

Unclassified

ENV/JM/MONO(2012)32

Organisation de Coopération et de Développement Économiques
Organisation for Economic Co-operation and Development

17-Oct-2012

English - Or. English

ENVIRONMENT DIRECTORATE
JOINT MEETING OF THE CHEMICALS COMMITTEE AND
THE WORKING PARTY ON CHEMICALS, PESTICIDES AND BIOTECHNOLOGY

**REPORT OF THE OECD WORKSHOP ON INTEGRATED PEST MANAGEMENT (IPM)
STRATEGIES FOR THE ADOPTION AND IMPLEMENTATION OF IPM IN AGRICULTURE
CONTRIBUTING TO THE SUSTAINABLE USE OF PESTICIDES AND TO PESTICIDE RISK
REDUCTION, BERLIN, GERMANY, 16-19 OCTOBER 2011**

Series on Pesticides
No. 70

JT03329033

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OECD Environment, Health and Safety Publications

Series on Pesticides

No. 70

**Report of the OECD Workshop on
Integrated Pest Management (IPM)
Strategies for the adoption and implementation of IPM in
Agriculture Contributing to the sustainable use of Pesticides
and to Pesticide Risk Reduction**

IOMC



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- No. 69 *OECD Survey on Integrity of Pesticides at the Manufacturing, Import and Distribution Stages: Survey Results* (2012)

Published separately

OECD Guidance for Country Data Review Reports on Plant Protection Products and their Active Substances-Monograph Guidance (1998, revised 2001, 2005, 2006)

OECD Guidance for Industry Data Submissions on Plant Protection Products and their Active Substances-Dossier Guidance (1998, revised 2001, 2005)

Report of the Pesticide Aquatic Risk Indicators Expert Group (2000)

Report of the OECD Workshop on the Economics of Pesticide Risk Reduction (2001)

Report of the OECD-FAO-UNEP Workshop on Obsolete Pesticides (2000)

Report of the OECD Pesticide Aquatic Risk Indicators Expert Group (2000)

Report of the 2nd OECD Workshop on Pesticide Risk Indicators (1999)

Guidelines for the Collection of Pesticide Usage Statistics Within Agriculture and Horticulture (1999)

Report of the [1st] OECD Workshop on Pesticide Risk Indicators (1997)

Report of the OECD/FAO Workshop on Pesticide Risk Reduction (1995)

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The Organisation for Economic Co-operation and Development (OECD) is an intergovernmental organisation in which representatives of 34 industrialised countries in North and South America, Europe and the Asia and Pacific region, as well as the European Commission, meet to co-ordinate and harmonise policies, discuss issues of mutual concern, and work together to respond to international problems. Most of the OECD's work is carried out by more than 200 specialised committees and working groups composed of member country delegates. Observers from several countries with special status at the OECD, and from interested international organisations, attend many of the OECD's workshops and other meetings. Committees and working groups are served by the OECD Secretariat, located in Paris, France, which is organised into directorates and divisions.

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FOREWORD

This document is the report of the “*OECD Workshop on Integrated Pest Management (IPM) - Strategies for the adoption and implementation of IPM in agriculture contributing to the sustainable use of pesticides and to pesticide risk reduction*”, that took place on 16-19 October 2011, in Berlin, Germany, and was chaired by Dr. Wolfgang Zornbach of the German Federal Ministry of Food, Agriculture and Consumer Protection. It was attended by about 90 participants, representing regulatory authorities of OECD countries, regional and international organisations, i.e. the European Commission, the UN Food and Agricultural Organization, the International Organization for Biological Control (IOBC), the European and Mediterranean Plant Protection Organization (EPPO), the pesticide and bio-pesticide industry, food producer, retailer and cooperative organisations, farmer organisations, environmental organisations, as well as a number of experts in IPM from academia and other organisations.

The purpose of this workshop was to develop detailed recommendations for promoting and facilitating the adoption and implementation of IPM strategies and for encouraging appropriate stakeholders to use IPM tools and measures. The workshop was planned in the framework of the “OECD Strategic Approach in Pesticide Risk Reduction”. It addressed the following four main issues:

- Technology and Information
- Economics and Market Access
- Policies and Strategies
- Measurements and Impact

This report includes the outcomes of the workshop discussions, as well as the overall workshop conclusions (Section 4) and recommendations (Section 5) targeted at governments, all stakeholders and OECD.

The Seminar report was approved by the Working Group on Pesticides during its 27th meeting on 13-15 June 2012.

This document is being published under the responsibility of the Joint Meeting of the Chemicals Committee and the Working Party on Chemicals, Pesticides and Biotechnology, which has agreed that it be unclassified and made available to the public.

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1. INTRODUCTION

This report presents the proceedings of the “OECD Workshop on IPM - Strategies for the adoption and implementation of IPM in agriculture contributing to the sustainable use of pesticides and to pesticide risk reduction”, held in Berlin, Germany, on 16-19 October 2011. It includes the outcomes of the workshop discussions, as well as the overall workshop conclusions and recommendations. The purpose of this workshop was to develop detailed recommendations to OECD and its member countries and to stakeholders for promoting and facilitating the adoption and implementation of Integrated Pest Management (IPM) strategies and for encouraging appropriate stakeholders to use IPM tools and measures. The workshop was planned in the framework of the “OECD Strategic Approach in Pesticide Risk Reduction”¹.

The workshop was hosted by the Julius Kühn-Institut (JKI), Federal Research Centre for Cultivated Plants in Berlin, at the invitation of the German Federal Ministry of Food, Agriculture and Consumer Protection (BMELV), and was chaired by Dr. Wolfgang Zornbach, Deputy Head of the BMELV Plant Protection Unit and Chair of the OECD Working Group on Pesticides (WGP). Approximately 90 people attended. Just over half of the participants were officials from 20 OECD country regulatory agencies. The other participants were representatives of regional and international organisations, i.e. the European Commission (EC), the UN Food and Agricultural Organization (FAO), the International Organization for Biological Control (IOBC), the European and Mediterranean Plant Protection Organization (EPPO), of the pesticide and bio-pesticide industry, i.e. CropLife International (CLI) and International Biocontrol Agent Manufacturers Association (IBMA), of food producer, retailer and cooperative organisations, farmer organisations, environmental organisations, the OECD Secretariat, as well as a number of experts in IPM from academia and other organisations. The list of workshop participants is attached in Annex 1.

2. WORKSHOP OBJECTIVE AND ISSUES

The overall workshop objective was to examine the progress of implementation and adoption of IPM since the first OECD workshop² on IPM in 1998, to address current gaps and barriers to IPM adoption, and to make recommendations to identified stakeholders to facilitate further progress which would lead to greater pesticide risk reduction in agriculture.

The workshop was organised in order to learn about the current and diverse situations of IPM implementation in OECD and enhanced engagement countries and to discuss and recommend how to further advance IPM uptake. In particular, it addressed various aspects of IPM through four main “workshop issues”.

¹ [http://www.oecd.org/officialdocuments/displaydocumentpdf/?cote=ENV/JM/MONO\(2009\)38&doclanguage=en](http://www.oecd.org/officialdocuments/displaydocumentpdf/?cote=ENV/JM/MONO(2009)38&doclanguage=en)

² The workshop was jointly organized with FAO. The report is available at :
[http://www.oecd.org/officialdocuments/displaydocumentpdf/?cote=ENV/JM/MONO\(99\)7&doclanguage=en](http://www.oecd.org/officialdocuments/displaydocumentpdf/?cote=ENV/JM/MONO(99)7&doclanguage=en)

Workshop issues

The workshop issues were built on the results of a pre-workshop survey³, which was carried out at the end of 2010. The questions of the survey related to:

- Background information about the state of IPM compared to the information provided at the OECD workshop on IPM in 1998
- Existing national structures, involved stakeholders and their roles in IPM implementation and crop or sector-specific IPM guidelines
- Main drivers and main barriers, and what is needed to promote IPM adoption and implementation
- The availability of quantitative/qualitative information on economic impact of IPM, the evaluation of measures and indicators to measure progress, and the contribution of IPM to pesticide risk reduction.

The responses collected from 20 OECD countries, two enhanced engaged countries and three organisations dealing with IPM thus provided background information on recent achievements concerning the adoption and implementation of IPM, about main barriers and possible solutions in IPM.

The comparison between the current situation described by survey respondents and the workshop in 1998 regarding the barriers and incentives for IPM implementation revealed that progress has been achieved, that, in particular for OECD countries, the framework for IPM, which was the core of recommendations coming from the 1998 workshop, was now generally in place and that countries were now dealing with technical implementation issues related to the adoption of IPM. However, some main drivers and barriers to IPM implementation (e.g. farmers' knowledge and role, training, availability of tools and adoption of technologies, measurements) were still considered to be crucial for successful IPM adoption.

The following four main issues were therefore identified to be discussed at the OECD workshop in 2011:

- Issue #1 - Technology and Information
- Issue #2 - Economics and Market Access
- Issue #3 - Policies and Strategies
- Issue #4 - Measurements and Impact

These issues were discussed in turn during the first two days of the workshop, i.e. about half a day was allocated for presentations and discussions on each issue. The workshop programme is included in [Annex 2](#), while the issues are detailed in [Annex 3](#).

³ Unpublished

3. WORKSHOP ORGANISATION

The 3-day workshop was organised in alternating plenary and break-out group (BOG) sessions as described below. The workshop was concluded by a city tour: “Urban IPM in Berlin” which was organised by the Plant Protection Office Berlin in cooperation with the Plant Protection Unit of the Federal Ministry of Food, Agriculture and Consumer Protection. It included a guided tour on IPM measures in the main tropical greenhouse of The Botanic Garden and a visit of the inside and outside gardens of the Federal German Chancellery.

Furthermore, posters about IPM implementation/adoption activities were displayed throughout the full workshop period and provided additional background information. About 30 posters from 10 countries and 3 international organisations provided valuable complementary case studies to the main issues discussed during the workshop plenary and break-out group sessions. They provided examples about the successful implementation of IPM in various crops and regions across the world related to the four identified workshop issues. The posters are available on the IPM website⁴ of the OECD Pesticides Programme and the list of all posters is provided in Annex 4.

3.1 Plenary Sessions

The *initial* plenary presentations on the morning of Day 1 of the workshop included a number of welcome speeches by JKI and BMELV officials, the introduction by OECD about its pesticide activities and the importance of holding a second IPM workshop for the future OECD programme, a general presentation from FAO on the global framework for agricultural production, and a keynote speech from IOBC.

The IOBC keynote speech set the scene and gave an introduction to IPM with examples of successes, formulating challenges in IPM related to the availability of information both on adverse effects of pesticides on natural enemies and current knowledge about non-chemical methods, funding issues and regulatory systems. The IOBC vision to promote IPM includes putting reward systems in place by governments, substituting critical/worst pesticides, reshaping funding systems to bridge the gap between research and farm level, and creating awareness for IPM in the general public.

The *following four* plenary sessions included a number of presentations by speakers representing various stakeholders from different geographical areas. These presentations provided case-studies linked to each workshop issue and set the scene for the discussions within the following break-out groups to identify priority actions and to provide recommendations. Following each set of 4-5 plenary presentations, the floor was opened to all workshop participants for short questions of clarification before splitting into the different break-out groups.

Copies of all plenary presentations are included in Annex 6. A summary of the presentations on each issue is presented in boxes on the following pages.

⁴ http://www.oecd.org/document/49/0,3746,en_2649_37465_49998577_1_1_1_37465,00.html

The *last* plenary session on Day 3 of the workshop was dedicated to presenting and agreeing on the overall workshop conclusions and recommendations (Sections 4 and 5 below).

3.2 Break-out group sessions

The break-out group (BOG) sessions, allowed for more detailed discussion of the workshop issues. Three BOGs met in parallel and discussed the same issue (i.e. in turn, workshop issues #1 to #4) but from a different perspective:

- government/regulators
- farmers
- consumers

This ensured a consideration of the different needs and problems each interest group is faced with in different stages of IPM implementation.

Workshop participants were allocated to the BOGs so that the composition of the BOG ensured a mix of backgrounds among the participants and changed between issues/sessions, to allow a maximum of interaction among people.

At the end of each BOG session, the BOG Chairs and Rapporteurs prepared slides with key conclusions of the discussions, action items and recommendations, which were then presented in plenary on the morning(s) of the following day(s). After the workshop, the BOG Chairs and Rapporteurs prepared more detailed reports, based on the presentations. These detailed reports are provided in [Annex 5](#).

Boxes 1 to 4 - Summary of Plenary Presentation (for each workshop issue)

Box 1

Issue 1: Technology and Information

The content of the first plenary session provided insights to examples of technological approaches, crop consultant programmes and tools and sector-specific problems of IPM implementation; a short summary is listed below.

1. Role and scope of forecasting models and decision support systems within IPM systems (Erich Jörg, Germany/ Ministry of Agriculture in Rhineland-Palatinate)

The first presentation about the role and scope of forecasting models and decision support systems within IPM systems provided an example from Germany. Dr. Jörg outlined approaches of how to disseminate forecasting models and decision support system results via different media, internet services and recently also via mobile devices and how to administer a comprehensive network of agro-meteorological stations and agronomical data acquisition. Dr. Jörg also pointed out the main benefits of employing forecasting models and decision support systems and it was shown how strongly IPM in the major arable and horticultural crops depends on the use of forecasting models and decision support systems.

2. Stimulating use of professional IPM consultants in agriculture, benefits for farmers and society (Frank Zalom, US/University of California, Davis)

The second talk from the USA introduced the role of crop consultants' knowledge of pest biology and management strategies linked to the real-time information on pest abundance and crop status. It showed how recommendations from independent crop consultants could result in positive economic return to farmers and support IPM up-take.

3. ENDURE and its tools relating to IPM-implementation (Jens Eric Jensen, ENDURE/Denmark/The Knowledge Centre for Agriculture - VFL)

The next talk informed about a European wide effort in the European Network of Excellence ENDURE to promote IPM via a network of scientists and advisors. IPM is a continuously improving process which needs research and participatory approaches at field level, and in addressing this ENDURE has set up a permanent network of European research institutions dedicated to research on IPM and has produced several online data bases and tools to provide and facilitate the exchange of information on IPM at the European level.

4. Advances with IPM as a component of sustainable agriculture: a contrast of the Australian cotton and grains industries (Nancy Schellhorn, Australia /CSIRO)

The last talk of issue 1 gave insights to two agricultural sectors (cotton and grain) at different stages of IPM implementation in Australia. The cotton industry represents the advanced stage of IPM implementation, with strong commitment to research and to new technologies. Pesticide dependence to control insect pests was the major concern and problems were overcome by the support of research, new technologies and IPM strategies. Pesticide resistance problems, economical and environmental benefits clearly promoted IPM implementation. Whereas, in the grain sector, which is naturally more diverse, the pressure related to pesticide resistance, environmental concerns and the economical situation are less urgent and critical. These factors seem to result only in limited incentives to adopt IPM from the grower perspective. Nevertheless, programmes are in place to build up IPM knowledge, initiate changes in perception and behaviour of the growers and foster IPM up-take in grain sector.

Box 2**Issue 2: Economics and Market Access**

The second group of plenary presentation in the afternoon of Day 1 addressed regulations and market demands that growers are facing and examples of programmes from different continents; a short summary is listed below.

1. Implementing IPM at farm level: the farmers' perspective (Eugenia Pommaret, COPA-COGECA /European Farmers)

The first talk presented the challenges which the new European legislation on pesticide authorisation and pesticide use entails in the view of the European farmers and European agri-cooperatives. IPM/ICM is valued as the cornerstone of sustainable farming systems, as long as both are based on economic viability, social acceptance and environmental friendliness. It was pointed out that in some cases the adoption of IPM measures is out of the control of the farmer as the control tactics are often dictated by the buyer. Additional concerns are the availability of tools (e.g. Decision Support Systems (DSS) and forecasting), the zero-tolerance requirements of the market and the increasing "cost-price squeeze" of output – and input prices for farmers.

2. The introduction, practice, successes and difficulties of IPM in New Zealand pome fruit: a case study (Mike Butcher, New Zealand/Pipfruit NZ Inc.)

The next presentation from New Zealand gave an overview on the introduction of IPM in pome fruit. The introduction of enhanced IPM and uptake of biological control built on participatory approaches gaining the ownership of farmers of the process. The initial drivers to the adoption of IPM were arising resistance to insecticides, pesticide regulations and requirements of the export markets which comprise 75% of the production. The commercial restrictions which force scientifically sound and biological-based IPM to a 'back seat' in preference to ultra low residues are seen as the biggest single threat to sound IPM programmes being developed and successfully implemented.

3. IPM, a vital part of GLOBAL G.A.P. (Friedrich Lüdeke, GLOBAL G.A.P)

The third talk presented the view of a private production and certification standard owner with regards to IPM. The main goals are to assure consumers that food is produced according to the holistic approach of Good Agricultural Practice at farm level and that the standard is under continual improvement driven by producers and traders. The Good Agricultural Practice is to produce high quality food and to minimize the risk of microbiological contamination, lessen detrimental environmental impacts of farming operations, and ensure a responsible approach to worker health and safety as well as animal welfare.

4. How IPM Facilitates Trade (Keith Jones, CropLife International)

The last presentation gave a worldwide perspective of an international stewardship programme (with major focus on IPM) which facilitates farmers and advisors training mainly in developing countries. The training contributes primarily to better worker protection, better knowledge in pest identification at the required stages and thus to more appropriate pesticide timing and use. The facilitation of access to tools and information will improve livelihoods through increased productivity, increased safety and reduced environmental impact and access to markets. This can be supported through appropriate, enforceable regulation, the adoption IPM (within stewardship) but it does require investment in capacity building and must be promoted by all stakeholders in the food chain.

Box 3**Issue 3: Policies and Strategies**

The third group of plenary presentations in the morning of Day 2 addressed policies and strategies in place for IPM implementation and covered a wide range of perspectives and countries; a short summary is listed below.

1. IPM in the European Strategy for sustainable use of pesticides (Patrizia Pitton, European Commission / DG SANCO)

The first talk covered the regulatory perspective in the European Union about Integrated Pest Management as keystone in the European strategy for sustainable use of pesticides. The objectives of Directive 2009/128/EC on sustainable use of pesticides were laid out and provisions on IPM explained. The following key points for IPM implementation were pointed out: the availability of qualified advisory services and creation of effective knowledge networks to divulge research results and to orient research objectives on the basis of farmers needs, the integrated efforts of concerned parties to support IPM implementation in environmental and agricultural policies with provisions for incentives on preventive techniques and informing general public on IPM and organic farming to heighten awareness of and to promote such systems.

