



**Plant protection profiles  
from  
Asia-Pacific countries**



**Plant protection profiles  
from  
Asia-Pacific countries**

**ASIA AND PACIFIC PLANT PROTECTION COMMISSION**

**and**

**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS  
REGIONAL OFFICE FOR ASIA AND THE PACIFIC**

**Bangkok, 2007**

The designation and presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations concerning the legal status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers and boundaries.

All rights reserved. Reproduction and dissemination of material in this information product for educational or other non-commercial purposes are authorized without any prior written permission from the copyright holders provided the source is fully acknowledged. Reproduction of material in this information product for sale or other commercial purposes is prohibited without written permission of the copyright holders. Applications for such permission should be addressed to the Plant Protection Officer, FAO Regional Office for Asia and the Pacific, Maliwan Mansion, 39 Phra Atit Road, Bangkok 10200, Thailand or by e-mail to [yongfan.piao@fao.org](mailto:yongfan.piao@fao.org)

© FAO 2007

For a copy of this publication, please write to:

Piao Yongfan  
FAO Regional Office for Asia and the Pacific  
Maliwan Mansion, 39 Phra Atit Road  
Bangkok 10200  
THAILAND  
Tel: (+66) 2 697 4268  
Fax: (+66) 2 697 4445  
E-mail: [yongfan.piao@fao.org](mailto:yongfan.piao@fao.org)

---

## Foreword

The FAO Regional Office for Asia and the Pacific, which provides the Secretariat for the Asia and Pacific Plant Protection Commission (APPPC), has long recognized that providing access to information is an important instrument in the development of agriculture. For example, it publishes the *Selected indicators of food and agricultural development for the Asia-Pacific* which allows people to make comparisons between countries, study driving factors of development, and identify trends that can be early warnings of potential dangers or signs of positive impacts of successful developments. In addition, FAO maintains about 35 databases; some of these also publish their own specific country profiles such as for livestock, fisheries, forestry, land and water use, pastures, food security, biotechnology, food safety, and animal and plant health. Surprisingly, there is no database or country profiles for plant protection. Therefore, the development of country profiles for plant protection is unique in this region and perhaps in the world, and may help formulate better strategies and policies for pest and pesticide management, and assist in regional harmonization and cooperation.

In a globalized world economy it is important to have international standards and to monitor their compliance and implementation. Many international conventions require their members to report regularly on the status of implementation. For example, the International Plant Protection Convention (IPPC), of which many countries in Asia and the Pacific are members, requires its member countries to exchange phytosanitary information relevant to international trade. In addition, under the revised text of the IPPC, governments are encouraged to report on regular pest surveillance and monitoring, the establishment and maintenance of pest-free areas, and the results of pest risk analyses that they have conducted. The IPPC Secretariat assists in the exchange of official pest data. Similarly, the *International Code of Conduct on the Distribution and Use of Pesticides* was amended to include a provision to monitor and report on the implementation of the Code.

The Asia and Pacific Plant Protection Commission has recognized the importance of efficient and transparent exchange of critical information as an important means to improve regional cooperation and development. It is also aware that the need for accurate and structured information will increase in the coming years. Without waiting until countries are officially required to comply, the development of country plant protection profiles is indeed timely and very relevant for our future work. Indeed, this initiative represents a step ahead of developments.

Hopefully, the Country Plant Protection Profiles can already become part of the country reports in the next APPPC meeting scheduled for August 2007 in China. By compiling the information ahead of the meeting, it will be easier to prepare the country presentations and they will contribute to a more informative and useful exchange of information.



He Changchui  
Assistant Director-General and  
FAO Regional Representative for Asia and the Pacific

Bangkok, March 2007

## Table of contents

	<i>Page</i>
<b>Foreword</b>	
<i>by the Assistant Director-General and FAO Regional Representative for Asia and the Pacific</i> .....	iii
<b>List of Acronyms</b> .....	vii
<b>1. Analysis of plant protection information exchange among APPPC member countries</b>	
1.1 Background information .....	1
1.2 Analysis of the 2005 APPPC country reports .....	6
1.3 Conclusion and recommendations .....	15
<b>2. Development of APPPC Plant Protection Profiles</b>	
2.1 Development of draft Plant Protection Profiles format .....	17
2.2 Regional consultations .....	18
2.3 Update of Country Plant Protection Profiles .....	21
<b>3. Country Plant Protection Profiles</b>	
3.1 AUSTRALIA .....	22
3.2 CAMBODIA .....	38
3.3 CHINA, PEOPLE'S REPUBLIC OF .....	55
3.4 INDIA .....	73
3.5 INDONESIA .....	91
3.6 KOREA, DEMOCRATIC PEOPLE'S REPUBLIC OF .....	108
3.7 LAO PEOPLE'S DEMOCRATIC REPUBLIC .....	123
3.8 MALAYSIA .....	139
3.9 MYANMAR .....	155
3.10 PAKISTAN .....	170
3.11 PHILIPPINES .....	186
3.12 SRI LANKA .....	204
3.13 THAILAND .....	220
3.14 VIET NAM .....	239
<b>4. Future use of Plant Protection Profiles</b> .....	257
<b>Annex I Membership and partnership status of APPPC and FAO member countries in Asia and the Pacific in international conventions and agreements</b> .....	259
<b>Annex II Details of analysis of 2005 country reports</b> .....	261
<b>Annex III Agenda and list of participants of the Pilot Consultation on Development of Profiles for the Exchange of Plant Protection Information among APPPC Members (December 2006)</b> .....	297

## List of acronyms

APPPC	Asia and Pacific Plant Protection Commission
ASEAN	Association of Southeast Asian Nations
Codex	Codex Alimentarius Commission
DAALI	Department of Agronomy and Agricultural Land Improvement
DNA	Designated National Authority
DOA	Department of Agriculture
ESCAP	Economic and Social Commission for Asia and the Pacific
ETL	Economic Threshold Level
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	FAO Statistical Database
FFS	Farmer Field School
GAP	Good Agricultural Practices
GDP	Gross Domestic Product
GMO	Genetically Modified Organism
GNI	Gross National Income
IPM	Integrated Pest Management
IPP	International Phytosanitary Portal ( <a href="https://www.ippc.int/IPP/En/default.jsp">https://www.ippc.int/IPP/En/default.jsp</a> )
IPPC	International Plant Protection Convention
ISPM	International Standards for Phytosanitary Measures
LMO	Living Modified Organism
MOA	Ministry of Agriculture
MOE	Ministry of Environment
MOH	Ministry of Health
MRL	Maximum Residue Limits
NGO	Non-Governmental Organization
NPPO	National Plant Protection Organization
OC	Organochlorine (pesticides)
OECD	Organisation for Economic Co-operation and Development
OP	Organophosphate (pesticides)
PANAP	Pesticide Action Network Asia and the Pacific
PCE	Phytosanitary Capacity Evaluation
PIC	Prior Informed Consent (Rotterdam Convention)
POP	Persistent Organic Pollutants (Stockholm Convention)
PPD	Plant Protection Department/Division
PPPProfiles	Plant Protection Profiles

PRA	Pest Risk Analysis
PRG	Plant Growth Regulator
RSPM	Regional Standards for Phytosanitary Measures
SPS	Sanitary and Phytosanitary
TOT	Training of Trainers
UNEP	United Nations Environmental Programme
USD	United States Dollar
WHO	World Health Organization
WTO	World Trade Organization

# 1. Analysis of plant protection information exchange among APPPC member countries

## 1.1 Background information

The development of information technologies has truly changed our lives and the way we conduct business. In particular, the Internet has made it possible for us to access a wealth of information at a speed that was unimaginable even a few years ago. Information is power. Better information enables us to learn from each other, improve the quality of our work and contribute to better functioning societies and a world community. On the other hand, we have more information than we can possibly absorb, which makes it necessary for us to organize the information in such a way that it can be more easily accessed, understood and used. In agricultural sciences, this is often done through databases and structured information sheets such as country profiles.

