# Towards a revitalized SP-IPM

The CGIAR Systemwide Program on
Integrated Pest Management 2007 and 2008

SP-IPM Secretariat
International Institute of Tropical Agriculture
Ibadan, Nigeria

International mailing address:
IITA
Carolyn House
26 Dingwall Road
Croydon, CR9 3EE, UK
E-mail: i.zeledon@cgiar.org
Website: www.spipm.cgiar.org

Editing, layout and design: IITA

Cover photo: Vegetable street market in Tamil Nadu, India - G. Luther, AVRDC

# Towards a revitalized
# SP-IPM

The CGIAR Systemwide Program on
Integrated Pest Management 2007 and 2008

This report was prepared by the current Coordinator of SP-IPM, I. Hoeschle-Zeledon, using information provided by B. James, SP-IPM Coordinator until June 2008.

# Contents

# Introduction

Delegates to the Earth Summit in Rio de Janeiro in 1992 recognized a looming crisis in international development. Attempts to raise living standards through conventional development approaches were not only having a woefully limited impact on poverty and other indicators of underdevelopment, they were also 'costing the earth'. In effect, inappropriate development strategies were destroying the planet's ecological life support systems. In agriculture, reliance on pesticides and fertilizers to raise production was undermining the sustainability of that production. In the Agenda 21 action plan that emerged from the Summit, integrated pest management (IPM) was explicitly recognized as a key part of the solution to this problem. It would allow more food to be produced with a less negative impact on agricultural and natural ecosystems. In 1996, as part of its response to Agenda 21, the Consultative Group on International Agricultural Research (CGIAR) launched its Systemwide Program on Integrated Pest Management (SP-IPM).

The SP-IPM is a global partnership. The task is to draw together the IPM efforts of the international agricultural research centers (IARCs) and their partners, and to focus these efforts more clearly on the needs of poor farmers in developing countries. The Program tackles those areas where research promises solutions to pressing problems of sustainable agriculture but where impact has so far been limited. This is because efforts were fragmented among different organizations or in different regions of the world, or links between researchers and farmers were inadequate.

The Program's stakeholder groups are international research institutions that include IPM as a major part of their agenda, specialized agencies and networks promoting and supporting IPM, non-governmental organizations (NGOs), farmer support groups, and the plant protection industry. The research for development organizations and farmers are the principal clients. They benefit from the Program through access to technical resources and expertise, information, advice, and also from collaborative field and capacity-building activities. These services aid farmers' efforts to manage pests, achieve greater food security, and raise their incomes within a healthier environment.

There followed a period of dwindling importance given to IPM research at a global scale with a subsequent failure to attract financial support. This meant that many projects designed by the SP-IPM team did not go beyond the planning stage. In addition, internal disputes on governance in recent years contributed to a further decline in activities and donor interest. Research within the Program came almost to a standstill in 2006.

The foundation for the revitalization of SP-IPM was laid in 2007. The governance problem that had threatened the viability of the Program was resolved. Effective 2007, the SP-IPM became a Medium-Term Plan (MTP) project of its host Center, the International Institute of Tropical Agriculture (IITA). The MTP project serves as a working framework for inter-institutional collaboration on IPM by CGIAR Centers and allied groups. IITA became responsible for the delivery of the output targets. The deliverables form part of the measurements of IITA's performance. The IITA Research for Development Directorate and Board of Trustees provide administrative and financial oversight of the Program.

*Vietnamese farmer examining her rice crop for pests. - K.L. Heong, IRRI*

Also in 2007, a new Chair of the Steering Committee from outside the CGIAR, Prof. Richard A. Sikora, and a new Program Coordinator, Dr Irmgard Hoeschle-Zeledon, were appointed. Both took office in July 2008. At the same time, the SP-IPM Secretariat was relocated from IITA's Bénin station to Ibadan, Nigeria. The new management team decided to grant the World Vegetable Center (AVRDC) and the International Center for Insect Physiology and Ecology *(icipe)* full membership on the SP-IPM Steering Committee, with effect from August 2008.

Beginning in 2008, SP-IPM adopted a new research strategy. This was developed to react better to the global food safety and food security problems through collective action. There is now ample evidence that investment in SP-IPM will pay back in terms of the critical performance required of IPM research by the Centers to make decisive contributions to the achievement of the CGIAR System Priorities (SPs) and the related Millennium Development Goals (MDGs).

This report summarizes the field operations in 2007/2008, includes the results of the activities undertaken to revitalize SP-IPM in compliance with the reconciliation agreement brokered by the CGIAR, and the emerging needs to increase Program ownership, commitment, and impact.

