

# **IPM: A New Paradigm For Industry**

**Discussion Paper**

*By*

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## Discussion Paper

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**Technology**  
+  
**Knowledge**  
+  
**People**

### Background

In 1998, GCPF commissioned a survey by Landell Mills to investigate the degree of corporate understanding and compliance with the principles of ICM / IPM. The survey initially targeted Europe and the Asia-Pacific region and was conducted at HQ, regional and national affiliate levels for the top 12 R&D-based international crop protection companies.

The survey reported high levels of understanding and compliance at HQ level, which dropped away at regional and especially at national affiliate levels. Urgent action was called for by the PAG, to improve the level of implementation of IPM within its member companies.

This document is a result of an initiative of APCPA's Sustainable Development / IPM Project Team and is intended to address key issues raised by the survey, i.e. how to enhance/promote the integration of IPM principles into company business plans and product strategies. Stakeholder lobbying will only be truly effective once there are clear signs that industry is making serious efforts to address this challenge

As a highly visible outreach programme carrying political sensitivity, it is critical that industry recognizes the need for sustained commitment to, and rigorous, transparent implementation of this programme.

### A New IPM Paradigm?

Several compelling arguments suggest the time is right for a new paradigm for ICM / IPM. These arguments are not only science-based, but also reflect the changing arena of knowledge dissemination as well as economic and socio-political trends.

The old IPM paradigm, espoused by many advocates, holds that natural biological control is the cornerstone for insect IPM, and that all else is secondary in a self-regulating, balanced agro-ecosystem. However, today's need for intensive agricultural production and resulting high cropping indices have reduced the natural buffering capacity and, along with it, the efficacy of biological control within these systems. Other tools are now more than ever necessary to enhance the natural recovery and management of pest-predator balance, and weeds/disease levels in today's intensive agricultural ecosystems.

## Technology, and how to use it

Key agricultural technologies available to us today offer considerable promise for improving agricultural productivity and sustainability.

- **Chemical crop protection:** new products and technologies, offering high selectivity, favourable environmental profiles and excellent IPM compatibility
- **Host plant resistance (HPR):** host plant resistance to pathogens has now been shown to be effective in the field, with 10m ha of blast-resistant rice grown worldwide, reducing or eliminating the need for fungicides. The value of HPR for insect control is likely to become a second cornerstone for IPM.
- **Biotechnology** provides us with the means to precisely tailor plant cultivars to enhance the durability / stability of HPR, allowing cultivation of ‘multivars’ of crops, which incorporate a variety of resistance mechanisms, whilst maintaining phenotypic and agronomic uniformity. Management of hitherto intractable problems such as plant viruses, is now feasible through the introduction of specific resistance genes from outside the crop’s immediate genome.
- **Plant Nutrition:** nutrient status is known to be critical factor in predisposing crops to insect attack. Current technologies allow fine-tuning of plant nutrient levels, both macro- and micro, which in turn can help to optimise the use of other external inputs.
- **Water management:** Impending water shortages across the globe will drive the development of more drought-tolerant crops
- **Cultivation techniques:** management systems such as conservation tillage, inter-cropping and buffer zones.

### 1. Knowledge, and how we share it

**Biotech, Genomics, Bioinformatics:** Biotechnology has not only provided us with the means to modify genotypes. Rapid advances in the underlying sciences of genomics and bioinformatics offer us considerable insight into fundamental mechanisms in ecology and evolution. Such understanding will certainly be of immense value to researchers in their quest for highly productive, environmentally friendly and sustainable agricultural systems.

**The Yield Gap:** Yield gaps between research station and field are still often wide, reflecting lack of farmer access to technologies and the knowledge to apply them to maximize yield potential. Knowledge-intensive concepts, such as ICM / IPM, need to be effectively communicated and correctly applied by end users. So-called ‘active’ technologies (which need adjustment and fine-tuning according to local conditions) require considerable investment (e.g. in end-user training) to change entrenched farmer practice and empower the farmer to make appropriate management decisions. ‘Passive’ technologies, on the other hand, are inherent to the crop and require little or no education or end-user intervention for their potential utility to be realised in the field. Their widespread adoption at field level can thus be achieved far more rapidly and cost-effectively, whilst at the same time meeting ecological and social needs.

By alleviating the impact of environmental or other yield constraints, such tools are expected to drive an increase in on-farm yields to levels approaching their research yield potentials.

**Spreading it Around:** Perhaps most fundamental of all is the revolution in information technology, fuelled by the Internet, which is changing not only how we all access information and services, but also how we do business and interact with each other. We hear a great deal about farmer empowerment, but the advent of enabling technologies such as Broadband and WAP, will make Net access ubiquitous even in many developing countries and totally revolutionize farmer decision making. In India, 93 Maharashtra villages are already connected in a Village Internet Project, and Smart Village Projects are emerging in Malaysia and elsewhere. Farmers, until today starved of information, will soon be deluged in it! Conventional, ‘trickle-down’ extension theory is about to be overturned in favour of a more empowered, responsive and interactive modality.

