster presentations highlighted the research funded by OMAF's Special Research and New Directions in Agri-Food & Rural Research Programs.

The annual meeting of the OPMRSC was held at the Kay House, Arkell Research Station, Guelph, Ont. on December 9, 2002. The committee accepted the reports of the Ontario Weed Committee, Minor Use Update and reports of the Technical Working Groups representing Fruit, Ginseng, Nursery, Ornamentals and Turf, Greenhouse Vegetables, Greenhouse Floriculture, and Vegetables. 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.

Responses to last years recommendations are highlighted in the next section, however, there have been some extremely positive developments in the Minor Use arena that warrant highlighting here.

Agriculture and Agri-Food Canada (AAFC) has announced a six year, \$60 million commitment to improve access to pest control products with a focus on reduced risk products through the following initiatives:

- AAFC to establish an "IR-4-like" structure to prioritize minor use needs nationally, make minor use submissions, manage submissions, generate necessary field and laboratory data
- Establishment of at least 6 GLP compliant research facilities in BC, the Prairies, Ontario, Quebec and the Maritimes to cover all crop zones
- Proposed establishment of headquarters in Ottawa with executive director, IR-4 liaison, study directors and administrative assistants
- Establishment of a national minor use website, improved liaison with PMRA and IR-4 and coordination of an annual national priority setting meeting
- AAFC intends to double the number of submissions to PMRA as a result of this initiative.

The PMRA has committed a further \$11 million for their reduced risk initiative to increase review staff for minor use and establish a minor use advisor. Other initiatives include:

- Reduced delays between US and Canadian registrations,
- Reduced delays between registrations on major and minor crops,
- Implementation of Crop Profiles as a tool for the PMRA to use when dealing with registration submissions.

- Establishment of a Minor Use Advisor

RESPONSES TO 2001 RECOMMENDATIONS

OPMRSC Recommendation #1.

Target Agencies:

Pest Management Regulatory Agency, Policy Branch
Agriculture and Agri-Food Canada

Issue: Improve the Access to Crop Protection Materials, including Biologicals and Biorationals.

Response:

Representatives from Agriculture and Agri-Food Canada (AAFC) and Pest Management Regulatory Agency (PMRA) were in attendance at the OPMRSC Annual Meeting and reported on recent initiatives that are intended to address this recommendation e.g. Minor Use funding.

OPMRSC Recommendation #2.

Target Agencies:

Ontario Ministry of Agriculture and Food

Issue: Increased Funding for Crop Protection Research

Response:

There have been no increases in funding from OMAF for crop protection research.

OPMRSC Recommendation #3.

Target Agencies:

Agriculture and Agri-Food Canada

Issue: Maintaining Research Capacity and Effective Research Teams in Ontario

Response:

Dr. Gary Whitfield, AAFC Theme Leader for Pest Management spoke to this recommendation and suggested that the committee should focus future recommendations on specific research needs rather than on positions. For example, nematologists at other AAFC sites can meet the concern about lack of nematology in Ontario. There are 72 scientists assigned to Pest Management and that is the highest level of staff resources in any of the new theme areas. It will be difficult to argue for any more resources.

OPMRSC Recommendation #4.

Target Agencies:

Ontario Ministry of Agriculture and Food
Univ. of Guelph, Laboratory Services Division

Issue: Improved Access to Rapid Diagnostics for Ontario Agriculture**Response:**

Currently OMAF and UofG staff is exploring possibilities for rapid diagnostics through a private lab in London. They are working to further define specific testing needs and feasibility. If the tests are available and protocols are already in place then they should be able to offer the service at a reasonable cost.

ISSUES

Numbers of alien species of insects and diseases continue to rise in Ontario. Introductions of these pests result in economic loss to growers in several ways: rarely, if ever, is there a control

measure available to mitigate losses; if an emergency registration is possible, they are not 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 result in non-tariff trade barriers and consequently, loss of markets. Last year, the committee reported on Chrysanthemum Rust, Sudden Oak Death, and Plum Pox Virus. New pest finds this year include Swede Midge, Pea Leafminer and Emerald Ash Borer. OMAF specialists, Researchers and the Canadian Food Inspection Agency (CFIA) staff are working closely to develop strategies to mitigate losses.

The agriculture community is closely watching the ongoing issue of municipalities' actions to ban non-cosmetic use of pesticides within municipal boundaries. Agricultural use has not escaped the debate. While OPMRSC is accustomed to dealing with science based issues, the committee may need to spend more time on non-science issues impacting the use of pesticide issues including political and trade matters.

Nutrient Management Act is a major issue for Ontario agriculture. The possible effects on production agriculture are most often discussed, but it must be recognized that changes in nutrient levels can also affect pests and influence pest management decisions. The implementation of the Nutrient Management Act in the province must take into consideration the effect on pest complexes.

The continuing evolution of field diagnostics, extension services and delivery of Integrated Pest Management (IPM) programs in Ontario continues to be felt at the grower and industry level. Increased capacity and expertise is needed. 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 development of programs and training. There continues to be good co-operation between OMAF, Agricultural Integrated Management Services (AIMS) and the private sector, however there is a need for a more co-ordinated approach throughout the agriculture practitioner continuum in Ontario.

The potential for pesticide residues that exceed the MRL to appear in food produced in Ontario still exists, despite the major advances in pest management. This remains a food safety issue, and is critical for maintaining consumer confidence, and in some cases, export markets. The OPMRSC recommends continued support of OMAF's pesticide residue monitoring and analysis program.

Consolidation within the crop protection industry is not over. Company mergers are still occurring affecting the number of people employed in the industry, and is expected to result in less discovery research, and less research and development in general. The result will most likely

be a reduction in the number of crop protection materials being offered and may reduce the number of minor uses on labels.

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

A draft document has been developed by OECD countries to guide the process of registration of biological control agents. The registration as outlined in the draft, is based on the pesticide model and asks for unrealistic data requirements that would likely eliminate ongoing research and development by the biological control industry. With so much of the greenhouse vegetable industry dependent on biocontrol and an increasing number of flower growers using it as a primary pest management strategy, the impact on the industry could be devastating.

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 and growers expect the new initiatives by both AAFC and PMRA will help alleviate this issue in the near future. However, it is imperative that the agriculture community remain vigilant in the progress of these initiatives to ensure their needs are being addressed in an effective and efficient manner.

RECOMMENDATIONS ARISING FROM GAPS/BARRIERS, 2002

OPMRSC Recommendation #1.

Target Agencies:

Pest Management Regulatory Agency

Issue: Improved Access to Crop Protection Materials, including Low-Risk, IPM Compatible Products.

Recommendation:

The committee recommends that the PMRA develop a system of special exemptions for least toxic products (similar to that of the Environmental Protection Agency) which would increase the availability of IPM compatible products. Further, the committee recommends that the PMRA reconsider its movement toward registration of biocontrols.

Background:

The American Food Quality Protection Act has, and will continue to, result in the loss of many older pesticides in both Canada and the United States. Because growers still need crop protection materials to replace those that are lost, the Canadian system must move to “catch up”, such that Ontario growers have access to the crop protection materials that are also used in the United States.

Ontario growers remain at a competitive disadvantage in the world market as a result of limited access to crop protection materials, including new chemistry, biological controls and biorational, or least toxic products. Ontario growers often must use older, less environmentally friendly products, because new materials are not registered in Canada. As the U.S. moves to phase out these older chemistries, products shipped to the U.S. can no longer be treated with these cancelled products, thus further limiting markets for Ontario growers.

