

Report of the twenty-fourth session of the Asia and Pacific Plant Protection Commission

5 to 9 September 2005

Bangkok, Thailand



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Foreword

The Plant Protection Agreement for the Asia and Pacific Region (formerly the Plant Protection Agreement for South-East Asia and Pacific Region), which was approved by the 23rd Session of the FAO Council in November 1955 and entered into force on 2 July 1956, is an intergovernmental treaty and administered by the Asia and Pacific Plant Protection Commission (APPPC). The Commission, according to its provisions, convenes at least once every two years and is open to participation by all member countries.

The Twenty-fourth Session of the FAO Asia and Pacific Plant Protection Commission (APPPC) was convened in Bangkok from 5 to 9 September 2005 to review the activities of the Commission carried out in the past two years and to review the overall plant protection situation at national and regional levels followed by discussion and adoption of two Regional Standards of Phytosanitary Measures (RSPMs) as well as identification of the work programme of APPPC for 2006-2007. This document presents the final report of the Session.

During the last biennium, the FAO Regional Office for Asia and the Pacific and its intergovernmental technical body – APPPC – have been involved in several significant programmes dealing with major areas of plant protection in the region. The Commission has been very active in enhancing capacity building and information exchange among member countries on aspects of phytosanitary measures in line with the International Plant Protection Convention (IPPC) and Sanitary and Phytosanitary (SPS) Measures of WTO, pesticide management following the FAO Code of Conduct and Rotterdam Convention as well as extension of integrated pest management to major crops of the region.

It is expected that the activities planned for the next two years and the actions taken on the recommendations will further enhance cooperation and the capacity of member countries to deal with various phytosanitary issues in this era of globalization. It will amplify regional cooperation in other aspects of plant protection as well. The firm commitments and concrete actions by all governments of the member countries are required in order to achieve common goals in agricultural and rural development towards the Millennium Development Goal of halving world hunger by 2015.



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

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REPORT OF
THE TWENTY-FOURTH SESSION
OF
THE ASIA AND PACIFIC PLANT PROTECTION COMMISSION
5 to 9 September 2005
Bangkok, Thailand

1. Opening of the session and organizational matters

1.1 Attendance

The twenty-fourth session of the Asia and Pacific Plant Protection Commission (APPPC) was held in Bangkok, Thailand from 5 to 9 September 2005. Fifty (50) delegates from 20 member countries of the commission, namely, Australia, Bangladesh, Cambodia, China, Democratic People's Republic of Korea, Fiji, India, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Nepal, New Zealand, Pakistan, Philippines, Republic of Korea, Sri Lanka, Thailand, Tonga and Viet Nam attended the meeting. One delegate from Japan and three from the United States of America attended as observers. There were 33 observers from Thailand. There were also representatives from CropLife Asia, the International Rubber Research and Development Board (IRRDB) and the Pacific Plant Protection Organization (PPPO). The list of participants is attached as Annex I.

1.2 Introductory remarks by Mr Somchai Charnnaronkul, Deputy Secretary General, National Bureau of Agricultural Commodity and Food Standards, Chairperson of the Organizing Committee

Mr Somchai extended a warm welcome to the delegates and observers, and expressed his pleasure at the impressive turnout which he anticipated would produce a successful meeting. He stressed the importance of plant protection in the implementation of international trade and noted the role of the (APPPC) as regional coordinator in achieving the objectives of the International Plant Protection Convention (IPPC).

Mr Somchai also reiterated the commitment of Thailand to plant quarantine, including their experiences from involvement in the IPPC for the establishment of phytosanitary standards. In the area of pesticide management, guidelines were based on the Rotterdam Convention. A number of activities on Integrated Pest Management (IPM) were also mentioned, especially in cotton and vegetable cultivation, deriving from farmers' training through Farmer Field Schools (FFSs). Mr Somchai said that he hoped the forum would further enhance understanding of these important aspects.

In conclusion, Mr Somchai thanked the Food and Agriculture Organization of the United Nations (FAO), Regional Office for Asia and Pacific for their support and encouragement leading to the successful hosting of this meeting, and also to the Organizing Committee and Secretariat for their untiring efforts in ensuring the efficient operation of the meeting.

1.3 Opening remarks by Ms Wan Normah Wan Ismail, Chairperson of the 23rd Session of APPPC

The Chairperson started by expressing her appreciation and thanks to the Government of Thailand and FAO Bangkok for their roles in the co-hosting of the Commission Session, and also to the Executive Secretary of the APPPC and Secretariat staff for the management of the meeting.

Ms Wan Normah then reported the successes in the pursuit of regional cooperation in IPM, Pesticide Management and Sanitary and Phytosanitary (SPS) issues, with emphasis on the areas of capacity building and information exchange. There was special mention and thanks to the Executive Secretary of the APPPC, Mr Piao Yongfan for his contributions to the implementation of the work plan for the 2003-2005 period. The highlights of this were:

- i. Development of two Regional Phytosanitary Standards with Australia, namely, the *Guidelines for the Confirmation of Non-Host Status of Fruits and Vegetables to Tephritid Fruit Flies* and *The Requirements for the Establishment and Maintenance of Pest Free Areas for Tephritid Fruit Flies*.
- ii. Coordination of the Regional Technical Consultation on draft ISPMs.
- iii. Organization of two workshops on the preparation of Pest Risk Analysis (PRA) for South American Leaf Blight (SALB), followed by engagement of a consultant for a 3-month study mission in preparation of the final workshop in 2006.
- iv. Organization of five regional workshops with the cooperation of the IPPC Secretariat, FAO Rome and NPPO Malaysia in capacity building.
- v. Hosting of the *Second Workshop on the Harmonization of Pesticides Regulatory System in ASEAN* in Kuala Lumpur.

As out-going chairperson, Ms Wan Normah expressed confidence that the momentum gained in the previous years would be sustained over the next two years with enhanced cooperation and globalization.