## **2. People, and their institutions**

**Public policy:** The ongoing public sector IPM programme implemented by FAO in Asia-Pacific on behalf of the Global IPM Facility has brought about political buy-in as well as an “IPM infrastructure” (including policy, institutional framework and people). Most Asian countries have adopted IPM as the official national crop protection policy, based on principles of season-long farmer participatory training advocated by FAO and others. Clearly, the required awareness and acceptance of IPM at top governmental and political levels are thus already in place.

**Implementation:** Nevertheless, practical implementation has often fallen short of expectations and, in the past, enthusiastic extrapolation and promotion of local success stories have not generally been helpful in gaining political support in the longer run. The challenge industry now faces is to demonstrate the value of practical, science-based IPM models, tied in with cost-effective systems for transferring the necessary knowledge for more widespread field adoption.

**Extension:** At the other end of the scale, as mentioned above, information and knowledge will be more accessible to rural extension workers and small farmers, who will adopt innovations more rapidly than is the case today. News of local success stories will spread to other communities and cultures at the speed of the Net, turning an old and much-loved axiom on its head:

*“Think Local, Act Global”*

**Public-Private Collaboration:** the political climate for public-private sector partnerships (e.g. with CGIAR, WB, FAO) is now more favourable, as evidenced by the latest announcement of the first-ever UN Business Advisory Council, which is expected to open the door to further opportunities for collaboration.

The recent CSD-8 Preparatory Meeting, held in New York, endorsed IPM and the need for public-private collaboration in its implementation. Para 29 of its final recommendations states:

*“Governments are urged to promote the safe and sustainable use of plant protection products and plant nutrients in agricultural production, and to strengthen practical ways to enhance the application of IPM and IPN. All stakeholders, including farmers, the private sector and international organizations, are encouraged to form effective partnerships with governments, including those that provide capacity building assistance for this purpose.”*

**Private sector contribution to R&D:** The private sector produces many of the target-specific, environmentally friendly, IPM-compatible products underpinning successful cropping practices. In the past decade, the private sector has been the main driver of new farming technology in the industrialized countries - global private sector investments in agricultural and food R&D are conservatively estimated at \$11 billion in industrial countries, and \$2 billion in developing countries, compared with \$8.5 billion and \$8.8 billion by the public and private sectors respectively, for a public/private global total of \$30 billion. A large proportion of this investment is directed towards developments of inputs or the supporting knowledge to fully utilize the potential inherent in those inputs.

## **Industry Challenges**

The above discussion covers, at a macro level, some of the reasons driving a new IPM paradigm for industry. Below are listed briefly, some of the realities which industry faces today:

- **Food safety:** The increasing importance attached by food supply chain industries to meeting residue standards set by Codex and others, will drive a shift towards mandatory ICM-based protocols for producers in exporting countries.
- **Increasing external pressures:**
  - Public / consumers
  - More stringent food chain production protocols
  - Increasing power of regulatory agencies / pressure group coalitions, increasingly demanding zero pesticide use
  - Calls for more responsible corporate citizenship, accountability and transparency
- **Biotechnology:** Industry need to act to ensure broad acceptance of biotechnology's place as an integral part of ICM / IPM.
- **Sustainable Agriculture:** Interest in sustainable agriculture from all stakeholder groups demands a strengthening of industry's focus and track record on ICM / IPM as the technical foundation for sustainable crop production.

## **GCPF Position**

- At its recent London annual meetings (June 2000), GCPF's top policy-making body (ExNet) re-iterated its strong commitment to ICM and IPM, and called upon all companies to incorporate these philosophies into their corporate cultures and, in particular, into marketing practices. At the same meetings, the World Bank's South Asia Office offered to facilitate a joint public-private sector cotton IPM project in Maharashtra State, India. The EU, DG8, (via Michael Dale) is also asking the GCPF International ICM Project Team for support in putting this EU/FAO IPM programme in cotton for SEA into place.
- FAO Rome has signalled a willingness to discuss collaboration on IPM with GCPF.
- If appropriately fostered, these approaches could pave the way for a new era in relationships with the international donor community. However, in order to build such external

credibility, industry needs to do much more at all levels to demonstrate its commitment towards implementing the principles of ICM / IPM.