**Table 1. SP-IPM members and partners in 2007/2008**

| Organization | Role | Comparative advantage |
|---|---|---|
| Members | | |
| CGIAR Centers: Bioversity, CIAT, CIMMYT, CIP, ICARDA, ICRISAT, IITA, IRRI, WARDA | Generate and disseminate appropriate technologies; strengthen end-user capacity; members of the SP-IPM Steering Committee and Inter-Institutional Working Group. | The Centers have a shared mission that promotes their commitment to inter-Center IPM efforts to alleviate hunger and poverty in partnership with NARS of developing countries. |
| Partners | | |
| Other international research institutions: AVRDC, *icipe*, CABI | Conduct applied research to manage agrobiodiversity and develop biologically based pest management technologies; members of the SP-IPM Inter-Institutional Working Group.<br>In mid-2008, AVRDC and *icipe* became members of the SP-IPM Steering Committee. | Close partnership with development agencies, NARS, and farmers for participatory development and promotion of IPM in location-specific areas. |
| Global plant protection network: International Association for Plant Protection Sciences (IAPPS) | Facilitates information exchange among plant protection practitioners; member of the SP-IPM Inter-Institutional Working Group. | IAPPS promotes an integrated and systems approach to agroecosystem management in the control of pests, diseases, and weeds. |
| Specialized network promoting IPM: FAO Global IPM Facility | Initiates, develops, and expands IPM programs that aim to reduce pesticide use by promoting improved crop and pest management approaches; member of the SP-IPM Inter-Institutional Working Group. | Close operational linkage with governments and NGOs to promote IPM development and uptake. |
| Plant science industry: CropLife International | Produces and promotes sound use of crop protection products; provides information, and field-based training; member of the SP-IPM Inter-Institutional Working Group. | This global private sector federation collaborates with publicly funded research institutions for the adaptive testing of a wide range of crop protection products and related technologies. |
| Specialized agency promoting IPM: World Bank's Agriculture and Rural Development/Environmentally Sustainable Development Network | Develops and exchanges policy information; increases public awareness and recognition of the benefits of sustainable agriculture, such as that supported by IPM. | Close operational linkage with governments and NGOs to promote IPM development and uptake. |

# Re-planning

## Center Commissioned External Review

The Center (IITA) Commissioned External Review (CCER) was conducted in February-March 2007. The CCER was to review SP-IPM's history, organization, and research plan (vis-à-vis expected outcomes), and to advise on Program relevance, validity, content and substance, research and outreach priorities, value addition, governance, and operational responsibilities. The CCER recommended 15 action areas to support the operational and management challenges of the SP-IPM. The recommendations emanated from interactions between CCER panelists and participants at the SP-IPM Steering Committee meeting in 2007, the Program's core donor agencies, and end-users of SP-IPM results. The 15 recommendations were accepted by IITA, and SP-IPM initiated their implementation.

## External Program and Management Review

The sixth External Program and Management Review (EPMR) of IITA in 2007 included a special panel review of SP-IPM history, progress, relevance (especially to IITA's mission and overall MTP), constraints, and future. Additionally, the SP-IPM's CCER panelists reported to and interacted with the EMPR panel. The EPMR report concluded that:

> "…The Panel concurs with the recent CCER and supports the continuation of the SP-IPM, focused on one or a small number of themes. The Panel offers some suggestions but is not prescriptive, urging the partners to address areas that, firstly, clearly add value to individual Center programs (including the proper meshing with IITA plant/health and commodity approaches) and, secondly, which share information to advance approaches and the enabling environment across the wider community of practice in IPM"

The conclusion was later underlined by the Science Council in its 2008 report on the assessment of current Systemwide and Ecoregional Programs (SWEPs). This stated:

> "The SP-IPM had a clearly defined role in its early stage as a coordination program and has recently attempted to revive its role. As the program is intending to start anew, its goals and purpose need to be assessed as a new program focusing on specific SP research areas".

## Strategic Planning Workshop

In addition to its CCER and EPMR, by the end of 2007 the SP-IPM had identified new leadership (Chair and Coordinator). The Chair was recruited from outside the CGIAR. The SP-IPM organized a strategic planning workshop and Steering Committee meeting early in 2008 to present, discuss, and agree on an operational and management framework. The workshop built on issues discussed and agreed upon in the Program's 2007 Steering Committee meeting and

Preparing for the future: SP-IPM team at strategic planning meeting – R. Sikora, SP-IPM

recommendations from the CCER to focus on the need to move the renewed SP-IPM forward into global relevance and applicability. The workshop was hosted by ICARDA, Aleppo, Syria, 10–14 February 2008. Participants included the following:

- Representatives from the CGIAR Centers: Bioversity, CIAT, CIMMYT, CIP, ICARDA, ICRISAT, IITA, IRRI, and WARDA
- Representatives from AVRDC and *icipe*
- Representative of the plant protection industry: CropLife International/BASF
- SP-IPM leadership: incoming Chair from the University of Bonn, Germany; DDG-Research (IITA), and outgoing Program Coordinator
- Resource person on climate change from the World Bank

The workshop developed a framework through which the Program could make decisive contributions to the achievement of the SPs and the related MDGs. The Steering Committee also agreed that the SP-IPM would continue to function as a "Systemwide Coordination Program" but with flexibility in its implementation strategy to accommodate activities that would suit the mode "Short-term Systemwide Research Task Forces". Box 1 shows the new operational framework covering the following priority research themes:

### Box 1: Profile of the SP-IPM

**Goal/Impact**: IPM research results enhance the achievement of CGIAR SPs and related MDGs.

**Purpose/Outcome**: New technologies for improved IPM make a significant contribution in the development of healthy and more productive agroecosystems.

**Utilization**: Stakeholders of the international agricultural community take up new and improved IPM technologies for their crop management.

**Outputs and related activities**

- **Output 1: Adaptation of IPM to climate variability and change increased:** Develop methodologies to identify regions and cropping systems which are vulnerable to increased pest damage under climate change conditions; identify IPM strategies to enhance resilience to climate variability and change across vulnerable agroecosystems; and develop strategies for adapting host-plant resistance to pests under different climate conditions.
- **Output 2: Improved agroecosystem resilience for soil, root and plant health documented and lessons shared:** Broaden the understanding of ecological relationships in agricultural production systems to improve soil, root, and plant health; and develop management options for the control of important soil and plant pests in key cropping systems.
- **Output 3: Management of contaminants in foods, feeds and the environment improved:** Develop new technologies to identify germplasm that is able to reduce mycotoxin levels; develop and disseminate new tools to augment management of contaminants; and develop and promote IPM systems to reduce inappropriate pesticide applications.
- **Facilitation Output** (focus on catalytic action to underpin collaborative research outputs): Resources to promote IPM research and outreach mobilized; IPM concepts and options promoted; and inter-institutional partnerships built and enhanced.