1.4 Welcome address by Dr Changchui He, FAO Assistant Director-General and Regional Representative for Asia and the Pacific

Dr He welcomed the delegates to Bangkok and expressed his thanks to the Government of Thailand for hosting the meeting. He especially thanked Mr Somchai and the Organizing Committee for the superb administration of the meeting, and also the out-going chairperson for the efficient and effective work over the past two years.

Giving an outline in the priority areas, Dr He stressed the necessity for discussion into the various areas of plant quarantine, and the need for phytosanitary measures to be effective and not to be a trade barrier. Special attention would be dedicated to the discussion of RSPM No. 3 and RSPM No. 4. He also emphasized the importance of the availability of regional information, which could be greatly enhanced with the introduction of the International Phytosanitary Portal (IPP).

The successful implementation of IPM in rice, cotton and vegetables in recent years was highlighted as being a positive example of the achievements of APPPC member countries. He promised further assistance towards sustainable and environmentally friendly agricultural projects developed from the expansion of IPM programmes.

On the problems arising from improper use of pesticides, Dr He announced that an International Code of Conduct on distribution and use of pesticides has been adopted. However, a significant

number of problems still exist, and the focus would now shift towards the enforcement of the code. He also noted that the region as a whole has developed a general plant protection programme, but more work is needed to further strengthen organization structures, pesticide legislation and registration, and safe handling methods. Priority recommendations put forward were also expected to boost and improve plant quarantine services.

Reiterating APPPC's leading role in supporting farmers, Dr He then outlined measures required to achieve environmental sustainability. He also pointed out the need for the delegates to bring to the attention of national authorities the importance of the deposition of acceptance of the agreement as soon as possible.

1.5 Inaugural address by the Honourable Dr Suthiporn Chirapanda, Deputy Permanent Secretary, Ministry of Agriculture and Cooperatives, Thailand

In his address, the Honourable Dr Suthiporn extended a warm welcome to delegates, observers and guests to the opening of the 24th APPPC meeting. Noting the importance of agriculture amongst APPPC member countries, he believed there was need to strengthen regional bonds for the exchange of agricultural knowledge and information through forums such these. He was particularly pleased with the progress in farmers' education through the FFSs and the implementation of IPM. He congratulated the APPPC for the adoption of the Guidelines for the Development of Heat Disinfestations Treatments of Fruit Fly Host Commodities and the Training Requirements for Plant Quarantine Inspectors.

Dr Suthiporn observed the wide coverage of the agenda, especially the implementation of the International Code of Conduct on the Distribution and Use of Pesticides, and progress in the Convention of the Prior Informed Consent. He hoped that the Convention would adopt the two draft standards.

While stressing the importance of the protection of indigenous plants from unwanted alien species, Dr Suthiporn noted that phytosanitary measures undertaken should not pose a barrier to trade. He also announced the promotion of organic agriculture by the Government of Thailand since December 2004, and he looked forward to a successful conclusion on the related IPM and pesticide management discussions.

Finally, Dr Suthiporn thanked Mr Piao, Executive Secretary of the Commission and his team for setting the agenda which will contribute toward the Millennium Development Goal of halving world hunger by 2015. Wishing all participants success in their deliberations, he then declared open the 24th Session of the Asia and Pacific Plant Protection Commission.

1.6 Election of the Chairperson and Vice-Chairpersons of the 24th Session, the Drafting Committee and the adoption of the provisional agenda and timetable

1.6.1 Election of the Chairperson and Vice-Chairperson of the 24th Session

Thailand was elected Chairperson of the 24th session of the APPPC.

The elected countries to the Vice-Chairpersons were:

China
India
Malaysia
New Zealand

1.6.2 Election of the Drafting Committee

Dr John Hedley (New Zealand) was elected Chairperson of the Drafting Committee. The other members were:

Dr Xia Jingyuan, China
Dr P.S. Chandurkar, India
Mr Chan Yeng Wai, Malaysia

1.7 Adoption of the provisional agenda and timetable

The draft agenda and timetable were unanimously adopted.

2. Secretariat report on actions taken on recommendations of the twenty-third session of the Commission

Mr Piao Yongfan, Executive Secretary of the APPPC, reported on the activities of the secretariat and working groups since the 23rd session of the Commission.

2.1 Status of Plant Protection Agreement for Asia and the Pacific

There was no change in membership of the Asia and Pacific Plant Protection Commission. There are in total twenty-four (24) countries party to the Plant Protection Agreement of the Asia and Pacific region. Ten countries (Australia, Bangladesh, China, India, Indonesia, Malaysia, New Zealand, Pakistan, Republic of Korea and Sri Lanka) had accepted the amendment relating to the financing of the activities of the Commission, which was adopted in 1983. The acceptance by a further six countries (two-thirds) is necessary before the amendment could enter into force (Note: The amendment to the Agreement was transmitted to all Members, by the FAO Director-General in 1984).

As of 25 April 2005, out of the total 24 member countries of the APPPC, 19 were parties to the IPPC and 11 countries had accepted the 1997 Revision of IPPC. Since the 23rd session of the Commission, six countries have accepted the revision.

2.2 Status of the revised (1999) Plant Protection Agreement for Asia and the Pacific region

The revised Plant Protection Agreement for Asia and the Pacific region was approved by the FAO Council in 1999 and the certified true copies of its first set were transmitted to all APPPC members on 19 June 2000. Up to now, only the Philippines and Viet Nam have sent their instruments of acceptance to the FAO Legal Office. (However, Viet Nam's acceptance was not in the correct forms.)