Providing access to information is an important instrument in the development of agriculture. For example, FAO maintains about 35 databases, some of which also publish their own specific country profiles such as for livestock, fisheries, forestry, land and water use, pastures, food security, biotechnology, food safety, and animal and plant health. However, there is no database or country profiles for plant protection. There exists the International Phytosanitary Portal (IPP) for country phytosanitary information; however, the unstructured format of the posted information makes it difficult to compile and compare the information in a systematic manner. No unified source of information exists for other plant protection areas such as pest and pesticide management, or the control of pest outbreaks. Some data can be found in conference proceedings or on websites of country plant protection organizations. However, this information is difficult to find and to compile since it is often incomplete or only available in the local language.

Many international conventions require their members to report regularly on the status of implementation. For example, the International Plant Protection Convention (IPPC) requires its member countries to exchange phytosanitary information relevant to international trade. In addition, under the revised text of the IPPC, governments are encouraged to report on regular pest surveillance and monitoring, the establishment and maintenance of pest-free areas, and the results of pest risk analyses that they have conducted. The World Trade Organization (WTO) requires countries to report on phytosanitary trade restrictions, and the Rotterdam Convention collects country information on the implementation of the Prior Informed Consent (PIC) procedure. Similarly, the *International Code of Conduct on the Distribution and Use of Pesticides* was recently amended to include a provision to monitor and report on the implementation of the Code. However, no reporting procedures have yet been set up.

The availability of country plant protection profiles would facilitate the international reporting requirements, and – in addition – could help formulate better strategies and policies, provide an early warning of dangerous trends, and assist in regional harmonization and cooperation by providing transparency of procedures and practices. However, to be useful, country profiles should provide key information in an organized and structured manner so that it can be easily understood and updated. By following a standard format and using same measurement units, it would become easy to find, compile and compare country plant protection information. This would also be an important step towards indicators for the development of the different plant protection fields which could be published as part of “Selected Indicators of Food and Agricultural Development in Asia-Pacific Region”<sup>1</sup>.

---

<sup>1</sup> Annual publication of the FAO Regional Office for Asia and the Pacific, Bangkok.



The Asia and Pacific Plant Protection Commission (APPPC) has recognized the importance of efficient and transparent exchange of critical information as an important means to improve regional cooperation and development. It is also aware that the need for accurate and structured information will increase in the coming years. Therefore, the development of country profiles on plant protection information is seen as an important means to improve the exchange of information among member countries.

The 24 member states (see Figure 1) of APPPC vary greatly in size and level of economic development. The association includes all countries of the region except Bhutan, Brunei, East Timor, Japan, Maldives, Mongolia, Singapore and several Pacific island states. Biennial meetings are convened to review the activities carried out by the Commission in the previous two years and to review the overall plant protection situation at national and regional levels. For that purpose, country reports are presented at the meetings following a set of guidelines.



**Figure 1. Member States of the Asia and Pacific Plant Protection Commission (APPPC)**

APPPC was founded in 1956. An amendment to the original agreement related to the financing of the activities of the Commission was adopted in 1983, but has not yet entered into force because the number of the accepting countries has not reached the required two-thirds of the countries. A revised Plant Protection Agreement for Asia and the Pacific region was approved in 1999, but it is still pending until two-thirds of the member countries accept the revision.

All APPPC members also belong to the International Plant Protection Convention (IPPC), while Japan belongs to IPPC but not to APPPC.

APPCC members and Japan also belong to other international conventions and agreements that aim to provide universally accepted standards for agricultural production and food products in order to protect consumers and the environment, and practice fair trade. All countries have signed on to the Codex Alimentarius and the Convention on Biological Diversity (CBD), and most countries are members or are in the process of becoming members of the World Trade Organization (WTO). However, three international agreements on pesticides (Rotterdam, Stockholm and Basel) have only been ratified by 15-20 countries, depending on the updated data.

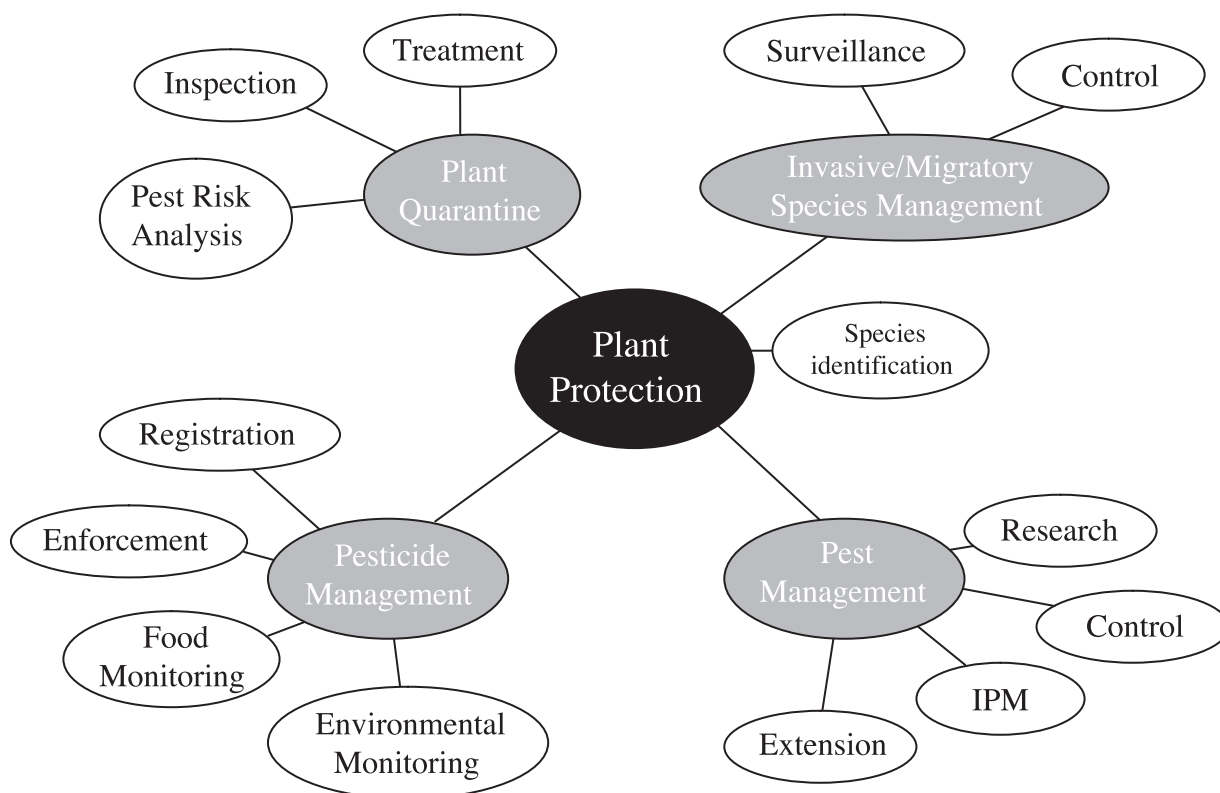
	APPCC Current	APPCC 1983 Amendment	APPCC 1999 Revision	IPPC Current	Codex Alimentarius	WTO-SPS	Rotterdam Convention	Stockholm Convention	Basel Convention	Convention on Biological Diversity
<b>Conventions</b>										
Australia										
Bangladesh										
Cambodia								2006		
China				2005						
Fiji				2005						
French Polynesia										
India								2006		
Indonesia										
Japan*										
Korea DPR										
Korea, Rep. of								2007		
Lao PDR								2006		
Malaysia										
Myanmar				2006						
Nepal				2006			2007	2007		
New Zealand										
Pakistan										
Papua New Guinea										
Philippines							2006			
Samoa				2005						
Solomon Islands										
Sri Lanka							2006			
Thailand										
Tonga				2005						
Viet Nam				2005						
	24	15	3	25	25	20	15	20	19	25

\* Japan is not a member country of APPCC.