**Climate change impact on IPM strategies**

Within the framework of agroecosystem redesign to help to halt and reverse the effects of climate variability and change there will be a need to analyze and advise on actual and potential impacts of cumulative abiotic stress on trophic relationships and the disruption of niches of ecosystem service providers (natural enemies, pollinators, decomposers, etc.). Research will involve the assessment of boundaries of species' distribution, the vulnerability of landscapes, plant, human, and livestock health, alien invasive species, the evolution of new strains/biotypes, etc. To prepare communities to act on the impact of climate change in the future it is necessary to assess the bioclimatic potential of pest/pathogen systems and develop simulation models/mapping tools for pest and natural enemy forecasting, their distribution and adaptation. Ongoing CGIAR work on models/mapping tools to forecast pests and natural enemies, as well as distribution and adaptation studies, especially for drought problems in crops, provide a solid foundation to build upon. A potential link is the evolving Climate Change Challenge Program.

*Link scientists on SP-IPM Steering Committee: K.L. Heong/IRRI, H.C. Sharma/ICRISAT*

**Functional agrobiodiversity use and monitoring for soil and plant health**

The intensification of agricultural production in response to increased population growth and markets aggravates the decline in soil fertility and nutrients and often results in increased incidence of pests/diseases. In agroecosystems, the role of many species for the maintenance of natural "life support" systems or in causing production losses is mostly underestimated and less understood. Depending on the species, soil biota (especially arthropods, plant parasitic nematodes, and microbes/pathogens), for example, can be pests or beneficial (e.g. selected soil microorganisms) in nitrogen fixation, nutrient recycling, and the biological control of diseases and arthropod pests. A better understanding of the role of biodiversity in sustainable agriculture, and how to measure and manage the principles and processes involved is needed to develop sound IPM approaches that mitigate pest damage. In this regard, "functional agrobiodiversity" is rooted in the conventional intuition that the sustainability of production systems depends on retaining some level of biological diversity. Incautious intensification of agriculture which threatens the natural life support systems will disrupt sustainable crop production. There is a need, therefore, to specify challenges, assess trophic relationships, and exploit renewable resource opportunities in agroecosystems to manage soil biota and above-ground pests/diseases to conserve delicate ecological balances that underpin agriculture and protect human and agroecosystem health. Research in this area will help to address community needs for information and application tools on ecosystem

The predatory mite *Typhlodromalus aripo*, holds the cassava green mite under control. - G. Goergen, IITA

services (biocontrol, pollination, soil matter decomposition). Prior CGIAR investments in this area include the development of world-class biodiversity resources centers (reference collections), biodiversity mapping and landscape projects, the development of indicators of soil agroecosystem health, and conservation research (involving GIS tools). The challenge is to develop strategies to manage healthy agroecosystems and minimize the adverse effect of pest species.

*Link scientists on SP-IPM Steering Committee: J. Kroschel/CIP, F. Nwilene/WARDA, J. Nicol/CIMMYT, A. Yahyaoui/ICARDA, C. Staver/Bioversity*

**Food safety, biosafety, and health risks**

Food quality monitoring and management activities will enable SP-IPM to analyze and mitigate the contamination of food, feed, and agroecosystems by mycotoxins and pesticide residues. These activities will also allow the assessment of the impact of transgenic plants on non-target organisms, and the appraisal of the biosafety of food from transgenic crops. Growing public awareness of food safety and sustainable production issues is a driver for the need to develop and apply less toxic pesticides and/or biological alternatives to the application of very toxic chemicals and to the increasing use of generic products of doubtful quality. These alternatives will make foods safer, and hence reduce health risks and improve the market opportunities for agricultural produce. For example, the development of effective tools and techniques for the sanitation of planting material will limit the spread of risks to human and agroecosystem health from pests. These will be useful in efforts to rapidly multiply and disseminate healthy planting materials, limit the man-made spread of pests/diseases, promote seedling vigor, and assist in compliance with quarantine regulations.

There are prior and ongoing CGIAR R4D investments in these areas. Potential links are the Stockholm Convention on persistent organic pollutants and the food processing industry.

*Link scientists on SP-IPM Steering Committee: M. Tamo/IITA; H.C. Sharma/ICRISAT; C. Staver/ Bioversity*

Since toxin-producing fungi pose a serious health risk, contaminated food and feed are denied access to international markets. - R. Bandyopadhyay, IITA

# Field operations

## Beneficiary impact assessment of IPM pilot sites

In the past, SP-IPM and its partners had established a number of pilot sites in key agroecologies. These served as focal points for developing and disseminating "best-bet" IPM options in new models of partnership and to bring the results of scientific efforts in this area to the attention of a wider target group. In 2007, five years after SP-IPM's exit from the sites, a beneficiary impact assessment (BIA) was conducted of the northern Guinea Savanna (NGS) pilot site in Nigeria to assess the impact on parasitic weed management. The pilot sites were in Kayawa, Layin Taki and Detu villages in Kaduna State. Table 2 lists "best-bet" *Striga* management options implemented at these sites.