During the 23rd session of APPPC, it was recommended that a site within the internet-based IPP be used as a site and a database for the Commission. This was implemented, and now every ICPM member has equal access to essential official phytosanitary information and is able to exchange official information electronically to meet their obligations under the IPPC and to facilitate decisions on phytosanitary issues. A Regional International Phytosanitary Portal Pilot Workshop for Asia and the Pacific was held in Kuala Lumpur, Malaysia, from 17 to 20 January 2005. The participants consisted of those responsible for information exchange in their respective National Plant Protection Organization (NPPO) and those tasked with the input of relevant information in IPP. The portal (available at <http://www.ippc.int>) has been tested and designed to hold phytosanitary information

including pest reports, description of the NPPOs, phytosanitary restrictions, points of entry with specific restrictions, list of regulated pests, emergency actions, official contact point details, non-compliance, organizational arrangements for plant protection, pest status and rationale for phytosanitary requirements. APPPC together with the Secretariat of IPPC and the Department of Agriculture of Malaysia organized a workshop on information exchange capacity building for the Asian region at the Institute of Biological Science, University of Malaya from 3 to 6 May 2005. The workshop was attended by 14 participants from 11 countries.

As part of its efforts to promote information exchange among member countries, the Commission has produced four publications, hard copies of which were already distributed to the member countries and are downloadable from the website (<http://www.fao.org/world/regional/rap/>). These publications include:

- i. *Report of the Expert Consultation on Coconut Beetle Outbreak in APPPC Member Countries* (RAP Publication 2004/29),
- ii. *Regional Standards for Phytosanitary Measures. Training Requirements for Plant Quarantine Inspectors* (RAP Publication 2004/24),
- iii. *Regional Standards for Phytosanitary Measures. Guidelines for the Development of Heat Disinfestations Treatments of Fruit Fly Host Commodities* (RAP Publication 2004/23), and
- iv. *Report of the Twenty-Third Session of the APPPC* (RAP Publication 2004/05).

In addition, the launching of the International Phytosanitary Portal by the Commission (<https://www.ippc.int/IPP/En/default.jsp>) has made available information about RSPMs, such as adopted RSPMs, draft RSPMs for country consultation, as well as other relevant reports.

Two workshops for Pest Risk Analysis (PRA) on South American Leaf Blight (SALB) were held in Malaysia in 2003 as part of the work plan of the FAO TCP project (TCP/RAS/0168A) for the Development of PRA for SALB of Hevea for the rubber growing countries in Asia. While a draft PRA on SALB was drafted at the workshop, several information gaps and additional areas for further research on SALB were identified for further improvement of the draft at the workshop. FAO had approved an extension of the implementation period to conduct studies on the information gaps for PRA of SALB, and one expert will be sent to Brazil to carry out the task for a period of three months in Brazil. A workshop will be organized in January 2006 to update Pest Risk Analysis based on the outcomes of the information obtained in Brazil.

2.3 Progress in Integrated Pest Management (IPM) in Asia and the Pacific region

In the last two years, the IPM programme in Asia has undergone many changes that reflected the strength and sustainability of the approach adopted towards farmers' education. There are now more nationally funded programmes, more NGO operated programmes and additional inputs from international development agencies using IPM-FFS.

The FAO-EU IPM Programme for Cotton in Asia was completed on 31 December 2004. It had provided a culture of impact assessment, sustainable farmer groups, locally funded activities and recognition of environmental education for poor farmers to achieve rural poverty reduction, enhanced livelihood, sustainable development and food security. The Programme targeted small-scale cotton farmers using ecological processes covered in IPM-FFS curricula. FFS graduates reported significantly higher profits that contributed to better nutrition, children education and debt reduction, thereby ensuring a brighter future for their families. For example, the gross margin income of FFS farmers increased substantially by an average of US\$ 175 per ha or 23 percent relative to

the control groups. Over the same period, farmers taught skills in IPM reduced their pesticide costs by 46 percent.

In its first phase, the FAO Regional Vegetable IPM Programme in Asia promoted and supported IPM in vegetables by Asian smallholder farmers. Now into its second phase, the programme emphasizes vegetable IPM participatory training and research in the Greater Mekong Subregion. It will focus on helping participating countries to continue vegetable IPM beyond Phase II.

In the last two years, IPM activities were funded by the Danish International Development Agency (DANIDA) in Bangladesh, Cambodia, Thailand and Viet Nam. The European Union (EU) supported an IPM-FFS programme in the Wang Watershed Management Project in Bhutan. A bilateral IPM programme supported by Norway was initiated in Nepal. India and Pakistan have allocated budgets for national programmes in support of IPM activities in their respective countries. The Asian and Pacific Coconut Community based in Jakarta has initiated an IPM programme in coconut with funding from Common Funds for Commodities in which the IPM-FFS was selected for educating farmers in the management of rhinoceros beetle and the imported coconut mite. FAO provides technical support to this programme.

The continued interest of farmers' education in a technical field such as IPM by countries in Asia has encouraged FAO to work with regional entities such as the Association of South East Asian Nations (ASEAN) and the South Asia Association for Regional Cooperation (SAARC). The ASEAN-FAO Programme on Quality Farmer Education for Poverty Alleviation and Market Competitiveness (ASEAN-FAO QFarmED) is an output of the first collaboration. With the support of SAARC, FAO has submitted a proposal on IPM Enhancement Programme for SAARC countries to be approved by the members.

The Expert Consultation on Coconut Beetle Outbreak in APPPC Member countries organized by FAO in Bangkok from 26 to 27 October 2004 and a follow up Asia-Pacific Forest Invasive Species Network Workshop organized by FAO in Ho Chi Minh City from 22 to 25 February 2005, recognized the importance of farmers' education with introduction of exotic parasitoids to sustain the biological control of the invasive pest species *Brontispa longissima* (Gestro).