## APCPA Position

APCPA is fully aligned with GCPF's global position, reaffirming that implementing ICM is the overall industry goal. Since this term is less well-known in the A/P region than in Europe and USA, the initial thrust of any industry campaign will need to build upon current understanding. (see my comment under GCPF position) This should evolve from an initial focus on IPM (including nutrient and water management) through to the development of the broader acceptance of ICM among stakeholder groups, including biotech / enhanced seeds).

## Proposals for Industry

APCPA proposes to launch a region-wide industry IPM campaign in Asia-Pacific, aimed at key target groups:

- Industry personnel, esp. sales & marketing
- Government extension officers
- Educational institutions
- NGO's (grass-roots and advocacy)
- Media

Industry's external credibility rests upon the extent of IPM implementation by individual companies and associations. The initial primary focus will thus be on **industry's own personnel**, which is the only target group over which industry has complete and direct control. Other target groups are also addressed in the strategy, but it must be acknowledged that industry can only be an effective advocate for these groups once it has built external visibility and credibility.

In implementing a regional IPM strategy, the roles of individual companies, National Crop Protection Associations and APCPA should complement each other, and will be coordinated to optimise resource use. Specific proposals are suggested below, and a suggested division of the respective roles of these entities is given as a matrix in Appendix 1.

### APCPA IPM Strategy 2000 - 2002

APCPA's proposed new IPM strategy has three components, as follows:

- **Data generation, collection, interpretation & dissemination in order to provide datasets that support industry platforms on key elements of IPM**
- **Training & education (internal and external, to enable appropriate adoption)**
- **Lobbying (decision- and policy-makers, academia, donor community, other food chain influencers) – to ensure common understanding of IPM, ensuring acceptance of the place of CPP's and biotechnology as legitimate ICM / IPM tools.**

## **Recommended Initiatives**

### **1. Data generation, collection, interpretation, dissemination**

- Collaborative projects (industry + public sector) to develop practical IPM programs in key crops (FAO priority crops of rice, vegetables, cotton).
- Commission reviews of current scientific literature to underline industry positions.
- Create IPM knowledge database, within **APCPA's Regional Technology Centre**, to focus on following areas:
  - IPM studies, major IPM journals, industry success stories, training resources, key contacts in private / public sector, industry projects / status reports, minutes of regional and country IPM Teams.

### **2. Training & Education**

Training and education is aimed primarily at industry personnel. In the second phase, key influencers, including government extension workers and NGOs, could also participate in training programs and obtain a professional qualification. Specific activities could include:

- All companies to establish in-company IPM training requirements for their sales, marketing and technical staff.
- IPM criteria to be incorporated into job descriptions and performance evaluations of all sales & marketing, and technical personnel, industry-wide.
- Develop standardised 'conventional' training modules on general IPM principles, plus an IPM framework for the key crops, customised to the different climatic and crop production systems across the region.
- National Associations could develop/ commission their own core IPM training modules for locally important cash crops e.g. oil palm.
- Establish IPM educational programmes targeting the following stakeholders
  - retailers and the distribution chain
  - government extension services
  - academia, including vocational colleges / high schools
  - International organizations
  - NGO community
- Develop Distance Learning Programmes accessible via the Web, targeted at industry staff, aimed at achieving and recognizing defined levels of understanding and competence through introduction of a professional qualification linked to the candidates' most relevant major crop production systems. The programmes may also be made available to other stakeholder groups.
- National Associations to conduct workshops at national level, bringing together key stakeholders to promote industry IPM positions.
- Produce a TV Documentary on IPM: WorldView Foundation has offered access to its Young Asia-TV production team and free airtime.
- Establish industry-sponsored IPM model farms to demonstrate economic, social and environmental benefits.

### **3. Lobbying (Advocacy Campaign)**

The lobbying objective is to ensure a common understanding of definitions, and acceptance of the rightful place of CPP's and biotechnology as legitimate components of ICM / IPM.

Target audiences are policymakers, extension services, institutions / academia, R&D centres, donor agencies, NGO's, and media.

- National Crop Protection Associations (NA's) to establish (or strengthen) IPM Committees, and identify a senior industry figure to lead these teams and champion IPM industry-wide. Such a person must have strong external credibility in order to function effectively in lobbying.
- Companies to identify an IPM Champion for the Region, to coordinate corporate IPM strategies.
- Demonstrate to key influencers the industry commitment to IPM and the merits of this. (include Safe Use / Responsible Care within the programme).
- APCPA to act as dialogue partner in the region, in order to foster linkages and leverage funding possibilities with major organizations such as FAO, ADB, IRRI and UN-ESCAP.
- National Associations should support 'top-level' lobbying by mounting a sustained public awareness campaign, including national level activities (e.g. Open Days, workshops, radio/TV/print media features).
- Develop core IPM curriculum for local adaptation by NA's, and adoption by universities & vocational colleges.