**Table 2: Agreed "best-bet" clusters of IPM options in Kaduna State, Nigeria**

| Research options | Farmers' coping strategies |
|---|---|
| Use of *Striga* free seeds: minimizes infestation of *Striga* free fields and introduction of new strains of *Striga* | Planting of *Striga* tolerant maize varieties, e.g., red tassel maize (probably *Oba Super 1*) |
| *Striga* resistant/tolerant maize varieties, e.g., Across 97-TZL Comp. 1-W (tall, late maturing, OP); IWDSTR-CO (shorter, medium-duration, OP); *Oba Super 1*; *Oba Super 2* (9022-13, N-efficient). Resistant/tolerant sorghum varieties, e.g., ICSV111 (early maturing; sow early August, to follow short-duration cowpea (e.g., IT93K-452-1) with only 2 insecticide sprays) | Cultural practices: Hoeing and hand-pulling; earthing-up of the weeds |
| Cultural practices: mechanical weeding (hoeing and hand-pulling); molding (earthing-up) | Rotation with soybean and groundnut; not systematic; planting soybean or groundnut for 3-5 years after a crop of a severely infested cereal |
| Rotation of maize with non-host legumes (soybean, cowpea and groundnut); at least 2 years of legumes followed by 1 year of cereal under light to moderate *Striga* infestations | Relay cropping of maize followed by cowpea |
| Double/relay cropping: short-duration cowpea followed by short-duration maize/sorghum | Use of FYM: applied as/when available |
| Short-duration maize followed by dual-purpose cowpea | Use of inorganic fertilizer (urea) |
| Intercropping cereals and legumes | Crop rotation (3-5 years of soybean or groundnut after a severe *Striga* infection of cereal |
| Strip cropping cereal: legume in 2:4 ratio | If current maize crop is severely infected, remold entire crop and then (a) plant cowpea or sweetpotato or (b) plant red tassel maize variety (probably *Oba Super 1*) |
| Transplanting of sorghum grown in *Striga* free nursery | Planting of resistant/tolerant sorghum varieties e.g., *Gezarnera* (local); *Mai masaba* (improved) |
| Use of FYM/organic manure: annual application of 4 t/ha of FYM as supplement to 50 kg N/ha | Application of urea (routine agronomic practice for increased productivity) and then earth-up to cover weeds and *Striga* |
| Use of inorganic fertilizer: application of NPK, urea, and SSP | Rotating with soybean or groundnut |
| Chemical control: apply recommended rates of 2,-4-D, glyphosate or paraquat | |

Box 2 summarizes the general BIA purpose that guided the assessment of the interventions at the pilot site.

Results showed that in the years following the SP-IPM interventions, there was a noticeable shift in farmers' practice to manage *Striga* at pilot site localities. Improved and *Striga* resistant maize varieties now predominated over traditional varieties and seed treatment had become a common practice. The use of mineral fertilizers at recommended rates

*Striga hermonthica*, a major constraint to maize production in the northern Guinea Savanna. - IITA

**Box 2: The purpose of BIA**

***Ex-ante* assessment**

- Determine the perceptions, needs, problems, fears of and risks to the communities and stakeholder groups likely to participate in and be affected by the project
- Formulate project priorities by examining the relative benefits of different aspects of potential project activities to address the needs identified
- Formulate the likely mitigation measures for identified problems
- Assess the likely impact of the proposed project
- Establish the framework for *ex-post* monitoring and evaluation

***Ex-post* assessment**

- Provide the necessary feedback to research managers, planners and policy makers, communities, and pertinent stakeholder groups
- Specify lessons learnt that can be used to improve the management and decision making process with respect to priority setting and the management of project activities
- Provide accountability by project leaders on project partnerships, results and gains to a wider audience
- Establish credibility for public sector projects

increased significantly, from 16% of the SP-IPM trained farmers in 2001 to 59.4% in 2007, and to 68% of the farmer-to-farmer (f-f) trained growers. There was a highly significant shift in the land area cropped to maize among the SP-IPM trained farmers, due to the adoption of *Striga* management technologies and the benefit-cost ratio doubled.

In terms of spill-over benefits, access to non-maize farm income was particularly related to income gained from the double cropping of the early maturing/short-duration cowpea variety IT93K- 452-1 to induce suicidal germination of *Striga* at potential maize cropping sites. By providing additional income from the same plot of land, the *Striga* trap crops were supplementary attractants to farmers in their efforts to manage the parasitic weed.

According to the farmers, this variety helped to reduce the effects of the traditional hunger period (July) during which the majority of farmers run out of food. This variety is now widely spread and called *Dan Kayawa* after the parasitic weed IPM pilot village *Kayawa.*

The cowpea variety IT93K-452-1 has proved to be an effective trap crop for *Striga hermonthica*. - S. Muranaka, IITA

"… My people are so happy about the good things you brought to this village and they have been talking about it. You brought prosperity to this community. You brought to the people a solution to their *wutawuta (Striga)* problem and they no longer face that problem and they are having fantastic crop yields now. You have uplifted the name of this village especially through the cowpea variety introduced to our farmers, which has spread all over the area and even beyond the State…" Chief, Kayawa village.

The encouraging results stimulated new inter-institutional *Striga* control projects supported by different donors. These helped to keep the pilot site momentum moving towards a large-scale impact in the NGS.

**Recommendations**

- Concerted efforts by national programs will be required to fully embrace the pilot site approach for technology testing and dissemination, and by the SP-IPM partners to invest in the pilot site approach as part of the implementation strategy. The BIA tools and results database will serve as a working document to develop historical profiles of key variables affecting *Striga* IPM and help research managers and development agencies to prioritize areas needing further attention. The BIA tools need to be integrated into IPM implementation projects, especially to benefit those who take over primary responsibility for increasing pilot site impact and to help in justifying current and future projects.
- By providing additional income from the same plot of land, the nitrogen fixing leguminous trap crops in the rotation and the double cropping patterns were key economic attractants for the communities. It is expected that, over time, these practices would help to improve the soil status and reduce the *Striga* seedbank. However, the long-term effects of the rotation and double cropping technologies need detailed research to quantify their benefits in *Striga* IPM.
- Farmers' associations provide excellent opportunities for peer interactions, experiential learning, and sustainable access to technical support groups. This would lead to increased community awareness, the appreciation of extension messages, and a trustworthy information exchange in the communities. These elements of pilot sites should be strengthened to take full advantage of their inherent value in a sustainable exit strategy.