2. Pesticide Risk Reduction Program: A Canadian initiative to help growers achieve pesticide risk reduction (Pat Curry, Canada, Health Canada, PMRA, and Cezarina Kora, AAFC, Pest Management Centre)

The second talk presented the Canadian Pesticide Risk Reduction Program, a government program that promotes IPM with the goal of risk reduction in a joint initiative of two Federal Departments: Health Canada's Pest Management Regulatory Agency (PMRA) and Agriculture and Agri-Food Canada (AAFC). The program support has led to increased availability of new control products, increased availability and access to new, innovative IPM tools and practices and dissemination activities facilitating the knowledge transfer to growers. The case presented from apple growers illustrated the multiple benefits to growers such as the availability of solutions for IPM and how to use the new technologies as way to support the transition process away from older chemistries and reduced dependence on pesticides.

3. Implementation of IPM in Agriculture in Japan (Yasuhiro Hayakawa, Japan/ Agricultural Chemicals Inspection Station)

The third talk presented the strategy of IPM promotion in Japan, where checklists of IPM practices for many individual crops are developed and promoted by the prefectural governments. The checklists are used by farmers as production guidelines and for self assessment. The Ministry of Agriculture, Forestry, and Fisheries (MAFF) has provided subsidies for developing required technologies, including research to develop indicators for the assessment, and for promoting the use of such technologies in agriculture.

4. IPM in US Schools: Challenges, Opportunities and Implications for IPM in Agriculture (Tom Green, US/IPM Institute of North America, Madison, WI)

A different example about IPM in schools was presented from the USA. The talk presented how a broad-based coordinated national effort from US EPA and USDA to reduce health risks resulted in a verifiable IPM program against unmanaged pest problems and high risk pesticide use practices in US schools. The joint information and education about pest problems has had implications for agriculture including increasing policy maker, consumer and taxpayer awareness and support for IPM and providing a model for coordinated efforts to achieve IPM objectives in other arenas.

5. Past and current demands on agriculture and IPM, restrictions and suggestions (Gesine Schuette, PAN Germany/ Research Center for Biotechnology, Society and Environment, Hamburg)

The last presentation outlined the current demands and restrictions on agriculture and IPM from an NGO perspective and suggested a number of measures, including local standards for agricultural practices, production intensities and land use to increase wider IPM up-take beyond exemplary successes.

Box 4**Issue 4: Measurement and Impact**

The presentations of the last plenary session on Day 2 provided a wide range of examples and case studies about impacts of monitoring and measurement strategies; a short summary is listed below.

1. IPM Pest Information Platform for Extension and Education (James R. VanKirk, US/Southern Region IPM Center, North Carolina State University)

The case study ipmPIPE (Integrated Pest Management Pest Information Platform for Extension and Education) illustrated how decision support systems developed in response to specific problems can be implemented successfully in other systems at later stages. In the presented case of soybean rust the system significantly impacted on pesticide use and the optimization of control methods.

2. Germany's Network of Reference Farms for Plant Protection (Bernd Freier, Germany/JKI Institute for Strategies and Technology Assessment)

The presentation about the Reference Farms Network in Germany explained which information and assessments concerning pesticides use are made based on national annual surveys in main crops on representative farms. Treatment Frequency Indices (TFI) are calculated and influence factors on TFI are evaluated. The pesticide measures are assessed in respect of the "necessary amount" of pesticides by experts of plant protection services of federal states.

3. An Integrated System Approach to Sustainable Crop Protection (Karel Bolckmans, IBMA - International Biocontrol Manufacturers Association)

In the third presentation the bio pesticide industry raised thoughts why and which impacts of pesticide use and IPM should be measured, which tools are suitable for measurements and how to measure impact. Necessity is seen as a driver for innovation in a framework that has to provide resources, public and private research and tools.

4. Okanagan-Kootenay Sterile Insect Release (SIR) Program – A Successful Area-Wide IPM Program (Cara McCurrach, Canada/ Okanagan-Kootenay SIR Program, British Columbia)

The last talk presented the Okanagan-Kootenay Sterile Insect Release (SIR) Program operating in Canada is the longest-running, most successful area-wide pest management program for control of codling moth. The Program's success is a result of its governance and is based on partnership between the SIR administration, the growers, local packinghouses and industry advisors supported by research and extension specialists. Commitment, co-operation and strong organization enabled amongst other achievements improved opportunities for biological control and a reduced reliance on pesticides.

4. WORKSHOP CONCLUSIONS

This section presents the workshop overall conclusions. It addresses the following topics:

- Policies fostering IPM adoption and ensuring IPM sustainability
- Strategy development and farmer buy-in
- Economic feasibility of production
- Tool and technology transfer between countries & regions
- Education, training and knowledge transfer (including extension)
- Funding issues
- Registration policies
- Production Standards/Certification/Labelling
- Measurement of IPM uptake
 - Activity Indicators
 - Performance Indicators
- Communication and raising awareness

Policies fostering IPM adoption and ensuring IPM sustainability

The role of governments in IPM implementation would be most effective by combining three types of policy approaches in varying degrees:

- An *outcome-based policy*, where the government sets a goal of risk reduction through the application of IPM, while the exact means of implementing IPM and accounting for goal achievement are in the hands of market forces.
- A *facilitative (“carrot”) policy*, where the government uses policy measures as an incentive to make the uptake of IPM attractive to farmers. Such facilitative policies will vary and use a broad suite of tools for knowledge transfer, decision making support and stakeholder involvement.
- A *prescriptive (“stick”) policy* with the government setting both goals, as well as laying out specific expectations for implementation (e.g. through regulations, requirements and checklists)

and working with stakeholders to develop guidelines with specific IPM measures that farmers should implement.

In addition, it was generally recommended using more “carrots” (meaning incentives) than “sticks” (referring to regulations and enforcement) for policies to foster IPM uptake. It was also noted that incentives should be used carefully to avoid trade distortions.

All above policy types and their combination require measuring pesticide use intensity, monitoring IPM uptake in a simple auditing system and risk indicators for demonstrating goal achievement. It was noted that wherever possible, measurements should involve data already being collected to avoid additional cost burdens.

It was recognised that IPM adoption is flexible and dynamic. Different ways of adoption can be e.g., on a “Fast-track”, i.e. solving critical problems (e.g. no pesticides available) or in “Community groups” working together to address a set of issues over time or in “Partnership in chain” with direct interaction between farmers, processors & consumers providing valuable feedback. Arising from the various ways of IPM adoption issues such as how to incentivize farmers, financial mechanisms and the role of standards need to be discussed and pertinent mechanism for IPM implementation developed.

Finally, IPM needs supporting infrastructures to ensure its continuity and sustainability and prevent growers reverting to conventional, pesticide-based production.

Strategy development and farmer buy-in

The ongoing integration of farmers in research and decision-making about IPM is vital in the development and implementation of IPM throughout the process and helps overcome initial insecurities and uncertainties. Changing farming practices is difficult and might entail economic risks; therefore farmers (being business people) want to understand what they are asked to do and why.

Participatory approaches involving growers and partnerships with other stakeholders are also important elements to achieve successes. These approaches should allow growers ownership of the solutions available through IPM and could include demonstration plots on actual farmers’ fields, discussed further under “Economic feasibility” below.

It is critical to consider long, medium and short term needs of farmers to develop the right policies and research strategies. Such needs may include amongst others the choice of crops in rotations (including non-marketable crops), the availability of resistant cultivars, low risks chemical pesticides and biopesticides, and the availability of other viable solutions to problems. To increase the adoption of IPM, farmers need to be provided with a broad spectrum of new effective products and need help through extension and technical support in understanding how to use them.

Finally, long-term support needs to be available when needed to sustain farmers’ participation in IPM programmes and to avoid farmers reverting to conventional protection systems when problems occur.

Economic feasibility of production

IPM production has to be feasible and should provide benefits foremost for the growers, but also to consumers and society in terms of healthy food and reduced environmental risks. That would facilitate greater IPM uptake (or maintenance of IPM programs). In relation to production costs, IPM measures are not necessarily more costly but transitional (external) costs related to knowledge uptake need to be considered as well. IPM schemes have to economically stand alone, meaning that they should be self-supporting after the initial transition phase. Crop loss insurance schemes tailored for farms adopting IPM would help support the adoption of IPM.

There is a need to demonstrate the effectiveness and cost benefit analysis of IPM techniques directly to farmers, e.g. through field demonstrations. Such success cases and test/demonstration plots on farm may also provide for a transition to new methods, with a limited economic risk to farmers.

Tool and technology development/transfer between countries & regions

Tools for farmers, such as thresholds, diagnostics, geospatial warning systems should be identified for the short term or developed in a long-term perspective in anticipation of phytosanitary problems.

The need for research and development of new tools was stressed, as only this supports a continuous market access, demonstrates efficacy, the overall costs and benefits of IPM tools and environmental benefits.

However, a wealth of information related to IPM already exists, and particularly, there are technologies used throughout the world that could be adopted for use. But there is limited or no active technology transfer across regions concerning the information and expertise needed to support the adoption of specific technologies. However, others can learn from the tools used and approaches taken, even if pest pressures are often location-specific and pest problems require individualized solutions.

Benchmarking could contribute to and facilitate the transfers of tools and technologies among member countries and potentially fill the gaps associated with minor uses.

Education, training and knowledge transfer (including extension)

The complexity of IPM requires training of farmers to ensure the adoption of new tactics and technologies. Developing continuous education for farmers and advisors to provide and enable them to adopt new knowledge, organizing farmers, sharing IPM experiences and lessons learned, will clearly support the uptake of existing IPM technologies and will provide new knowledge.

An interface is needed between research and farmers to ensure that knowledge is exchanged. Such a framework needs to work toward increasing farmer interests and commitment to adopt IPM. In this context, extension advisory (private or public) services are considered as key players for IPM

implementation. But extension needs to be maintained and ensured over time as agricultural systems and IPM in particular are dynamic.

The ways of transferring information also have to be greatly improved; in this respect, emphasis needs to be put on ways to demonstrate that IPM works and the on-farm demonstration plot concept.

Funding issues

IPM research, in order to continuously develop and support tools and technologies, requires funding across multiple levels: science, technology transfer, extension, growers' education and consumers' information.

Funding criteria should be re-shaped to ensure that grower needs are met. Public funds need to be re-shaped to be more appropriately targeted to the timeframe of the problem and solution. They should be linked to strategies of providing tools and technologies for IPM and made available for grower education and for support of extensions services, instead of giving direct payments to farmers for IPM implementation or promoting IPM to consumers. In addition, private and public partnerships need to be reinforced. Crop loss insurance schemes could be funded by private industry, although governments could underwrite such schemes.

Registration policies

Pesticide evaluations should look at entire systems, including a possible demonstration that new products do not undermine established IPM systems and an evaluation of the ecological impact. Furthermore, consideration should be given to the IPM-compatibility of new products with IPM based production. The registration process of lower risk pesticides and biopesticides should be made easier and cheaper and the risk management requirements should be harmonized as much as possible.

Production Standards/Certification/Labelling

Farmer organisations could be more proactive and should be involved in the development of IPM production guidelines and standards.

Also, it would be important to engage in a meaningful, science-based dialogue with the food distribution industry regarding standard setting (in particular when standards above those set by the regulatory agencies are established by retail industry). Otherwise certification standards may thus block access to markets. Therefore, retailer (and consumer) associations are to recognize voluntary IPM standards applied by growers and could embark on a certification programme to allow mutual recognition of IPM produce in future.

There is often a cost involved with certifying food products. As farmers may already be overwhelmed with a number of different certifications they are required to pay for, a government-supported framework, including minimum requirements, was suggested to enable consolidation of such certification systems for farmers and avoid overburden in the long run.

Labelling IPM products should help farmers get an economic benefit and globally prevent non-harmonized, independent standards from distorting the market. Branding of IPM at the retail level should be considered to encourage all growers to adopt IPM. However, a standardized certification system needs to be economically viable and coherent with science based IPM and the measurement of IPM (adoption) needs to be credible and validated.

Different opinions existed in the groups whether to have a certification for IPM produce. It was argued that:

- A special certification for IPM produced agricultural commodities is not recommended, rather preferring selling prices which reflect the direct costs at the farm level, including a small amount of taxes able to cover the indirect IPM costs.
- Growers may not see the added value of such certification schemes, particularly as the latter would increase compliance costs.
- Whereas on the other hand, it was considered positive, even necessary, to have a stand-alone IPM certification system.

Measurement of IPM uptake

Data and information are useful to measure the adoption and implementation of IPM. In addition, assessments demonstrating the benefits of IPM for farmers and for the society should work as incentives and valuable tools to foster IPM uptake.

The choice of what is measured and criteria of measurement should involve governments (in consultation with other stakeholders such as grower groups and scientists). A simple measurement of IPM adoption rate (and some additional measurements of impacts, success stories) was preferred although it was recognized that more detailed assessments would contribute to more precise information.

For assessing the economic viability of IPM tools and strategies, the use of case studies was seen as the most practical way when it is not possible to do it at a general level. Such case studies, as well as the assessment of data which are already collected at the farm level in a mandatory way, should ensure that no additional administrative burden is imposed on farmers. When farm data are used, ownership of the data should automatically be held by farmers.

Benchmarking countries' and regions' current level of tools and technologies available for facilitating adoption of IPM (e.g. through the use of a questionnaire to generate data for benchmarking) was discussed as an option to assess IPM uptake. Such benchmarking could result in a set of minimum standards for IPM

adoption and a plan could be developed for a progressing process within regions and countries to achieve minimum standards. This could also be used to establish next levels of IPM progression.

Activity Indicators

Farm-based measurement is one of the main tools to identify bottlenecks or barriers in IPM implementation. However, further identification of research needs and incentives aiming to make IPM more attractive to farmers is necessary.

It was recognised that activity indicators for adoption of IPM (e.g., farmer self assessment, sales figures for biocontrol agents, treatment frequency index, degree of recruited extension services) are difficult to choose as each measure has certain shortcomings to be broadly applicable. Therefore, a general set of principles on IPM should be established in order to allow each country to measure the extent of IPM implementation. The auditing related to such principles or certification could be carried out by a third party.

Performance Indicators

There is a need to have a measure of risk reduction that is directly related to the implementation of IPM. Current risk indicator models should be reviewed to determine if they can be used for this purpose.

Communication and raising awareness

It is important to inform consumers about IPM-based food production as it can directly help create a market demand for sustainable food. It is essential that all relevant stakeholders, such as consumer groups, education systems, retailers, producers, government bodies and marketing companies participate in crafting effective consumer awareness strategies.

It is necessary to collect baseline information and to review the existing knowledge, expertise and on-going programs on how IPM information is currently communicated to consumers in order to identify successful awareness practices. The key message has to build confidence/trust in IPM and sustainable food production through conveying truth, transparency and commitment.

It is also important to develop effective strategies to communicate and educate the consumers (including children) about improved environmentally sound production and safety of food through the use of IPM as consumers can drive market needs. For IPM promotion and information to the general public, more science-based plain language communication regarding agriculture (e.g. good agriculture practice, human health benefits, and environmental stewardship) should be used rather than IPM specific information. Demand and support by consumers would then increase the consequent IPM uptake by growers.

Educating the retailers and NGOs about the principles and benefits of IPM and developing marketing strategies including a brand for IPM would be also a key element to support IPM and help additionally prevent the establishment of non-harmonized standards, or standards with unintended consequences.

Sharing information across countries/regions should be facilitated, recognizing however that there is no prescriptive and broadly applicable IPM approach, as IPM concepts are specific to crops and regions.

5. WORKSHOP RECOMMENDATIONS

This section presents the workshop overall recommendations for the OECD, governments and stakeholders.

They are presented in the following way:

- 5.1 Recommendations to governments
- 5.2 Recommendations to all stakeholders
- 5.3 Recommendations to OECD

5.1 Recommendations to governments

Infrastructures and policies promoting IPM

Governments should better recognize the contribution of IPM to sustainable agriculture and consider integrated and sustainable crop production and the pertinent drivers for sustainable agriculture in all systems. Therefore, they should put the infrastructure in place to facilitate the adoption and implementation of IPM. In particular, they should:

- Develop a framework for IPM regulation
- Provide incentives to IPM (both positive and negative), including incentives for research and innovation programmes, that do not cause market distortion
- Re-direct incentives from conventional farming to IPM
- Provide the conditions for knowledge transfer and education, in particular:
 - Provide research incentives and facilitate the information transfer from research to farm level
 - Provide funds for IPM extension services which should involve farmer organisations, support demonstration farms and the demonstration of effective cultural practices
 - Educate farmers, advisors and other stakeholders (including regulators, NGOs, retailers) on IPM
- Develop a framework for IPM certification programme
- Facilitate faster and cheaper registration of low risk, selective and IPM-compatible pesticides as well as biological products.

Measurements and impacts of IPM adoption and implementation

Governments should develop indicators and ways to measure implementation and impacts of IPM. In particular they should:

- Coordinate with stakeholder bodies (board, farmer group, etc.) to obtain and develop an inventory of data that is already being collected.
- Invest in cost-benefit measurement models, showing to farmers and the society the costs (research, implementation, management) and benefits (economic, environmental, social) of IPM uptake
- Undertake research on IPM benefits and impacts that can be easily measured
- Fund demonstration projects (and leverage other stakeholders to fund demonstration projects) on:
 - Implementation
 - Measurements of effect on pest management
 - Environmental and risk indicators
 - Economic impact (cost/benefit)

Communication on IPM

Governments should carry-out communication activities, in particular they should:

- Develop national action plans that consider IPM awareness campaigns for the public
- Promote the added value of IPM with respect to environmental and societal benefits, in particular to retailers and the food industry
- Facilitate credible information exchange on IPM (information needs to be transparent, science based and not alarming)
- Promote produce from IPM in public purchases

5.2 Recommendations to all stakeholders

Stakeholders should carry-out research on and contribute actively to the adoption of:

- The entire IPM toolbox (e.g. cropping system)
- Individual tools (e.g. plant breeding, decision support systems, biological control)

All stakeholders should carry out communication on the benefits of IPM and sustainable agriculture.

They should also:

- Undertake environmental performance evaluation of pesticides and other IPM tools (i.e. calculate their overall costs and benefits in the society as a whole)
- Develop or support demonstration plots/farms
- Investigate better options for research funding on IPM and share experiences.