2.4 Implementation of the Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticide in International Trade and the International Code of Conduct on Distribution and Use of Pesticides

The Convention entered into force on 24 February 2004. To date, 41 chemicals are included in Annex III of the Convention, and are subject to the Prior Informed Consent (PIC) procedure. As of 8 August 2005, there were ten parties out of the total 24 member countries of APPPC. Since the 23rd Session of APPPC, eight member countries (Australia, China, DPR Korea, France, India, New Zealand and Republic of Korea) had accepted the Convention. A number of regional and national activities on technical assistance had been carried out by the Rotterdam Convention Secretariat in cooperation with the FAO Regional Office and their national counterparts. In March 2004, the Asian Regional Training Workshop on the Operational Procedure of the Rotterdam Convention was held with 47 participants from 17 countries. The Secretariat of the Rotterdam Convention attended the meeting of the ASEAN working group on Multilateral Environmental Agreement (MEA) (9th Session, in May 2005), with an additional session to promote the ratification and implementation of the Convention. In December 2004 and April 2005 national consultations on the ratification and implementation of the Rotterdam Convention were undertaken in China and Sri Lanka. China has ratified the Convention in March 2005, while Sri Lanka has initiated the ratification process after the consultation.

The Regional Workshop on International Code of Conduct on the Distribution and Use of Pesticides: Implementation, Monitoring and Observance was held in Bangkok, Thailand, from 26 to 28 July 2005. Attended by 18 of the APPPC member countries, the workshop discussed the new provisions of the Code of Conduct which was revised in 2002 to strengthen its guidance to reduce the adverse effects of pesticides on health and the environment and to support sustainable agricultural practices. The participants assessed the status of the implementation of the revised Code and identified needs, priorities and emerging issues at the country level. The workshop delegates carefully reviewed the draft guidelines on monitoring and observance of the revised version of the Code. Suggestions were made to further improve the questionnaire. The delegates endorsed the 12 findings to strengthen the implementation of the Code of Conduct.

2.5 Progress in the Implementation of Plant Quarantine in Asia and the Pacific region

The topics of *Guidelines for Pest Free Areas for Fruit Flies* and *Guidelines for Determination of Non-host Fruit Fly Status* were identified as priorities for regional standard setting for phytosanitary measures during the 23rd Session of APPPC. The APPPC working group discussed the standards and revised the former titles of the draft RSPM No. 3 and RSPM No. 4 to *Requirements for the Establishment and Maintenance of Pest Free Areas for Tephritid Fruit Flies* and *Guidelines for the Confirmation of Non-host Status of Fruit and Vegetables to Fruit Flies Using Host Status Tests* respectively during a “Working Group Meeting on Draft Regional Standards for Phytosanitary Measures”, which was held in Bangkok from 27 to 30 September 2004. These two draft standards were reviewed at the meeting of the APPPC Standards Committee, which was held in Bangkok, Thailand, from 14 to 16 February 2005. The draft RSPMs were later distributed to APPPC members for their comments, and several were submitted by some countries. The updated draft standards would be submitted to this session for further review and adoption.

The Regional Training Workshops on the International Standards, Pest Risk Analysis and Phytosanitary Capacity Evaluation (PCE) were held in Kuala Lumpur, Malaysia, from 19 to 30 July 2004 and 19 to 29 July 2005 respectively. Attended by representatives from 11 countries and CABI, the workshops were part of FAO’s Programme to promote capacity building in plant health and to coordinate the implementation of phytosanitary measures as applied to international and regional trade. Training was provided to enable the participants to input necessary information – country’s background on phytosanitary capacity and the conducted exercises on the standards to evaluate the NPPO capacity (ISPM No. 6 on Guidelines for Surveillance and ISPM No. 7 on Export Certification were used as examples for these exercises). The participants successfully carried out the exercise on PRA with the PCE Tools, and significantly increased their fundamental knowledge/information on ISPMs and other phytosanitary aspects.

The Fifth APPPC Regional Workshop for the Review of Draft International Standards for Phytosanitary Measures was held in Bangkok from 23 to 27 August 2004. The workshop was attended by representatives from 20 countries and the IPPC Secretariat. The workshop reviewed the six draft ISPMs. The meeting recommended that the draft standards on the guidelines for inspection of consignments and the requirements for the establishment, maintenance and verification of areas of low pest prevalence, were returned to the working groups for redrafting. The reviewed draft ISPMs were discussed at the 7th Interim Commission on Phytosanitary Measures (ICPM) which was held in Rome, Italy, from 3 to 9 April 2005. As a result, three new ISPMs and two revised ISPMs were adopted. The Sixth Regional Workshop for the Review of Six Draft International Standards for Phytosanitary Measures (ISPMs) will be held in Thailand from 10 to 14 September 2005, and five draft ISPMs will be reviewed.

In conclusion, Mr Piao extended his appreciation to Dr Niek Van der Graaff, Chief of Plant Protection Service and IPPC Secretary, Executive Secretary of PIC, FAO Rome for his strong support and backstopping to the APPPC. He also thanked Dr John Hedley for his kind assistance and contributions to APPPC during the past years and his devotion to the development of APPPC Regional Standard for Phytosanitary Measures. He also appreciated his Malaysian counterparts for their special inputs to APPPC. Malaysia provided extensive support to the APPPC training activities during the past two years as a chair-country of the 23rd Session of APPPC.

2.6 Discussion on the Executive Secretary's Report

2.6.1 Expansion of the APPPC

To a proposal put forward by the delegates to expand the membership to APPPC, the Executive Secretary suggested that an application be made by any interested party to IPPC, Rome.

2.6.2 Status of revised text of APPPC

The delegates were informed of the status of the revised text of APPPC and that only two countries had forwarded acceptances.

The Executive Secretary's report was endorsed by the Session.

3. Country, regional and international organization reports

3.1 Australia

Biosecurity Australia (BA) was established as a prescribed Agency on 1 December 2004 and Mr John Cahill was appointed as Chief Executive. A new position of Principal Scientist has been created.

BA consists of three Branches, namely Animal Biosecurity, Plant Biosecurity and Business Development and Communication Branch. Responsibility for managing the technical aspects of BA's work continues to reside in the Animal and Plant Biosecurity Branches.

In 2004, the Australian Government announced the creation of the Eminent Scientist Group (ESG). The role of the ESG is to consider BA's treatment of stakeholder comments on draft import risk analysis reports, to ensure that they have been adequately addressed.