- R. Bandyopadhyay, IITA

## Pesticide fate in agroecosystems

In sub-Saharan Africa, vegetable agroecosystems are often characterized by intensive pesticide use. In 2007, the pesticides in use included two organochlorines (endrin and pirimiphos-ethyl) declared obsolete/not in use by the 2004 WHO Classification of Pesticides by Hazard, and four WHO class 1b (highly hazardous) pesticides (methamidophos, carbofuran, cadusafos, and fenamiphos). The philosophy of SP-IPM favors the use of biological alternatives and the least toxic pesticides. In pursuit of this aim, comprehensive information on pesticide use patterns and pesticide fates in target agroecosystems is required to advise farmers, field agents, the public, and governments on inappropriate pesticide regimes.

In 2007, the SP-IPM collaborated with the University of Bonn, Germany, to assess pesticide dissipation after field application from two representative horticultural soils (acrisol and arenosol) and plant surfaces (African Garden Egg, *Solanum macrocarpon)* in Bénin. Four different insecticides were applied in their locally available commercial formulation: bifenthrin, diazinon, deltamethrin, and endosulfan.

Dissipation half-lives of the pesticides tested in Bénin were shorter by a factor of 6-10 than in corresponding data from temperate conditions. This supposedly resulted from enhanced volatilization and photolysis under tropical conditions. From plant surfaces, dissipation proceeded substantially faster than dissipation from the soil. Endosulfan half-lives on plant surfaces were the shortest reported so far. Endosulfan-sulfate did not show declining concentrations even by the end of the trial in the acrisol. The facts that substantial residues of endosulfan resulted from applications dating back at least 4 weeks before the beginning of the trial, and that the residual pesticide dissipated quite slowly, point to aging and sequestration of endosulfan in the arenosol. In conclusion, endosulfan is a potential long-term pollutant in the soils investigated.

The study results further indicated a potential for pesticide residues to accumulate on plant surfaces. For example, deltamethrin residues of 0.6 mg/kg were measured in *S. macrocarpon* after the recommended pre-harvest interval of 3 days. These concentrations did not exceed the maximum residue levels (MRLs) of 2 mg/kg set by FAO/WHO, but would not comply with the much stricter European MRL of 0.5 mg/kg. This was due in part to an application rate that was twice as high as the recommended rate. The higher application rate was a common local horticultural practice which consequently increased pesticide risks to health and the international trade in vegetables.

This study laid a foundation that encouraged the following:

- IPM research should embrace basic research on the environmental fate of pesticides under local use conditions and human exposure to the compounds in the tropics.
- Pesticide residue levels in vegetable products should be monitored to quantify the exposure of consumers to pesticides.
- Soil and groundwater should be monitored in areas of high vulnerability and pesticide use to help quantify ambient pesticide concentrations and assess related risks for local consumers and the environment.

# IPM information exchange

## International Plant Protection Congress

The SP-IPM Secretariat serves on the Governing Board of the International Association for Plant Protection Sciences (IAPPS). IAPPS organizes International Plant Protection Congresses every 4 years. The Congresses are held at different locations around the world and bring together all plant protection disciplines. The SP-IPM Coordinator serves on the international organizing committee of the International Plant Protection Congress. Box 3 outlines areas of mutual benefit for SP-IPM and IAPPS.

### Box 3: SP-IPM partnership with IAPPS

SP-IPM is well placed in its partnership with IAPPS (http://www.plantprotection.org) to further promote IPM globally. In 2003, IAPPS became a member of the Inter-Institutional Working Group of SP-IPM and the two organizations agreed to jointly pursue the following mutual benefit areas.

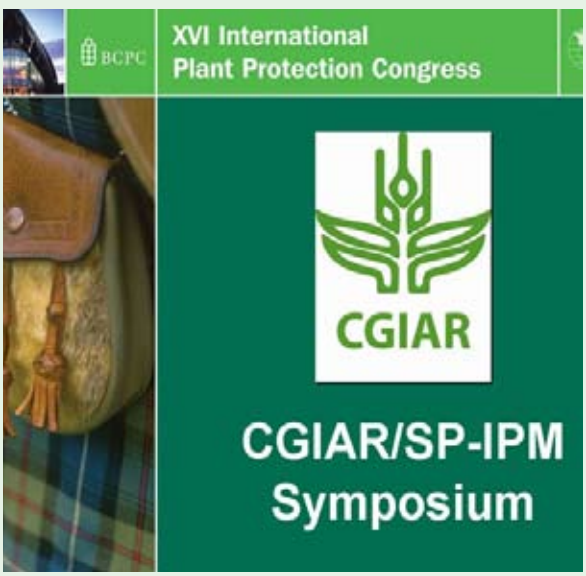
**Shared goals:** The goal of IAPPS is to stimulate "the development and exchange of plant protection information among researchers, extension specialists, growers, policy makers, administrators, crop protection consultants, and environmental and other interested groups". It is highly compatible with SP-IPM's purpose which is (in part) "to encourage better communication…, and a broader awareness of the benefits of IPM, leading to a policy environment more favorable to its widespread implementation". IAPPS organizes the International Plant Protection Congresses and distributes a newsletter in association with its international journal, Crop Protection – thus offering several suitable outlets for information generated by SP-IPM for its advocacy activities.