5.3 Recommendations to the OECD

The OECD and its Pesticides Programme should encourage/help countries to implement the recommendations made by the workshop participants to governments and stakeholders (see above). In particular, the OECD should work towards the following objectives:

Coordination and information exchange

- Facilitate information and expert knowledge exchange:
 - Provide a platform for information sharing, dialogue and cooperation, including all stakeholders, in order to facilitate the transfer of IPM tools and technologies among countries
 - Explore which systems/networks are currently used to facilitate information exchange
 - Organise workshops (e.g. on decision support systems, on how to implement IPM at farm scale, on education activities, etc.)
 - Facilitate stakeholder engagement and collaboration sessions on identifying IPM strategies
 - Provide a clearinghouse of information to keep track of:
 - available tools and decision support tool boxes
 - lists of IPM experts and of IPM practitioner organisations that contribute to IPM adoption
- Inform governments of IPM benefits

Policies in favour of IPM adoption and implementation

- Review incentives that would facilitate the adoption and implementation of IPM
 - Make an inventory of all potential incentives to stimulate the uptake of IPM
 - Collect positive, incentive-based success stories of useful interventions from member countries and share the incentives to stimulate the successful adoption of IPM. Such a positive approach serves to bridge the various policy alternative choices
 - Consider developing a guidance on the establishment of insurance schemes for crop losses due to IPM
 - Collect country-specific case studies that demonstrate the economic viability of individual IPM tools in order to produce a model case that could be used by individual countries

- Encourage registration policies that take into account IPM criteria
 - Encourage enhanced access to bio-pesticides/low risk selective pesticides by reducing unnecessary regulatory burdens and fees/cost in the registration process and harmonizing regulatory schemes
 - Develop guidance on the evaluation of broad ecological impact of pesticides on agricultural production systems (possibly as part of the registration process)
- Consider how IPM tools and technologies can help filling-out the gaps as regards to minor uses
- Apply lessons learned from the horticultural sector ,i.e. minor uses programmes, regarding incentives and other approaches that could be applied to facilitate the uptake of IPM
- Consider ways of ensuring that countries establish supporting infrastructures for the sustainability of IPM delivery and implementation learning from the experience with pesticides
- Consider exploring the certification requirements of countries (trade barriers), in an effort to identify and possibly remove unnecessary/unjustifiable requirements that could have a negative impact on the implementation of IPM

Measurements and indicators

- Develop indicators measuring IPM adoption and implementation
 - Develop an inventory of available data and measurement tools
 - Provide guidance as to what type of information would be the most useful (in cooperation with stakeholders' bodies, e.g. farmers groups and boards)
 - Set up a set of IPM implementation indicators to be used by governments including minimum standards/principles for IPM to be used as the basis for the measurement of IPM adoption and implementation
- Develop performance indicators
 - Determine if the effect of IPM adoption on risk reduction can be measured within the context of risk indicator models (with a view to developing performance indicators) and encourage cooperation to measure the benefits of IPM

- Monitor IPM adoption and implementation and the benefits of it
 - Develop benchmarking tools regarding countries' levels of IPM implementation
 - Measure progress in IPM adoption and implementation in various countries and regions

Public & food chain awareness raising

- Consider facilitating the development of certification of IPM produce
 - Develop guidance on certification, labelling or branding of IPM-based crop production
 - Establish a certification programme on IPM to allow the future mutual recognition of IPM produce
 - Facilitate meaningful, science-based dialogue regarding the setting of food standards with retailers, including inviting them as observers
- Identify the most effective way of communicating IPM to consumers
 - Review existing consumer communication models and identify success factors
 - Promote harmonized approach and establish communication best practices (including guidance for school information pack)
 - Reach out to the retailers and growers and other relevant sections of the production chain (e.g. food industry) who are in the decision-making process
- Organise seminars to share knowledge on how to promote IPM globally (involving all stakeholders)

6. ANNEXES

ANNEX 1: PARTICIPANT LIST

OECD Workshop on Integrated Pest Management

Strategies for the adoption and implementation of IPM in agriculture contributing to the sustainable use of pesticides and to pesticide risk reduction

Berlin, Germany, 16-19 October 2011

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Mr. Peter KENMORE

Chief, Plant Protection Service
FAO, AGPP Division

European and Mediterranean Plant Protection Organization (EPPO)/Organisation européenne et méditerranéenne pour la protection des plantes (EPPO)

Mrs. Vlasta ZLOF

Scientific Officer
EPPO

Farmer Organisations

Ms. Lori BERGER

Executive Director
California Specialty Crops Council

Mr. Peter ISAACSON

National IPM / Minor Use Coordinator
Canadian Nursery Landscape Association

Dr. Gabriele LUDWIG

Almond Board of California

Dr. Charles MELLINGER

Director of Technical Services
National Alliance of Independent Crop Consultants
Glades Crop Care, Inc.

Ms. Eugenia POMMARET

COPA-COGECA
Fédération Nationale des Syndicats d'Exploitants Agricoles

Mr. Murray PORTEOUS

1st Vice President
Canadian Horticultural Council

Food producer, Retailer and Cooperative Organisations

Dr. Friedrich LÜDEKE
GLOBAL G.A.P

Mr. Paul BOL
Dutch Produce Association / GlobalGAP

Mr. Bernard RAYNAUD
Directeur
Direction agriculture durable et développement

CropLife International (Pesticide Industry)

Mrs. Eva ERISGEN
Crop Protection , Public and Government Affairs
BASF SE / CropLife International

Dr. Keith JONES
Director Stewardship & Sustainable Agriculture
CropLife International

Dr. Peter OHS
Senior Product Stewardship Manager
Bayer / CropLife International

International Biocontrol Agent Manufacturers Association (BioPesticide Industry)

Mr. Bernard BLUM
Head International Affairs
International Biocontrol Manufacturers Association (IBMA)
Agrometrix Integrated Crop Management

Mr. Karel BOLCKMANS
Head of Research & Development
Production and R&D
Koppert BV

Mr. David CARY
Executive Director
International Biocontrol Manufacturers' Association

Mr. Vittorio VERONELLI
Managing Director
CBC (EUROPE) Ltd.

IOBC (International Organization for Biological and Integrated Control)

Dr. Franz BIGLER

President IOBC wprs
Agroscope Reckenholz-Taenikon ART Research Station

Dr. Frank WIJNANDS

IOBC wprs IPM Commission
Applied Plant Research - Wageningen UR

IPM Research, Development, Training and Implementation

Dr. Thomas GREEN

President
IPM Institute of North America

Mrs. Lynnae JESS

North Central IPM Center
Michigan State University

Ms. Carrie KOPLINKA-LOEHR

Northeastern IPM Center
Cornell University
The Insectary

Mr. Rick MELNICOE

Environmental Toxicology Western IPM Center
University of California

Mr. James VAN KIRK

Director
USA / Southern Region IPM Center
NC State University

Dr. Janny VOS

CABI

Professor Frank ZALOM

Dept. of Entomology Dept. of Entomology
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Environmental Organisations

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PAN Europe (Belgium)

ENV/JM/MONO(2012)32

Dr. Gesine SCHUETTE

Scientific Advisor

PAN Germany Research Center for Biotechnology

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OECD/OCDE

Ms. Silke DACHBRODT-SAAYDEH

Expert

Julius Kuehn-Institute (JKI)

Federal Research Centre for Cultivated Plants

Ms. Beatrice GRENIER

ENV/EHS

OECD

Ms. Sylvie PORET

Principal Administrator

ENV/EHS

OECD

ANNEX 2: WORKSHOP PROGRAMME

OECD Workshop on Integrated Pest Management

Strategies for the adoption and implementation of IPM in agriculture contributing to the sustainable use of pesticides and to pesticide risk reduction

Berlin, Germany, 16-19 October 2011

Workshop location:

Julius Kühn – Institute (JKI)
Federal Research Centre for Cultivated Plants
Königin-Luise-Straße 19
14195 Berlin, Germany

Sunday 16 October 2011	
16.00-18.00	<ul style="list-style-type: none"> • Workshop pre-registration • Poster hanging session
<i>16.30-17.30</i>	<i>Meeting of the Planning Group with Break-out Group Chairs (and possibly rapporteurs)</i>
18.00-20.00	<ul style="list-style-type: none"> • Welcome Drinks • Poster presentations

Monday 17 October 2011	
8.00-8.30	Registration
8.30-10.00	Plenary Session: Welcome and Introductions <u>Workshop Chair:</u> Dr. Wolfgang Zornbach, Chair of the OECD Working Group on Pesticides, from the German Federal Ministry of Food, Agriculture and Consumer Protection (BMELV)
8.30-9.00	Welcoming addresses and introduction to OECD <ul style="list-style-type: none"> • Werner Kloos, Deputy Director General for Agriculture, German Federal Ministry of Food, Agriculture and Consumer Protection • Georg F. Backhaus, President, Julius Kühn Institute (JKI) • Sylvie Poret, OECD Pesticides Programme, Environment Directorate
9.00-9.10 9.10-9.30	Presentations on recent IPM work and future projects by international organisations: <ul style="list-style-type: none"> • OECD (Beatrice Grenier and Silke Dachbrodt-Saaydeh) • FAO (Peter Kenmore)
9.30-10.00	Keynote speech Integrated Pest Management: challenges and vision, Franz Bigler (IOBC - International Organization for Biological Control)
10.00-10.20	Coffee break
10.20-11.30	Plenary Session: Presentations on Issue # 1: <i>Technology and information</i> <u>Co-Chairs:</u> Wolfgang Zornbach and Susanne Sütterlin (Ministry of Economic Affairs, Agriculture and Innovation, The Netherlands)
10.20-10.35	1. Role and scope of forecasting models and decision support systems within IPM systems (Erich Jörg, Germany/ Ministry of Agriculture in Rhineland-Palatinate)
10.35-10.50	2. Stimulating Use of Professional IPM Consultants in Agriculture, Benefits for Farmers and Society (Frank Zalom, US /University of California, Davis)
10.50-11.05	3. ENDURE and its tools relating to IPM-implementation (Jens Eric Jensen, ENDURE/Denmark/The Knowledge Centre for Agriculture - VFL)
11.05-11.20	4. Advances with IPM as a component of sustainable agriculture: a contrast of the Australian cotton and grains industries (Nancy Schellhorn, Australia /CSIRO)
11.20-11.30	Guidance to Break-out Groups
11.30-13.00	Break-out Groups on Issue #1: <i>Technology and information</i> (rooms to be announced)
13.00-14.00	LUNCH

Monday 17 October 2011	
14.00-15.00	Plenary Session: Presentations on Issue #2: <i>Economics and Market Access</i> Co-Chairs: Wolfgang Zornbach and Kimberly Nesci (US-EPA)
14.00-14.15	1. Implementing IPM at farm level: the farmers' perspective (Eugenia Pommaret, COPA-COGECA /European Farmers)
14.15-14.30	2. The introduction, practice, successes and difficulties of IPM in New Zealand pome fruit: a case study (Mike Butcher, New Zealand/Pipfruit NZ Inc.)
14.30-14.45	3. IPM, a vital part of GLOBAL G.A.P. (Friedrich Lüdeke, GLOBAL G.A.P. /retailers association)
14.45-15.00	4. How IPM Facilitates Trade (Keith Jones, CropLife International)
15.00-15.45	Break-out Groups on Issue #2: Economics and Market Access (rooms to be announced)
15.45-16.00	Coffee break
16.00-17.00	Break-out Groups on Issue #2: Economics and Market Access (cont'd)
17.00	End of DAY 1
<i>17.15–18.00</i>	<i>Session for BOG Chairs and Rapporteurs (for Issues #1 & #2)</i> <i>Debriefing with the Planning Group</i>
<i>From 18.00 onwards</i>	<i>Preparation of verbal and written reports by BOG (#1 & #2) Chairs and rapporteurs</i>
20.00	Conference dinner (<i>dress code: casual</i>) (invitation by the German Federal Ministry of Food, Agriculture and Consumer Protection)

Tuesday 18 October 2011	
8.30-9.30	Plenary Session Reports by the (six) Break-out Groups on Issues #1 and #2 (presentations) <u>Co-Chairs:</u> Wolfgang Zornbach (Germany), Susanne Sütterlin (The Netherlands) and Kimberly Nesci (US-EPA)
9.30-10.15	Plenary Session on Issue # 3: <i>Policies and Strategies</i> <u>Co-Chairs:</u> Wolfgang Zornbach and Mike McDavit (US-EPA)
9.30-9.45	1. IPM in the European Strategy for sustainable use of pesticides (Patrizia PITTON, European Commission / DG SANCO)
9.45-10.00	2. Pesticide Risk Reduction Program: A Canadian initiative to help growers achieve pesticide risk reduction (Pat Curry, Canada, Health Canada, PMRA, and Cezarina Kora, AAFC, Pest Management Centre)
10.00-10.15	3. Implementation of IPM in Agriculture in Japan (Mr. Hayakawa, Japan/ Agricultural Chemicals Inspection Station)
10.15–10.45	Coffee break
10.45 -11.15	Plenary Session on Issue # 3: <i>Policies and Strategies</i> (cont'd)
10.45-11.00	4. IPM in US Schools: Challenges, Opportunities and Implications for IPM in Agriculture (Tom Green, US/IPM Institute of North America, Madison, WI)
11.00-11.15	5. Past and current demands on agriculture and IPM, restrictions and suggestions (Gesine Schuette, PAN Germany/ Research Center for Biotechnology, Society and Environment, Hamburg)
11.15-13.00	Break-out Groups on Issue #3: <i>Policies and Strategies</i> (rooms to be announced)
13.00-14.00	LUNCH
14.00-15.00	Plenary Session: Presentations on Issue #4: <i>Measurement and impacts</i> <u>Co-Chairs:</u> Wolfgang Zornbach and Pat Curry (Canada, PMRA)
14.00-14.15	1. IPM Pest Information Platform for Extension and Education (James R. VanKirk, US/Southern Region IPM Center, North Carolina State University)
14.15-14.30	2. Germany's Network of Reference Farms for Plant Protection (Bernd Freier, Germany/JKI Institute for Strategies and Technology Assessment)
14.30-14.45	3. An Integrated System Approach to Sustainable Crop Protection (Karel Bolckmans, IBMA - International Biocontrol Manufacturers Association)
14.45-15.00	4. Okanagan-Kootenay Sterile Insect Release (SIR) Program – A Successful Area-Wide IPM Program (Cara McCurrach, Canada/ Okanagan-Kootenay SIR Program, British Columbia)

Tuesday 18 October 2011	
15.00-15.45	Break-out Groups on Issue #4: Measurement and impacts (rooms to be announced)
15.45- 16.00	Coffee break
16.00-17.00	Break-out Groups on Issue #4: Measurement and impacts (cont'd)
17.00	End of DAY 2

<i>17.15–18.00</i>	<i>Session for BOG Chairs and Rapporteurs (#3 & #4)</i> <i>Debriefing with the Planning Group</i>
<i>From 18.00 onwards</i>	<i>Preparation of verbal and written reports by BOG (#3 & #4) Chairs and rapporteurs</i>
<i>From 18.00 onwards</i>	<i>Preparation of draft workshop recommendations (OECD Secretariat)</i>

Wednesday 19 October 2011	
9.00-10.00	Plenary Session Reports by the (six) Break-out Groups on Issues #3 and #4 (presentations) <u>Co-Chairs:</u> Wolfgang Zornbach (Germany), Mike McDavit (US-EPA) and Pat Curry (Canada)
10.00-11.00	Plenary Discussion Overall Workshop Recommendations and Conclusions
11.00-11.20	Coffee break
11.20-12.30	Plenary Discussion (con'd) Overall Workshop Recommendations and Conclusions Path forward
12.15-12.30	Closing Remarks
12.30-13.30	LUNCH
13.30 until 18.00	Urban IPM in Berlin including a visit of the German Chancellery, and a city tour/sightseeing The bus will take the participants back to the workshop place and/or participants can stay in the city centre and return individually to the hotels or leave to the airport
18.00	END of DAY 3 END of WORKSHOP

ANNEX 3: DETAILED WORKSHOP ISSUES

Note: the text below and the four lists on next pages were developed in advance of the workshop as guidance for discussion.

Four main issues have been identified as topics for discussion at the OECD workshop. These issues will be discussed in turn during the first two days of the workshop, i.e. about half a day will be allocated to each issue.

Each issue will be first introduced in plenary session (by 4-5 presentations) and then discussed by the three break-out groups (BOG). The 3 BOG will meet in parallel and will discuss the same issue looking at different perspectives: farmers', government/regulators' and consumers'. Workshop participants will be allocated to the BOGs so that the composition of the BOG would ensure a mix of backgrounds among the participants and would change between sessions (to allow a maximum of interaction among people). All BOGs will report on the outcomes of their discussions at the start of the next morning plenary session.

The following lists the four main issues along with a preliminary description of its possible contents. It is expected that all BOGs should try to address these issues bearing in mind the development of IPM over time, i.e. what problems and what solutions for different stages of IPM implementation. Also the recommendations should account for short-term and long-term perspectives.

Issue #1: Technology & Information

- Which tools, and for which purposes, are available for IPM strategies? Which information is necessary for the use of the tools? Are these tools accessible? Are they feasible?
- Emerging technologies (robotics, precision farming, multi-media, internet, etc.), feasibility
- Decision support tools for farmers choice for solutions
- Development of crop-specific guidelines and use of the methodology for other crops
- Participatory approaches (across stakeholder groups, inside the farmer community), demonstration farms
- Knowledge development and transfer between research and farmers to target the research projects for farmers needs and to stimulate awareness and participation
- Training (of farmers, of trainers), manuals and other educational materials; availability of IPM related training programs & degrees in universities and colleges
- Advisory systems: professionals trained specifically for IPM and phytosanitarian matters to grant target advice
- Availability of certified crop consultants/advisors and extension specialists
- Adaptation of tools and technologies by extension services
- Expansion of applications of warning systems with weather forecasting systems supportive and development of early diagnosis systems and threshold values for intervention
- Complexity of IPM information, e.g. introduction of more specific products and biological control agents, resistant/tolerant crops, alternative techniques to reduce weed/pest pressure
- Communication technologies used by farmers and communication to different stakeholders (e.g. consumers)
- Risk perception, lack of knowledge, farmers' reluctance to changes
- Recommendations on key solutions and resources necessary to overcoming IPM adoption barriers and gaps and to enabling IPM uptake

<p>Issue #2: Economics & Market Access</p>

- Economics by growers perspective, adhere to standards for market access
- Economic incentives (e.g. subsidies, grants, partnership programmes)
- Do subsidies and increased taxes work?
- Farmers need to see that the overall strategy is feasible (also in the long-term) and economically attractive - also in terms of economic feasibility (demonstrate benefits)
- Are there counter-productive incentives (e.g. energy crops)? Is the system of incentives itself valuable for IPM?
- Who pays for extension? additional costs, advisory services tax paid or private enterprises
- Risk perception (e.g. yield losses, higher production costs) due to higher prices of softer, lower risk chemistries, more know-how and specialised equipment required with advanced IPM technologies, higher food prices – current trends, etc.)
- Complexity of costs – for different stakeholders in IPM, for farmers, different kind of benefits and returns, shifts of costs between sectors/groups of costs
- Label and certification to ensure market access, export and trade standards (below official MRL)
- (lack of) premium prices for IPM products
- Mixed perception between IPM and organic farming
- Consumer and food retail demands on product quality (productive/counter-productive), phyto-sanitary issues
- Micro (farm level) or macro economics -> what does it mean for external costs (for biodiversity, quality and sustainability)
- IPM adoption and economic viability at farm level / cost-benefit analyses to assess economic impact of IPM adoption
- Recommendations on using IPM as a marketing tool & related incentives/advantages

Issue #3: Policies/Strategies

Note: “policies” are to be understood in a broad sense and are meant to cover both the policies of the public and the private sectors.