Because access to crop protection materials is such an integral part of agricultural production, and competitiveness, the PMRA is urged to do the appropriate consultation with the agricultural industry before deregulating a product, and to provide the appropriate lead time for the consultation process. Also, it is imperative that the availability of alternative materials is considered before a product is removed from the market. The system for the registration of biological controls must undergo significant changes to make these materials available to growers. Currently, companies are shying away from the joint review process because of concerns that the Canadian registration system would slow their U.S. registrations.

Further to this, the PMRA should also reconsider movement towards a registration process for

biocontrols. Currently, these products are thoroughly reviewed by the Canadian Food Inspection Agency (CFIA) before use and a further "registration" process would be duplicative. Several biocontrol agents are currently being used successfully by greenhouse growers allowing significant reductions in pesticide use.

OPMRSC Recommendation # 2.

Target Agencies:

Agriculture and Agri-Food Canada
Pest Management Regulatory Agency

Issue: Timely, Efficient Implementation of the New Federal Risk Reduction Strategies.

Recommendation:

The committee recommends that both AAFC and PMRA take immediate actions to ensure efficient and effective implementation of the risk reduction strategies and further, the committee recommends increased partnerships between AAFC, PMRA, University Researchers, OMAF, growers and private consultants to provide assistance towards implementation.

Background:

Agriculture and Agri-Food Canada (AAFC) has announced a six year, \$60 million commitment to improve access to pest control products with a focus on reduced risk products through the following initiatives:

- AAFC to establish an "IR-4-like" structure to prioritize minor use needs nationally, make minor use submissions, manage submissions, generate necessary field data and laboratory data
- Establishment of at least 6 GLP compliant research facilities in BC, the Prairies, Ontario, Quebec and the Maritimes to cover all crop zones
- Proposed establishment of headquarters in Ottawa with executive director, IR-4 liaison, study directors and administrative assistants
- Establishment of a national minor use website, improved liaison with PMRA and IR-4 and coordination of an annual national priority setting meeting
- AAFC intends to double the number of submissions to PMRA as a result of this initiative.

The PMRA has committed a further \$11 million for their reduced risk initiative to increase review staff for minor use and establish a minor use advisor. Other initiatives include:

- Reduced delays between US and Canadian registrations,
- Reduced delays between registrations on major and minor crops,
- Implementation of Crop Profiles as a tool for the PMRA to use when dealing with registration submissions.
- Establishment of a Minor Use Advisor

The initiatives as outlined above address many of the outstanding issues raised by this committee over the past years. It provides more funding and focus on minor use registration, development of more GLP compliant research establishments, emphasis on risk reduction strategies, closer links with the U.S. (IR-4) and commits AAFC to pest management research over the next 6 years. That being said however, it is readily apparent that it will take much longer to develop the infrastructure to achieve these goals. Of particular concern is the backlog of minor use submissions both from the data development aspect and the subsequent review process.

OPMRSC Recommendation #3.

Target Agencies:

Agriculture and Agri-Food Canada

Issue: Human Resources for Pest Management Research in Ontario.

Recommendation:

The committee recommends that AAFC take a more proactive role in explaining exactly how their new team approach to pest management research will address Ontario's concerns/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. 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.

OPMRSC Recommendation #4.

Target Agencies:

Ontario Ministry of Agriculture and Food

Issue: Development of a New Program for Research and Development of Pest Management Programs in Ontario

Recommendation:

The OPMRSC recommends that OMAF take the required steps to build on the successes of the Food System 2002 Program by developing a new long term (10 years) pest management research and development program with adequate funding (\$1 million/yr).

Background:

During the course of the Food Systems 2002 program, many successful and economically sustainable research and development projects have led to significant improvements to IPM programs and pesticide use reductions. To date there has been a 42% reduction in pesticide use and a concurrent 30% reduction in the risk associated with their use. The province of Ontario must build on this investment and continue to both build new programs where none exist and improve current programs.

The development of IPM and more recently ICM (Integrated Crop Management) programs requires a stable and dedicated source of funding to ensure that new problems (e.g. alien species) and serious on-going pest problems are addressed. In light of the general 'public good' that such programs have achieved to date, it is recommended that they be fully supported in the future. Over the past five years, the funding available for this type of research through the OMAF competitive funds dropped from \$800,000 per year for the Food Systems 2002 program down to \$200,000 per year for the portion of the OMAF Special Research Program, and more recently the New Directions in Agri-Food & Rural Research Program.

In light of the success of the Food Systems 2002 program, this committee wishes to convey to OMAF and ARIO, the need to continue support towards research which expands upon the goals and philosophy of the FS2002 program namely, improved integrated crop management strategies leading to high quality, safe food supplies. It behooves OMAF to build upon the strong base developed through FS2002 and move our growers to the next level of environmentally

friendly, sustainable pest management. Continued work in this area, however, requires a long-term and dedicated commitment.

OPMRSC Recommendation #5.

Target Agencies:

Ontario Ministry of Agriculture and Food

Issue: Development of a Co-ordinated Approach to Increasing Capacity, Expertise and Implementation of Pest Management Programs in Ontario.

Recommendation:

The committee recommends that OMAF take the lead in bringing interest groups together to develop a provincial strategy to address the need for increased capacity, expertise and implementation of IPM programs across Ontario.

Background:

Research and development of pest management programs is meaningless without successful implementation strategies. There is a critical need to increase the level of capacity, expertise and coordination within in the IPM community, through partnerships in development, delivery and training for students, consultants and agribusiness.

In 1999, OMAF refocused its resources into technology transfer initiatives in the areas of pest management, specifically developing and testing such programs and delivering these to independent practitioners, growers groups and agribusiness for implementation. It was anticipated that this shift would allow for the private sector or other delivery bodies to provide pest management services to the grower community. Despite attempts by private sector consultants, agribusiness and the Agricultural Integrated Management Services (AIMS) initiative their remains a lack of capacity, expertise and coordination to provide a province wide service. There is a distinct need to coordinate activities through better partnerships, communication and training initiatives to better provide these services and to address growers concerns that they have lost sources of unbiased, credible information.

Minor Use Program - Update for Ontario Commodity subcommittees and OPMRSC

December, 2002

Program statistics:

- 17 new URMULE submissions made to date in 2002 from Ontario
- 4 new URMULE submissions pending
- 40 new URMULE submissions made to date nationally
- 40 % from Ontario, 13 % from BC, 34 % from Prairies, 5 % from Quebec and 10 % from Maritimes
- 32 URMULE registrations nationally in 2002 (2 were regional only)
- Approximately 200 URMULE submissions (1997-2002) remain in the system with outstanding data requirements, registration/re-evaluation issues and/or rationales in preparation
- Main issues are requirements for costly residue trials, occupational exposure data, metabolism data, storage stability data, formulants policy impacts, crop tolerance and efficacy data

Activities/Initiatives Fall 2001/Early 2002:

- ADM's of Agriculture Ministries of provinces of Ontario, Quebec and BC met with PMRA to review major issues effecting minor use program i.e. crop zones, use of crop groupings, lack of access to reduced-risk and biopesticide products, failure of URMUR program and lack of seed treatment harmonization.
- At the F/P/T meeting, provinces of Ontario, BC and Quebec gain the support of all other provinces departments of environment for improved access to reduced risk and biopesticide tools
- Numerous and sustained recommendations from Ontario OASCC committees regarding minor use issues
- CARC (Canadian Agri-Food Research Council) workshop on minor use reviewed issues and proposed recommendations regarding access to reduced risk products, development of crop profiles, problems with the URMUR program, establishment of a national minor use organization and improved communication.
- CHC (Canadian Horticultural Council) present to MPs at Standing committee of Agriculture the landmark document 'Crop Protection - A Better Future for Canada' which outlined key recommendations to improve the registration system.
- In April 2002, the CCSPA (Canadian Consumer Specialty Products Association) issues another landmark report entitled 'Market Access Times for Pest Control Products' which outlined performance concerns at the PMRA.