**Focal points:** Country focal points – influential national plant protectionists, identified by SP-IPM and endorsed by appropriate national authorities – will receive basic organizational and networking support from IAPPS to steer consultative interactions between global partners and national institutions. Part of the technical support includes free individual IAPPS membership for IARC-affiliated national plant protection scientists, where the IARC is an IAPPS Associate Member.

**Policy environment:** SP-IPM, IAPPS Regional Coordinators, and the country focal points will create opportunities to develop a sound vision on the operational environment guiding the development of plant protection sciences in the countries. Thematic reviews of national plant protection capacities will be initial steps towards assessing the status of national legislation and the regulatory framework for plant protection products, improving compliance with international policies and protocols, and enhancing the ability of national institutions to respond to priority needs.

**Information sharing:** SP-IPM, IAPPS Regional Coordinators, and the country focal points will collate and disseminate plant protection information to enhance decision-making and IPM advocacy by national programs. Joint activities will be the production of technical briefs and field documents on topical IPM issues, and organization of IPM information workshops targeting national policymakers and local administrative authorities to increase the profile of IPM in their countries.

IAPPS co-organized XVI Congress in association with the British Crop Protection Council International Conference and Exhibition – Crop Science & Technology Congress in Glasgow, Scotland, 15-18 October 2007. SP-IPM's second global symposium *Emerging Themes in Agroecosystem Health and Food Safety* at the Congress showcased publicly funded IPM research results as integral components of interventions in the fight against declining livelihoods in the developing world. The symposium featured 15 papers by CGIAR scientists and their partners based in Asia (China, India, and the Philippines), Africa (Bénin and Nigeria) and Latin America (Peru). Abstracts of the symposium papers can be found here: http://www.spipm.cgiar.org/Spipm_Sympo%20site/Pages/Proceedings/Proceedings.htm.




Partnership with IAAPS. – B. James, IITA

## Global IPM Forum

Michigan State University organized a Global IPM Forum from 15 to 17 June 2008 at their Kellogg Center. The Global IPM Forum brought together the key representatives of the worldwide IPM community for an interactive dialog on emerging issues. These were related to IPM research, education, extension/outreach, communication, and networking to help enhance the development and adoption of IPM practices. The participants represented national agricultural research systems (NARS), policy makers, and representatives of international organizations, the private sector, NGOs, and the donor community. The objectives of the Forum were to:

- provide a platform for interactive discussions on the lessons learned in IPM implementation during the past 25-50 years and their implications for a new, equitable, and sustainable global agriculture
- identify short-term and long-term global priorities in IPM research, education, and outreach activities towards meeting the emerging challenges and opportunities of the new global agriculture
- develop a plan of action for creating new partnerships and strategies to strengthen IPM research, education, extension/outreach, communication, and networking worldwide

Building on the background information presented, including a keynote address from a member of the SP-IPM Steering Committee (ICARDA representative), and issues highlighted during various sessions, the Forum participants identified key issues, needs, and gaps in capacity building. They developed recommendations that can be included in action plans for IPM capacity building and implementation. Participants discussed and advised on the following key problem areas.

**Research:** Biotic stresses caused by pests reduce the productivity of all agricultural sectors. There are IPM research challenges and opportunities in the context of the increased demand for food, feed, and fuel globally. Progress in IPM research generally targets single pests and crops. Holistic and system IPM approaches will incorporate the best modern concepts of landscape ecology to provide ecosystem services while reducing pest pressures.

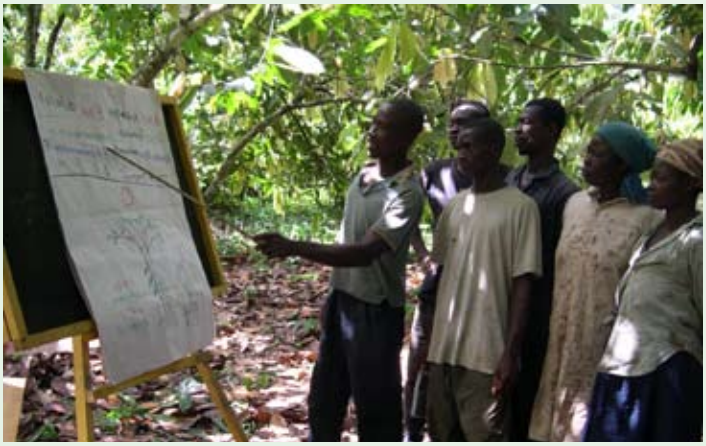
**Academic education/instruction:** Academic educational systems in agriculture in developing and developed nations are constrained by their course contents, overall curricula, and learning tools and technologies that focus more on theory and principles and less on practical aspects. The current educational format is not relevant to addressing the needs of farmers and industry and does not adequately prepare students for the job markets. Institutional linkages are too weak to foster the exchange of IPM knowledge among academic institutions in developing and developed countries. Additionally, interest will be essential in engaging the academic community in sharing and exchanging IPM-related information through the use of new and emerging ICT technologies.

**Extension/Outreach:** Extension and outreach are the most important parts of the successful implementation and adoption of new IPM practices. Collaboration and partnerships among governments, NGOs, the private sector, and farmers' organizations are required for effective extension systems. All available tools and approaches have to be used to transfer IPM knowledge and information to the end-users. It is important to tailor IPM extension/outreach programs to the needs of different clients (small-scale vs. large-scale farmers, high value crops vs. staples, urban vs. rural) and to specific geographic regions.