- Sustainability and biodiversity as framework for IPM
- Certification systems (voluntary and industry-led initiatives)
- Private standards for farmers to market products (Voluntary vs. mandatory production standards - examples of cases where this has driven sustainable food production)
- Production protocols and their impact on IPM
- Environmental and food safety standards
- Voluntary vs. mandatory elements in policies -> benefits for IPM implementation
- Systems to fund and promote IPM research
- Role of crop-specific and regional guidelines (learning from the experiences and transferring to other crops for which no or fewer guidelines exist)
- Role of national and regional (e.g. EU, NATFA) legislation and guidelines– regulatory background
- Sustainability ->role of CAP (i.e. EU Common Agriculture Policy)
- Recommendations on key drivers to move forward IPM adoption and policy changes to enable the full benefit of these drivers

Issue #4: Measurement and impacts
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- Measuring environmental and economic impact of IPM

- Activity indicators for IPM=**Uptake** IPM
 - Questionnaires to farmers
 - Farmer self-assessment (progress on IPM adoption scale)
 - Direct/indirect measurements (e.g. number of acreage/hectares under IPM, number of farmers trained for IPM, residue levels, natural enemy levels, pesticide use - statistics data on sale and use)

- **Performance=Impact** indicators (risks, Treatment Frequency Indices,...)
 - What by whom, why and how
 - Contribution to risk reduction: which risk indicators to measure it?
 - Economic impacts (for farmers, for countries, for consumers)
 - Analyses of pesticides group of substances to analyse impact - priorities for action e.g. soil fumigation
 - Accident/intoxication occurrences
 - Water monitoring data
 - Residue monitoring data

- Sufficient economical information for the adoption of new tools/and strategies
 - How to collect and disseminate such information (role of extension services)
 - Transferring from case specific to broader adoption = learning from other cases

- Recommendations on IPM adoption of indicators and measuring tools already available for use

ANNEX 4: POSTER LIST

The following poster list provides the names, emails and organization of the main author. The contact indicates the name of the workshop participant concerning information and questions about the poster content if the author is not attending the workshop.

The actual posters are available on the public website of the OECD Pesticides Programme (http://www.oecd.org/document/49/0,3746,en_2649_37465_49998577_1_1_1_37465,00.html).

Poster N°	Issue #1: Technology & Information	
1.1	Canada	<p>Modeling Tools Provide Advance Warnings of Potential Distribution of Diamondback Moth and Crop Risk Associated with Number of Generations Olfert, Owen; Weiss, R. & Soroka, J. AAFC-Saskatoon Research Centre <i>Email: Owen.Olfert@AGR.GC.CA</i> Contact: Pat Curry</p>
1.2	Finland	<p>IPM as a mutual learning process facilitated by Change Laboratory Vänninen, Irene; Pereira-Querol, M.; Forsström, J.; Engeström, Y. MTT Agrifood Research Finland, Plant Production Research <i>Email: irene.vanninen@mtt.fi</i> Contact: Irene Vänninen</p>
1.3	Germany	<p>Experience with Biological Control in IPM: Reasons for success and failure Jehle, Johannes; Herz, A. Julius Kühn-Institut, Federal Research Centre for Cultivated Plants, Institute for Biological Control <i>Email: johannes.jehle@jki.bund.de</i> Contact: Johannes Jehle</p>
1.4	Germany	<p>ISIP – the Online Decision Support System for Plant Production in Germany Röhrig, Manfred; Sander, R.; Jörg, E. ISIP; Ministry of Environment, Agriculture, Food, Viticulture and Forestry Rhineland-Palatinate <i>Email: roehrig@isip.de</i> Contact: Erich Jörg</p>

- 1.5 Germany **Dissemination Concepts for Online Decision Support**
Röhrig, Manfred; Sander, R.; Jörg, E.
 ISIP; Ministry of Environment, Agriculture, Food, Viticulture and Forestry
 Rhineland-Palatinate
Email: roehrig@isip.de
Contact: Erich Jörg
- 1.6 Germany **Geographic information Systems (GIS) in Crop Protection Warning Service in Germany**
Zeuner, Thorsten; Joerg, E.; Kleinhenz, B.; Racca, P.; Jung, J.; Roehrig, M.
 ZEPP – Central Institution for Decision Support Systems and Programs in Crop
 Protection
Email: Zeuner@zepp.info
Contact: Erich Jörg
- 1.7 Japan **Case study and available technologies for IPM in Japan**
Satoyama, Masato
 Plant Protection Division, Food Safety and Consumer Affairs Bureau Ministry of
 Agriculture, Forestry and Fisheries
Email: masato_satoyama@nm.maff.go.jp
Contact: Masato Satoyama
- 1.8 New Zealand **Innovation and research for IPM programmes: some case studies from New Zealand**
Stevens, Philippa
 The New Zealand Institute for Plant & Food Research Limited
Email: Philippa.Stevens@plantandfood.co.nz
Contact: Philippa Stevens
- 1.9 Sweden **Integrated Pest management – an idea of how to implement and control it by education and advisory service**
Sundgren, Agneta
 Swedish Board of Agriculture
 Plant and Environment Dept. Extension Service Div. South
Email: Agneta.Sundgren@jordbruksverket.se
Contact: Agneta Sundgren
- 1.10 United States **Pesticide Risk Mitigation Engine: A Farmer-friendly online tool for field-specific risk assessment and mitigation**
Green, Thomas; Pronschinske, W.; Benbrook, Ch.; Bagdon, J.; Benbrook, K.; Guzy, M.; Vache, K.; Jepson, P.; Kaplan, J.; Kegley, S.; Mineau, P.
 IPM Institute of North America
Email: ipmworks@ipminstitute.org
Contact: Thomas Green

- 1.11 United States **The Michigan Apple IPM Implementation Project**
Epstein, D.; Gut, L.; Edson, Ch.; McGhee, P.; Waldstein, D.
Michigan State University, East Lansing, MI
Email: Sheryl.Kunickis@ars.usda.gov
Contact: Sheryl H. Kunickis
- 1.12 United States **Building an Integrated Pest Management network across the United States of America with the Extension Integrated Pest Management Coordination and Support competitive grants program, a product of the United States Department of Agriculture – National Institute of Food and Agriculture.**
Draper, Martin A.; Ley, E. L.; Fitzner, M. S.
United States Department of Agriculture, National Institute of Food and Agriculture.
Email: Sheryl.Kunickis@ars.usda.gov
Contact: Sheryl H. Kunickis
- 1.13 CABI **Plantwise Alliance**
Vos, Janny; Boa, E.; Reeder, R.; Hobbs, S.; Leach, M.; Corless, T.; Poswal, A.; Kuhlmann, U.; Abrahams, P.
CABI - Centre for Agriculture and Biosciences International
Email: j.vos@cabi.org
Contact: Janny Vos
- 1.14 IBMA **From Integrated Pest Management (IPM) yesterday to Biological Integrated Plant Care (BIPC) today**
Blum, Bernard
International Biocontrol Manufacturers' Association (IBMA), International Affairs
Agrometrix Integrated Crop Management
Email: bjblum.ibma@bluewin.ch
Contact: Bernard Blum
- 1.15 IBMA **Sustainable agriculture: increasing opportunity for IT tools**
Hassani, Mounir
Atlas Agro AG
Email: www.eprotecta.com
Contact: Bernard Blum
- 1.16 IOBC **IOBC guidelines on Integrated Production and tools for the implementation on farm level**
Baur, Robert; Malavolta, C.; Wijnands, F.
International Organisation for Biological and Integrated Control of Noxious Animals and Plants / WPRS Commission on IP Guidelines and Endorsement
Email: robert.baur@acw.admin.ch
Contact: Robert Baur

- 1.17 IOBC **IOBC: from guidelines to action on farm level lessons learnt from case studies**
Baur, Robert; Malavolta, C.; Wijnands, F.
 International Organisation for Biological and Integrated Control of Noxious Animals
 and Plants / WPRS Commission on IP Guidelines and Endorsement
Email: robert.baur@acw.admin.ch
Contact: Robert Baur

Poster
 N°

Issue #2: Economics & Market Access

- 2.1 Canada **Success and challenges involved in developing biopesticides with small companies: three case studies from Canada**
Vincent, Charles; Bostanian, N.J.; Coté, J.-C.
 Horticulture Research and Development Centre, Agriculture and Agri-Food Canada
Email: charles.vincent@agr.gc.ca
Contact: Cezarina Kora
- 2.2 United States **U.S. Environmental Protection Agency - Grants to Support IPM**
Ellis, Frank; Brennan, T.; McDavid, M.
 U.S Environmental Protection Agency, Washington, D.C
Email: www.pestwise.com
Contact: Mike Mc David
- 2.3 United States **IPM and the Marketplace: What do Walmart, McDonald's and Sysco have to do with IPM?**
Green, Thomas, A.; Petzoldt, C.
 IPM Institute of North America
Email: ipmworks@ipminstitute.org
Contact: Thomas Green
- 2.4 IBMA **The FARRE IPM project in France**
Damoiseau, Louis
 International Biocontrol Manufacturers' Association (IBMA), France
Email: damoiseau.louis@orange.fr
Contact: Bernard Blum

Poster
N°

Issue #3: Policies/Strategies

- 3.1 Canada **A Role for Bioclimate Modelling in Development of IPM Strategies: Case Study – Insights into the Potential of Classical Biological Control in a Changing Climate**
Olfert, Owen; Weiss, R.; Haye, T.; Kuhlmann, U.
AAFC-Saskatoon Research Centre, Agriculture and Agri-Food Canada
Email: owen.olfert@agr.gc.ca
Contact: Pat Curry
- 3.2 Canada **Agriculture and Agri-Food Canada programs in support of sustainable agriculture**
Kora, Cezarina
Pesticide Risk Reduction Program of Pest Management Centre, Agriculture and Agri-Food Canada
Email: Cezarina.Kora@agr.gc.ca
Contact: Cezarina Kora
- 3.3 Czech Republic **Overview of current situation of IPM adoption in Czech Republic**
Radová, Štěpánka
Department of Integrated Pest Management Methodology
State Phytosanitary Administration
Email: stepanka.radova@srs.cz
Contact: Štěpánka Radová
- 3.4 Denmark **Green Growth – the Danish National Action Plan on Pesticides**
Fjelsteda, Anita; Jensen, J.E.; Kudsk, P.
Danish Environmental Protection Agency
Email: anfje@mst.dk
Contact: Jens Erik Jensen, Per Kudsk
- 3.5 Switzerland **IPM in Switzerland: benefits and difficulties**
Nyffenegger, Laurent; Cerutti, F.
Swiss federal office for agriculture
Email: laurent.nyffenegger@blw.admin.ch
Contact: Laurent Nyffenegger
- 3.6 United States **U.S. Environmental Protection Agency Partnerships for Environmental Innovation in Pest Management**
Ellis, Frank; Brennan, T.; McDavit, M.
U.S. Environmental Protection Agency, Washington, D.C.
Email: www.pestwise.com
Contact: Mike Mc Davit

- 3.7 United States **U.S. Environmental Protection Agency - Office of Pesticide Programs - Conventional Reduced Risk Pesticide Program**
Schaible, Stephen; Nesci, K.
 U.S. Environmental Protection Agency, Washington, D.C.
Email: Nesci.Kimberly@epamail.epa.gov
Contact: Kimberly Nesci

**Poster
N°**

Issue #4: Measurement and impacts

- 4.1 Canada **Integrated Pest Management (IPM) Practices: analysis of the Canadian ornamental nursery industry**
Isaacson, Peter
 Canadian Nursery and Landscape Association (CNLA)
Email: peter@canadanursery.com
Contact: Peter Isaacson
- 4.2 Canada **The Quebec Agricultural Phytosanitary Strategy 2011-2021**
Theriault, Pierre-Antoine
 Ministère de l'Agriculture, Pêcherie et Agroalimentaire du Québec
Email: pierre-antoine.theriault@mapaq.gouv.qc.ca
Contact: Pierre-Antoine Thériault
- 4.3 Germany **Hot-spot identification & management for surface waters in context of the German NAP: Methodological framework and first results**
Golla, Burkhard; Strassemeyer, J.; Strittmatter, R.; Gutsche, V.
 Julius Kühn-Institut, Federal Research Centre for Cultivated Plants, Institute for Strategies and Technology Assessment
Email: burkhard.golla@jki.bund.de
Contact: Jörn Strassemeyer
- 4.4 United States **Tracking Government Policy Impacts in Agriculture: IPM-Based Functional Ecology Measures**
Whalon, Mark
 U.S. Environmental Protection Agency, Washington, D.C.
Email: whalon@msu.edu
Contact: Mike McDavit
- 4.5 IBMA **PHEROMONES: Biological Pest Prevention in modern IPM enables less Pesticides**
Waldner, W.; Varner M.; Mattedi L.; Marani G.; Melandri M.; Pradolesi G.; Veronelli, V.; Iodice A.
 Sudtirol Beratungsring für Obst und Weinbau, Lana (BZ) Italy
Email: vveronelli@cbceurope.it
Contact: Vittorio Veronelli

ANNEX 5: REPORTS OF THE BREAK-OUT GROUPS

Issue #1 - Technology and Information

- **Report of Break-out Group 1.1** (Chair: Susanne Sütterlin, the Netherlands)
- **Report of Break-out Group 1.2** (Chair: Sheryl Kunickis, US)
- **Report of Break-out Group 1.3** (Chair: Cezarina Kora, Canada)

Issue #2 - Economics and Market Access

- **Report of Break-out Group 2.1** (Chair: Kimberly Nesci, US)
- **Report of Break-out Group 2.2** (Chair: Warren Hughes, New Zealand)
- **Report of Break-out Group 2.3** (Chair: Bernard Blum, IBMA)

Issue #3 - Policies and Strategies

- **Report of Break-out Group 3.1** (Chair: Mike McDavit, US)
- **Report of Break-out Group 3.2** (Chair: Mark Davis, FAO)
- **Report of Break-out Group 3.3** (Chair: Patrizia Pitton, European Commission)

Issue #4 - Measurements and Impact

- **Report of Break-out Group 4.1** (Chair: Pat Curry, Canada)
- **Report of Break-out Group 4.2** (Chair: Bernd Hommel, Germany)
- **Report of Break-out Group 4.3** (Chair: Keith Jones, CropLife International)

Issue #1 - Technology and Information
(Focus: Role of Government and Regulators)

Report of Break-out Group 1.1

Chair: Susanne Sütterlin, the Netherlands

From the list of the main issues to consider, provided by the OECD, the majority of the conversation focused on three key areas: funding, knowledge transfer and extension. This summary is therefore structured accordingly.

We firstly describe the key discussion points, followed by the main conclusions. Next, we identify the major actions to be taken for improvements of IPM, and finally we list recommendations for the OECD. Specific points associated with major conclusion are listed in the appendix 1.

SUMMARY OF THE DISCUSSION

- Funding
IPM research to develop and support tools and technologies requires funding across multiple levels: Science, Tech Transfer, Extension, Growers education and Consumer information
- Knowledge exchange
Framework to ensure that knowledge is exchanged from growers needs to extension, science and governments
- Extension
Extension issue is linked with the previous two issues, knowledge exchange and funding, and should be developed to target long term capacity building

In addition to three main issues three other topics were touched in the discussion. These include development of specific research tools, incentives for growers to change practice, opportunities and possibilities to fill gaps associated with minor uses.

KEY CONCLUSIONS OF THE DISCUSSION

For funding we concluded that private and public partnerships need to be reinforced. Especially public funds need to be reshaped to be more appropriately targeted to the timeframe of the problem and solution, and linked to strategies of providing tools and technologies for IPM.

We had a wide recognition that an interface is needed between research and farmers to achieve knowledge exchange which works toward increasing farmers interest and commitment to adopt IPM. This framework must have the ultimate goal to empower farmers (skin in the game).

Our final conclusion is that without extension (private or public) no IPM implementation is possible.

ACTIONS TO BE TAKEN

Following the key conclusions of the discussion we identified priority areas for actions that may lead to better implementation of IPM tools and technologies. The sequential actions identified were the following:

- Benchmarking countries and regions current level of tools and technologies available for facilitating adoption of IPM. Use the Questionnaire tool to generate data for benchmarking from which OECD could set minimum standards for IPM adoption.
- Once benchmarking is completed OECD could develop a plan for a progressing process within regions and countries to achieve minimum standards. This could also be used to establish next levels of IPM progression.
- Another outcome of the benchmarking is the identification of countries that already achieved high levels of tools and technologies. This might facilitate the transfers of tools and technologies among member countries and potentially filling the gaps associated with minor uses.

RECOMMENDATIONS

- Short term

Take on issues of limited tools and technologies associated with minor use. Currently there is a need to address this gap, which the Expert Group on Minor Uses (EGMU) can take on board.

- Medium term

The Risk Reduction Steering Group (RRSG) could facilitate the benchmarking process to identify disparity in knowledge (tools, technologies and economics) between regions and countries, therefore identify minimum standards to be achieved in all regions.

- Long terms

The Working Group on Pesticides (WGP) could be responsible for the long term goal of monitoring and measuring the progress of achievements in regions and countries. This could be anchored in a WGP working program for the coming decade.