**Figure 2. Ratification and membership of international agreements**

The range of traditional plant protection functions as shown in Figure 3 covers general crop pest management, the control of invasive or migratory pests, plant quarantine and pesticide management. APPCC's country report guidelines cover these four major areas under the headings of "Outbreaks of Major Pests", "Integrated Pest Management", "Plant Quarantine" and "Pesticides".

APPCC and IPPC assume member countries to have national plant protection organizations. Under the IPPC definition, the official National Plant Protection Organization (NPPO) is the government service that discharges the functions specified by IPPC. Table 1 shows that these functions do not include the areas of IPM and pesticide management but define the official NPPO as the national



**Figure 3. Plant protection functions**

authority for the “control and issuance of phytosanitary certificates”<sup>2</sup>. In some countries, this is the responsibility of the national plant protection service, in other countries it is handled by a specialized unit. While IPPC is primarily concerned about the transboundary movement of pests, APPPC addresses the full range of plant protection functions. These different perspectives affect the reporting and exchange of information.

In recent years, increasing emphasis was placed on plant quarantine which is also reflected in the importance of phytosanitary measures to regulate the import and export of food under the WTO-SPS Agreement. This agreement allows countries to set their own standards to the extent necessary to protect human, animal or plant life or health. It stipulates that regulations must be based on science and should not be applied arbitrarily or as trade barriers. However, despite the increasing importance of plant quarantine under WTO-SPS, only four NPPO are the official National Enquiry Point for WTO-SPS. In six countries, the WTO-SPS enquiry points are not even part of the Ministry of Agriculture (Figure 4).

The actual organizational arrangements to execute the various plant protection functions differ greatly from country to country and have changed over the years. Among the meeting participants, only 7 countries have a single national plant protection organization that is responsible for the full range of plant protection functions (Figure 4). In the majority of countries (14), pesticide management has been moved to a separate organizational unit (mostly still within Ministry of Agriculture). The core plant protection functions of pest management and plant quarantine are executed by separate organizations in at least 8 countries. Some countries have even created specialized and sometimes independent units for IPM or pest risk assessments.

<sup>2</sup> <http://www.fao.org/docrep/W7470E/27470e5.htm>

**Table 1. Comparison of member functions under APPPC and IPPC**

APPCC Article IV, revised agreement 1999	IPPC Article IV, revised text 1997
<b>NPPO-Functions</b>	
<b>Phytosanitary measures</b>	
Review state of plant protection in the region and need for action (b)	Inspection of consignments for international traffic (2c)
Promotion of appropriate measures to prevent introduction and spread of pests (c)	Disinfestation or disinfection of international consignments (2d)
Promote application of phytosanitary measures in relation to GMOs (c)	Issuance of phytosanitary certificates (2a)
	Ensure post-certification phytosanitary security prior to export (2g)
Regional standards for the development of pest risk analysis (d)	Conduct pest risk analysis (2f)
<b>Surveillance</b>	
Regional standards for the identification of pests for common action (d)	Inspections of plants with the object of reporting existence, outbreaks and spread of plant pests and of controlling those pests (2b)
<b>Pest Free Area Management</b>	
Regional standards for the recognition of pest-free areas (d)	Protection of endangered areas and the designation, maintenance and surveillance of pest free areas and areas of low pest prevalence (2e)
Promoting establishment of pest free areas (c)	
<b>Staff Training</b>	
Coordination and arrangements for training (i)	Staff training and development (2h)
<b>Additional Party Provisions</b>	
<b>Information Exchange</b>	
Collection, collation and dissemination of plant protection information (h)	Exchange information regarding regulated pests and their control (3a)
<b>Phytosanitary Standards and Regulations</b>	
Develop and adopt regional Standards (d)	Issue phytosanitary regulations (3c)
Provide assistance to develop ISPM (e)	
Promoting multi- and bilateral agreements (j)	
<b>Plant Protection Research</b>	
	Research and investigations in the field of plant protection (3b)
<b>(Integrated) Pest Management</b>	
Promoting appropriate measures to control pests, incl. use of IPM (c)	Not a function
Review status of and promote IPM (f)	
<b>Pesticide Management</b>	
Harmonize pesticide regulations (g)	Not a function

In an increasing number of countries, plant protection functions are executed by a network of different plant protection organizations, like in Australia, China, Japan, Republic of Korea, New Zealand and Thailand.

The organizational diversity of plant protection was also reflected in the range of institutional affiliation of participants who attended the 24<sup>th</sup> APPPC Session in 2005. They came from general

	PQ-PRA	PQ-Inspection	PQ-Treatment	Invasive Species	Pest M.-Extension	Pest M.-Intervention	Pest M.-IPM	Pest M.-Research	Pesticides-Registration	Pesticides-Enforcem.	Pesticides-Food Monit	Pesticides-Envir. Mon	Conventions					
													WTO-SPS	PIC-DNA	POP-NFP	Basel-NFP		
<b>NPPO</b>																		
Bangladesh														x	-	x	x	
Lao PDR														-	?	x	-	
Myanmar														x	-	x	-	
Nepal														x	-	MoA	x	
India														MoA	MoA	x	x	
Viet Nam																x	x	
Pakistan																	-	x
Sri Lanka														x	MoA	-	x	
Malaysia														MoA	MoA	x	x	
Cambodia														-	-	x	x	
Philippines														DoA	-	x	x	
Fiji				?										MoA	-	-	-	
Indonesia				?											MoA	x	x	
Tonga				?										MoA	-	x	-	
Korea DPR			?	?										-	x	-	-	
New Zealand														MoA	MoA	x	x	
Australia														DoA	DoA	x	x	
China*														x	MoA	x	x	
Japan														x	x	x	x	
Korea, Rep. of									RDA					MAF	RDA	-	x	
Thailand															DoA	x	x	
														4	2			
	21	16			11				7					12	11	1	0	

Conventions: - = absent; x = other than MoA; RDA = Rural Development Administration

\* Japan is not a member country of APPPC.

**Figure 4. Range of plant protection responsibilities of the Official NPPO (preliminary data)**

plant protection (14)<sup>3</sup>, plant quarantine (20), pesticide management (5), extension (9), research (13), biosecurity (4) and others (9).

The responsibilities of national plant protection organizations are also affected by international developments in biosecurity in food and agriculture. In the broadest sense, biosecurity attempts to ensure that ecologies sustain people and animals through biodiversity and prevention of diseases. FAO<sup>4</sup> defined biosecurity as the management of all biological and environmental risks associated with food and agriculture, which covers biosafety, food safety and plant as well as animal health. Biosafety under the Cartagena protocol deals with the safe transfer, handling and use of living modified organisms (LMOs). Thus, the contributions of plant protection to biosecurity are more than phytosanitary measures to reduce the risks of introduction of plant pests.