Australia implemented ISPM No. 15 on 1 September 2004 for imported containerized cargo and plans to implement ISPM No. 15 for imported break bulk and air cargo on 1 January 2006. Australia has maintained its requirements for bark freedom and is finalizing its technical justification for retaining this measure.

Plant Biosecurity is currently undertaking a number of import risk analyses and policy reviews, namely:

- i. Apples from New Zealand
- ii. Bananas from the Philippines
- iii. Table grapes from Chile
- iv. Citrus from Florida
- v. Limes from New Caledonia

- vi. Unshu mandarins from Japan
- vii. Coniferous timber from the US, Canada and New Zealand
- viii. Mangoes from India
- ix. Pears from additional Provinces in China
- x. Durian segments from Thailand
- xi. New Zealand stone fruit to Western Australia
- xii. Cereal seeds for sowing from New Zealand
- xiii. Pears from additional Provinces in Korea

Australia has a number of pest free areas, particularly in relation to Queensland Fruit Fly and Mediterranean Fruit Fly. Tasmania is free of fruit flies and areas of Victoria, New South Wales and South Australia form the Tri-State Fruit Fly Free Area. Australia has a Code of Practice for the management of fruit flies and this is currently under review.

The most significant recent outbreak of an exotic pest in Australia has been citrus canker in the Emerald district of Queensland. Surveys conducted throughout Australia have confirmed that this disease is limited to the Emerald area.

Plant Biosecurity has conducted International Pest Risk Analysis Workshops each year. Other areas of the Department, such as the Office of the Chief Plant Protection Officer also undertake capacity building projects.

Australia proposes the development of an RSPM for managing the risk of entry of scale insects. Scale insects are regularly encountered on the pathways for the movement of fruit and vegetables and it is considered desirable to align the pest risk analysis for this group of pests among regional countries.

3.2 Bangladesh

Agriculture is the backbone of Bangladesh and contributes about one-third to the gross domestic product (GDP). Approximately 84 percent of the countries total population is directly or indirectly dependent on the agriculture sector of which 57 percent is engaged in the crop subsector above. Rice is the most important crop accounting for 82 percent of the cropped area. The other major crops are jute, wheat, sugarcane, potato, pulses, and oil seeds, fruits, vegetables, cotton and tea.

The climate of the country is very conducive for rapid multiplication of pests and diseases. Insect pests damage different kinds of crops significantly every year. Several methods of pest control are being practiced to combat the pest incidence, but IPM approaches are being given more emphasis for the management of pests.

Under the Ministry of Agriculture the Department of Agricultural Extension, Plant Protection is a Wing consisting of four sections, namely

- i. Operation
- ii. Pesticide Administration and Quality Control
- iii. Plant Quarantine
- iv. Surveillance, Forecasting & Early Warning

Under the supervision of the Director, Plant Protection Wing, "Strengthening Plant Protection Services Project" (SPPS) has been implemented since 1997. Under this project, The Project Director

(PD) works with the support officers like Deputy Director (IPM), Deputy Director (V.P.C), Assistant Director (IPM), Entomologist, Plant Pathologist and others.

A SPSS in Bangladesh achieved success in the introduction of IPM in the country and created enormous impetus and interest among farmers, extension functionaries, policy level officers, research workers and politicians. The IPM activities under the project operated in 201 upazilas of 64 districts. The training of farmers (male and female) in rice and vegetable IPM was the main thrust of the project. The farmers' training was done through FFSs. A total of 8 500 FFSs would be established during the component period, and 212 500 farmers will receive practical, field orientation and season long training in IPM of rice and vegetables. The component will assist the DAE in the development of a Strategy and Action Plan for the implementation of the National IPM Policy. Some of the major tasks of the component include the development of 1 300 farmer trainers (FTs), establishment of 7 800 IPM clubs, work on biological control for rice hispa, bringal shoot and fruit borer, and demonstrations on organic farming.

Plant Quarantine activities have been strengthened with the establishment of additional Plant Quarantine out-stations to safeguard the country from the entry of exotic pests and diseases associated with the imported plants and plant products. The existing "Plant Quarantine Rule, 1966" was updated in July 1989. Furthermore, the Plant Quarantine Acts have been updated in 2004 as per Seed Rules of Bangladesh. An additional new four out-posts will be established to strengthen land border Plant Quarantine activities.

The registration of pesticides was regulated by the existing "The Pesticide Ordinance, 1971" and "The Pesticide Rules, 1985". An attempt was made to review existing pesticides found harmful to the environment and fishery for the purpose of registration/banning. There are nine pesticide formulation plants in the country. About 50 percent of the total pesticides were imported as finished product. In the Plant Protection Wing, a pesticide laboratory is available for testing the physical properties and active ingredient (AI).

The Rodent Control Campaign was organized in 1983 to create awareness among the general public regarding the menace of rats and to develop encouragement for timely control measures. Through this campaign rat damages have been reduced considerably.

3.3 Cambodia

The Plant Protection Service of the Department of Agronomy and Agricultural Land Improvement has four activities:

- i. Research on pest problem on major crops
- ii. Plant quarantine
- iii. Pesticide analysis
- iv. Pest control and extension

The first three activities have research and regulatory functions. IPM focused more on farmers through their participation in Farmer Field Schools. Plant protection activities focused mainly on three areas, that is, insect, disease, and weed management.

The pest damage on rice and especially on vegetable production was the main constraint for Cambodian farmers. Outbreaks of brown plant hopper, armyworms, grasshopper (*Locusta*) and rats were reported for rice in 1998, 1999 and 2000. Numerous insect pests, diseases and weeds were known to pose serious obstacles to crop production in Cambodia.

The Ministry of Agriculture, Forestry and Fisheries initiated the IPM Programme in 1993 after a National Workshop on “Environment and IPM”. The overall goal of the National IPM Programme was to promote food security in Cambodia by enhancing the sustainability of intensified crop production systems through the promotion of Integrated Pest and Crop Management skills at farm level. The National IPM Programme was structured under the Ministry of Agriculture, Forestry and Fisheries and the Department of Agronomy and Agricultural Land Improvement was responsible for the implementation. The programme is now working in 14 major agricultural production provinces.