APPENDIX 1

Funding, specific points

- Continuing funding for Research and Extension in IPM (regional differences)
- IPM research grants for 3-4 years for basic research do not consider and Tech Transfer to advisors and finally growers
- Criteria for grants to be appropriate for the implementation and outcome to farmers (i.e. stakeholders involvements)

- Timeframe in funding is in general too short
- Gaps identifications with growers community, finding funding partners
- Funding not addressed with strategy, availability alone is not enough

Knowledge exchange, specific points

- Dissemination could be infrastructure problem
- Resistance to mandatory changes
- Parallel development of new technologies and relevant regulatory frameworks
- Decision tools should meet farmers practical use and be simple, stimulate farmers knowledge improvement
- Demonstration plots and farms
- Scouting is not welcome by farmers they need more simple solutions, we don't often know what farmers are willing to do
- Cost of pesticides are cheaper than making field assessment therefore they are used on prophylactic basis
- Working groups involving all stakeholders to develop IPM protocols it cannot be just top down, must be in partnership
- Extension, specific points
Educational system to improve IPM
- Long term capacity building to ensure extension is possible
- Extension role is critical
- Private and/or public extension service

Participants in BOG 1.1

Main perspective: Government/Regulators'		
	Country/organisation (representing)	Name
CHAIR	Netherlands	Ms. Susanne Sütterlin
Rapporteur	IBMA	Mr. Vittorio Veronelli
Rapporteur	Australia	Ms. Nancy Schellhorn
	Australia	Mr Gary Fan
	Belgium	Ms. Annie Demeyere
	Canada	Mr. Pierre-Antoine Thériault
	Canada	Mr Peter Isaacson
	Denmark	Mr. Jens Erik Jensen
	Estonia	Mr. Tarvo Järve
	Finland	Mrs. Sari Autio
	Germany	Mr. Bernd Freier
	Germany	Mr. Christoph Hoffmann
	Germany	Mr. Udo Heimbach
	Germany	Mr. Martin Hommes
	Japan	Mr Yasuhiro Hayakawa
	New Zealand	Mr. Mike Butcher
	Poland	Mr Krzysztof Kielak
	Switzerland	Mr. Fabio Cerutti
	United States	Mr. Michael McDavit
	European Commission	Ms Patrizia Pitton
	CropLife International	Mr. Keith Jones
	IBMA	Mr. Karel Bolckmans
	PAN Europe	Mr. Hans. Muilerman
	IOBC	Mr. Franz Bigler
	European Ag. Coop	Mr. Bernard Raynaud
	IPM experts	Mr. Rick Melnicoe
	IPM experts	Ms. Carrie Koplinka-Loehr
	IPM experts	Ms. Gabriele Ludwig

Issue #1 - Technology and Information
(Focus: From a Farmer's Perspective)

Report of Break-out Group 1.2

Chair: Sheryl Kunickis, US

Introduction

From a farmer's perspective, BOG 1.2 discussed the Technology and Information Issues that would need to be considered in advance of the adoption and implementation of IPM in agriculture. A round robin of brainstorming provided several key areas of discussion and included the following challenges:

- Where are the technologies? We know they exist, but there is limited or no technology transfer!
- The adoption of tools and technologies at the farm level – how?
- Complexity of IPM techniques
- How does the information get communicated to the farmer?
- Farmers are reluctant to make changes.
- There is a need to provide education to better make use of the technologies.
- IPM needs to be economic viable to be adopted at the farm level.

Key Conclusions on Discussion Points

The following describes the three alternative policy approaches and implications for IPM implementation in agriculture. Note they are in no specific order and are related one to another.

Where are the technologies? We know they exist, but there is limited or no technology transfer!

Participants in BOG 1.2 recognized there is a wealth of information related to Integrated Pest Management, and particularly, there are technologies being used throughout the world that could be adopted for use. However, a clearinghouse for identifying the technologies and where they exist, the information needed to support their use, and the expertise associated with specific technologies is non-existent.

The adoption of tools and technologies at the farm level – how? The group recognized that the concept and practice of IPM is not widely known and adoption could be slow. Lessons learned from the adoption of other technologies will be of value, as well as including input from social scientists on their observations of how people change the way they think and act. It was suggested, and supported, that many look to a farmer that is considered progressive – once he or she adopts new practices or technologies and is successful, others generally follow suit. Getting the word out through grower organizations, educational forums, and field days provide real experiences that often lead to adoption.

Complexity of IPM techniques. Participants clearly stated that IPM techniques cannot require the education of a Ph.D. IPM techniques must be easily adapted for use by all farmers, regardless of educational level. Time and human resources needed to adopt and implement IPM should be considered.

How does the information get communicated to the farmer? It was pointed out that during the growing season, farmers have limited time and resources to invest, particularly when it comes to education. Winter meetings are the best time to meet with growers as that is when more time is available for learning and planning for the next season. Communication materials should be clear and easily understood.

Farmers are reluctant to make changes. Farmers often adopt new practices or technologies once they are demonstrated to be cost efficient and useful. Because the profit margin in farming is narrow, change will often be slow, with implementation to change occurring one field at a time.

There is a need to provide education to better make use of the technologies. New technologies must be understood to be able to successfully use them; however, they cannot be so complex that an advanced degree is required for adoption. Educational efforts should be addressed at the level of education of the farmer interested in learning IPM technologies.

IPM needs to be economic viable to be adopted at the farm level. Again, from the farmer's perspective, the bottom line on the adoption of IPM technologies is that must be economically feasible and technologically sound if adoption is to occur. If a cost benefit cannot be shown or demonstrated, there will be little adoption.

Other Priority Areas for Actions

Participants in BOG 1.2 included the following points that should be considered in ensuring better implementation of IPM:

- Tools, such as thresholds, diagnostics, geospatial warning systems, should be developed, or identified.
- Organizing farmers, sharing IPM experiences and lessons learned, and providing new knowledge.
- Continuous education for farmers and farm advisors/consultants as IPM is dynamic as are farming systems.

Recommendations for the OECD Pesticides Programme to Facilitate the Adoption and Implementation of IPM

Based on the findings and conclusions of BOG 1.2, the following recommendations are provided for consideration by the OECD:

1. **New technologies, such as Decision Support Systems, should be tracked. There should be a clearinghouse on available technologies, where it is used, the information needed for support, names of the experts, and related educational materials in a single database.**
2. **Facilitating information exchange.** OECD should facilitate information exchange through workshops, for example, on models such as Decision Support Systems, how to implement IPM at the farm scale, education activities, etc.
3. **Identify experts and facilitate expert exchange.** Continuing on the theme of providing a clearinghouse of information, OECD could include a list of IPM experts, their background, and willingness to exchange knowledge for the purpose of successful understanding and adoption of IPM across the countryside.

Participants in BOG 1.2

Main perspective: Farmers?		
	Country/organisation (representing)	Name
CHAIR	United States	Ms. Sheryl H. Kunickis
Rapporteur	CropLife International	Mrs. Eva Erisgen
Rapporteur	Denmark	Mr Per Kudsk
	Australia	Mr Donald Ward
	Canada	Ms. Patricia Curry
	Czech Republic	Ms. Stepanka Radova
	Estonia	Ms. Evelin Hillep
	Finland	Ms Tove Jern
	Germany	Mr. Bernd Hommel
	Germany	Ms. Monika Gelhausen
	Germany	Mr. Erich Jörg
	Germany	Ms. Annett Gummert
	Ireland	Mr. Gordon Rennick
	Japan	Mr. Tomohiro Ishioka
	Netherlands	Mr. Robert Luttik
	New Zealand	Ms. Philippa Stevens
	Portugal	Ms Miriam Cavaco
	Switzerland	Mr. Laurent Nyffenegger
	IBMA	Mr. David Cary
	PAN Germany	Ms. Gesine Schuette
	IOBC	Mr. Frank Wijnands
	IPM experts	Mr. James R. VanKirk
	IPM experts	Mr. Charles Mellinger
	IPM experts	Mr. Murray Porteous
	CABI	Ms. Janny Vos
	GLOBALG.A.P	Mr. Friedrich Lüdeke
	FAO	Mr. Peter Kenmore

Issue #1 - Technology and Information
(Focus: From Consumers' Perspective)

Report of Break-out Group 1.3

Chair: Cezarina Kora, Canada

Introduction

At the BOG 1.3, the Technology and Information issue was discussed in the context of promoting grower adoption of IPM from the consumer's prospective. It became apparent that this is a sensitive topic to address as it involves many layers and issues. A discussion followed among a group of participants representing diverse backgrounds and experiences related to IPM. Unfortunately, the one representative from the Consumers International group included in the participant's attendance list for this BOG was not present. It would have been helpful to also have the prospective from such an organization captured in this discussion.

Main areas of discussion

Among the two key aspects of the issue, the technology, in terms of pest management methods adopted by growers or how the food crops were produced was deemed of little interest and not directly related to most consumers. Therefore, the group focused the discussion on the information and communication about pest management technologies, specifically IPM. It was generally recognized that significant research into and application of best methods to communicate IPM to consumers have already been undertaken in the context of several large-scale programs. It was deemed important that this large body of pre-existing knowledge and experience be taken into account and used to inform any additional efforts in this area.

The following points were discussed:

Do consumers have a role in driving IPM adoption?

It was generally agreed that consumers have an indirect role in driving IPM adoption; they exercise their influence through making food purchasing decisions at the market place.

However, a more central role in driving IPM adoption by growers was attributed to marketing (processors, wholesale & retail) companies. Marketing companies can influence IPM adoption and sustainable production through requiring that producers they buy the agricultural products from comply with certain production standards (best practices) and then marketing respective goods under specific certification and labeling/branding schemes (e.g. in the US). In European countries for instance, some retail companies require that the produce their purchase has lower MRLs than those officially set by regulators. In some retail chain in NL, a stars logo system is established to differentiate the use of animal friendly methods from conventional meat production where better compliance with best practices is indicated by a higher number of stars on a scale of 1 to 4 (1 = conventional and 4 = ecologically /IPM based production) appearing on the packaging.

Should the consumer be informed about sustainable food production and IPM?

It was deemed important to inform consumers about the safety of the food they consume and the difference between conventional and IPM-based food production. This would help the consumer in making conscious food purchasing decisions at the food stand and therefore creating a market pressure for sustainable food.

Who are the consumers?

Everyone is a consumer, including farmers. There are, however, different segments or types of consumers representing different demands, e.g. those who base their food purchasing decisions on price, convenience, quality or interest on personal or environmental health safety. Some are ready to pay more for added benefit.

The consumer awareness and their preferences for food choices are constantly changing. In some areas, with global urbanization and more people living in towns, the knowledge and interest about food, where it comes from and how it is produced is decreasing. In other areas, better education and awareness (e.g. through school programs, 'Field-to-Fork' or 'Farm-to-Table' type initiatives) and the increasing concerns about links between pesticide use and human health issues are likely leading to more conscious consumers.

Over 20 years of consumer education about sustainable food production in US has shown that consumer awareness has moved very slowly compared to the wholesale buyers. While it is observed that generally, consumers nowadays are relatively more knowledgeable and aware, it was felt that it would help to create more informed taxpayers who may be more willing to support government programs for IPM research, education and implementation.

What to communicate to consumers?

While it was generally agreed that IPM and sustainable food production should be communicated and promoted to consumers, caution was emphasized about what message to convey and how to deliver it for best results. The IPM concept may be too complex and challenging to communicate and explain to consumers. It has many definitions, and often neither scientists nor IPM experts can agree on a common definition. Also, IPM involves many layers of approaches and implementation stages, so it may mean different things to various people. Food crops produced following IPM principles may not be relevant to consumers, not easy to understand, and in some instances can even be misleading compared to let's say organically grown food crops. IPM has not been necessarily related to being good for the consumers either. Consumers can tell the difference, and therefore, make an informed choice between organic and conventional produce. Adding another category (IPM based produce) may confuse the consumer.

It was suggested that an alternative message should be identified, something that the consumers can easily relate to and understand. For the message to resonate with the consumer, it should convey information about direct benefits resulting from IPM-based foods such as human health and safety (e.g. linked to pesticide residues), economics (cost), and quality as compared to conventional foods. Also, the information should be educational, simple and right to the point so it would easily capture consumer's attention. Connecting IPM to human health was suggested as the most useful approach. It was cautioned though to stay away from the environmental type benefits.

How to communicate the IPM message to consumers?

Consumers are vulnerable to miss-communication, therefore it was deemed critical that the message conveyed is clear, consistent and readily accessible. If consumer is directed to a website to learn more about benefits of certain food items, it may not work.

The keyword in this communication is trust. It is essential that the message is transparent, and always conveys the truth and commitment. Communication should represent a constant process of image building in an effort to clearly explain how is the farming business done and exploring ways to gain consumer trust in food production systems. Identifying a compelling farming story to tell (e.g. about a family farm business or life in the farm where the food was produced) which consumers can associate with has been effective in achieving consumer awareness.

It was deemed important to tailor (customize) the information about specific benefits of IPM-based foods to target certain consumer segments based on their specific interests and demands.

Other suggestions about means of conveying the message included (some of these are already adopted in different countries):

- Using 3rd party certification and labelling/branding of goods (e.g. ‘Green’, ‘Eco’, ‘Sustainable’, or symbolic logos like stars, etc)
- Implementing clear and practical IPM standards for inclusion in crop production
- Identifying where and how (what format) it is best for consumers to access the information. Is it in the supermarket where and when they buy the goods or directing the consumer to a website to look for the information? It may not help to rely solely on website/internet resources.

Whose role is to communicate the IPM message to consumers?

There are two levels of interfaces recognized in the business interaction and communication chain: Between producer (as supplier) and retailer (as buyer) and between retailer (as seller) and consumer (as buyer). Except for direct marketing at farm level, generally the retailer has a central position between the producer and the consumer. However, the group cautioned about leaving it up to retailers to do all the communication. Although, the retail industry could play a significant role in educating the consumer, consumers may not fully trust the information channelled through retailers.

It was proposed that professional marketing consulting firms may have a role in identifying market needs and helping retail companies in developing appropriate marketing strategies. These may include developing a brand for IPM that would result in safer food and also help create demand for safe food. There was also a question about who is going to pay for such service.

Other suggestions include:

- Consumer groups should take a leadership role for unbiased consumer education
- Establish special education programs about benefits of safe food in schools
- Identify and communicate key attributes of IPM-based food that specific consumer segments may directly relate, or react to
- Try to influence policy and attitude changes for the supermarkets to embrace and promote sustainable food to consumers
- Create an open dialogue and negotiate effective communication approaches with retailers
- The consumer should also be involved in the process of communication. Maybe through interviews and videos about their testimonials on what they know and value about consuming safe foods.

It is essential that trustful relationships and transparent communication flows are established at each interface levels in the chain. Regardless of who communicates the information, the message should be clear, simple, and consistent and always conveys the truth and long-term commitment.

General context and regulatory framework

In many cases, retail companies require that their suppliers (producers) abide to various voluntary and/or compulsory production standards; these schemes may differ in various countries. Similarly, certification, labeling/branding, and compliance schemes exist in many countries (Global Gap, On-Farm Food Safety Programs, etc). However, there is a cost involved with certifying food products and in some cases farmers are overwhelmed with the many (up to 5 at times) certifications they are required to pay for. A framework was suggested to enable consolidation of such requirements for farmers, in order to avoid overburden in the long run.

The regulatory environment is changing. For instance, by January 2014 in the European Union countries IPM implementation will be legislated. Perhaps, after this regulation comes into force and IPM implementation becomes compulsory in EU countries, the market driven nature of IPM adoption will be lost. This new situation should perhaps also determine how the consumer is informed and educated about sustainable food in these countries in the future. How this new legislation will impact the other countries trading with EU countries, still remains to be seen.

APPENDIX I

Priority areas for actions

- Identify and review the existing body of knowledge and expertise generated through research on buyer-driven efforts and consumer response to IPM and related messages
- Review currently on-going successful programs
- Collect baseline information on how IPM message is currently communicated to consumers
- Review existing consumer awareness practices and identify success factors
- Develop effective strategies to communicate and educate the consumers about improved safety of food through IPM
- Develop effective strategies to communicate and educate the retailers about the principles and benefits of IPM
- Communication to build consumer confidence/trust in IPM and sustainable food production through conveying truth, transparency and commitment
- Work with marketing company to develop marketing strategies including a brand for IPM
- Work towards building trust into quality and safety of IPM-based food products

Recommendation to the OECD Pesticides Programme

- Develop guidelines on certification, labeling or branding on IPM-based crop production
- Promote harmonized approach so consumers can embrace the system and be prepared for the new developments in establishing IPM in crop production
- Identify the most effective way of communicating IPM to consumers, e.g. through consumer groups, retailers, schools, etc.
- Become aware of, tap into and share the collective knowledge and expertise generated so far while making recommendations to member countries

APPENDIX II

Below are indicated a few example resources featuring links between food production and consumers which might help to further the consumer awareness discussion:

A recent article “**Tweeting farmers bridge gap between farm, table**” links technology and information to the benefit of bridging the gap between farm and table, i.e. connecting consumers wanting to know more about where their food comes from with the people who make their living producing it. The new technology might help making the communication more efficient in the future. <http://www.cbc.ca/news/business/smallbusiness/story/2011/10/14/f-twitter-farmers-agriculture-social-media.html>

Canadian Food Summit 2012, a recent event featured the topic of relation between food and consumers. <http://www.conferenceboard.ca/conf/12-0018/agenda.aspx>

The following organizations have conducted specialized research on consumer awareness topic:

- The Hartmann Group (<http://www.hartman-group.com/>) is specialized in market research and consulting around consumer health and wellness attitudes and responses for over ten years. A 2010 report, *Marketing Sustainability: Bridging the Gap between Consumers and Companies* investigates and updates consumers' understanding of sustainability and answers questions including cues that resonate with consumers as they shop for and purchase products and utilize foodservice, and the broader conceptual context perceived by consumers to personally benefit them as companies undertake various environmental, economic, and social activities.
- Ramu Govindasamy, Associate Professor, Marketing Dept. of Agricultural, Food and Resource Economics, New Jersey State University (55 Dudley Rd., New Brunswick, NJ 08901-8520, Phone: 848-932-9192, Fax: 732-932-8887, Email: govindasamy@njaes.rutgers.edu)

The following programs are examples of those successfully creating wholesale buyer and consumer demand for products produced using IPM:

- **Eco Apple** <http://redtomato.org/ecoapple.php>
- **Food Alliance** <http://foodalliance.org/>
- **Rainforest Alliance** <http://redtomato.org/ecoapple.php>
- **Sysco** <http://www.sysco.com/investor/OnlineSustainability2011/sustainability-suppliers.html>

A directory of such programs is located at <http://www.ipminstitute.org/links.htm>

Participants in BOG 1.3

Main perspective: Consumers'		
	Country/organisation (representing)	Name
CHAIR	Canada	Mrs. Cezarina Kora
Rapporteur	Germany	Mr. Johannes Jehle
Rapporteur	Sweden	Mrs Agneta Sundgren
	Australia	Mr. Tom Parnell
	Canada	Ms. Cara McCurrach
	Czech Republic	Mr. Michal Hnizdil
	Denmark	Mr. Jørn Kirkegaard
	Finland	Ms Irene Vänninen
	Germany	Mr. Michael Zellner
	Germany	Mr. Peter Zwerger
	Germany	Mr. Jörn Strassemeyer
	Germany	Ms. Vivian Vilich
	Japan	Mr. Masato Satoyama
	Netherlands	Mr. Johan Edens
	New Zealand	Mr. Warren Hughes
	Spain	Ms. Maria L. Ballesteros
	Switzerland	Mr. Robert Baur
	United States	Ms. Kimberly Nesci
	India	Mr. V.K. Yadava
	CropLife International	Mr. Peter Ohs
	IBMA	Mr. Bernard Blum
	COPA-COGECA	Ms. Eugénia Pommaret
	IPM experts	Ms Lynnae Jess
	IPM experts	Mr. Frank Zalom
	IPM experts	Mr. Thomas Green
	IPM experts	Ms. Lori Berger
	GLOBALG.A.P	Mr. Paul Bol
	EPPO	Ms Vlasta Zlof

Issue #2 - Economics and Market Access
(Role of Governments and Regulators)

Report of Break-out Group 2.1

Chair: Kimberly Nesci, US

After the introduction of the tasks to the group by the chair supported by a summary of points received in advance of the meeting or made during the introductory presentations to the issue, the chair guided the group through a brainstorming session. This brainstorming session led to a diverse set of points and discussion given below.