**Communication:** Although a lot of IPM-related information has been generated, this information has not been effectively communicated to the various stakeholders in a format that is easily understandable. Effective IPM communication programs are essential to communicate complex

scientific information in a language appropriate to the target groups. This will help build trust among IPM stakeholders and will allow end-users (farmers, general public, etc.) to benefit from the wealth of information available.

**Networking and partnerships:** In the interconnected world, networking and partnerships are key elements in efficient sharing and exchange of knowledge, information, and resources. A lot of IPM-related information has been generated and is available around the world, but not efficiently shared. There is need for enhanced networks and innovative partnerships that harness new IT tools for obtaining and sharing IPM-related information.



Sharing knowledge and building capacity. – S. David, IITA

## ENDURE

The SP-IPM Coordinator was invited as one of the four opening keynote speakers to the first international conference of ENDURE, the European Network for the Durable Exploitation of Crop Protection Strategies. This is funded by the European Union (EU) under the Framework Program 6 for Research and Technological Development. The conference took place from 12 to 15 October in La Grande Motte, France, under the title *Diversifying Crop Protection.* It attracted more than 120 oral and poster presentations from four continents.

The conference was inspired by the current revision of the EC Directive 91/414 on pesticide registration. The revised version, mainly aiming at simplifying the complicated registration process for pesticides within the EU, will allow for fewer active ingredients. This further reduction in plant protection options caused concern among scientists and practitioners as there might be no pesticides available for new pests introduced by climate change. Resistance management would be seriously hampered from the continued use of a small range of active ingredients.

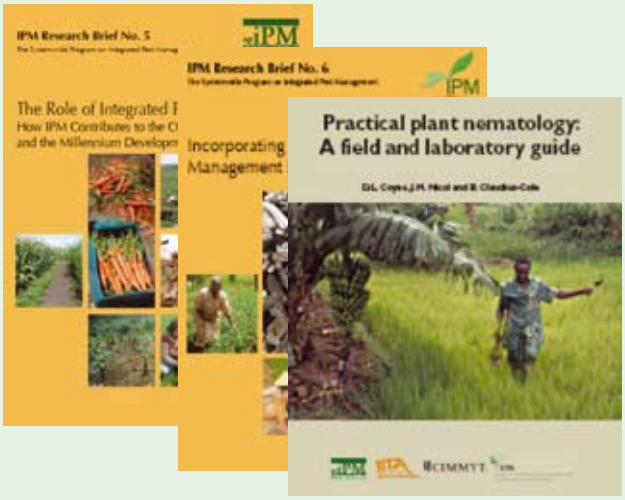
The SP-IPM Coordinator's talk provided the Southern perspective: *IPM research and practice within the CGIAR.* It presented the new SP-IPM and the current research in the three focus areas: IPM Adaptation to Climate Change; Food, Feed, and Environmental Safety; and Improving Agroecosystem Resilience.

After the presentation and the discussions that followed, the Coordinator also participated in an evening event on a foresight study *Crop Protection in Europe in 2030,* and attended a press meeting and a workshop on *ENDURE working together with countries outside Europe.* These activities increased the awareness of the members of this European network about plant protection constraints in the developing world. There was recognition that Europe did not exist in isolation and that European legislation and regulations, such as the maximum residue levels for pesticides or contamination with mycotoxins, had a serious impact on countries exporting agricultural produce to the EU. The ENDURE members admitted that if Europe wanted to ensure a supply of safe food from outside, then stronger cooperation would be required with crop protection scientists from outside Europe. They repeatedly mentioned that the CGIAR Centers and SP-IPM should be their logical partners.

A workshop during the conference for representatives from non-EU countries specifically aimed at fostering the participation of international partners in the ENDURE network. Areas of common interest were discussed. Sharing of experiences with colleagues from other agroecosystems to make better progress in research was considered a primary common area. The SP-IPM Coordinator suggested the areas of food safety and capacity building as a starting point for collaboration between SP-IPM and the ENDURE network. The problem of avoiding contamination of export products by mycotoxins was recognized as indeed an important field where collaboration would be mutually beneficial. Also SP-IPM's plans for a rotational training course on IPM were felt worthy of further discussion.

## Educational tools

SP-IPM initiated the publication of educational tools. The pioneering publication is *Practical plant nematology: a field and laboratory guide.* The manual was written by nematologists at IITA, CIMMYT, and the University of Ibadan, Nigeria. It was produced in partnership with Green Ink Publishing Services Ltd (UK) and the Technical Centre for Agricultural and Rural Cooperation (CTA), the Netherlands.




## IPM Briefs

There were two new publications within the series of IPM Research Briefs. These aim at promoting information exchange among stakeholders, building public awareness and understanding of the benefits of IPM, encouraging the full integration of IPM into mainstream agriculture, and thereby raising the profile of IPM within the farming community.

*IPM Brief No. 5: The Role of Integrated Pest Management: How IPM Contributes to the CGIAR System Priorities and the Millennium Development Goals* highlights ways in which IPM can contribute to meeting the CGIAR SPs. It shows how SP-IPM will take forward the IPM agenda to maximize this contribution. The Brief provides a range of examples of IPM's past and current contributions, drawing on ongoing work of the SP-IPM member organizations and focusing on IPM's contribution to both rural productivity and human capital. The Brief outlines the SP-IPM strategy to deliver its contributions to the CGIAR SPs and the MDGs.

*IPM Brief No. 6: Incorporating Integrated Pest Management into National Policies* examines the context and prospects for integrating IPM with national policies, both within existing plant protection policies and in the wider national and worldwide policy environments. A range of policy and regulatory tools are described, as well as key steps for putting IPM policy into practice. Drawing on a wide range of examples, the Brief provides policy makers in developing countries with a succinct and practical introduction to the process of incorporating IPM into national policy.