## 1.2 Analysis of the 2005 APPPC country reports

The 24<sup>th</sup> Session of APPPC in 2005 was attended by delegates from 20 member states plus Japan as an observer. Absent were France (for French Polynesia), Papua New Guinea, Western Samoa and Solomon Islands. All country delegations presented country reports, which were analyzed to

<sup>3</sup> The numbers in parentheses indicate the number of countries.

<sup>4</sup> Regional Strategic Framework for Asia and the Pacific, RAP Publication 2004/06.

order to assess the reporting mechanisms with regard to the status of the plant protection situation in the region<sup>5</sup>.

The reports varied greatly in content and detail. Of the approximately 35 reporting topics listed in the guidelines, country reports covered between 5 and 31 items dependent on personal selection and/or the area of specialization of the reporting institution. Some questions were answered by as few as 5 countries. This ‘pick and choose’ reporting style makes it difficult to make a coherent and accurate assessment the status of plant protection in the region.

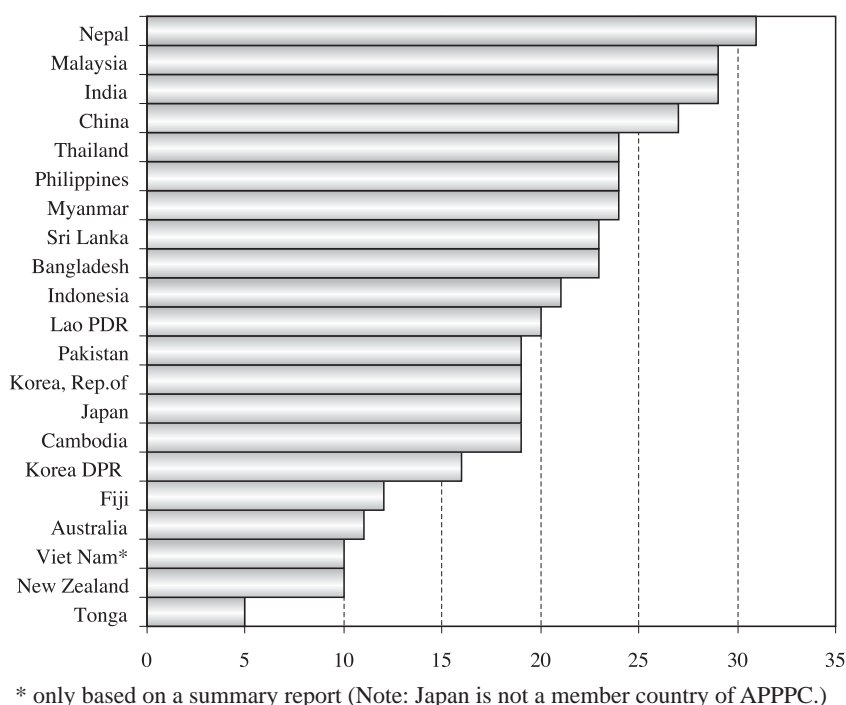
The uneven reporting is only partly an indication of the efforts that were put into the preparation of the country reports. More importantly, it reflects the increasing fragmentation of plant protection functions. Since many reporting institutions were no longer responsible for some of the key plant protection functions, it was difficult for them to report on these topics and some countries skipped entire sections, such as pest and pesticide management, in addition to reflections of various situations of plant protection of countries with local demands.

### Section 1: Introduction

*Guidelines for country report:*

*General review of progress including technical, policy/legal, infrastructural and institutional development and challenges in national plant protection since 2003.*

The dynamic nature of plant protection is highlighted by the fact that about half the countries (11) reported changes or progress in the past two years. This has resulted in new policies for food/ biosafety (2) and pesticide reduction targets (1) as well as new legislations (both proposed and/or ratified) for plant protection (1), plant quarantine (2), biosafety (1) and pesticides (1). In several countries, plant quarantine was reorganized (2) and expanded in terms of number of check posts (4) and introduction of electronic phytosanitary certification (2).



**Figure 5. Number of report topics**

<sup>5</sup> For Viet Nam, only a report summary was available.

Notable developments were the creations of biosecurity authorities in Australia and New Zealand. The functions of Biosecurity Australia are limited to quarantine assessments and policy advice, while Biosecurity New Zealand is aiming to prevent unwanted animal and plant species from arriving and getting rid of or controlling those that are already there. Despite their specific mandates, both organizations serve as “National Plant Protection Organization”.

The most important technical improvements that were highlighted were in the field of IPM and biological control (7), but also the strengthening of plant quarantine and PRA capacities (5).

Most countries felt challenged by the new demands of plant protection. Major constraints were lack of qualified personnel (7), but also lack of funds and infrastructure (6).

## Section 2: Outbreaks of major pests

*Guidelines for country report:*

*Infested crops, causal organism, estimated loss; actions and areas covered by control measures; management of invasive species*

Outbreaks of pests and diseases were reported from all countries (except Tonga), but the reports gave generally little information about the reasons for these outbreaks which might be caused by migratory or new invasive pests, climatic factors or a breakdown in the natural, ecological pest suppression function because of monoculture cultivation or an overuse of pesticides and other agricultural inputs.

Reporting on pest outbreaks also depends to some extent on one’s definition of “pest”. In the broadest sense, any organism injurious to plants might be considered a pest. In pest management, however, the definition is often restricted to organisms that cause economic damage. Consequently, the types of outbreaks reported varied greatly according to the definition used.

**Infested crops:** Most frequently mentioned were pest outbreaks on rice (11), which is also the most widely grown crop. This was followed by fruits (6), vegetables and corn (5 each), coconut (4), cotton and sugarcane (3 each), wheat, soybeans and potato (2 each). Other crops were only mentioned once.

**Causal organisms:** The list of reported organisms causing outbreaks covered the full range of known pests and diseases. Some countries provided lists of all known pest species in the country. However, the Brown Plant Hopper (BPH) was named most often (10) and has apparently increased in severity in recent years, particularly in Cambodia, southern China and Viet Nam (personal communication). Knowing that BPH outbreaks can be triggered by an overuse of pesticides, this could indicate a rising use of chemicals in those countries. Other rice pests mentioned repeatedly were rice stem borer (6), rice leaf beetle (3), rice water beetle and swarming caterpillar (2 each) as well as rice blast (3) sheath brown rot and turgo virus (2 each). In addition, outbreaks of general pests such as rodents (5) armyworm (Spodoptera) and bollworm/corn borer (Helicoverpa) (4) were frequently mentioned. Grasshoppers and locusts outbreaks were reported from Cambodia, China, Indonesia and Lao PDR.

**Losses:** The reports gave little information about the severity of outbreaks and the amount of crop losses. These figures are difficult to determine and – when available – often inflated. Five countries gave damage estimates, either in percent, as total yield losses or as area affected. To assess the economic damage, however, such figures would need to be put in relation to the total crop area and actual or potential plant protection expenditures.

**Control measures:** There was no systematic reporting on the control measures taken to combat pest and disease outbreaks. Normally, outbreaks of migratory and invasive pests are controlled by government agencies, while local outbreaks are the responsibility of farmers. The reported measures used to control the outbreaks involved pesticides, biopesticides or biological control agents applied by both government agencies and individuals.