The comments by the break-out group focused around the following points

Incentives

The discussion on incentives focused around positive (subsidies, other support) and negative (taxes, less subsidies) incentives for the farmer to implement an IPM scheme. The group discussed that subsidies should cover the whole robust toolbox of IPM measures and should not exclude any tool (In this context no consensus was found whether GMOs should be considered as a self evident part of the toolbox). In this discussion, it was also stated by several participants that subsidies are not always necessary, but they may be useful in some cases. Nevertheless, the group agreed that, after some time, the IPM scheme has to economically stand alone, meaning that it should be self-supporting. One main question on incentives that arose during group discussions was the funding and the source of funding for incentives. The group discussed that reducing the cost of registration of IPM suitable products / fast track registration to get a faster market access could be considered a source of funding.

Education and Information

For education and information of farmers, and thus for the basis for the implementation of IPM, the group saw extension advisory services as key players. Education and information should be done in partnership with other stakeholders (e.g. research) and in close cooperation with the farmers and industry associations. It was strongly recommended that the ways of transferring information has to be greatly improved. The group discussed a way to better show farmers how IPM schemes work: the implementation of demonstration plots in partnership with key farmers on parts of the farmers' field to show in practice how IPM works and the outputs of the scheme. Again it was emphasized that IPM has to be seen as a package advice, starting with prevention activities, followed by monitoring activities and finally by the implementation of corrective measures. The advisory system clearly needs to support the farmers in this direction and to build up the necessary knowledge capacities by the farmers so that the schemes can be implemented. Available scheme (BMP = Best Management Practices) should be documented and distributed to the extension services of OECD countries. The group recommended that sources of support be looked for to outreach to non-OECD countries. The group agreed that the on-farm demonstration plot concept is essential to gain acceptance and adherence to the tools by the farmers themselves.

Market Issues

The brainstorming on market issues focused around access to the market and trade barriers which are/may be caused by differences in MRLs or other standards. Referring to the incentive issue, all participants

agreed that incentives must not result in a distortion of the market and that equity (level-playing field) has to be guaranteed. Within this context, we should not only look at fresh food, but also on processed food, feed or non-food.

No consensus could be reached on the question if there is a positive or negative effect of the retailers on market access. On one side, retailers are supporting farmers within a scheme which allows them to get access to the market and on the other side they are implementing a vast number of non-harmonized certification schemes with sometimes contradicting requirements. This may limit the tools for producing high quality products or distort the market to unreasonable standards with no valid basis in science or safety.

It was also emphasized to approach the retailer and non retailer (consumer) markets differently.

In general it was considered positive, even necessary, to have a stand-alone IPM Certification System, which by labelling the product (either produce or finished, processed commodities) could support the better implementation of IPM outside the EU. It should help the farmers to get an economic benefit out of implementing IPM. Further, a standardized certification system would provide for a level playing field and prevent non-harmonized, independent standards from distorting the market. As an example, ornamental production in Canada and its promotion via labelling was mentioned. Further activities of the authorities to support market access included supporting traceability schemes for commodities back to the farm and helping farmers to gain more trust of retailers / consumers. In this context, again the need for research and development of new tools was stressed, as only this supports a continuous market access and successful implementation of IPM schemes. The group also noted the question of the unsecure funding situation at the moment.

Research issues

Some governments try to force farmers to reduce the use of pesticides. This can be achieved by only allowing the use of low risk pesticides which mostly have to be applied more often. As a consequence, the fuel consumption increases. Here governments should invest in research that aims to calculate the overall costs and benefits of pesticides and other IPM-tools in the society as a whole (e. g. environmental performance evaluation). The result could be the definition of good and bad IPM tools. On the other hand, this definition would be a strong intervention into the market and thus should be discussed with all stakeholders.

The group agreed on the clear need to strengthen the R&D capabilities in the countries (e.g. breeding of resistant varieties including GMOs) with adequate funding.

Regulatory issues

It was common sense that Governments should guarantee equitable market conditions, with its incentives not disturbing or distorting the markets (OECD recommendation). It was mentioned that subsidies should finally not be the driver for implementing IPM; IPM should ultimately be economically self-sustaining. Governments should support work to demonstrate how IPM works and how IPM is supporting the farming community. Payment of subsidies should be limited to and linked clearly to tasks the farmers are doing for society.

To enable a faster implementation of IPM, registration must be cheaper and faster to get more products with low risk, human health and environmental impact (e.g. biocontrol agents).

The group agreed on the clear need to have a standard IPM certification system. Governments should not only support the inclusion of farmers into training activities on IPM but also of retailers and NGOs to

prevent the establishment of non-harmonized standards, or standards with unintended consequences (e.g., the limit to the number of pesticides detected in produce).

Recommendations:

Area: Education and Information

- OECD should encourage governments to educate farmers, NGOs, retailers on IPM
- OECD should encourage governments to facilitate the information transfer from research to farm level, for example through demonstration farms. The IPM practices should also include effective cultural practices
- OECD should harmonize definitions (e.g., low risk)

Area: Incentives

- OECD should encourage governments to provide incentives to IPM
 - Which cause no market distortion
 - Which may be positive and/or negative incentives (carrots and sticks)
 - Which should cover research incentives

Area: Research

- OECD should encourage research on the following:
 - Entire IPM toolbox (e.g., cropping system)
 - Individual tools (e.g., plant breeding)
 - Demonstration plots
 - Environmental performance evaluation of pesticides and other IPM-tools

Area: Facilitation/Regulation

- OECD should encourage governments to facilitate:
 - A faster and cheaper registration of low risk products
 - A credible information exchange, which is transparent, but also not alarming
 - Set up of a framework for IPM certification program
 - Set up a framework for IPM regulation

Participants in BOG 2.1

Main perspective: Government/Regulators'		
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Issue #2 - Economics and Market Access
(Focus: Farmers Perspective)

Report of Break-out Group 2.2
 Chair: Warren Hughes, New Zealand

Key Discussion Points

The following were the main discussion points from the Breakout Session:

a. Market Demand

There appears to be little market demand for crops produced by IPM systems by consumers. This is due to the consumer not having knowledge or understanding of IPM systems and its benefits. So while there appears to be lack of information being communicated to consumers, part of this issue is determining what needs to be communicated. This is on the basis that it is difficult to provide meaningful slogans for IPM systems that are easily communicated to the consumer.

The retail sector appears focussed on outcomes i.e. low residues, rather than on the how at this stage. Therefore, farmers utilising IPM may be disadvantaged in that it does not necessarily mean lower residues in commodities or pristine crops on the retail shelf.

As a consequence, the farmer may not see a market advantage for adopting IPM, although they may well adopt it for other reasons.

b. Incentives

There should be incentives for farmers to adopt IPM. These include:

- Utilisation of Extension Services such as farmer advisors to assist farmers in the implementation of IPM. It was considered this was a role for Government to provide this service, although it was noted that in some countries the Government has decided Extension Services are a private rather than a public good.
- Crop loss insurance is made available to farmers. This is in the situation where a farmer may have concerns on the economic aspects of adopting IPM. Specifically, the failure of the crop in the initial years of adopting IPM. By providing a facility of crop loss insurance in the event of crop failure should encourage farmers to adopt IPM. Such insurance schemes would be funded by private industry, although Governments could underwrite such schemes.

c. Role of Government

There are various initiatives that Government can undertake to facilitate adoption of IPM by farmers. These include:

- Making registration process for IPM compatible pesticides less costly and hence the farmer has access to pesticides that fit into their IPM programme.
- More funding of research. One of the main research activities should be in support of developing IPM system for specific crops. Once developed then this makes it easier for the farmer to adopt.

Government has a role in research funding and examples were given where funds derive from registration fees but various effective examples were also reported about grower organisations directly supporting and performing research on IPM.

- The Government purchases of goods and services in relation to commodities should give priority to those produced from IPM systems. This sends signals to wider stakeholders on the importance of IPM.

d. Communication

Farmers need to play a role in promotion of IPM to wider stakeholder group such as the general public (as alluded to in the Market Demand section above). In particular the benefits of IPM such as lower pesticide use based on spraying on thresholds and use of cultural practices to minimise pest development in the crop, and less impact on the environment.

Recommendations to the OECD Pesticides Programme to facilitate the adoption and implementation of IPM.

- To develop guidance material for organisations on establishment of insurance schemes for crop losses due to IPM
- To encourage governments to provide funds for IPM extension services which should involve farmer organisations
- To encourage governments to promote produce from IPM in public purchases
- To encourage countries to better recognise contribution of IPM in sustainable agriculture (and benefits to society)
- To encourage countries to investigate better options for funding research on IPM and share experiences gained

Participants in BOG 2.2

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Issue #2 - Economics and Market Access

(Focus: Consumers' perspective)

Report of Break-out Group 2.3

Chair: Bernard Blum, IBMA

1) Points of discussion and conclusions

a) Identification of IPM produced agricultural products

- It seems useful, if not advisable to enable consumers to identify, in market, the agricultural commodities which have been produced under IPM conditions
- This identification may provide several benefits at different levels. This may also make it clear to consumers that the production system used has taken in consideration beneficial environmental and health aspects.
- Such an identification can be made with several system such as labels, certification etc.
- However such an identification for IPM produced agricultural commodities, will be difficult to implement due to the following elements:
 - o identification of consistent criteria across various international production systems
 - o who will be entitled to supply the identification labels on an international level?
 - o produce suppliers do not like to 'dilute' their branding with additional 'marks'
 - o retailers do not like to differentiate between production types (with the exception of certified organic) because this implies one production type/system is less desirable and therefore may not sell as well
 - o since the intention is to ensure that all, or at least the majority, of the commodities are IPM produced, in principle all products should be eligible for IPM (or Organically labelled accordingly)
 - o There is a potential issue with who describes what to whom and what is believed – i.e., credibility of the message and messenger in the consumer's eyes.
 - o There is a need to break the cycle of retailer dominance of message as this message is often only for the financial benefit of the retailer concerned
 - o Any certification scheme is a cost to the producer who is already burdened with a plethora of competing schemes and compliance costs
 - o Such an identification may lead to artificial "technical" trade barriers which may be challenged by the World Trade Organisation (WTO)
 - o Consumer's want low cost, plentiful and safe food however this is achieved at the failure for producers to gain fair prices and the profits going to the retailers
 - o There needs to be social education of lifestyle; healthy living and healthy food choices of which the low input environmentally sound IPM programme is a significant part

CONCLUSION: the BOG does not recommend a special label of a certification for IPM produced agricultural commodities.

b) Pricing – Value for Money

It is usually broadcasted that producing under IPM conditions includes more expenses and requires more skills from the farmers.

It is well understood that farmers requires improved skills for practising IPM, however, some BOG participants challenged the ideas that the production costs are higher. Examples even demonstrate that they may be lower than conventional chemically based production.

In reality it looks that the mentioned lower production costs are made possible due to the externalisation of some costs: infrastructure, education costs etc.

In reality it seems (but this requires to be considered case by case) that the global production costs under IPM are substantially higher brought about by higher costs of selective IPM compatible intervention chemistries and the costs of pest and beneficial organism monitoring

The question is therefore about what has to be covered, at which level under which conditions.

In practice, while the added value attached to IPM produced agricultural commodities has not been evaluated and should be set case by case, it should be compensated.

- either with increased prices at the market place, the premium being refunded to the farmers through the distribution channel
- or with taxes which will be allocated to a special fund ensuring the reimbursement of the IPM costs to the farmers and the other indirect expenses engaged by the organisations/administrations

CONCLUSION The BOG would prefer to recommend selling prices which reflect the direct costs at the farms level, including a small amount of taxes able to cover the indirect IPM costs

c) Communication and consumers information

It remains necessary to make the consumers aware about the implementation of IPM which will both create sympathy for the farmers and justify the increase of prices. This social education process would ensure sound science-based information on IPM and its social and environmental benefits was communicated in a lay or popular manner

- IPM: the first important obstacle comes from the complexity of the IPM concept and we feel too difficult at this wider populus level. The suggestion is to broadcast the idea of **“Good Agricultural Practices”** or general “environmental services’ improvement resulting from the implementation of IPM that leads to quality production, safer environment and public health.
- An other issue is the communication/information flow. It is felt not wise to leave the distribution channel and the food industry alone to advertise upon IPM and Good Agricultural Practice. There are already examples of retailer requirements in so called private standards that contradict and even compromise Good Agricultural Practice. It is necessary to balance the information flow to the consumers and it seems that professionally prepared and **consumer organisation** (not PANs or Greenpeace) delivered messages may be appropriate information channels for consumers
- Media: special attention has to be given to media (TV, Radio, Press etc...) in order to ensure that they will publish and broadcast **science-based information**

- Segmentation in communication: it looks important to ensure that the information will be adapted to the public and its segmentation;
 - o **A special attention should be given to Education at school:** In order to ensure a better understanding of the consumers about GAPs, it is important to have education programs for children at the school level. These education programs, including eventually visits and practical exercises, should be science-based. The implication here is that a generational change in behaviour and mindset concerning food production may be advantageous

d) “Reduced risk” pesticides

it is a major concern for the public to understand that IPM programmes take enough in consideration their overall impact on the environment and enable a sound economic return to the producers. However, it appears sometimes that “reduced risk” pesticides are also lacking of efficacy. This leads to unacceptable practices, increases the cost of plant protection, even, sometimes makes it difficult to successfully use biological

“Low risk” pesticides must be considered only when their use will not lead to unacceptable practices, higher costs and does not jeopardize the use of biocontrol methods.

2) Conclusions on discussion points:

1. Not generally considered valuable to spend a lot of effort on differentiating between organic and IPM-based practices

2. Pricing

- Does IPM cost more?
 - Cost/hectare for the crop is one measure – sometimes lower once the transition to an IPM-based program is made
 - Increased cost of selective chemistries and monitoring services
 - There are input costs for research, development of tools including extension (government funding/taxes/cost to society) that are required to allow IPM to be implemented
 - How do you prove that a farmer is actually implementing IPM (difficulty to use this as the basis for funding/incentives etc)? – checklist approach (IOBC and Global GAP have developed approaches)

3. Communication

Importance of clear, concise communications on value of science-based IPM including environmental stewardship

Responsibility of all stakeholders (government, researchers, producer associations) to participate in communication – this will differ in different regions/countries

- Who does the consumer believe?
- Need to develop a communications strategy to deliver messages regarding IPM, good agricultural practice and environmental stewardship
- It is important not to leave the communication to the supermarkets alone
- Education of school children on importance of agriculture (including IPM)

4. Role of distributors and food industry

- important to have a dialogue with these industries if they are establishing standards above those set by the regulatory agencies (important to have a science-based discussion)

5. Risk attached to “reduced risk” pesticides

It was noted that the switch to “reduced risk” products has sometimes led to increased chemical costs, less effective biological control, increased fuel consumption, increased labour expense, the emergence of new pests and a lack of products different from chemical groups to manage resistance and control new pests. This has sometimes resulted in IPM not providing the economic return that it did when older chemistries were more heavily used

Priority Areas for action by OECD Pesticides Programme

1. More science-based popular/plain language communication regarding agriculture
 - international but nationally based involving all stakeholders
 - MT
2. Facilitation of shared information recognizing that IPM is specific to crop/region (can’t expect one specific/prescriptive approach to be broadly applicable)
 - international but nationally based
 - ST/MT/LT (ongoing)
3. Meaningful, science based dialogue with the food distribution industry regarding standard setting
 - international but nationally based
 - ST
4. Need to increase returns (income?) to farmers under IPM to facilitate greater uptake (different methods – food pricing is one)

Recommendations for action by OECD Pesticides Programme

Initiate a project (set up an IPM Expert Groups within the RRSB) to review current consumer communication models regarding the importance of agriculture, IPM with the goal of establishing best practices and communicate successful approaches internationally. Following on from the above be able to develop communication arguments (science based but plain language) for identify target communication segments and especially schools

- MT
2. Facilitate information sharing on IPM that could include an Expert Group of IPM practitioner organizations
 - ST/MT
 3. Facilitate meaningful, science based dialogue regarding the setting of food standards with retailers, including inviting them as observers including undertake surveys in order to assess in given IPM implementation plans, the direct and the indirect costs which will be suggested to be incorporated into selling prices and taxes.
 - ST

Participants in BOG 2.3

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	IPM experts	Mr. Murray Porteous
	IPM experts	Ms. Gabriele Ludwig
	FAO	Mr. Mark Davis
	IOBC	Mr. Franz Bigler

Issue #3 - Policies and Strategies
(from a Government Perspective)

Report of Break-out Group 3.1

Chair: Mike McDavit, US

Introduction

BOG 3.1 was tasked with discussing “policies and strategies” from a government perspective for the purpose of furthering the adoption and implementation of IPM in agriculture. The group consisted of participants from more than 15 countries and discussed the topic for more than 90 minutes. After reflecting on the session, three themes emerged from the dialogue, representing alternative approaches to furthering the implementation of IPM in agricultural systems. Participants recognized that the role of government in IPM implementation would be most effective by combining three types of policy approaches in varying degrees:

1. Outcome or performance-based policy
2. Prescriptive policy (“stick”)
3. Facilitative policy (“carrot”)

Key Findings and Recommendations

The following describes the three alternative policy approaches and implications for IPM implementation in agriculture.