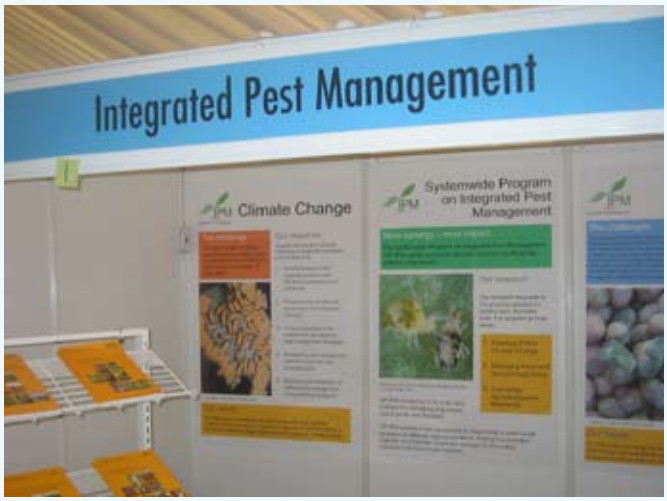
## Website update

The website http://www.spipm.cgiar.org was regularly updated to promote external visibility of the Program. However, after the strategic reorientation and the change in leadership, a different structure of the website was needed to reflect the new era which the Program had just entered. Thus, the website is undergoing a fundamental change in content and appearance.

# Increasing visibility and stimulating support

## AGM 2008

In December 2008, SP-IPM participated for the first time at the CGIAR Annual General Meeting (AGM). This was held in Maputo, Mozambique, and molded round the reform of the CGIAR. SP-IPM was represented by the Chair and Coordinator and informed those attending about the new, revived Program at a specifically designed information booth with attractive materials and through many bilateral discussions. A number of donor delegations had been contacted in advance and meetings were held during the AGM with the aim of restoring interest in the Program.



Information display – I. Hoeschle-Zeledon, SP-IPM

## Institutional visits

During October 2008, the SP-IPM Chair visited several US-based institutions concerned with IPM issues in the developing world (World Bank, IFPRI, USAID, CropLife International USA) to present the new goals, structure, and research concepts. The discussions were stimulated by a presentation *The Impact of Pests and Diseases on Crop Production and the Importance of IPM in International Development* (http://www.spipm.cgiar.org/PDFs/impact_of_pest_diseases.pdf). This stressed the need for increasing productivity by reducing yield losses in view of the growing global demand for food.

The new management team also started making their first calls to the member Centers CIMMYT, CIP, and CIAT for discussions with management and scientific staff. Topics were improvements in cooperation, the need for Centers' support, the scope of research, and fund raising issues. The Centers confirmed the need for inter-Center collaboration on IPM issues and scientists expressed strong commitment. The visits also helped the team to make a better assessment of the available research capacities relevant to IPM at the SP-IPM member Centers.

# Financial information

Summary of 2007/2008 donor contributions to SP-IPM core activities (US$)

| Donor/year | 2007 | 2008 | Total |
|---|---|---|---|
| Switzerland | 177,022 | 0 | 177,022 |
| Italy | 0 | 109,093 | 109,093 |
| CropLife International | 0 | 62,686 | 62,686 |
| **Total** | **177,022** | **171,779** | **348,801** |

Matching funds to run the SP-IPM Secretariat were generously provided by IITA.

# Acronyms and Abbreviations

| | |
|---|---|
| AGM | Annual General Meeting |
| AVRDC | The World Vegetable Center |
| BIA | Beneficial Impact Assessment |
| Bioversity | Bioversity International |
| CABI | CAB International |
| CCER | Center Commissioned External Review |
| CGIAR | Consultative Group on International Agricultural Research |
| CIAT | International Center of Tropical Agriculture |
| CIMMYT | International Maize and Wheat Improvement Center |
| CIP | International Potato Center |
| EC | European Commission |
| ENDURE | European Network for the Durable Exploitation of Crop Protection Strategies |
| EPMR | External Program and Management Review |
| EU | European Union |
| FAO | Food and Agriculture Organization of the United Nations |
| FYM | Farmyard Manure |
| GIS | Geographical Information System |
| IARC | International Agricultural Research Center |
| IAPPS | International Association for Plant Protection Sciences |
| ICARDA | International Center for Agricultural Research in the Dry Areas |
| *icipe* | International Center for Insect Physiology and Ecology |
| ICT | Information and Communication Technology |
| ICRISAT | International Crops Research Institute for the Semi-Arid Tropics |
| IFPRI | International Food Policy Research Institute |
| IITA | International Institute of Tropical Agriculture |
| IPM | Integrated Pest Management |
| IRRI | International Rice Research Institute |
| IT | Information Technology |
| MDG | Millennium Development Goal |
| MRL | Maximum Residue Level |
| MTP | Medium-Term Plan |
| N | Nitrogen |
| NARS | National Agricultural Research System |
| NGO | Non-Governmental Organization |
| NGS | Northern Guinea Savanna |
| NPK | Nitrogen, Phosphorus, Potassium |
| OP | Open-pollinated |
| R4D | Research for Development |
| SP | CGIAR System Priority |
| SP-IPM | Systemwide Program on Integrated Pest Management |
| SSP | Single Super Phosphate |
| SWEP | Systemwide and Ecoregional Program |
| UK | United Kingdom |
| USAID | United States Agency for International Development |
| WARDA | Africa Rice Center |
| WHO | World Health Organization |