**Invasive species:** Newly discovered pest species or pathogens have been reported from seven countries, notably New Zealand (24) Australia (4) and Sri Lanka (4). However, new discoveries are not always economic pest invasions and may include organisms that have been present in the country for some time. In the Philippines, a corn plant hopper (*Stenocranus pacificus* Kirkaldy) that was first discovered on the island of Mindanao in 2002, caused a major outbreak during the first quarter of 2004; however, these outbreaks have been suspected to be caused by close planting distance, high nitrogen fertilizer, synchronized planting, or decreasing population of the natural enemies due to spraying.

Migratory pest outbreaks are monitored in China and India (locusts) and the Republic of Korea.

One alien species, however, that has recently invaded several new countries is the Hispine beetle *Brontispa longissima*. The species has its centre of origin in Indonesia but has caused outbreaks on coconuts in Cambodia, Lao PDR, Philippines and Thailand and is further spreading in the region.

Another potentially serious invasive alien pest in the region is the coconut mite which has been introduced from Africa to Sri Lanka and southern India (Kerala and Tamil Nadu). This pest can spread to other coconut countries in Asia where 85 percent of the world's coconuts are grown and cause serious yield losses.

### Section 3: Integrated pest management

*Guidelines for country report:*

- 3.1 *National IPM Policy*
- 3.2 *IPM Programmes: sources, amount of inputs, impact of implementation*
- 3.3 *Results from research, programmes concerned*
- 3.4 *International cooperation*
- 3.5 *Development of pest control: insects, diseases, nematodes, weeds*
- 3.6 *Pest control extension; small farmers*

Over the past 15 years, Integrated Pest Management (IPM) has received much attention in the APPPC region through the implementation of several intercountry programmes on rice, cotton and vegetables that promoted IPM in connection with Farmer Field Schools (FFS).

**IPM policy:** Eight APPPC member countries reported to have policy statements, regulations or planning documents in support of IPM. In 5 countries, IPM has been institutionalized in form of special IPM units or in India as IPM field stations. Four countries had earmarked national funding for IPM. Despite these achievements, there were only few examples of IPM policies having affected pest and pesticide management. Only three countries mentioned to have ended pesticide subsidies, and only two had a national policy to reduce the amount of pesticides in agriculture. Two countries promote IPM in connection with Good Agricultural Practices (GAP), and one has introduced a national accreditation scheme that includes IPM practices.

**IPM programmes:** All responding countries (19) reported to implement IPM activities, and 8 countries had National IPM Programmes, mostly in connection with external funding. However,



there was no information on the amount of financial inputs into IPM programmes that would allow an assessment of their significance on a national scale. The impact most often reported from IPM was a reduction of farm-level pesticides and increased farm income through better efficiency. Only India reported a large-scale impact from IPM in form of an increased use of biopesticides and a nation-wide decrease in chemical pesticides. Two countries observed fewer pest outbreaks as a result of IPM.

**IPM research:** Only nine countries reported on IPM research activities, but this may not represent the complete picture. Most reported research was on vegetables (7) and fruit (4), but also on rice, cotton and corn (3 each), carried out by agricultural research stations (4), projects (3) or universities (2). Most IPM research involved biological control (7), biopesticides (6) and chemical control (5); very little research was done studying agricultural biodiversity and ecological pest suppression (1).

**International cooperation:** Ten countries reported receiving international support for IPM implementation, but that information was not complete as some known IPM projects were not included. Assistance came notably from FAO, EU and Denmark. Most of the projects were coming to an end, and no new projects have found a donor. To promote IPM, Pakistan and Thailand started their own National IPM and IPM-GAP project, respectively.

**Development of pest control:** All responding countries (17) were engaged in developing new pest control recommendations for insects and diseases, but some also for weeds (2) and nematodes (1). Most pest control activities involved a wide range of technologies, primarily biological (12) and chemical control (10), followed by cultural control methods (8) and biopesticides (8). Eight countries carried out surveillance and forecasting activities. Strengthening natural control, however, was only mentioned 3 times. The crops of concern were rice (15), vegetables (12) and fruits (7).

**Pest control extension:** Some countries in the region, particularly the developing countries that provided pest control extension to small farmers, very often used farmer field schools and IPM technologies; while more industrialized countries reported either not to have extension services or that they disseminated IPM information through mass media. There was not enough information about the size of the programmes or whether they were fully integrated into the general extension service. In addition, two countries distributed natural enemies to farmers, and one country manufactured a Neem-based pesticide. One country still maintains a government service for ground and aerial pest control but lacks resources for operation.

#### Section 4: Plant quarantine

*Guidelines for country report:*

*4.1 NPPO organization*

- a. New or reorganized National Plant Protection Organization (NPPO) structure with functions;*
- b. Plant quarantine (external and domestic if appropriate) network;*
- c. List of plant protection legislation, regulations, etc. with years promulgated;*
- d. Highlights of significant updates of new or revised plant protection legislation and regulations;*
- e. Name(s) and address of national plant quarantine authority-director general(s) and institution(s).*

*4.2 Status of Implementation of International Standards for Phytosanitary Measures (ISPM) and APPPC Regional Standards for Phytosanitary Measures (RSPM), constraints; planned time frame for implementation of ISPM 15.*

- 4.3 *Progress of pest risk analysis.*
- 4.4 *Progress in preparation of lists of regulated pests in accordance with ISPM 19.*
- 4.5 *Establishment of pest free places of production and pest free production sites.*
- 4.6 *Use of International Phytosanitary Portal (IPP) for information exchange, setting up national phytosanitary information website; other forms of distribution for the information.*
- 4.7 *Phytosanitary Capacity Evaluation (PCE); training on phytosanitary capacity building.*
- 4.8 *Proposal on Regional Standards for Phytosanitary Measures (RSPM) and ISPM to be set or revised; possible contribution for RSPM development to the Commission.*

**NPPO organization:** Due to the confusion whether NPPO refers to only plant quarantine or generally to plant protection, two countries described their plant quarantine setup and seven their plant protection organization. Seven countries had reorganized plant protection in the last 5 years. Half the countries (10) gave information about their plant quarantine service in terms of number of personnel, number of quarantine stations and labs, and entry points. India provided details on the number of persons authorized to issue certificates and the number of export certificates and import permits issued. Ten countries listed their plant quarantine legislation, and six countries gave information about ongoing developments or future plans. The addresses for the plant quarantine authority given by 10 countries were mostly identical with the NPPO focal points listed on the IPP portal.

**Implementation of ISPM:** Two countries responded in general terms that they had no problems with ISPM implementation. Four countries gave detailed information, and of these only 2 indicated that they were implementing most measures; some countries gave general answers that they were making efforts to follow the guidelines or that they considered or supported them. Regional SPM were used by three countries. In addition, India has developed a set of national guidelines and manuals for phytosanitary measures.

Regarding the implementation of ISPM 15, twelve countries had partially implemented the guidelines or were in the process of setting up implementation. Most countries were first regulating the import of wood packing materials before regulating export. Only the Philippines had implemented ISPM 15 for both import and export. In three countries, wood packing material will be fumigated with MeBr; four countries also use heat treatment.

**Pest Risk Analysis (PRA):** Twelve countries indicated to have carried out preliminary pest risk analysis, however, nine of these countries found the procedures difficult and they lacked trained personnel for a systematic implementation. A few countries provided information on the number of PRA that have been completed which ranged from 1 to 28. Only India reported to have conducted 1,478 PRA on 657 commodities, raising doubt whether the same procedure was followed. In a collaborative effort, six Southeast Asian countries conducted a joint PRA on SALB in 2003.