- Crop Life and CFA (Canadian Federation of Agriculture) also make presentations to committees reviewing the new PCP Act.

Federal Response and Initiatives - 2002

- May, 2002; AAFC and Health Canada announce \$ 7.3 million for 'reduced risk initiative'.
- \$3.3 million for AAFC to develop crop profiles and IPM strategies, \$4.0 million to PMRA to increase review staff for minor uses and establish position of minor use advisor
- June, 2002; AAFC announces a 6 year, \$54.5 million commitment to improve access to pest control products with the focus on reduced risk products
- AAFC to establish an "IR-4-like" structure to prioritize minor use needs nationally, make minor use submissions, manage submissions, generate necessary field data and laboratory data
- Establishment of at least 6 GLP compliant research facilities in BC, Prairies, Ontario, Quebec and Maritimes to cover all zones
- Proposed establishment of headquarters in Ottawa with executive director, IR-4 liaison, study directors and administrative assistants
- Establishment of a national minor use website, improved liaison with PMRA and IR-4 and coordination of an annual national priority setting meeting
- July, 2002; National Minor Use Coordination Working Group met in Guelph to review initiatives and attempt to address outstanding issues such as crop zones, residue data requirements, preparation of rationales, minor use timelines, development of crop profiles and agree upon a strategy for establishing national minor use priorities
- August, 2002; national conference call held to establish national minor use priorities for 2003; pests (insects, diseases, weeds) ranked first numerically, potential solutions ranked as A, B or C
- Sept., 2002; IR-4 Food Use workshop attended by OMAF, AAFC, PMRA and CHC; several joint projects proposed
- Oct. 2002; AAFC via CHC (C. Hunter) initiate plan to submit 40-50 new URMULE submissions to address national 'A' priorities

Current activities:

- The Minor Use Advisor, Ms. Imme Gerke is based at PMRA HQ in Ottawa. Her roles and responsibilities are to bring grower's concerns to the attention of PMRA management and return responses, to expedite concerns on specific submissions, to increase growers awareness of the limits within which PMRA operates, to be liaison with minor use coordinators, AAFC, IR-4 and EPA.
- AAFC is still working to obtain the funds and establish the new 'minor use development center'. Key positions have yet to be filled at both PMRA and AAFC with the exception of the minor use advisor.

- AAFC will contract CHC and CFA to begin the collection of comprehensive crop profiles:
- This is a critical piece to improve risk mitigation decisions on minor uses
- Funding of URMULE projects, fiscal 2002-2003:
 - AAFC provided partial funding (50-75%) to 8 minor use projects in 3 provinces (ON, AB, MB) totaling just over \$61,000.00
 - AAFC also provided funding to 6 joint IR-4 projects directed by CHC totaling just over \$202,000.00
 - This funding mechanism will not exist in 2003-2004 and future funding mechanism is unclear at present
 - OMAF (IRMB) also committed to funding URMULE projects at a 12.5% level, however only one group of projects (xmas trees) was submitted in 2002. These funds also have capacity to contribute to projects, which screen new reduced-risk and/or biopesticide products that may become future minor use submissions.
 - The OMAF funding will be revisited in early 2003 as the situation in AAFC changes and/or is clarified.

Internet websites of interest:

- OMAF's minor use website; summarizes provincial priorities, active minor use projects nationally and minor use registrations since late 2000.
www.gov.on.ca/omafra/english/crops/minoruse/index.html
- PMRA website:
<http://www.hc-sc.gc.ca/pmra-arla/english/index-e.html>
- US IR-4 website; summarizes all non-food and food use minor use projects, searchable by crop or active ingredient
<http://pestdata.ncsu.edu/ir-4/>
- NAFTA Summary of Joint Review Registrations and Submissions
http://www.hc-sc.gc.ca/pmra-arla/english/pubs/jnt_rev-e.html

ONTARIO WEED COMMITTEE REPORT

Trends

- Continued move to Roundup Ready, mostly due to complexity of other programs based on conventional herbicides.
- Roundup-Ready is not necessarily a “less-management” program.
- Margins in the agro-chemical are very slim. Not many new herbicides in the pipeline.
- Research indicating that low drift AI nozzles may negatively affect performance of contact herbicides.
- Changes to Minor Use Program that were announced last summer will affect some research programs. More details are being awaited.

Issues around Roundup-Ready

More Roundup-Ready soybeans are being grown. There are issues with timing and expectations. Some believe that one just needs to go with 1 liter of Roundup and all the problems (annuals and perennials) are solved. There is a need for increased explanations on what the limits of this system are. Many farmers are waiting too much to spray. There is a need to stress that under moderate to heavy weed pressure, waiting until the 2nd trifoliate (or even later) will result in yield loss. Waiting too long may mean you may not be able to access field in time if there is heavy rain. Roundup will clean soybeans even when big and thick weed stands are treated at the flowering stage but this aesthetically pleasing outcome is reached at the cost of diminished revenues.

Many very weedy fields of Roundup-Ready corn were observed. Once again it seems that this is a question of expectations. Growers may have sprayed once and walked away, expecting that the job was done. The non-residual nature of glyphosate needs to be recognized, especially considering that many of the traditional corn herbicides (atrazine, Banvel, Dual, Frontier) have soil residual activity.

Problems with glyphosate drift have been seen more often this year. This is due to the increase Roundup-Ready crop acreage, but also to the fact that many growers are putting in a few acres of vegetable crops in areas that were typically used for field crops. There are also more greenhouses where glyphosate damage would have significant impact.

Problem Weeds

It appears that some “old friends” are still around and are sometimes increasing in numbers. Newcomers also joined them, which makes management trickier. Nipplewort and biennial wormwood are some of the newer problem weeds that were encountered in 2002. Common waterhemp (*Amaranthus rudis*), a major weed problem in the US Mid West, was thought to be absent from Ontario until last summer. It was documented in two fields in Essex and Lambton counties. In both cases it survived applications of Pursuit and was too tall to be well controlled by contact herbicides used as rescue.

Herbicide Resistance

New cases in 2001 that were confirmed in February 2002 include lambsquarters resistant to

Pinnacle, green foxtail resistant to Pursuit and cocklebur resistant to Pursuit, Classic and FirstRate.

There were few reports in the summer of 2002 of problems with ragweed resistant to ALS inhibitors. It is believed that growers assume that most ragweed plants are resistant so they are switching to alternative modes of action, glyphosate being one of the most popular. The fact that two companies decided not to support their ALS herbicides for ragweed in five counties in the Southwest was related to resistance.

There were a few cases of resistant pigweeds, lambsquarters and nightshades sent for testing and resistance confirmation at the University of Guelph in the fall of 2002.

Issues and priorities

The issues and priorities encompassing multiple commodities have been grouped in the Pest Management category. They have further been assigned to five sub-groups, which are presented in order of priority.