Outcome-based policy. Outcome or performance-based policy envisions the role of government as primarily goal-setting and neutral on the means for achieving the goal. Implementation is left to the free market for resolution. For instance, in this case the government would set a goal of risk reduction through the application of IPM, while the exact means of implementing IPM and accounting for goal achievement would be in the hands of market forces expressed through the ingenuity of growers and other pesticide users. To be effective and for demonstrating goal achievement, such an approach would require the establishment of measures for pesticide use intensity and risk indicators.

Prescriptive policy. The prescriptive policy envisions the role of government as both goal-setting, as well as laying out specific expectations for implementation. For instance, government can use regulation as a “stick” to bring about the uptake of IPM. Government can prescribe IPM use to pesticide users through checklists and guidelines, thereby explicitly specifying IPM measures that farmers should implement. Other prescriptive methods include mandating IPM use as conditions of pesticide registration, in which labels and labelling provide information and dictate best practices as a means of stimulating IPM implementation, as well as pest resistance management. To be effective and for demonstrating goal achievement, such an approach would require the establishment of measures for monitoring IPM uptake and developing a simple auditing system

Facilitative policy. In contrast to the prescriptive policy, the facilitative policy envisions the role of government as convenor and incentive-maker rather than coercer for IPM implementation. Government

uses policy measures as a “carrot” to make the uptake of IPM “irresistible” to farmers. The types of potential, constructive facilitative policy roles are many and varied, including

- Making an inventory of all potential incentives to stimulate the uptake of IPM and encouraging the selective use of such measures.
- Providing a platform or arena for stakeholders to discuss and collaborate on IPM implementation and engaging different levels of government, as appropriate.
- Creating and sharing science-based information and guidance about IPM between researchers and farmers, such as:
 - Pesticide side-effects on natural enemies in different contexts
 - Environmental impacts of pest control choices (environmental impact yardstick, risk indicators)
 - Influences of alternative pesticides on human health
 - Efficacy of different pest control tools
- Providing sufficient information on pests and pest control options to farmers, enabling them to choose the pesticide solution with the least risk (“substitution principle” at the farm level).
- Providing a clearinghouse for sharing information about IPM practices in different parts of the world.
- Supporting agricultural extension services as indirect means to promote the uptake of IPM.
- Stimulating research on the development of new IPM tools and practices.
- As regulator, ensuring the availability of a sufficiently large diversity of crop protection tools. In other words, government should be careful to not ban or cancel pesticides without realizing the potential impact on IPM systems that depend on such pesticide products
- Enhancing farmer access to biopesticides (and other low risk alternatives) by reducing the unnecessary regulatory burdens for market entry and registration. Governments should strive to harmonize regulatory schemes for low risk pesticides.

Other Key Considerations

The BOG discussion covered many topics and view points, and reached conclusions on a set of key considerations for setting policy or strategies by government for facilitating the uptake of IPM in agriculture. These positions are by and large relevant to any of the three above approaches to IPM uptake.

- Policy must focus on changing behavior of growers rather than merely creating a paper exercise or façade of IPM implementation. IPM should not be reduced to “box-checking.” Real improvement in IPM implementation would be the result of greater appreciation and application of IPM for the economic benefit of farmers. The collection of information should be integrated into existing systems as much as possible to reduce the burden on growers. We want to avoid creating senseless paperwork and bureaucracy for overseeing the pest control operations of farmers.

- Any legitimate IPM system must provide direct economic returns to the farmer. Similarly, we should do our best to avoid any IPM interventions that produce negative financial consequences for the farmer.
- One novel approach for helping the farmer use more IPM would be to redirect existing subsidies to help farmers make the risky transition to IPM (e.g., introduce crop failure insurance). Ideally, the best policy intervention would help the farming community realize the so-called tipping point of IPM implementation. Once the tipping point is reached, the government would then reduce its involvement in the process and let market forces further carry the uptake of IPM.
- A recurring position in the BOG was that any effective policy must be tailored to local or regional conditions. There is no practical IPM solution taken on a larger scale for the simple reason that pest control dynamics occur at the lower scales of region or community on a specific crop.
- Government policy must address contradictory or competing regulatory schemes and deal with them in order to ensure lasting changes in IPM uptake. Policy on IPM must be executed using a holistic or systems approach when developing regulations in order to prevent contradictions arising between other regulatory schemes or standards. For example, food quality standards and food safety policies must be reconciled with IPM policies and practices. Otherwise, competing policies may introduce formidable barriers for the uptake of IPM.
- To avoid unintended market distortions, government policy must also seek to harmonize risk management requirements as much as possible between countries. Examples include standardized re-entry intervals, pre-harvest intervals, and MRL's (for export).
- Regardless of the overarching strategies employed for IPM implementation, government policy makers must continue to enable the free market to drive the uptake of IPM.
- In developing government policy on IPM implementation, such policies should attempt to aim at appealing to and differentiating all stakeholders involved in the agricultural system. The whole crop production chain must be part of the story and involves not only growers and farmers, but also includes advisors, applicators, suppliers, wholesalers, retailers, etc.

Recommendations for the OECD Pesticides Programme for Facilitating the Adoption and Implementation of IPM

Based on the findings and conclusions of BOG 3.1, the following recommendations are provided for consideration by the OECD:

1. **Make an inventory of all potential incentives to stimulate the uptake of IPM.** The OECD could collect positive, incentive-based success stories of useful interventions from member countries and share the “carrots” to stimulate the successful adoption of IPM. Such a positive approach serves to bridge the various policy alternative choices.
2. **Provide a platform or arena for stakeholders to discuss and collaborate, engaging different levels of government as appropriate.** The OECD could pursue opportunities for facilitating stakeholder engagement and collaboration sessions on identifying IPM strategies on particular crops or regions. Templates for engaging the right actors could be similarly developed for countries to employ on their own.

3. **Enable world-wide information sharing.** Similar to the first recommendation, the OECD is in a unique position to provide forums and technologies for sharing between countries the experience and regulatory approaches from OECD member countries on the adoption and implementation of IPM in agriculture.
4. **Enhance access to biopesticides by reducing unnecessary regulatory burdens and harmonizing regulatory schemes.** Coordinate with the Biopesticides Steering Group and ask for assistance for developing approaches for advancing the registration of biopesticides and other low risk pesticides. Barriers apparently still exist regarding the simplified registration of biopesticides in some countries. Such tools are vital to the successful adoption of new IPM systems.
5. **Use knowledge gained in the OECD Minor Use program to facilitate the uptake of IPM in other crops.** Coordinate with the Minor Use program and ask for assistance on applying the lessons learned on promoting the minor uses of pesticides to the adoption and implementation of IPM in agriculture (particularly with regard to regulatory incentives).

Participants in BOG 3.1

Main perspective: Government/Regulators'		
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**Issue #3 - Policies and Strategies
(Farmers' perspective)**

Report of Break-out Group 3.2

Chair: Mark Davis, FAO

Introduction/Background

Based on previous discussions that had taken place during the workshop, some key themes had been identified that framed the discussion on farmers' perspectives on policy and strategy issues. The first of these is how farmers can be effectively incentivized to take up IPM? Discussion centered on labeling schemes and other financial mechanisms. The second theme was how farmers are supporting in implementing IPM through the availability of proven tools, technical support on an ongoing basis, monitoring pests and the extent to which tools are effective and measuring progress against agreed indicators.

Of the list of discussion topics provided for the "Policies and Strategies" session, the following were identified by the group as being of particular relevance to farmers, and therefore guided the discussion:

- Certification systems (voluntary and industry-led initiatives)
- Private standards for farmers to market products (voluntary vs. mandatory production standards - examples of cases where this has driven sustainable food production)
- Voluntary vs. mandatory elements in policies – increasing benefits for IPM implementation
- Role of crop-specific and regional guidelines (learning from the experiences and transferring to other crops for which no or fewer guidelines exist)
- Recommendations on key drivers to move forward IPM adoption and policy changes to enable the full benefit of these drivers

Main discussion topics

Adoption of IPM by farmers

The importance of inclusivity for farmers was strongly emphasized. It was considered vital that they are included in the development and implementation of IPM throughout the process and on an ongoing basis. This will help to address farmers' resistance to change and anxieties about economic safety during the initial phases. Farmers need to understand what they are being asked to do and why. In addition, sustaining farmers' participation in IPM programmes depends on long-term support being available when needed. There are many cases of farmers reverting to conventional, pesticide-based production and protection systems when problems occurred under IPM production that were not easily solved. For example, in India, farmers are offered loans to buy pesticides, but not IPM inputs and as a

result many revert to high chemical dependence after a single season of IPM for purely economic reasons.

During the workshop the issue of incentives had been extensively discussed. The group agreed that more “carrots” than “sticks” should be used to incentivize farmers to take up and maintain IPM. Farmers are business people first and need to know that their production is safe. As well as economic security, farmers want to understand the scientific basis of IPM. They will not agree to take significant risks for which there are no insurance or viable technical solutions. However, farmers are also citizens and also make ethical decisions, including protecting the environment, but these are often secondary to economic security.

The long-, medium- & short-term needs of farmers should be considered in IPM. Long-term considerations might include which crops will be grown in a rotation programme, noting that some crops do not have a market. In the medium-term, the availability of resistant cultivars must be ensured. In the short-term, proven solutions to pest problems have to be made available.

It was noted that IPM may be adopted by farmers in different ways. For example, a fast-track approach may work when a solution to a critical problem is needed. An example given was the lack of availability of pesticides for certain problems where an IPM answer was the only solution/option. Elsewhere, community groups may work together to address a set of issues. In other situations partnership in a production chain may work together to encourage and support IPM uptake (e.g. wine production) where direct links between farmers, processors & consumers provides valuable feedback

Delivering IPM generally needs institutional support in the form of research, training, extension and/or other public or semi-public services. Can the private sector play a greater role in delivering IPM tools? This may be selective and address some of the more financially attractive elements, but the private sector clearly has advantages whose benefits should be built into IPM delivery where possible.

IPM tools

In addition to developing and approving IPM tools to address pest problems, there is a need to demonstrate the effectiveness and cost benefit analysis of IPM techniques directly to farmers, through field demonstrations. Similarly in working with farmers to encourage uptake of IPM, test plots on farm may also provide for a transition to the new methods, with a limited economic risk. Sharing success stories among farmers can also help to build confidence.

In support of IPM, regulators should ensure that in the registration of new pesticide products a demonstration that the IPM systems in which they will be used, will not be undermined. In a broader sense, this group also recommended that pesticide evaluations in general should look at entire production systems and their ecological impact evaluated. Currently, evaluations look at product toxicity to a few non-target species such as bees. However, agricultural ecosystems are complex, especially under IPM, with many beneficials and related factors such as habitat, over-wintering sites and alternative food sources. These are not considered in standard evaluations, but are an increasingly important issue that should be addressed by OECD and national authorities. The group recommended that OECD develop guidance on the evaluation of broad ecological impact of pesticides on agricultural production systems – maybe as part of the registration process or when a product is being considered for use in a particular IPM system.

Pesticides also have a well established extensive support infrastructure that makes them readily available and relatively cheap. Authorities have not had to incentivize farmers to use pesticides, but there are many “hidden” subsidies in the form of externalities of pesticide life cycle management, that are financed by the authorities or consumers (e.g. residue monitoring, inspection schemes, emergency response to chemical spills etc.). IPM needs similar infrastructure to ensure its continuity and sustainability. The group recommended that OECD consider ways of ensuring that countries establish supporting infrastructures for the sustainability of IPM delivery and implementation learning from the experience with pesticides.

Standards and Certification

Private standards may contradict themselves and block access to markets; for example, setting unachievable MRLs and demanding cosmetically perfect produce. Either standards need to be relaxed or consumers educated to accept blemished produce. However, it was also noted that cosmetic quality can also be achieved in IPM systems, as has been achieved in New Zealand.

Standards and Certification are expensive for farmers to implement, and there are too many of them that confuse farmers. They need to be economically viable, coherent and their proliferation needs to stop. For this reason, OECD and national authorities need to engage the private sector in dialogue to rationalize standards and certification schemes.

The group recommended that OECD explore (possibly through means of survey) the national standards such as MRLs that could act as trade barriers, in an effort to identify and possibly remove unnecessary and unjustifiable requirements that could have a negative impact on the implementation of IPM.

In addition, OECD should reach out to the retailers and growers and other relevant sections of the production chain (e.g. Food industry) who weren't part of these IPM discussions, but who play important roles in the decision making processes.

Participants in BOG 3.2

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	Switzerland	Mr. Fabio Cerutti
	United States	Ms. Kimberly Nesci
	India	Mr. V.K. Yadava
	CropLife International	Mr. Peter Ohs
	IBMA	Mr. Bernard Blum
	PAN Germany	Ms. Gesine Schuette
	IOBC	Mr. Frank Wijnands
	IPM experts	Mr. Rick Melnicoe
	IPM experts	Ms. Gabriele Ludwig
	IPM experts	Ms. Lori Berger
	IPM experts	Ms Lynnae Jess
	European Ag. Coop	Mr. Bernard Raynaud

**Issue #3 - Policies and Strategies
(Consumers' perspective)**

Report of Break-out Group 3.3

Chair: Patrizia Pitton, European Commission

On the basis of the presentations given and suggested issues for discussion, the group debated the expectations and potential driving force of consumers in the progress of Integrated Pest Management.

Summary of main discussion

- What are consumers interested in? They are a diverse group, only some of whom are driven by price. They are generally far removed from farm production and can be influenced by the media. They are more and more interested in environmentally friendly produce.
- People are sensitive to pesticide residues, but it's hard to communicate and explain IPM to them in relation to residues. One BOG participant cited a case of a US company that certifies produce based on pesticide residues, but consumers didn't respond by purchasing such certified produce, so the company failed. People who are worried about residues turn to organic produce, not IPM. The environmental benefits and sustainability of IPM should be communicated to the public.
- Organic produce may be unhealthy as could have pests and natural toxins.
- Organic produce is easy to explain and sell to consumers (ie. no pesticides). IPM needs a clear, immediate and understandable message that underlines the environmental benefits, eg. increased safety for bees and other beneficial organisms.
- How can we raise consumer awareness and communicate in a positive way about IPM and plant protection?
- Price is very important. If IPM produced food is more expensive, then the additional value to the consumer must be properly communicated to justify the higher price.
- Everybody in the food production chain should reduce the risk of pesticides.
- The role of consumer associations is to share good information. The general public may intuitively understand general concepts but doesn't need to know all the details of IPM.
- Professional marketing is needed to define a communication strategy to consumers to best sell IPM. For example, a retailer set up a "bee hotel" in a supermarket to show consumers the environmental benefit to bees.
- IPM can improve the image of those farmers practicing it relative to conventional farmers.
- One workshop participant cited the case of voluntary IPM standards followed by farmers but not promoted or supported by retailers.
- IPM should be seen in the larger framework of sustainable production, for which some marketers specialise.

- The US Stewardship Index partnership among growers, suppliers and environmental public interest groups focuses on the crop supply chain and uses bottom line or output based metrics instead of an IPM toolbox. For example, reduced energy or water use is the goal, which enables operators to compare and communicate performances, rather than on which specific IPM practices are followed.
- Other marketers follow the emotional route, e.g. by using a label on produce linked to a website giving information on how it was produced in a fair sustainable manner.
- Encourage outreach to consumers to educate them on the discoveries and benefits of IPM. Sustainable processing, including packaging, should be considered.
- IPM awareness should be promoted to children as future consumers.
- Consumers are only educated on prices, but there is a potential to connect consumers with farmers to educate them further, e.g. consumers can pick their own fruits/vegetables to get first hand experience of food production.
- Some organisations formed to advocate IPM, such as IPM Voice, should be used to advantage.
- The criteria to define IPM should be same for all stakeholders, but IPM in one country may not be considered IPM in another. The “Guide IPM elements and guidelines” is available on the internet at <http://www.ipmcenters.org/ipmelements/IPMElementsGuidelines.pdf>.
- The OECD could work on transparent cost benefit analyses of IPM production process.
- OECD could also develop an IPM certification program with clear guidance to explain labels so consumers know what they’re paying for.

Key conclusions

- Need to promote and communicate the environmental benefits and sustainability values of IPM to inform consumers and increase demand and consequent IPM take up from growers.
- Need to find appropriate ways to measure environmental benefits and communicate them in a easy manner to consumers
- Professional marketing is needed to define a strategy for communication to consumers.
- The involvement of retailer/consumer associations is needed to recognise the voluntary IPM standards applied by growers and to permit promotional information is widely spread
- Need to improve the education of children on IPM.
- Possibility for a certification program to allow the future mutual recognition of IPM products.

What should the OECD WGP do about IPM?

- Collate communication strategies to consumers, on IPM guidelines and success stories to share with member countries.
- Encourage cooperation to measure the environmental benefits of IPM.
- Develop guidance for a school information package on IPM.
- Encourage countries to develop national action plans that consider IPM awareness raising campaigns for the general public to communicate the added environmental benefits and sustainability values of IPM.
- Promote the participation of retailers and the food industry in such campaigns.
- Organise a seminar/workshop to share knowledge on how to promote IPM involving stakeholders such as consumers associations, Sustainable Agriculture Initiative platform, Stewardship Index, Food Alliance, Sysco, IPM Voice, Leaf.
- In the long term, the WGP could develop a certification program to allow the future mutual recognition of IPM products.

Participants in BOG 3.3

Main perspective: Consumers'		
	Country/organisation (representing)	Name
CHAIR	European Commission	Ms Patrizia Pitton
Rapporteur	PAN Europe	Mr. Hans. Muilerman
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	Czech Republic	Mr. Michal Hnizdil
	Denmark	Mr Per Kudsk
	Estonia	Ms. Evelin Hillep
	Finland	Ms Tove Jern
	Germany	Mr. Johannes Jehle
	Germany	Mr. Christoph Hoffmann
	Germany	Mr. Bernd Hommel
	Germany	Mr. Michael Zellner
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	CropLife International	Mr. Keith Jones
	IBMA	Mr. David Cary
	IOBC	Mr. Franz Bigler
	IPM experts	Ms. Carrie Koplinka-Loehr
	IPM experts	Mr. Thomas Green
	IPM experts	Mr. Murray Porteous
	IPM experts	Mr. Frank Zalom
	CABI	Ms. Janny Vos
	GLOBALG.A.P	Mr. Friedrich Lüdeke

Issue #4 - Measurements and Impact
(Role: Government/regulator)

Report of Break-out Group 4.1

Chair: Pat Curry, Canada

The BOG decided to discuss three main areas about the measurement and impact of IPM namely: activity indicators for adoption of IPM, indicators of the impact of IPM on risk reduction and the economic viability of IPM tools and strategies.

1. Discussion about activity indicators for adoption of IPM

It was recognized that there are currently different methods in use to measure the adoption of IPM in several regions or organisations. Some of them were presented and discussed.