**Lists of regulated pests:** About half the countries (13) reported that they have or are in the process of establishing lists of regulated pests. So far, only Japan and New Zealand have published lists of both quarantine and non-quarantine pests as required by ISPM 19. These lists are constantly revised and updated. According to ISPM guidelines, pests should only be regulated only after their risk has been determined in a PRA. Considering the limited number of PRA conducted in several countries, most of the lists of regulated pests are therefore still preliminary, waiting for PRA verification.

**Pest-free production sites** according to ISPM 10 have only been established in Australia, Malaysia, New Zealand, Philippines and Sri Lanka; four more countries are in the process of setting up

sites. Some examples of existing pest-free sites are for fruit flies, papaya ringspot virus, mango weevil and white rust on chrysanthemums.

**International Phytosanitary Portal (IPP):** Even though IPP has a website for each APPPC country, only three countries use it for information exchange and one country (Australia) to report outbreaks. Ten countries maintain own websites, two with on-line databases. For SPS information, more information is available on the WTO site than IPP; while there were only 142 SPS notifications from nine APPPC countries on IPP, there were more than 4 000 entries from 14 countries on the WTO-SPS site. Thus IPP plays only a secondary role in the exchange of phytosanitary information, which could be the reason for its limited use by the member countries.

**Phytosanitary Capacity Evaluation (PCE)** is a computerized tool to self-assess a country's capacity in relation to the IPPC and WTO-SPS Agreements. Even though two regional training courses were held on PCE, only two countries reported to have used it. Without prospects of assistance to overcome capacity deficits, some countries may not find it useful to conduct a PCE. Three countries reported to have organized training for plant quarantine staff, and six more countries participated in regional or local training courses. The most frequently mentioned training topics (3 each) were PCE and PRA.

## Section 5: Pesticides

*Guidelines for country report:*

- 5.1 *List of regulations and legislation*
- 5.2 *Status of ratification and implementation of Rotterdam Convention, challenges and opportunities*
- 5.3 *Implementation of International Code of Conduct*
- 5.4 *Monitoring and management of pesticide residues*
- 5.5 *Development and application status of biopesticides incl botanical pesticides*
- 5.6 *List of banned/prohibited pesticides (year, insecticide, fungicide, herbicide)*
- 5.7 *Name and address of national authority for pesticide registration*

**Legislation:** All countries that responded to this question (18) indicated to have legislation regulating the use of pesticides, and more than half the countries (13) provided the list of legislation. However, there was little information on the implementation and enforcement of the legislation. Some countries gave the number of registered products which ranged from 100 (Lao PDR) to almost 2 500 (Pakistan).

Pesticide manufacturing countries may require additional legislation. The existence of fake and adulterated pesticides is also a known problem that needs more attention. At least one country mentioned illegal imports as a problem.

**Rotterdam Convention:** Even though ten countries had ratified the convention, only four country reports mentioned this. This may have been due to the fact that in 2005 only two NPPO were also the DNA for the Rotterdam Convention. Other reporting institutions may not have been aware of its status since it did not fall under its responsibilities, even though in 11 cases the DNA was part of the Ministry of Agriculture; only in Japan and Korea DPR it was not.

Since the PIC procedure was already included in the Code of Conduct since 1989, more countries claimed to implement the Rotterdam Convention (9) than have actually ratified it. In most cases, banning or restricting the import of PIC chemicals was regarded as compliance. It appeared that some countries that made a conscious effort to implement the convention found that they lacked capacities for enforcement, risk assessment or for obtaining a consensus on the future status of

certain chemicals. Some countries continue to import PIC chemicals because of lack of alternative products.

**Code of conduct:** Nine countries affirmed their commitment to the Code of Conduct, but few provided details. No country referred to the new reporting requirements of the revised version of the Code of Conduct. In most cases, implementation of the Code was seen as having pesticide legislation, registration, labelling regulations and licensing. Some countries mentioned to implement the Code through training programmes on the safe use of pesticides, product stewardship or promotion of GAP standards.

**Pesticide residues:** Most countries have laboratories to monitor pesticide residues, but the number of annual analyses ranged from 0 to over 23 000. Only two countries gave details on the number of contaminated samples, which amounted to 4 percent and 27 percent. Some laboratories conducted residue analysis for research and registration purposes, others to certify agricultural exports or to check imports. Few laboratories systematically monitored market products, farmer health or environmental contamination. Possibly, more food safety and environmental monitoring programmes are carried out by the Ministries of Health or Environment. China has a programme to monitor the effects of pesticide residues on insect resistance.

**Biopesticides** are used in most countries. Eight countries gave details on the products registered, which ranged from a few to about 100 (China). While the use of biopesticides is being encouraged and appears to be increasing, the extent of their market share in relation to chemical pesticides appears unknown.

**Banned pesticides** existed in all countries that reported on this topic (14), the total number of products ranging from 12 to 96. Nine countries provided the lists of banned or restricted pesticides. The majority of the banned products were insecticides. In addition, nine countries have restricted the use of certain pesticides by banning particular hazardous formulations. Most banned or restricted pesticides have been those targeted by the Rotterdam and Stockholm Conventions. No information was provided on products which were under evaluation to be banned.

**National Pesticide Authority:** Twelve countries provided the address of the National Pesticide Registration Authority, which was identical with the NPPO in only 3 cases.

## **Section 6: Development of international cooperation projects or programmes for plant protection**

<i>Guidelines for country report:</i> <i>None</i>
--

APPPC includes both industrialized countries that give assistance and developing countries that are in need of it. The plant protection organizations in the donor countries may not always be fully informed about the country's foreign assistance programmes. Likewise, the reporting institutions in the developing countries often do not mention cooperation projects involving other plant protection organizations. Thus the information in the country reports about international cooperation projects or programmes was not complete and some known projects were not included.

Seven countries reported to have international assistance projects. Three countries responded to the question by listing their priority needs for international cooperation, namely for IPM, mass production of biocontrol agents or biopesticides, measuring environmental and ecological pesticide contamination, conducting pest risk analysis and interception of new exotic pests. One country

described its memberships in international bodies, and two countries listed international workshops and trainings it attended.

Most of the international cooperation projects were in IPM (6) and plant quarantine (4); there was only one pesticide-related project, namely for cleaning up obsolete pesticides in China. Most IPM projects were sponsored by Denmark, while Australia assisted several countries in plant quarantine.

Most of the reported projects came to an end in 2004 and 2005. Despite the increasing demands on plant protection and the difficulties in many countries to meet these challenges, only one new international cooperation project was reported, namely for the quarantine treatment against fruit flies in Viet Nam. Several proposals for IPM successor projects have been prepared, but they have not yet found a donor.

### **Section 7. Name of National Plant Protection Organization:**

*Guidelines for country report:*

*Name of the chief, designation, office address, phone and fax, E-mail, website.*

*In addition, please provide name and address of **head and institutions** who should be **officially contacted** for future consultation, nomination, invitation, etc. if necessary for administrative procedures.*

All countries provided names and addresses. In some countries, the designated NPPO was undefined as the Department/Ministry of Agriculture. Other countries gave several contact addresses for different plant protection organizations, some in other ministries. A few addresses were for national focal points in lieu of existing national organizations.

### **Section 8. Conclusion**

*Guidelines for country report:*

*None*

The concluding remarks given by about half the countries stressed the importance of plant protection for international trade (4) and coordination (3), but also for environmentally friendly production (3) of safe food (3) while protecting biodiversity (1) and fighting poverty (1). To meet these challenges, several countries stressed the need to strengthen plant protection infrastructure (3) and human capacities (3), but also plant protection laws and their enforcement (3) and the ability to apply SPS standards (3) and to conduct PRA (2). Other countries recognized the need to reduce pesticides (2) and to improve extension, IPM, biocontrol and farmer's decision-making capacities.