1. Minor Use Registration

Ontario Weed Committee Pest Management Research Priority #1

To continue herbicide efficacy and residue work leading to registration of minor use herbicides under the URMULE and URMUR programs in horticultural crops, specialty field crops and for problem weeds not currently on product labels in field crops.

2. Environmental Issues:

Ontario Weed Committee Pest Management Research Priority #2

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

Ontario Weed Committee Pest Management Research Priority #3

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

Ontario Weed Committee Pest Management Research Priority #4

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

Ontario Weed Committee Pest Management Research Priority #5

Determine the environmental variables affecting the production, release and dispersal of pollen

from ragweed and other allergenic weed species affecting the health of Ontario residents and develop a model predicting the timing and severity of pollen load near major metropolitan areas.

3. Herbicide Reduction and Safe Usage:

Ontario Weed Committee Pest Management Research Priority #6

Establish economic thresholds for problem weeds, e.g. sowthistle, sandbur, prickly lettuce, with consideration for crop quality, dockage, harvest moisture, and weed seedbank issues.

Ontario Weed Committee Pest Management Research Priority #7

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

Ontario Weed Committee Pest Management Research Priority #8

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

Ontario Weed Committee Pest Management Research Priority #9

Evaluate effectiveness of cost-effective, broad-spectrum biological control agents, including seed predators, to replace or reduce herbicide use in crop and non-crop areas.

4. Weed biology and ecology:

Ontario Weed Committee Pest Management Research Priority #10

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

5. Emerging Pests / Invasive weed species

Ontario Weed Committee Pest Management Research Priority #11

Biology and control of herbicide resistant weeds in field and horticultural crops.

Ontario Weed Committee Pest Management Research Priority #12

Identification and management of invasive weed species in crop and non-crop habitats, e.g. purple loosestrife

FRUIT TECHNICAL WORKING GROUP

Pest Management Issues and Recommendations

Impact of Pesticide Re-Evaluation Regulations USDA-EPA –Food Quality Protection Act PMRA-Pesticide Re-evaluation

The recent federal commitments to the minor use program and pesticide registration process are good news. However positive actions are still required to address critical issues facing the industry. Recent crop tolerances and reentry periods announced by USA-EPA in the use for organophosphate insecticides will have serious implications on the way we grow our crops. Imidan (phosmet) in the USA now has a 3 day reentry interval and there is the possibility that the Canadian label will follow suit. This will definitely hamper our monitoring and scouting procedures developed for fruit crops.

Proposed zero tolerance for Guthion (azinphosmethyl) on grapes in 2003 by the USA is another issue. It is anticipated that processors will follow suit in adopting or speeding up EPA timetables. Without the use of guthion will create a huge hole in the grape berry moth strategy when high populations exist.

In Canada in 2002, removal of Streptomycin from the market was given a reprieve for one year, but now the status of Streptomycin is unknown. With no viable control for Fire Blight, the apple and pear plantings is at high risk of completely being destroyed by this devastating disease.

The fruit industry is dependent upon pest control products such as Streptomycin, Guthion (azinphosmethyl) Sevin (carbaryl) and Rovral (iprodione). Ontario has an excellent track record on the production of safe quality fruit produced through scientifically documented Best Management Practices including Integrated Pest Management (IPM). These programs have taken years to develop. The potential loss of key products regulatory action or unrealistic restrictions on the use pattern would seriously impede the continued of a safe, high quality product.

Recommendations:

- 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 strongly urge AAFC to fill the vacant population ecologist entomologist and vacant nematologist positions at the Vineland AAFC location as soon as possible.
- 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 azinphosmethyl, carbaryl 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.
- We encourage PMRA to provide an opportunity for the fruit industry as a whole to comment on re-evaluations of pesticides before decisions are made, similar to the EPA's National Registry.

Human Resources for Pest Management Research, Development and Implementation of Fruit Crops

A common theme that has surfaced in our review of pest management research projects for the fruit crops is the need for a comprehensive research, development and implementation of IPM programs and pesticide resistance management strategies. While an ambitious goal, it is needed to meet the challenges of loss of pesticides, pest resistance, emerging pests and the public growing 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.

- We strongly urge AAFC to fill the vacant population ecologist entomologist and vacant nematologist at the Vineland AAFC location as soon as possible in full time capacity. Also urge AAFC to clarify the roles and responsibilities of the plant pathologists stationed at Vineland as to fruit IPM research.
- There is strong need to increase the level of expertise and capacity in the IPM community, through partnerships in delivery and development and training for students, consultants (independent or agribusiness).

Pest Management Research Projects Identified at the Fruit Technical Working Group: October 30, 2002 (Not Ranked)

Apple:

- Development of sustainable IPM practices and resistant management for internal lepidoptera pests on tree fruit includes the following:
 - i. OFM resistance strategies and management
 - ii. CM resistance strategies and management
- Development of an Integrated Approach for Control of Apple Scab and other foliar & fruit diseases of apple
- Development of an Advanced IPM program for Ontario Apple Orchards

- Storage rots of pome fruits: Efficacy of current and potential new controls and strategies
- Genetic Transformation to increase Fire Blight Resistance in commercially important apple and pear cultivars
- Use of anti biotic alternatives to manage Fire Blight on pome fruit
- Efficacy Testing, Pesticide Timing and Evaluation of Biological Controls for Managing European Apple Sawfly
- Field Validation of developmental models for insect and disease for Ontario conditions

Berries:

Development and Implementation of IPM Programs and resistance management strategies for berry crops to include:

- Development of Economic Thresholds and Forecasting Models for Strawberry Leaf Diseases
- Identification of New Fungicides Suitable for Minor Use Registration for Control of Strawberry Leaf Diseases
- Control and Management of Anthracnose and Angular Leaf Spot of Strawberry
- Development of monitoring techniques and thresholds for control of cyclamen mite on strawberry
- Development of monitoring techniques and thresholds for the control of root weevil on strawberry
- Management Strategies for Cane Diseases of Raspberry, Black Raspberry and Blackberry
- Identification of Fungicides Suitable for Minor Use Registration on Cane Diseases of Raspberry
- Identification of insecticides for Tarnished plant bug control on day neutral strawberries
- Damage Surveys, Economic Threshold Development and Control of White Grubs in Berry Crops

New application methods for pesticides through drip irrigation

Grapes

Development and Implementation of an IPM Program and Pesticide Resistance Management Strategies for Grape to include:

- Development of Fungicide Resistance Management Programs for Powdery Mildew and Botrytis Bunch Rot of Grapes
- Efficacy Testing of New Fungicides for Control of Diseases of Grapes
- Management and Control of Crown Gall
- Development of mite and leafhopper control strategies on Grape
- Evaluation for bird control techniques in grapes

Management strategies of Asian Ladybird beetle, *Harmonia axyridis*, in grape

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.

Genetic Transformation to Increase Fireblight 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

Field Evaluation of Pesticides on Control of Bacterial Spot

Efficacy Testing of New Fungicides for the control of diseases of Stone Fruit to support minor use 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

Efficacy testing of new and existing products for the control of Plum Curculio on Tender fruit to support minor use registration.

Evaluation of monitoring techniques and sustainable control strategies for Plum Curculio in Tender Fruit.