### **Timelines & Priorities**

Implementation of the strategy would be within an overall 3-year framework 2001 -2003, with overall prioritisation of activities as shown in the activity matrix (Appendix 1). Individual counties may choose to re-prioritize certain issues according to local relevance, whilst maintaining the overall integrity of the strategy at regional level.

### **Resource Requirements**

Implementing this programme to generate expected results will require an estimated commitment by APCPA of ca 200-250k p.a. Industry should only proceed with this campaign once this commitment has been approved from the outset. Once the proposed activity schedule has been appropriately reviewed and agreed in principle, detailed planning and budgeting for individual activities can be assigned to APCPA's SD Project Team and the Secretariat, who would be tasked with the preparation of a detailed budget proposal for 2001.

In addition to the financial commitment, the programme will require the following strategic support:

- CEO commitment and financial support for minimum 3 years.
- Regional and national affiliate implementation / support
- Direct link and support from GCPF's Sustainable Agriculture Project Team in facilitating high-level contacts with multilateral and bilateral donor community.

## Evaluation

- Following up from the benchmark Landell Mills audit of corporate IPM compliance (1998), Industry's progress in incorporating IPM into their strategies and operations will be evaluated in 2002 along comparable lines
- In principle, all activities should incorporate a feedback mechanism(s) to facilitate evaluation of cost-effectiveness of the respective activities, so as to allow adjustments and improvements to be made.

## Benefits to Industry

- **Demonstrate R&D-based industry's long term commitment to ICM / IPM / SA**
- **Ensure inclusion of CPP's and biotechnology as legitimate and important tools for IPM / ICM / SA**
- **Improve standards of IPM / ICM understanding throughout all levels of industry**
- **Facilitate articulate external communication of industry's contributions**
- **Improve interface between industry and society (image)**
- **Position industry as a key player and stakeholder in sustainable agriculture**
- **Positively influence interpretation of IPM / ICM/SA within national and international legislative frameworks and conventions**
- **Enhance industry partnerships with governments, bilateral and multilateral donor community**

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Appendix 1: Industry IPM Strategy- Asia-Pacific Region.

## Appendix 1: Industry IPM Strategy: Asia-Pacific Region

Priority	Strategy / Activities	Companies	National Crop Protection Associations	APCPA	Budget Est USDk
<b>Data Collection &amp; Review</b>					
1	Collaborative projects to develop IPM programmes in key crops (FAO priority crops)	<b>S</b>	<b>S</b>	<b>L</b>	<b>50</b>
2	Commission reviews of critical scientific papers, and disseminate for industry response	<b>S</b>	<b>S</b>	<b>L</b>	<b>10</b>
3	Create IPM Knowledge Database within APCPA's RTC	<b>S</b>	<b>S</b>	<b>L</b>	<b>10</b>
<b>Training &amp; Education</b>					
1	In-company IPM training, linked to employee performance evaluation & remuneration	<b>L</b>	<b>S</b>	<b>S</b>	<b>-</b>
1	IPM Trainer-training module, customised for each country	<b>S</b>	<b>S</b>	<b>L</b>	<b>15</b>
1	IPM Distance Learning Programme		<b>S</b>	<b>L</b>	<b>50</b>
2	Core IPM curriculum for vocational colleges	<b>S</b>	<b>S</b>	<b>L</b>	<b>10</b>
2	National-level IPM workshops & seminars	<b>S</b>	<b>L</b>	<b>S</b>	
3	TV documentary emphasising industry R&D's contribution to IPM	<b>S</b>	<b>S</b>	<b>L</b>	<b>20</b>
3	IPM model farms	<b>S</b>	<b>L</b>	<b>S</b>	
<b>Lobbying</b>					
1	NA Committees & champions	<b>S</b>	<b>L</b>		<b>-</b>
1	Company IPM champions	<b>L</b>			<b>-</b>
1	Lobbying campaign (key influencers)	<b>L</b>	<b>L</b>	<b>L</b>	<b>10</b>
1	Foster links with dialogue partners (ADB, FAO, IRRI, WB, ESCAP etc)- identify key contacts by credibility ladder	<b>S</b>	<b>S</b>	<b>L</b>	<b>30</b>
2	Public awareness campaign:	<b>S</b>	<b>S</b>	<b>L</b>	<b>30</b>
2	TV/radio	<b>S</b>	<b>L</b>	<b>L</b>	
2	Print media	<b>S</b>	<b>L</b>	<b>S</b>	
2	Open days	<b>S</b>	<b>L</b>	<b>S</b>	
2	Website	<b>S</b>	<b>S</b>	<b>L</b>	
<b>APCPA Estimated Budget requirement 2001</b>					<b>235</b>

Note: L = Lead, S = Support