International cooperation and the important role of APPPC in overcoming these challenges were generally recognized and affirmed.

### 1.3 Conclusion and recommendations

To strengthen the exchange of information among APPPC member countries, the following actions are recommended:

#### **Role of APPPC**

A number of worldwide trends are affecting plant protection, notably international trade and the implementation of the WTO-SPS Agreement, as well as demands for safer and environmentally friendly agricultural production. Thus plant protection is still an important field that addresses a wide range of both national and international responsibilities. However, some of these responsibilities overlap with trade, health and environmental authorities. In the discussions about the future role of agricultural authorities for the various plant protection functions, different options are considered. This discussion also has consequences for APPPC.

**Narrow option:** One option would be to follow IPPC and restrict the functions of APPPC to international issues of plant quarantine and the **transboundary movement of pests**. This would be non-controversial and appropriate for an intercountry association, but would greatly limit its importance. Recognizing that the international information exchange on phytosanitary issues has in effect already been taken over by WTO-SPS, the role left for APPPC would be only a minor one and it could eventually end up as a sub-organization under WTO.

**Wider option:** Alternatively, APPPC could aim to coordinate both the domestic and international functions executed by increasingly specialized plant protection organizations. Recognizing the institutional reality in the member countries, APPPC would serve as the harmonizing body through standing committees for the different functions (pest management, migratory/invasive pests, plant quarantine, and pesticides) under the overall umbrella of **sustainable plant protection or biosecurity**. Instead of dealing with a single NPPO, mechanisms would need to be developed to deal with multiple, more or less interrelated plant protection organizations in the member countries.

The discussion, whether APPPC should follow IPPC or maintain its original scope is still unresolved. The country reports represent both options. A consensus on this issue would be required for a unified reporting and information exchange system.

#### **Development of standardized “Country Plant Protection Profiles”**

The organizational fragmentation of plant protection increases the need for harmonization and information exchange, while at the same time making it more and more difficult to collect and report information. The reports show that even country focal points have difficulties with this task. The currently practiced instrument of country report presentations at the biannual meetings may not longer adequately satisfy the needs for information exchange in a fast-moving world. Other options should be explored.

Any new reporting system should aim to restrict the amount of data to core information and key indicators that could track a country’s progress in the execution of its plant protection functions in a manner that is comparable between countries. Such a condensed and harmonized system would greatly facilitate the work of APPPC and the exchange of information between member countries.

The information could be arranged in a fixed format as a country profile or country fact sheet. For each of the plant protection functions it would contain the following key information:

- organizational structure
- legislation and regulations

- resources: personnel, number of offices, etc.
- key annual situation indicators
- key annual performance indicators

This information could first be collected by extracting past country reports and current websites for already available information. Missing information would be collected by means of structured questionnaire to the different plant protection organizations. The assembled country profiles then would only need to be updated from time to time and would form the country reports to the biannual meetings.

An already existing example of a standardized information package is the PCE tool, which could be used to prepare the country profiles. However, some sections would need to be modified and the format expanded to include other plant protection functions.

### **Use of multiple information channels**

In a fast moving world and information society, the channels for information exchange have greatly increased in recent years. APPPC also has made use of these developments by using the IPP to exchange phytosanitary information.

Recognizing the wide scope of plant protection spanning multiple organizations, there is an increasing need to manage the amount of information and to provide links to the fragmented institutions. The existing IPP portal could be used for that purposes. Since its current use for the exchange of phytosanitary information is limited, expanding the information platform to other areas of plant protection could enhance its importance and use by APPPC countries.

Instead of preparing country reports, delegates to the APPPC meetings would update the information in the country profiles. Country presentations would highlight key changes in the country profiles, while standing committees would review the datasheets for an assessment of the plant protection situation in the region.

The information in the country profiles would be posted on the APPPC website. The up-to-date status of the information would be guaranteed by the institutionalized regular updates.

In addition, APPPC may explore a Wikipedia-style open regional knowledge database for plant protection, if there is available resource of finance and staff, as expansions of the country profiles or could contribute to FAO's Best Practices Wiki<sup>6</sup>. The database could focus on major pests (in connection with EcoPort<sup>7</sup>) or on the important crops grown in the region. This format would provide an opportunity to bring in specialists from various institutions, including research and universities, to contribute to the development of plant protection in the region.

---

<sup>6</sup> [http://km.fao.org/bpwiki/wiki/Main\\_Page](http://km.fao.org/bpwiki/wiki/Main_Page)

<sup>7</sup> <http://ecoport.org/>

## 2. Development of APPPC Plant Protection Profiles

### 2.1 Development of draft Plant Protection Profiles format

Based on the guidelines for the 2005 country reports and the responses given, a format was developed to present as much information as possible in tables and lists. Since key legislation, rules and regulations are not expected to change significantly between APPPC meetings, this information could remain unchanged and would only need to be amended as necessary, thus eliminating the reporting of information that was already previously given. Other information could be simply updated by replacing the figures given with the latest available data. In this manner, gaps in the information could be easily identified and corrected in subsequent revisions. For the section on Pesticide Management, the format accommodated the responses to a questionnaire that was distributed in 2005 for the “Asia Regional Workshop on the Implementation, Monitoring and Observance of the International Code of Conduct on the Distribution and Use of Pesticides”<sup>8</sup>.

The format of the draft Plant Protection Profiles (PPProfiles) followed the following outline:

1. General Information
  - Selected country development indicators
  - Organization chart of all plant protection functions
  - Contact addresses of plant protection operational units and official contact point for international conventions
2. Plant Quarantine
  - General information
    - List of key legislation/regulation/rules
    - Key policy indicators
    - Distribution of responsibilities
    - Resources (personnel, diagnostic capabilities, other)
    - Pest-free area management
  - Key Situation Indicators
    - Volume of international trade with plant products
    - Technical assistance given/received
  - Key Operation Indicators
    - Institutional statistics (no. of certificates, etc.)
    - Information on List of Regulated Pests
    - Information on Pest Risk Analysis (PRA)
    - Information on Implementation of ISPM
    - Progress and constraints in recent years
3. Outbreak Management  
(surveillance, pest outbreaks and invasive species)
  - General information
    - Key policy indicators
    - Distribution of responsibilities (field pests, migratory pests, exotic pests)
    - Resources (personnel, other)

<sup>8</sup> Proceedings of the workshop were published as RAP Publication 2005/29.



- Key Situation and Operation Indicators
    - Information on new exotic species found established
    - Eradication or internal quarantine actions taken
    - Information on pest outbreak control actions
    - Progress and constraints in recent years
4. Pest Management
- General information
    - Key policy indicators
    - Distribution of responsibilities (research, recommendations, extension, training)
    - Resources (personnel, laboratories, other)
  - Key Situation and Operation Indicators
    - Implementation of IPM
    - Market shares of pest control agents
    - Information on crops requiring most interventions
    - Technical assistance given/received
    - Information on pest management extension
    - Progress and constraints in recent years
5. Pesticide Management
- General information
    - List of key legislation/regulation/rules
    - Key policy indicators (international conventions, registration, subsidies)
    - Distribution of responsibilities, other stakeholders
    - Resources (personnel, laboratories, other)
  - Key Situation Indicators
    - Information on pesticide trade
    - Pesticide use profile
    - Testing, quality control and effects in the field
    - Health and environmental information
    - Pesticide disposal information
  - Key Operation Indicators
    - Information on registration of pesticides and other control agents
    - Information on licensing
    - Information on quality control
    - Information on food and environmental residue monitoring
    - Progress and constraints in recent years

The draft PPPprofiles were then sent to a number of countries that were invited for a regional consultation. In preparation for the meeting, the participants were requested to review the profiles and fill in missing information. This actual use of the PPPprofiles would help identify ambiguous questions, difficult to get or irrelevant requests.