General:

The use of predatory mites as Biological Control Agents in Ontario Fruit IPM Programs

Identification and Development of Alternatives to Soil Fumigants

Evaluation of Bird Repellent and Controls in Grape, Tree fruit and Berry Crops

Identification of New Insecticides Suitable for Minor Use registration for the Control of Fruit Insects to Compensate for the Expected Loss of Organophosphate Insecticides

Investigation of the Negative Impact Asian Ladybird beetle, *Harmonia axyridis*, may have on ripening Fruit Crops

Development and Implementation of IPM Program and Pesticide Resistance Management for Fruit Crops.

Development of Control Strategies for diseases of fruit integrating cultural control and host resistance.

GENETIC TRANSFORMATION TO INCREASE DISEASE AND INSECT RESISTANCE IN COMMERCIALY IMPORTANT FRUIT CROPS.

GINSENG TECHNICAL WORKING GROUP REPORT

EMERGING ISSUES:

1. Cylindrocarpon root rot is appearing with increasing frequency in gardens. Some gardens have experienced losses in the range of 50% and occasionally as high as 90%. Research at Agriculture and AgriFood Canada has identified Cylindrocarpon as the primary causal factor in the ginseng replant problem. It is essential that ginseng growers have access to a means of identifying at-risk fields before planting. Control issues associated with this disease have the single greatest impact on the ginseng industry in Ontario. The lack of adequate control products for Cylindrocarpon remains a concern.
2. The incidence of Rusty Root remains a concern to ginseng growers. Loss of quality has forced some growers to accept prices below the cost of production. The causes of rusty root are not understood. This disease has both pathogenic and physiological origins. Until the physiological origins are better understood growers will not be able to avoid losses due to rust.
3. The lack of a replacement product for Quintozene for Rhizoctonia control has left the industry in a position of continued requirement for emergency use permits for Quadris. There is a need both for a Quadris URMULE and for additional products.
4. Seed-borne disease is a source of garden losses due to Cylindrocarpon, Rhizoctonia and Fusarium. The use of above-ground stratification will reduce the incidence of seed-borne losses. Losses will be further reduced by appropriate seed treatment products.
5. Disease problems associated with the use of low cloth shade need to be resolved. This is primarily an engineering issue. Methods need to be established that reduce both temperature and humidity. The industry relies heavily, about 50%, on the use of this type of shade structure and the economic reality is that it will continue to do so.
6. 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, if widespread, could lead to serious losses. The industry needs a comprehensive survey to determine whether resistance is present.
7. Reduction of a North American seed supply in 2003 may lead to the use of China as a source of seed for Ontario gardens. There is a possibility that diseases not found in Ontario may be imported on this seed.
8. Issues relating to organochlorine 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. These residues can occur as a result of soil contamination from drift, previous cropping practices or current applications. It is becoming increasingly evident that previous history, sometimes well in the past, is affecting current marketability.

GINSENG PEST MANAGEMENT RESEARCH PRIORITIES:

Diseases:

- 1) Cylindrocarpon

- 2) Rhizoctonia
 - 3) Rusty root
 - 4) Pythium: 4) & 5) can be interchangeable
 - 5) Botrytis
 - 6) Alternaria
 - 7) Phytophthora
1. 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.
 - Screening products for efficacy against Cylindrocarpon under field conditions.
 - Identifying an appropriate seed treatment for control of Cylindrocarpon and Rhizoctonia
 2. Developing efficacy and residue data to support URMULE registration of Quintozene alternatives.
 3. A comprehensive survey of the physiological causes of rusty root and a pictorial factsheet of symptoms.
 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. Efficacy and residue trials to support registration of additional control products for Botrytis.
 6. Determination of Phytophthora resistance in ginseng gardens.
 7. Identification of methods to reduce temperature and humidity under low cloth shade.

Weeds:

Broadleaf

1. Control of chickweed in gardens . Chickweed is increasing in ginseng gardens. Studies are needed to find a control product that is suitable for ginseng. Studies are also needed to determine the impact of weed populations on garden health and vigour. There are reports from other production areas that certain weeds actually improve Alternaria disease control.

GREENHOUSE FLORICULTURE TECHNICAL WORKING GROUP

Emerging Issues

1. *Quarantinable Pests and Diseases*

Quarantine issues identified in last year's report (e.g. Sudden Oak Death, Chrysanthemum White Rust) continue to hang over the industry, however there are additional problems that have emerged this year. There have been a considerable number of individual quarantine pest problems and it was suggested that the real issue is the lack of a coordinated North American approach to dealing with these incursions.

- Swede midge is a pest that lays its eggs into the growing point of brassica crops. The midge larva causes considerable damage to the plant making it unmarketable. The insect was first identified in Ontario in 1999 and CFIA surveys have found it in 9 counties. Movement of host plants out of these counties is currently restricted. The US is in the process of conducting surveys in New York and Michigan. The field vegetable industry is especially at risk, however there is a number of greenhouse grown ornamental plants in this family, as well as bedding plant seedlings that may be exported to the US. Some growers had product turned back at the border in the spring for this reason.
- Pea leaf miner (*Liriomyza huidobrensis*) is very closely related to the insect that caused so much damage to the chrysanthemum industry in the 1980's. However, this species has a wider host range. It was first found in Ontario in 1997 and has been believed to be present in the USA (especially California) for many years. Recent work however, has shown that there are two almost identical species that can only be distinguished by molecular means. Surveys have shown that the species in the US previously thought to be *L. huidobrensis* is in fact *L. langei* and that *L. huidobrensis* does not occur in the USA. Although there have been no confirmed intentions by the US to regulate movement of host plants of this pest, the potential for such action exists.

2. *OECD Registration of Biological Control Agents*

A draft document has been developed by OECD countries to guide the process of registration of biological control agents. The registration as outlined in the draft, is based on the pesticide model and asks for unrealistic data requirements that would likely eliminate ongoing research and development by the biological control industry. With so much of the greenhouse vegetable industry dependent on biocontrol and an increasing number of flower growers using it as a primary pest management strategy, the impact on the industry could be devastating. (See Recommendation 6).

3. *Move of University of Guelph Research Programs*

The decision by the University of Guelph to move its floriculture research program from Vineland to Guelph will have a negative impact on the cooperative research projects between the University of Guelph, Agriculture and Agri-Food Canada and OMAF and thus on benefits to the industry. The University is also proposing to go to a "full-cost" recovery system from researchers for the use of greenhouse space, with a proposed charge mentioned of \$300/m² of

bench space/year. Such a cost would severely curtail the research program, and in the opinion of the committee negates any reasons for the move.

Recommendations

Recommendation 1

Issue: Ethylene testing service for the greenhouse industry is a valuable service currently being provided by the Horticultural Products Lab at the University of Guelph, Vineland.

Background: Ethylene contamination (due to incomplete combustion of fossil fuels, faulty equipment or gas leaks) of greenhouses can cause significant losses in post-harvest storage and transportation, and in greenhouse production, particularly during winter months when greenhouses are not being vented. Detection of ethylene concentrations is essential for identifying the problem and determining corrective measures.

Details: With the move of research programs from Vineland to the main campus in Guelph, there is concern that the ethylene testing service will be discontinued or not as accessible to growers.

Recommendation: It is recommended that the University of Guelph continue to offer an ethylene testing service to greenhouse flower growers in Ontario.

Target Agency:

- University of Guelph

Recommendation 2

Issue: There is a need for rapid identification of insects and diseases at US border crossings.