In 2003 there were new subdecrees on phytosanitary inspection (No. 15 dated 13 March 2003) which were being re-enforced and re-implemented. Eighteen check points were designated at the seaport, airport and entry points located along the land border with Thailand and Viet Nam.

Nowadays, in Cambodia, no pesticides are produced. Most of the pesticides (almost 98 percent) available in local markets and used by farmers were extremely hazardous or very hazardous (class Ia and Ib, based on WHO classification).

The plant protection office was supported by Agricultural Productivity Improvement Project (APIP), NZAID, AusAid and FAO.

3.4 China

Plant protection plays key roles in sustaining agricultural production, ensuring food security, improving farmers’ income and health, and protecting the environment. The Ministry of Agriculture (MOA) takes great effort in reinforcing the infrastructures of the plant protection extension networks. Over the period 2003-2004, 103 new regional crop pest monitoring and control stations, 157 emergent control stations for migratory locust and wheat stripe rust, and three agro-airports have been constructed with a total investment of US\$ 89.47 million. The subsidy of the control of migratory locusts and pawn moth by the Central Government has been implemented for a long time, with an annual allocation of about US\$ 5 million. A recent development is the establishment of financial supports from the Central Government for the control of major pests in grain crops. The Central Government allocated US\$ 1.2 million for the control of wheat stripe rust in 2002, US\$ 6.1 million for rice borers and US\$ 1.2 million for rodent control in 2003. The total financial support for controlling wheat stripe rust, rice borers and rodents from the Central Government has been increased to US\$ 9.5 million in 2003 and US\$ 16.2 million in 2004.

Outbreaks of some major crop pests as a result of changes in cropping systems, global climate and crop varieties in the past two years has posed a great challenge to Chinese plant protection workers. The annual incidences of major crop pests (including insects, diseases, rodents and weeds) has increased to about 417 million hectare times in 2003 and 421 million hectare times in 2004. Among the most destructive and seriously occurring were migratory locusts (*Locust migratoria*) in the beach deserts along the coastlines of Chinese Bei and Yellow seas, wheat stripe rust (*Puccinia striiformis*) in northwestern China, rice stem borers (*Chilo suppressalis* and *Scirpophaga incertulas*) in the paddy fields of the Yangtze and Huai river valleys.

Regional actions were coordinated by the National Agro-technical Extension and Service Center (NATESC) of the MOA for the control of migratory pests: locusts, pawn moth, rice brown hopper, rice leaf roller, and regionally epidemical diseases: wheat stripe rust, rice blast and rice sheath blight. Annual control of major crop pests reached 434.7 million hectare times in 2003 and 465.7 million hectare times in 2004. National IPM programmes coordinated by NATESC have supported the implementation of key IPM technology in major crops and major pests. In the case of migratory locust management, biological and ecological control measures such as the use of microorganisms and the reclamation of locust habitats were extensively promoted in recent years.

Information technology such as Global Information System (GIS) and Global Positioning System (GPS) has been explored and applied in locust control. In wheat, bio-diversity strategies were used in reducing the over-summer areas of wheat stripe rust pathogens, and seed treatments with fungicides were extended on a large scale to reduce disease inoculum of the next season. In rice, IPM technology was applied to over 1.5 million hectares in 2003 and 1.67 million hectares in 2004 for the control of rice stem borers. Bio-diversity strategies were implemented on 6.67 million hectares for rice blast management. In cotton, the transgenic Bt cotton adapted IPM technology was extended to 1.3 million hectares in 2004. In corn, biological technologies such as the use of *Beauveria bassiana* for killing over-winter larvae of corn borer, and the release of *Trichogramma spp.* in fields have been extended to more than 2 million hectares since 2003. The introduction of the FAO-supported IPM programmes has resulted in shifts in China towards a farmer-centered approach through FFS.

Several governmental agencies in China co-act as NPPO; including the MOA, State Forestry Administration and General Administration of Quality Supervision, Inspection and Quarantine. A work plan was developed by the MOA to adapt relevant ISPMs and RSPMs to national standards, and relevant proposals have been approved by the State Standard Committee. According to the requirements of the ISPMs, experts were invited to conduct PRAs for revising the regulated pest list since 2002. The regulated pest list was drafted and will be further evaluated. The national phytosanitary information website is under construction. NATESC provided training to senior plant quarantine specialists. Three isolation and quarantine nurseries located in Beijing, Guangdong and Sichuan were built by the Ministry of Agriculture to detect and prevent the invasion of new quarantine pests. A pilot project on the establishment of pest free areas in apple cultivation strictly conforming to the ISPMs is being implemented in Gansu, Shannxi and Shandong.

The Regulation on Pesticide Administration was issued as Principal Law in China on 8 May 1997 by the State Council. The Regulation was revised to meet the requirements of WTO in 2003. At present, there are all kinds of formulation standards of pesticide products. Sixty-six national standards have been developed in China, including 175 industry standards and 10 000 enterprise product quality standards. Until now, 800 pesticide factories with 19 000 products were registered, and among them about 900 were imported products. About 1 000 pesticide products were registered annually in 2003 and 2004. China signed the final text of Rotterdam Convention (PIC) in October 1998 and started the ratification procedure in 2003. It was officially approved by the National People's Congress (NPC) in December 2004 and submitted to the headquarters of the United Nations on 22 March 2005. It became effective 90 days after submission according to UN regulations, and China became a formal signatory State on 20 June 2005. In order to ensure safe grain production and public health, China embarked on the replacement of highly toxic pesticides like Methamidophos, Parathion, Parathion-methyl, Monocrotophos and Phosphamidon during 2005-2007. All of them will be banned on 1st January 2007. Great efforts have been taken in the development of bio-pesticides for the replacement of highly toxic chemical pesticides as well. Over 100 types of bio-pesticides including 2 animal-sourced pesticides, 28 botanical pesticides, 16 microbial pesticides, and 50 antibiotic pesticides were registered. Annual production of bio-pesticides has increased to about 100 000 tons.