## 2.2 Regional consultations

A “Pilot Consultation on Development of Profiles for the Exchange of Plant Protection Information among APPPC Members” was organized by the FAO Regional Office for Asia and the Pacific and took place in Bangkok, Thailand, from 12-13 December 2006. It was attended by eight

delegates from Cambodia, China, Indonesia, Malaysia, Myanmar, Pakistan, Sri Lanka and Viet Nam, and three participants from Thailand.

In his opening speech, Mr *He Changchui*, FAO Assistant Director-General and Regional Representative for Asia and the Pacific, welcomed the participants and noted the timeliness and importance of developing country profiles for plant protection information. This endeavor would not only fill an important information gap, but could also strengthen regional cooperation and development. In today's globalized world there is an increasing need for accurate and structured information to facilitate trade and to harmonize regulations. FAO is committed to support APPPC in its effort to promote sustainable agricultural development in the Asia-Pacific region, and the exchange of information through structured country profiles is an important element of this strategy.

Before the start of the technical discussions, the participants expressed their expectations and objectives of the meeting as follows:

- Harmonize definitions and terminology
- Decide on general versus detailed information in the profile
- Edit the language so that it would be widely understood
- Include contact addresses to facilitate quick exchanges between relevant officers
- Identify official and operational contact channels
- Decide on format for contact addresses
- Include list of regulated plant quarantine pests
- Decide on timetable for implementation
- Decide on update schedule and mechanism
- Make profiles an instrument for reflection and self-assessment
- Possibly include an annex for more detailed information

In the introductory presentation, Mr Walter-Echols presented the results of an analysis of the 2005 country reports that showed the need for improving the mechanisms of information exchange within APPPC. It is expected that an organized and structured information exchange in form of country profiles would help member countries in formulating policies, recognize dangerous trends or gaps in the execution of plant protection functions, and promote transparency and harmonization of procedures. Furthermore, plant protection profiles may reduce the need for frequent questionnaires and would assist in the writing of reports, including required reporting to regional and international organizations. He then explained in more detail the format of the proposed country profiles and how they could be used in the future.

The technical discussions and deliberations of the participants proceeded in sessions covering general information and the four basic plant protection functions as outlined in the draft Plant Protection Profiles (PPProfiles):

### **I. General information**

This section contains basic country development indicators, an organization chart for all plant protection functions and a compilation of the most important addresses for both official and operational contacts.

The organization chart should identify the organizational position of all institutions mentioned in the PPP profiles. This would allow for an easy recognition of the extent of centralization or decentralization and the number of ministries involved. The participants agreed to the basic structure and color coding which should also include different textures for non-color presentations.

During the discussions about which addresses would be useful to have for each country, it was decided to provide the official contact addresses for the responsible ministry and responsible department, and an address for nominations. However, the participants considered it most useful to have operational contact addresses for the different plant protection function areas, in addition to the list of official focal points. The focal point for the Montreal Protocol was added, and other focal points may be added in the future as needed.

The table with selected country development indicators was moved to the end of the section and now also include a list of the most important crops grown in the respective country.

## **II. Plant quarantine**

Most discussions centered on this section since it is the main focus of IPPC. It was decided to eliminate the “Don’t Know” column in all tables with yes or no answers; if additional information is required to explain a response, it should be added as a note under the question. New questions were included in order to split questions that were too comprehensive, such as whether legislation covers domestic, import and export quarantine (now three questions), or the number of import permits/inspections (now two questions). The term “quarantine officer” was defined as the legally authorized persons to inspect and certify shipments. To assess the in-country diagnostic capacity, all accredited facilities capable of identifying the different pest categories should be listed.

With regard to pest-free areas, it was decided to list separately their compliance with ISPM 4 and ISPM 10. To show the importance of agricultural trade, the quantity of the main import and export plant commodities should be provided. A new table was added to the PPP profile to list the main quarantine pests intercepted in the top three commodities. Of particular interest is the list of regulated pests which should be posted on IPP in its entirety while the PPP profiles would contain their summary in form of total number of insects, pathogens and plant species on that list. A link to the complete list should be provided.

The table on the implementation status of ISPMs was left unchanged. It was decided not to add RSPMs to the list because their status is still voluntary.

Discussions and deliberations continued on the second day with the following topics:

## **III. Surveillance, pest outbreaks and invasive species management**

The major change in this section was to report the number of assigned staff separately for surveillance and control functions. The definition of pest outbreaks was to include storage pests, too. Since expenditures for outbreak control may involve both government and private efforts, it was decided to report for the eradication of pests the total area treated by all means, and for the control of regularly occurring pest outbreaks only the government efforts and expenditures.

## **IV. Pest management**

In this section, most clarifications were needed for the infrastructure reporting since in many countries pest management extension is carried out by the general extension service and not the plant protection service. The profile now includes the number of technical plant protection officers,

the number of offices on central, state or provincial level, and the number of field offices on district or village level. In addition, information on the number of government biocontrol or biopesticide production and distribution facilities is requested.

## **V. Pesticide management**

This section follows largely the format of reporting which countries will be expected to submit to FAO under the Code of Conduct. The question regarding the licensing of applicators was limited to field crop applications, excluding commercial quarantine treatment facilities. Another area of discussion was the reporting of biopesticides as compared to chemical pesticides. The Pesticide Use Profile now includes categories for chemical pesticides, i.e. insecticides, fungicides, herbicides and others (molluscicide, acaricides, etc.) and for “non-synthetic chemical” pesticides such as Bt, neem and also products such as Avermectin. To monitor progress with the various international pesticide conventions, two tables were added to report the pesticides that were restricted and those that were banned in recent years.

## **VI. Additional issues**

A new section was added to the PPPprofiles where other issues of common concern could be reported. This section now includes a table for reporting the genetically modified crops and total area under cultivation in the respective countries.

In conclusion of the meeting, the participants formulated the following observations and recommendations:

- The participants found the profiles useful, short and precise; they will make it easier to prepare reports for both internal and international reporting
- After the profiles are published, encourage other countries to fill out their country profiles and share them with other APPPC countries
- The participants recognized the value of the profiles to identify gaps and needs for technical assistance, and encourage interested parties to carry out systematic analysis of the profiles to identify shortcomings in the regions.
- Encourage member countries to use the profiles to strengthen internal information sharing as well as with outside institutions
- All interested parties should explore various means to update and disseminate the profiles, complementing the information on the IPP

It was decided that the draft PPPprofiles of the participating countries would be modified and formatted within a week after the consultation to include the changes that were discussed and decided during the meeting. The respective countries would then review and update the profiles, and return them to FAO RAP before the end of 2006. The updated PPPprofiles would be included as examples in the forthcoming publication of the meeting.

## **2.3 Update of Country Plant Protection Profiles**

Following the regional consultations, the draft PPPprofiles were revised according to the new format and sent to the participating countries for review and completion of missing information. The revised drafts were also sent to a number of non-participating countries which submitted a 2005 country report. The updated PPPprofiles that were returned to the APPPC Secretariat were edited for consistency and are presented in the next chapter.