Background: The success of the Ontario floriculture industry depends on its ability to compete globally and the strength of its export market. Most of the industry's production is currently exported and it has a positive trade balance with the US. With a perishable commodity such as flowers it is essential that border crossings are free of delays. Even a one-day delay can compromise the quality of the product. There has been a number of instances in the last couple of years of product (especially cut flowers) being delayed at the US border because of the presence of insect or disease pests. USDA border officials, without the necessary expertise to differentiate between species, send samples to experts for identification, a process that can take several days.

Details: For the export market, there is a need for expertise (and/or equipment) at major US border crossings, allowing rapid identification of insects and disease pathogens in a timely fashion.

Recommendation: It is recommended that:

- The Canadian Food Inspection Agency work with the USDA to investigate opportunities for

then use of rapid diagnosis technologies for the identification of insects and diseases in major ports between the USA and Canada.

Target Agencies

- CFIA

Recommendation 3

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

Background: The floriculture industry is at a disadvantage compared to its global competitors. There is a need for new pesticides that allow growers to manage pests using similar products to those available in the USA and Europe. Of primary importance are products that have been classified as reduced risk in the US, or which have an IPM fit. The floriculture industry has been very successful and efficient in recent years in registering new products through the Minor use program, primarily through an industry-funded position focusing on new registrations. However, there are still many products needed to further enhance growers' pest management programs.

The lack of new pest control products also gives rise to concern about the potential for off-label use of pesticides. There is concern for two main reasons:

1. The shortage of new pest control products, can make pest management programs very frustrating, with growers using ineffective products or trying to maintain a pesticide rotation (for resistance management purposes) with only 1-2 products that are effective.
2. The price differential between products (with the same active ingredient) labeled for field use and those labeled for greenhouse use can be wide. The use of cheaper (field use) products with the same active ingredient as the greenhouse labeled product, may offer short-term monetary benefits for growers. However, it ignores the developmental costs required for registration, the liability issues around high value intensive horticulture, and the goodwill of chemical companies in committing time and resources to the registration process. The industry has developed good relationships with chemical companies over the last few years, with its commitment to the Minor Use Program and the registration of a significant number of new products during that period. If the industry is to continue to receive the cooperation of chemical companies in helping it meet its pest management needs; it must address this issue proactively to ensure all growers are fully aware of their responsibilities. The industry needs to address this issue if they are to get the co-operation of pesticide companies in pursuing registration of new products.

Details:

Announcements in 2002 by AAFC and Health Canada of increased investment into the Minor Use Registration Program, were welcomed by the committee. The Minor use program has long been a subject of Recommendations from this committee and it is pleasing to see evidence of an increasing commitment to the program. The committee was concerned that any new funding for minor use initiatives be shared equitably between all agricultural sectors.

With regard to potential off-label pesticide use, Flowers Canada has put in place an information campaign to educate growers about the use of registered pest control products. This will involve a series of articles in the industry newsletter, and talking about the issue at grower meetings.

Recommendation

It is recommended that PMRA and AAFC ensure that the needs of all agricultural sectors are considered in determining how to move forward with plans to improve the Minor Use program. The committee also fully supports the action taken by Flowers Canada to address the issue of off-label use of pesticides.

Target Agency

- Pest Management Regulatory Agency
- AAFC
- Flowers Canada

Recommendation 4

Issue: Proposal for registration of biological control agents by the OECD

Background: Biological control is a well-established component of pest management in greenhouse floriculture with 10-20% of the total production area in Canada, currently using biological control. The adoption of the strategy has played a major role in reductions in pesticide use in greenhouse floriculture in the last 15 years. In many cases, growers using biocontrol are using 80-90% fewer pesticides. Biocontrol agents coming into Canada currently need a permit from CFIA, which is granted after a pest risk assessment is carried out.

Details: A January 2002 proposal by an OECD Working Group (of which Canada is a member), recommends a registration system for biocontrol agents that is based on the pesticide model of registration. The data requirements as proposed are unrealistic and would almost certainly result in reduced research and development of new natural enemies by commercial biocontrol producers. If the full data package were produced, the cost of development would have to be passed onto growers, reducing their use, and resulting in an increase in pesticide use. The implications for the industry could be disastrous, setting back all the progress that has been made in biological control in the past 10-15 years. For greenhouse vegetables, the consequences would be even worse, with biocontrol currently being used in 80-90% of greenhouse in Canada.

Recommendation: It is recommended that PMRA work within the OECD working group to ensure that any regulation of biological control agents does not adversely impact the greenhouse industry in Canada. It is understood and appreciated that some regulation is required, but the pesticide model of registration is not appropriate.

Target Agency: PMRA

VEGETABLE TECHNICAL WORKING GROUP

VEGETABLE TECHNICAL WORKING GROUP REPORT

Research and Services Recommendations

Recommendation 1 – While AAFCs new minor use system is being put into place, AAFC should commit to provide bridging funding for the 2003 research season to institutions which have minor use research projects underway. As planning and budgeting occur well ahead of the field season, funding uncertainty or a delay in funding decisions could mean the loss of the 2003 season for ongoing projects, and a delay in URMULE approval.

Recommendation 2 - That OMAF maintain a commitment to the minor use program, especially in the areas of screening and supporting the fulfillment of data requirements for submissions.

Recommendation 3 – The CFIA will be quarantining the movement of cole crop transplants from 8 counties in 2003, therefore it is imperative that efficacy work (including Spinosad and Assail) be completed on Swede midge control for greenhouse cole crop transplant production, to allow transplant certification programs to be in place by 2004.

Recommendation 4 – There is a need for research and registrations on replacements for pest control products being removed from the market or deregistered. Priority should be given to crops where a critical pest situation exists and no effective alternative control measure is available.

GREENHOUSE VEGETABLES TECHNICAL WORKING GROUP

Review of Pest Problems during 2002

Tomatoes

Significant pest problems included the following:

1. Pepino Mosaic Virus - This disease carried over into 2002 and at least 20 operations were affected. Likely more than this number of operations was infected with the virus with perhaps 50% or more of the acreage being affected. As in 2001, reported losses varied from 0-20%. Symptoms were again associated with stress conditions including uneven light conditions within an operation, poor vigour in association with fluctuating light conditions, stressed roots due to poor irrigation or irrigation failure, and fungicide applications.
2. Cabbage loopers were prevalent during summer and control with Dipel has been variable.
3. Tomato russet mites were also prevalent during summer and caused significant damage in a few operations.
4. Tomato bug (*Engytatus modestus*) – This pest was reported in about 5 operations. Warm conditions last winter together with early crops are some of the reasons that might have caused the incidence of this bug this year.
5. There were several incidences (at least 1 dozen) of bacterial canker. It is likely that a severe windstorm several weeks earlier may have contributed to the high incidence of this disease.

Cucumbers

Major problems for this crop were as follows:

1. Powdery mildew is still a challenge for many growers who are always looking for alternative products.
2. There were at least 4 incidences of Fusarium root and crown rot this year. It is possible that this disease may have occurred in other operations but was unrecognized because symptoms of this disease may be confused with those of gummy stem blight or Pythium root rot. This disease caused about 20% plant loss in at least 2 operations. Once this disease occurs in an operation, it appears to be difficult to eradicate and becomes a chronic problem.
3. Spider mites and cabbage loopers were the major insect problems.

There is growing interest among cucumber growers in use of biological control. The acreage is now about 30% and there is indication that this acreage will continue. Some of the reasons for this trend include increasing adoption of biological control by some large operations, resistance to pesticides, concern about food quality, and monitoring activities by PMRA.