The MOA launched a specific programme to promote the reduction of pesticide usage in 2004. The programme focused on the training of farmers and field demonstrations of IPM technology to reduce pesticide applications. A monitoring network of pest resistance to pesticides has been set up, and resistances of major crop pests such as cotton bollworm, rice stem borer, cabbage diamond back moth, and citrus red spider mite were being screened by the 50 regional stations. Results of pest resistance monitoring were released regularly at an interval of two years to provide guidance for crop pest management. A national programme on resistance management of rice stem borer commenced since 2003. Nationwide farmer training on safe use of pesticides was organized by NATESC in cooperation with the CropLife China (a non government organization).

Large international cooperation programmes were implemented on rice, cotton and vegetable IPM. So far, more than 20 TOTs and 30 000 FFSs in rice have been carried out, and a total of more than 600 facilitators and 100 000 farmers were trained in rice in Sichuan, Hubei, Hunan, Henan, Anhui, Zhejiang, Guangdong Provinces. Eight ToFs and 1 061 FFSs in cotton were held in Shandong, Anhui, Hubei, Sichuan and Henan Provinces in 2000 and 2004, also 245 government, 197 farmer facilitators and over 30 000 cotton farmers were trained. In addition, there were four more projects related to IPM: evaluation of Bt cotton supported by China, UK and CAB International, the cotton bollworm control in small scale farming system by EC and ICAC, monitoring migratory rice pest by Sino-South Korea, and control of migratory locusts by Sino-Kazakhstan.

3.5 The Democratic People's Republic of Korea

The state policy requirements of the plant protection organization of DPR Korea has been to establish regular systems, rules and order in boundary inspection, quarantine, to overcome departmentalism, to ensure unity in activities of the interrelated bodies and to streamline the frontier regulations to enable rapid clearance at border points.

There have been some advantages from the merging of boundary inspection. Considerable material, financial and personnel reserves have been obtained through management of the newly merged service. In addition, there is coordination of plans and activities secured to overcome and correct abnormalities by departmentalism and irresponsibility.

One of the problems encountered has been the difficulties in sustaining administrative and technical activity as required by international standards and recommendations. Meanwhile, there is also a shortage of expertise in maintaining regular systems and rules for command, and control over the implementation of supplementary measures.

DPR Korea cultivates selected high-yielding crops every year. The outbreaks of major pests differ in intensity and time.

A series of measures to improve and strengthen IPM have been implemented:

- i. Training and technology education have been set up for integrated management of pests.
- ii. Preliminary surveys and early warning systems have been established as a part of pest control strategy.
- iii. An IPM biological control method has been applied, but has not been increased.
- iv. The introduction of “right crop on right soil” and “right crop on right period” has produced useful yield increases.

There have been no changes in the National Plant Protection Organization or its laws. However, an additional proposal on the international and regional standards was submitted. Basic data for drawing a distribution map of non-phytosanitary pest free areas will be published in one to two years. There were also suggestions to supply information collected for one to two years copied on CD to member countries. There was a lack of urgency to increase the phytosanitary capacity, and lack of opportunities for training.

The standards pesticide applied in DPR Korea promulgated in regulations on pesticide control issued as Administration Council Directive No. 78 on 12 May 1992. Over recent years, there has been increased attention on the production and introduction of biological and botanical pesticides.

DPR Korea proposes to adopt detailed procedures and methods through the “International Code of Conduct” in supplying and using pesticides, standardize the specifications of trade marks

in national and international official languages, and cooperate better in advances in cultivation of *Streptomyces avermitillis*.

3.6 Fiji Islands

The contribution of the Quarantine and Inspection Division to improve the livelihood of Fiji's rural population and alleviate poverty was through the enforcement of the monitoring and surveillance regulatory services, and the empowering of the general and traveling public to protect Fiji's natural resources (plants and animals) and its environment for agriculture and other economic/social developments.

The Division was responsible for facilitating the increase in the export of Fiji's agricultural fresh produce and processed products and the provision of monitoring and surveillance regulatory services to effectively manage the quarantine risks associated with imports into Fiji.

The review of Fiji's Plant Quarantine Act 1985 was aimed at aligning the Act with the WTO principles and SPS requirements and would be completed in 2005.

With the decline in the sugar industry and the boom in the tourism sector, Fiji's agriculture sector must be vibrant, dynamic and constantly evolving to keep pace with the increasing challenges and promotion of the transition from traditional production to commercialization of the markets. This transition required an IPM approach to control pests whilst maintaining the food safety and quality standards for the markets.

The re-organization of the Quarantine and Inspection Division encompassed the review of Legislation, cost recovery exercise, establishment of the National Biosecurity and Export Advisory Council, National Plant Protection Organization and the overall strengthening of the division in terms of facilities, staffing and resources, to effectively play its critical roles and successfully meet the challenges ahead.

3.7 India

India is an agrarian country. Plant protection involved protection of agriculture from pests and diseases through promotion of IPM, regulatory measures to prevent introduction of exotic pests/diseases, ensuring availability of safe and quality pesticides and bio-pesticides, and training of extension functionaries in plant protection and locust control in the scheduled desert areas.

The Directorate of Plant Protection, Quarantine and Storage under the Ministry of Agriculture, Government of India is the National Plant Protection Organization exclusively devoted to plant protection services in the country. In the States, Plant Protection exists from the block level upwards. At the State Headquarters, the Plant Protection work is attended to by a Joint Director (Plant Protection).