- Farms that work on the basis of IPM guidelines can share their experiences based on a self assessment and report on the adoption of IPM rules. The disadvantage of the self assessment is that it can be based on the personal feelings of the farmer without standardisation and there may be questions on the validity of the evaluation.
- To have a more objective evaluation, an audit on the adoption of IPM by a third party can be a solution. IOBC is combining self assessment by the farmers and an audit by a third party based on a point system for IPM tools.

Other possibilities to measure the adoption of IPM that were discussed include:

- sales figures for biocontrol measures and natural enemies; this is not applicable in all IPM programs because in some cases biocontrol measures are not relevant to the situation
- The use of pesticides can be measured by evaluating sales data or by using the TFI (Treatment Frequency Index) for higher risk vs IPM compatible lower risk pesticides. Reduction of the use of some types of pesticides can lead to risk reduction. The TFI for optimised IPM application can be determined for specific regions, crops and environmental situations and used as reference.
- The level of the use of extension services can be an indicator for the measurement of adoption of IPM;
- As IPM is not only based on the reduction of use of pesticides but also on the application of different cultural techniques, a more systematic and useful approach to measuring adoption should integrate yield, damage caused by pests and diseases and use of pesticides.
- Different systems were presented by different countries: US website on outcome tools for IPM systems, Sysco program, Ecophyto (France) and the Danish system based on IPM standards made by the stakeholders and evaluated by farmers and advisors.

Conclusion: The main conclusion of this discussion was that it is difficult to choose one measure that is broadly applicable across all situations and countries. There is a need for a general set of principles on IPM in order to allow each country to measure the extent of IPM implementation. It was recognized that these principles would have to include as a minimum the EU IPM principles.

2. Discussion about indicators of the impact of IPM on risk reduction

It was agreed by the BOG that risk should be considered to include impacts on human health, the environment and economics as well as social aspects. Currently, different risk indicators exist for different purposes in different regions and on different geographical levels. Some are developed for on farm or regional use and some are designed to be used at a national level. Most indicators are complex and do not focus on the adoption of IPM. It was agreed that the BOG discussion would focus on indicators of risk reduction that are directly related to IPM adoption.

Comparison of indicators between farms that use IPM and those that do not was discussed as a possibility to measure the impact of IPM on risk reduction. However, it would be difficult to do this comparison across regions since how IPM is implemented depends on the region, the culture, the availability of alternative techniques etc. Another possible indicator at the grower's level would be to measure the change of knowledge of the farmer, the use of bio control and the shift to lower risk pesticides.

Other possible indicators of the impact of IPM were discussed recognizing that they are complex measurements to some extent interrelated e.g. biodiversity, residues on food, reduction of chemical body burden, residues in surface or groundwater, sustainability.

Conclusion: As conclusion the group agreed that there is a need to have a measure of risk reduction that is directly related to the implementation of IPM. Current risk indicator models should be reviewed to determine if they can be used for this purpose.

3. Discussion about the economic viability of IPM tools and strategies

The BOG agreed that IPM tools must be economically viable in order to be adopted by growers and it is important for the adoption of IPM that the farmer's income increases by implementing IPM. Therefore it is important to determine the economic viability of IPM tools. As the implementation of IPM tools varies by region, it would not be possible to assess the economic viability at a general level but only on a specific or regional level.

It was felt that not all growers in all countries would be willing to give their economic information as some of them would be afraid of the misuse of this information in order to raise taxes. It was suggested that it could be done through case studies in some countries where this would not be as issue. These case studies have to consider the costs and the benefits of implementing specific IPM tools, not only on farmer level but also on the broader social level. As well as the financial income of the farmer, the effects on the environment and the risk of not using IPM should be considered. For the policy makers it is important to have an idea of the cost for developing IPM tools, such as extension services and research.

Conclusion: The main conclusion of the discussion is that the use of case studies on a specific or regional level is the most practical and efficient way to investigate the economic viability of IPM tools.

Recommendations to the OECD Pesticides Programme to facilitate the adoption and implementation of IPM.

- The OECD should establish a minimum set of IPM principles that could be used by individual countries as the basis for the measurement of IPM implementation.
- In order to obtain a valuable indicator for the adoption of IPM, it could be useful to request the OECD Risk Indicator Expert Group to determine if the effect of IPM adoption on risk reduction can be measured within the context of more general and existing risk indicator models.
- It could be possible that ranking of individual member countries with respect to their level of implementation of IPM would have a positive effect.
- Country-specific case studies are very important to demonstrate the economic viability of individual IPM tools. OECD to collect existing case studies in order to produce a model case study template that could be used by individual countries.

Participants in BOG 4.1

Main perspective: Government/Regulators'		
	Country/organisation (representing)	Name
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	Germany	Mr. Johannes Jehle
	Germany	Ms. Monika Gelhausen
	Germany	Mr. Michael Zellner
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	CropLife International	Mrs. Eva Erisgen
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	IOBC	Mr. Franz Bigler
	PAN Germany	Ms. Gesine Schuette
	PAN Europe	Mr. Hans. Muilerman
	IPM experts	Mr. Frank Zalom
	IPM experts	Mr. Thomas Green
	IPM experts	Ms. Lori Berger
	IPM experts	Mr. Murray Porteous
	FAO	Mr. Mark Davis

Issue #4 - Measurements and Impact

(Main perspective: Farmers’)

Report of Break-out Group 4.2

Chair: Bernd Hommel, Germany

What does Measurement mean to the farmer?

First, the group clarified the scope of their discussion. BOG 4.2 discussed what measurement of IPM means to the farmer, and whether or not measurement of IPM has advantages to the farmer. The group noted that measurement may not always be an advantage, because measuring requires additional resources, but it is, in some cases, mandatory. The group also discussed self-assessment tools that farmers use (for example, their own systems of measuring soil quality, recordkeeping, etc...), and decided that these tools can be considered monitoring in IPM systems and are inherently useful to the farmer and advisory service.

What to Measure?

The group discussed measurements to determine the economic and environmental affect of using IPM techniques, the costs and benefits of implementing IPM, and the effectiveness of specific IPM techniques. The group concluded that a significant amount of existing measurement information already exists and should be used in lieu of creating new measurements or requesting the collection of additional information. Existing information is preferable in the interest of efficiency, cost minimization, and the ability to analyze the data (availability of historical information). Examples of the types of information that already exists (either voluntarily collected or mandated to be collected) that the group discussed are as follows: records on pesticide use, data that manufacturing facilities collect (grading, rejection rate, data on post-harvest pesticide use, residues), government records on residues, case studies, and information from demonstration farms or projects.

Why measuring?

The group also discussed why organizations or governments would want to measure the economic and environmental assessment of IPM, the costs and benefits to implementing IPM, and the effectiveness of specific IPM techniques. The group agreed on several reasons to promote the measurement of IPM successes, including measurement as a useful tool for encouraging farmers to use IPM systems and techniques. This could be accomplished either through advisory services or through farmers’ own measurements. IPM is a boon, not a burden, and while there are costs (research, implementation, management) to IPM, there are also very many benefits (economic, environmental, social). Measures can be used to show farmers how the benefits outweigh the costs by demonstrating, among other things, effectiveness of IPM techniques in pest control. This would ultimately encourage continued use and can help farmers to obtain subsidies. Measurement also helps society to gain knowledge about potential effects of IPM tools and systems, including social and environmental benefits. For example, measurement could also allow the evaluation of the impacts of pesticides and other farming/agricultural practices on the environment (e.g., water resources, beneficial organisms, biodiversity) and to improve existing and identify new risk indicators. These benefits, combine with pest control and other benefits to farmers, are

cumulative. Measurement would allow the demonstration of that cumulative benefit to society. Further, measurement allows for benchmarking of IPM programs against regional and national averages. Last but not least, farm based measurement is a main tool to identify bottlenecks or barriers in IPM implementation and further needs for research and incentives aiming on more attractiveness of IPM for farmers.

Finally, the group cautioned that measurement should be used to reward and not penalize farmers to ensure that farmers continue to have incentives to measure.

How to measure?

The group discussed how measurements should be taken, and agreed that it is important to measure scientifically, including before historical trend information as much as possible. The group agreed that it would be useful use and develop models to assist with measuring impacts. The group also agreed upon the need for accurate, validated, authenticated measurements.

Who could measure?

The group discussed who should be responsible for measuring, and agreed that any number of different organizations should be responsible for measurement, including farmers themselves (especially in the case of already-available data), extension services, organizations representing farmers and other stakeholders. The group agreed that it would be useful for stakeholders to pool data to avoid privacy issues, to allow benchmarking, to avoid duplication, and to allow escalation of pooled data (use of these data for multiple purposes).

Use of the data?

The group discussed how best to use the information obtained from measurement, which first led to discussions on who would analyze measurement information and interpret the results, who would use those results, and who would communicate the results to the public. The group did not come to any answers to those questions, but did agree that the significant uses of the data would be for communication purposes. For example, farmers can use IPM measurement data to show the public what they are doing and demonstrate benefits and bottlenecks, and farmers and other can use the data to communicate about the overall benefits of IPM to society.

There is also a need to clarify ownership of all data collected in farms and particular user rights.

Recommendations

Based on the above discussions, BOG 4.2 ultimately agreed to the following conclusions on the role of OECD in measuring IPM:

1. OECD should encourage governments to invest in cost-based models for measuring.
2. In measuring, OECD and governments should use stakeholder bodies (board, farmer group, etc...) to obtain and develop an inventory of information that is already being collected.
 - Avoids duplication of efforts
 - Based on a system that farmers already use and trust
 - Provides historical data

- OECD could provide guidance to those stakeholder bodies as to what type of information would be most useful.
3. OECD should encourage governments to fund demonstration projects that include:
 - Implementation
 - Measurement of effect on pest management
 - Measurement of effect on environmental indicators
 - Measurement of benefits and economic impact
 - Assessment of risk
 4. OECD should encourage governments to 1) identify what farmers themselves and advisors can measure, 2) ask farmers what he/she needs to know to effectively self-assess their IPM programs and, 3) based on that information, provide needed measurement tools at the farm level (e.g., simple indicators).

Participants in BOG 4.2

Main perspective: Farmers'		
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	Canada	Mrs. Cezarina Kora
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	Finland	Ms Tove Jern
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	Germany	Mr. Udo Heimbach
	Germany	Ms. Vivian Vilich
	Japan	Mr. Masato Satoyama
	Netherlands	Mr. Johan Edens
	New Zealand	Mr. Mike Butcher
	Portugal	Ms Miriam Cavaco
	Spain	Ms. Maria L. Ballesteros
	Sweden	Mrs Agneta Sundgren
	Switzerland	Mr. Robert Baur
	European Commission	Ms Patrizia Pitton
	CropLife International	Mr. Peter Ohs
	IBMA	Mr. Vittorio Veronelli
	European Ag. Coop.	Mr. Bernard Raynaud
	IPM experts	Mr. James R. VanKirk
	IPM experts	Ms Lynnae Jess
	IPM experts	Mr. Charles Mellinger
	CABI	Ms. Janny Vos
	GLOBALG.A.P	Mr. Friedrich Lüdeke

**Issue #4 - Measurements and Impact
(Consumers Perspective)**

Report of Break-out Group 4.3

Chair: Keith Jones, CropLife International

The group started with a discussion about the need and/or the means to communicate the benefits and impact of IPM adoption to consumers. The logic of this is one needs to know what should be communicated to consumers or others, before one can determine what needs to be measured. Some believed that it is the retailer that influences the consumer, and hence these are the ones that should be provided information and messages, whereas others (including retailer representatives in the meeting) believed that they are responding to consumer demand. It is likely that both need to be targeted. It was agreed that simple messages are needed for consumers that translate complex activities and that we should not try to explain the detail of what IPM is, but rather concentrate on the benefits. Ultimately consumers are interested in price, (nutritional) quality, safety and whether the production system is sustainable (including impacts on biodiversity). It was felt that IPM should fit into the wider sustainability concept (energy footprint, pesticide risk reduction, biodiversity etc), but this needs a consensus of what is 'sustainability.'

The discussion then focused on what to measure, how to measure and who should be doing the measurement. It was recognized that absolute measures may give misleading information due to annual changes in weather, pest and disease incidence, which will influence yields, pesticide use etc, therefore relative measures are probably the most useful. It was recognized that there is a need to carry out more research on the impacts of IPM (including if there is added value/income from adoption), plus a need to measure adoption by farmers. The concept of measuring risk reduction, as well as IPM adoption rates was also covered. It was also recognized that products that are not directly bought and consumed by consumers account for large areas of farming, in which IPM adoption could have a large (environmental) beneficial effect – how can IPM adoption be promoted and measured here (brand image and value of the subsequent products could be influential here – e.g. sustainable palm oil)? It was generally agreed that one measure was not enough. The following points on what should be measured were made:-

- Measure the solution or the problem?
- Should use similar criteria in different regions
- Implementation – rate of adoption of IPM principles
- Benefits to environment
- Within context of national action plans (non) compliance will be measured
- Toxicity measures alone not sufficient to capture the wider sustainability concept.
- Pesticide use alone doesn't take into account the biological variability between years
- Tracking of pesticide use and look at trends (e.g. California)

With regard how impacts should be measured, no substantive discussion occurred, an example of measurement was given where a number of IPM practices and impacts could be listed and use or evidence of use (impact) of any three of these would indicate IPM having been adopted/implemented (i.e. an IPM points system).

With regard to who should measure, it was pointed out that measurement of IPM adoption in the EU will be mandatory, so governments need to be involved in Europe. The possibility of independent certifying agencies being involved was also raised (some GAP certifications include IPM adoption).

The following was summarised as priority areas:-

- A simple measurement of IPM adoption rate is needed, plus some additional measurement of impacts and success stories
- The choice of what is measured and criteria of measurement should be done by government (in consultation with grower groups and scientists) – this should be closely linked with sustainability measures
- Branding of IPM at the retailer level should be considered to encourage all growers to adopt IPM – the measurement of IPM (adoption) will need to be credible and able to be validated

Thus OECD should consider:-

- Ensuring there is a common understanding of sustainability (and thus the benefits of adopting IPM)
- Undertake research on IPM benefits and impacts that can be easily measured
- Recommend to governments what measures of IPM adoption/impacts can be made

Participants in BOG 4.3

Main perspective: Consumers'		
		Name
CHAIR	CropLife International	Mr. Keith Jones
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	Germany	Mr. Christoph Hoffmann
	Germany	Mr. Erich Jörg
	Germany	Mr. Peter Zwerger
	Germany	Ms. Annett Gummert
	Ireland	Mr. Gordon Rennick
	Japan	Mr Yasuhiro Hayakawa
	Poland	Mr Krzysztof Kielak
	Switzerland	Mr. Fabio Cerutti
	United States	Mr. Michael McDavit
	IBMA	Mr. Karel Bolckmans
	IOBC	Mr. Frank Wijnands
	IPM experts	Mr. Rick Melnicoe
	IPM experts	Ms. Gabriele Ludwig
	IPM experts	Ms. Carrie Koplinka-Loehr
	GLOBALG.A.P	Mr. Paul Bol

ANNEX 6: SLIDES OF SPEAKERS' PLENARY PRESENTATIONS

Please refer to the separate publication for full Annex 6

ENV/JM/MONO(2012)32/ANN

DAY 1

INTRODUCTION

Welcoming address

By Georg F. Backhaus, Julius Kühn Institute (JKI)

The OECD Pesticides Programme

By Sylvie Poret, OECD

OECD and IPM

By Beatrice Grenier, OECD

Issues for the OECD workshop

By Silke Dachbrodt-Saaydeh, JKI, Germany and OECD

FAO's New Strategy

By Peter Kenmore, FAO

IPM – Successes, challenges and Visions

By Franz Bigler, IOBC

PLENARY SESSION: PRESENTATIONS ON ISSUE # 1: TECHNOLOGY AND INFORMATION

1. Role and scope of forecasting models and decision support systems within IPM systems

By Erich Jörg, Germany/ Ministry of Agriculture in Rhineland-Palatinate

2. Stimulating Use of Professional IPM Consultants in Agriculture, Benefits for Farmers and Society

By Frank Zalom, US /University of California, Davis

3. ENDURE and its tools relating to IPM-implementation

By Jens Eric Jensen, ENDURE/Denmark/The Knowledge Centre for Agriculture – VFL

4. Advances with IPM as a component of sustainable agriculture: a contrast of the Australian cotton and grains industries

By Nancy Schellhorn, Australia /CSIRO

PLENARY SESSION: PRESENTATIONS ON ISSUE #2: ECONOMICS AND MARKET ACCESS

1. Implementing IPM at farm level: the farmers' perspective
By Eugenia Pommaré, COPA-COGECA /European Farmers
2. The introduction, practice, successes and difficulties of IPM in New Zealand pome fruit: a case study
By Mike Butcher, New Zealand/Pipfruit NZ Inc.
3. IPM, a vital part of GLOBAL G.A.P.
By Friedrich Lüdeke, GLOBAL G.A.P /retailers association
4. How IPM Facilitates Trade
By Keith Jones, CropLife International

DAY 2

PLENARY SESSION ON ISSUE # 3: POLICIES AND STRATEGIES

1. IPM in the European Strategy for sustainable use of pesticides
By Patrizia Pitton, European Commission / DG SANCO
2. Pesticide Risk Reduction Program: A Canadian initiative to help growers achieve pesticide risk reduction
By Pat Curry, Canada, Health Canada, PMRA, and Cezarina Kora, AAFC, Pest Management Centre
3. Implementation of IPM in Agriculture in Japan
By Mr. Hayakawa, Japan/ Agricultural Chemicals Inspection Station
4. IPM in US Schools: Challenges, Opportunities and Implications for IPM in Agriculture
By Tom Green, US/IPM Institute of North America, Madison, WI
5. Past and current demands on agriculture and IPM, restrictions and suggestions
By Gesine Schuette, PAN Germany/ Research Center for Biotechnology, Society and Environment, Hamburg)

PLENARY SESSION: PRESENTATIONS ON ISSUE #4: MEASUREMENT AND IMPACTS

1. IPM Pest Information Platform for Extension and Education
By James R. VanKirk, US/Southern Region IPM Center, North Carolina State University
2. Germany's Network of Reference Farms for Plant Protection
By Bernd Freier, Germany/JKI Institute for Strategies and Technology Assessment
3. An Integrated System Approach to Sustainable Crop Protection
By Karel Bolekmans, IBMA - International Biocontrol Manufacturers Association
4. Okanagan-Kootenay Sterile Insect Release (SIR) Program – A Successful Area-Wide IPM Program
By Cara McCurrach, Canada/ Okanagan-Kootenay SIR Program, British Columbia