Pepper

Major problems for pepper crops were as follows:

1. There were several incidences of Fusarium earlier in the year but losses were not as dramatic as in previous years.
2. There was an incidence of INSV this year because of infected thrips early in the year.
3. Mildew was a problem in a couple of operations.
4. Cabbage loopers were prevalent during the summer.

5. European corn borer – losses were generally low possibly due to lower population levels, and aggressive use of biological controls including *Trichogramma* species and *Orius*.
6. Lygus bug – damage due to this pest was lower this year possibly due to increased use of *Orius*.

Major Concerns

- .
- A. Increased regulation of biological agents 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.
- B. 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.

Ornamentals, Trees, Turf and Home Gardens Technical Working Group

Emerging Issues

The pesticide issue continues to plague the turf industry in Ontario. In 2001, one municipality in Ontario, Cobalt, passed a municipal pesticide ban by-law. It came into affect on Nov. 1, 2002. The turf industry has been very proactive during 2002. The IPM Council, which represents all the turf stakeholder groups, has introduced a voluntary turf IPM accreditation process. It involves an IPM training day, an exam, a company audit and it requires lawn care companies to follow an IPM Code of Practice. Golf course superintendents and parks are in the process of adopting parallel accreditation as well. Recently, a private members bill, Bill 208 has gone to second reading. This bill sets the stage for clear municipal jurisdiction to pass bylaws prohibiting the use of pesticides as a precautionary measure "regardless of whether the scientific evidence is conclusive or not".

Another issue that continues in both the turf and nursery industries is the loss of current pesticides. Two insecticides (diazinon and chlorpyrifos) that were widely used on surface feeding insects in turf and nursery have been taken off the market. There are two turf fungicides (chlorothalonil and quintozene) will be off the market soon. There continues to be a need for low risk replacement products for both the insects and diseases of turf and ornamentals.

The relatively new pest for Ontario turf, European crane fly, continues to expand its area of infestation. We do have pesticides labeled in Ontario to control this pest, but we need to have more information on the best timing for these insecticides. The timing to date is based on information out of British Columbia.

The incidence anthracnose basal rot on golf course turf is increasing. There are currently no fungicides registered for control of this disease. It is a difficult disease to establish on research greens and hence Dr. Tom Hsiang is having a hard time conducting research on fungicide control.

There continues to be economic damage caused by June beetle and European chafer grubs in nursery conifer tree, deciduous tree and shrub production fields. There is a need to get preventative products (currently registered on other crops) labeled for nursery ornamentals and to have curative products available for these plants as well as turf. As a direct result of the de-registration of Dursban Turf Insecticide, there are no longer any registered pesticides that can be used to certify container nursery stock (e.g. ornamental grasses) to be free of Japanese beetle. A minor use label expansion for Merit was submitted in September. If no registered products are available to growers by March, 2003, losses in nursery stock sales may result.

There is a new pest in Ontario called the emerald ash borer. It is in the Windsor, LaSalle, Amherstburg, Essex and Tecumseh areas, in Essex County. It is a cambial borer that infests green and red ash (*Fraxinus pennsylvanica*). It is currently an urban forestry issue as there are no areas of significant nursery production in the regulated areas (to date). There is a quarantine on ash nursery stock, ash trees, ash tree part (live or dead) and all types of firewood in those areas. Detection methods are very limited and very little information on effective insecticide

control exists. The Canadian Food Inspection Agency has been working with other government agencies and the Michigan Department of Agriculture to devise plans for eradication of EAB in Ontario. After showing up in a few gardens in 2001, daylily rust (*Puccinia hemerocallidis*) was not detected at the same sites in 2002. This disease has spread rapidly through the U.S. and affects many of the varieties commonly grown in Ontario. Fungicide efficacy trials continue at the University of Guelph (Hsiang).

Discussion of research priorities:

The priorities that will be put forth to the Nursery/Landscape and Turfgrass Subcommittee of the Horticulture Crops Research and Services Committee from the Ornamentals, Turf, Trees and Home Gardens Technical Working Group are as follows:

1. Research into alternative, low risk pesticides for turf, nursery, landscape and home gardens
2. Label expansion of current white grub products for conifer trees, deciduous trees and shrubs
3. Replacement products for organophosphates for turf and nursery surface feeding insects
4. Research into detection methods and control of emerald ash borer

Pest Management Research Priorities From OFCRSC (Tobacco) - 2002

EMERGING ISSUES

- Tobacco Mosaic Virus (TMV), Tomato Spotted Wilt Virus (TSWV), and Brown Spot are becoming major concerns to tobacco growers. The introduction of mechanization, particularly, the increasing trend of machine harvesting tobacco may help spread these diseases. More attention needs to be paid to disease problems experienced in the southern tobacco states and that these should be treated as potential future problems for the Ontario tobacco crop. Severity of brown spot varied in the variety CT572. One field of CT572 was abandoned in the 2002-growing season due to severe leaf spotting. There is a need to develop varieties resistant to these diseases through the conventional breeding program.
- Drought conditions: In the past 2 years tobacco growers experienced severe shortage of rainfall coupled with above average temperature. Current tobacco cultivars are susceptible to drought. There is a need to address this issue through the use of broad base germplasm with some degree of resistance to drought stress conditions.
- Disinfection of tobacco plant production trays: Tobacco growers are concerned about the repeated use of plant production cell trays. It presents a risk to the tobacco industry for the transmission of diseases. In recent years, one farming operation was devastated by the transmission of tobacco mosaic virus (TMV) as a result of contamination originating from re-used cell trays. Therefore, there is a need to investigate the effects of a number of disinfection procedures using heat and/or chemical agents on the microflora associated with used transplant trays.

RESEARCH PRIORITIES

A) Breeding:

1. Development of high quality cultivars with improved manageability, balanced leaf chemistry, mature leaf style, and less off-grades.
2. Development of pest resistance (root lesion nematode, black root rot, blue mold, curing disorders (bacterial soft rot, pole rot, aspergillus), target spot, rhizoctonia, tobacco mosaic virus (TMV), aphids, and sclerotinia.
3. Develop varieties suitable for machine harvest. Traits to consider are: uniform leaf maturity, leaf suitability for machine harvesting, and reduced sucker
4. High return and yield (farm yield and lamina yield)

B) Production:

- 1) Development of tobacco varieties, with broad based, high tolerance to pest and diseases (i.e. blue mold, tobacco mosaic virus, black root rot) and good machine harvestability using conventional approaches and investigate the use of marker assisted selection

(CTRF/University of Guelph) (Long term research priority, ongoing project- conventional breeding).

The tobacco-breeding program has been very successful in developing varieties that meets the needs of the growers and the industry. Several high yielding, superior quality and pest resistant cultivars have been developed using conventional breeding methodologies. However, in recent years, molecular markers linked to traits of interest have been identified in a number of crop species. This has greatly enhanced the breeding programs of many crops. In tobacco very few molecular markers have yet been developed and no marker-based map is available. These are achieved through conventional hybridization, selection of desirable traits, and performance evaluation.

2) Development of fumigant replacements, millet or other nematode suppressing crops to control nematodes (CTRF) (short term research priority, ongoing project)

Reduced tobacco yields in south-western Ontario due to the root-lesion nematode (*P. Penetrans*) have increased reliance on fumigant nematicides. However, fumigants are costly and their use present environmental concerns. Cost effective and environmentally friendly biological control measures are needed in order to effectively manage nematode populations below economic threshold levels. A rotation system including crop plants that are poor host for root-lesion nematode may offer a sustainable approach.

3) Fungicide screening for control of metalaxyl-insensitive blue mold (CTRF) (short term research priority, ongoing project)

Blue mould is a serious concern to most tobacco growers in Ontario. When the disease pressure is high, both yield and quality are severely affected. In order to properly control the spread of the disease, it is important to evaluate compounds for control of blue mould on flue-cured tobacco and to study the effect of these compounds on the quality of the tobacco, regarding chemical composition, agronomic and smoke taste characteristics and residues within the cured leaf.

4) Fungicide screening for damping-off of tobacco caused by *Rhizoctonia solani* (CTRF) (Short term research priority, ongoing project)

The fungicide Benlate is currently used to control damping-off of tobacco, caused by the phytopathogenic fungus, *Rhizoctonia solani* and is the only pesticide approved for this use in Canada. On April 19, 2001, the manufacturer of this fungicide, E. I. Du Pont de Nemours and Co., announced that this product would no longer be available for sale by the end of 2002. Alternative products must be tested for their efficacy and their suitability as potential replacements of Benlate for controlling this widespread problem.

5) Further develop float/dry tray systems for producing seedlings with emphasis on pest

management (disinfecting) (CTRF) (short term research priority)

Unheated greenhouse beds, seeded to a density of approximately 100 to 120 seedlings per square foot, normally provide excellent seedlings for transplanting. However, because of the labour concern for pulling plants for transplanting and for the transplanting process itself, tobacco growers are moving towards a less labour intensive seedling production. The float/dry tray systems may be a solution for some growers, however a study needs to be conducted to investigate these systems for producing seedlings in relation to pest management, hardening-off, and uniformity.

- 6) Evaluation of control measures for control of bacterial soft rot, *Aspergillus* and moldy tobacco which would include the evaluation of sucker control products with improved efficacy and lower usage rates than those used currently (CTRF) (short term research priority)**
- 7) Evaluate different irrigation practices that use water more efficiently (i.e. trickle irrigation, fertigation) (CTRF) (short term research priority)**
- 8) Effects of different nitrogen rates, topping height and varieties on tobacco yield and quality (CTRF) (short term research priority, ongoing project)**

A survey examining the incidence and potential causes of bruise green grades was conducted in 1994. Most growers felt that it was caused by dry conditions, lack of nitrogen and choice of cultivars, or an interaction between those factors. Bruise green grades are now being monitored in the breeding program so that genotypes prone to bruising can be selected out before commercialization. No work has yet been undertaken that addresses the climatic or agronomic conditions that may influence this condition.

- 9) Fungicide screening for greenhouse and field control of target spot and *Alternaria* (CTRF) (short term research priority, ongoing project)**

Since the identification of the disease in 1994, it has occurred in widespread locations throughout the Ontario tobacco belt. Occurrences of this disease on a widespread, regular basis will likely decrease yield and quality of tobacco, particularly on the lower part of the plant where the disease is likely to be most severe. To minimize the occurrence of the disease, it is important to evaluate compounds for control of target spot disease on flue-cured tobacco.

- 10) Investigate insecticides with different chemistries for the control of aphids for the purpose of resistance management (CTRF) (short term research priority)**
- 11) Insecticide screening for the control of harvester ants with the focus on resistance management (CTRF) (short term research priority)**

12) Identify the cause(s) and solution(s) of tobacco bruising (CTRF) (long term research priority)

A survey examining the incidence and potential causes of bruise green grades was conducted in 1994. Most growers felt that it was caused by dry conditions, lack of nitrogen and choice of cultivars, or an interaction between those factors. Bruise green grades are now being monitored in the breeding program so that genotypes prone to bruising can be selected out before commercialization. No work has yet been undertaken that addresses the climatic or agronomic conditions that may influence this condition.

QUALITY ASSURANCE PRIORITIES

- 1) Leaf quality (CTRF)
- 2) Analysis of green and cured tobacco leaves for the presence of blue mold oospores (CTRF)
- 3) Further development of measures to reduce TSNA's in cured tobacco. (CTRF)

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

Pest Management Research Priorities From OFCRSC - 2002

Research 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	
A1	Barley Yellow dwarf in winter wheat: Economic impact, effect of changing cropping/rotational practices, seed treatments, best management practices, plant resistance.	
A2	European chafer: 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	
B1	Root Rots: (<i>Pythium</i> , <i>Phytophthora</i> , <i>Rhizoctonia</i> , <i>Fusarium</i>), thresholds, better management tools, biology	
B1	Alfalfa Weevil: Survey to determine status of biological control agents - why they haven't been effective lately	
B1	Cereal Leaf Beetle: Survey to determine status of biological control agents - why they haven't been effective lately	
B1	Seed Stinging Pests: - TPB, Lygus and Stink Bugs thresholds, management	
B1	Canola insect pests: - Cabbage Seedpod weevil, swede midge- survey of pests and potential biological control agents, thresholds	
B1	Slugs: New products for no till soybeans and corn	
B1	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, new products to replace lost chemicals	
B2	Potato Leafhoppers: thresholds, products, economic impact on alfalfa	
B2	Corn leaf diseases: i.e. Gray Leaf Spot, Stewarts Wilt. monitoring, prediction model, resistance	
C2	Anthraxnose in edible beans: - seed treatments, evaluate new products	

- C2 **European corn borer:** - refugia
- C2 **Wireworms in beans, soys and corn:** on farm treating
- C2 **Seedcorn maggot corn and beans:** on farm treating
- C3 **Corn Stalk Rots:** (*Anthrachnose, Fusarium, Gibberella*) Implications of cropping systems to disease, management

Services

SCN Education - need increased extension on SCN (Terry Anderson, Tom Welacky). Need commodity specialists and the company people to be promoting it more - Albert is doing all he can do. Growers still need more push

Research Updates - presenting field crop protection research from last years funding - where can it be done. Field crop research is not being presented at the Ontario Crop Protection conference.

Motion - take a half a day during annual field crop protection subcommittee meeting

- invite guests and members to present their research findings to committee
- have researchers include brief update on research findings to be attached to meeting minutes

Ontario Horticultural Crops Research and Services Committee (OHCRSC)

For more details on the following priorities and recommendations please refer to the individual subcommittee reports from the 2002 OHCRSC report.

Website: <http://www.gov.on.ca/OMAFRA/english/research/oasccindex.html>

Pest Management Priorities – OHCRSC

Research Issues

1. Minor Use issues – reduced risk and alternatives to OP's and Carbamates.
2. Resistance management.
3. Development of IPM tools/strategies/models.
4. Sublethal effects of crop production materials. (apiculture issue)
5. Food Safety.
6. Export monitoring.
7. Post Harvest – disease management
8. Non-essential pesticide use.

Services Issues

1. IPM scouting services.
2. Diagnostics.
3. Weather data.
4. Good Laboratory Practices.

OHCRSC Recommendations related to pest management

1. Minor Use
2. New/emerging/quarantinable pests
3. Apple – funding misalignment, slow turnaround
4. Crop Protection research capacity (nematology)
5. Good Laboratory Practices
6. Rapid pest ID at borders crossings.
7. Registration of biocontrols.
8. Education/training : grower level; regulator level (PMRA)
9. Economic data
10. Communication
11. Food Safety
12. IPM funding

MEMBERSHIP ONTARIO PEST MANAGEMENT RESEARCH AND SERVICES COMMITTEE 2001

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