At the national level, major emphasis is given to the promotion of Integrated Pest Management to minimize the use of harmful pesticides. Under this programme, farmers were trained through FFSs to grow healthy crops and manage pests/diseases with need-based use of chemical pesticides. To encourage the bio-pesticide industry, the data requirement for registration of bio-pesticides has been simplified and commercialization of all such bio-pesticides was allowed during the period of provisional registration.

Through regulatory measures, the Government encouraged the import of elite varieties of seeds and planting materials for increasing production and productivity of various crops. All imports of plants and plant materials were based on pest risk assessments. In order to harmonize the phytosanitary activities in line with international standards, a total of 19 standards were developed

and 15 of them have already been adopted. In order to give a boost to the export and import of agricultural commodities, five laboratories with modern facilities have been established at four regional plant quarantine stations, namely, Mumbai, Kolkata, Amritsar, Chennai and one at the national plant quarantine station, New Delhi. Similar facilities were proposed at more stations.

3.8 Indonesia

Pest infestation is still an essential limiting factor for crop production in Indonesia. Although a number of efforts have been made to solve this problem, serious damages caused by pest attacks are still reported from some crop production areas.

During the past two years (2003 and 2004), rat, stem borer, brown plant hopper, tungro and blast disease were reported to cause damage on rice farms. Areas damaged by those pests were 189 193 ha in 2003 and 180 804 ha in 2004. Estimated yield losses caused by those pests were 139 875 tons in 2003 and 140 570 tons in 2004.

Bacterial leaf blight, golden snail, and locust were also reported to cause damage on rice farms. Areas damaged by bacterial leaf blight reached 25 403 ha in 2003 and 37 229 ha in 2004. Golden snail damaged young rice plants in many provinces. The area damaged was 13 227 ha in 2003 and 16 737 ha in 2004, whereas the area of locust infestation was 318 ha in 2003 and 5 383 in 2004.

Some other important crops which were also reported to suffer from serious pest attacks during the past two years were corn (damages were mainly caused by rat, powdery mildew, stem borer, army worm, pod borer, leaf blight, locust and rice seedling flies), soybean (damages were mainly caused by army worm, pod borer, rat leaf roller, bean fly and green semi-loopers), peanut (major pests reported were army worm, leaf roller, brown spot, wild pig, rat and leaf rust), mung bean (major pests reported include, bean fly, rat and army worm), cassava (major pests reported were red spider mite, rat, and brown spot), potato (major pests reported were red spider mite, rat, and brown spot), potato (major pests reported was golden cyst nematode), sweet potato (major pests reported were tuber borer, rat, and wild pig), banana (major pests reported was wilt disease), citrus (major pest reported was fruit flies), rambutan (major pest reported was leaf caterpillar), cocoa (major pest reported was cocoa pod borer) and pepper (major pest reported was basal rot disease).

To cope with the pest problem, crop protection was practiced through the application of IPM at the farm level. This IPM system included periodic and intensive monitoring of the pest population, the use of resistant varieties, the implementation of the cropping system, the use of biological control agents, and other environmentally friendly control methods. Pesticides would only be used when other control measures were considered no longer effective. In line with the IPM policy, the Government of Indonesia banned the use of 36 pesticide chemicals and restricted the use of four others.

Changes were made to the Plant Quarantine Organization recently. Under the new setup, the Agricultural Quarantine Agency (AQA) was mandated to perform the enforcement of food safety and biosafety regulations at the entry and exit points. At the national level, this work would be managed by the Information and Biosecurity Centre, a new unit under the AQA. The Centre for Animal and Plant Quarantine Techniques and Methods, a former unit under the AQA, was dissolved and its functions transferred to the Animal Quarantine Centre and Plant Quarantine Centre, respectively. With these new structural changes, AQA now consists of three centres, namely the Animal Quarantine Centre, the Plant Quarantine Centre, and the Information and Biosecurity Centre, and a Secretariat.

3.9 Lao People's Democratic Republic

In Lao PDR, plant protection played an essential role in implementing the policies of the Government, as well as that of the Ministry of Agriculture and Forestry, especially regarding the policies on clean agricultural production, poverty eradication, agricultural commodity production for export, open market for ASEAN Free Trade Area and the readiness of Lao PDR to enter the World Trade Organization.

The plant protection activities which were carried out during the past two years (2003-2005) have faced many problems and constraints such as lack of skilled personnel who are specialized in subject matters, especially in entomology, mycology and virology. The network of the plant protection at the central and local levels has also not yet been strengthened while infrastructure, especially laboratory facilities, have been considerably low. Legal work has not yet been improved, such as regulations on plant protection and plant quarantine.

Other than the above-mentioned problems and constraints, the occurrence of natural disasters was a significant problem and constraint for agriculture in Lao PDR. Every year, agricultural production was severely devastated by drought, flood and pest outbreaks. The severe outbreaks of major pests over the past two years, causing serious damage, were as follows: coffee berry borer and coconut hispine beetles (*Brontispa longissima* Gestoro).

Since 2004, the IPM project has conducted research on the prevention and control of coconut hispine beetle by using biological control such as the rearing and releasing of parasitoids (*Asecodes hispinarum*) for attacking the eggs and worms of coconut hispine beetle in two provinces (Bolikhambay and Savannaket).

Plant quarantine played an important role in the support of national agricultural production for export. In recent years, the Department of Agriculture has improved the diseases and pests database and information system for phytosanitary certification, revised the framework and functioning of international plant quarantine checking points, announced orders on the control of coffee berry borer in three southern provinces and coconut hispine beetle in Savannaket and Bolikhambay Provinces. Currently, the Law on Plant Protection and Quarantine is being prepared and supported by FAO and AusAid. In addition, the Regulation on Organic Farming Standard was submitted to the Scientific and Technology Council of the Ministry of Agriculture and Forestry.

At present, there were 100 brand names of pesticides registered with DOA, consisting of 75 products from Viet Nam and 25 from Thailand.

3.10 Malaysia

Over the past two years (2003-2004), pest infestation for most of the major agricultural crops in Malaysia has decreased and is under control without significant losses due to improvements in cultivation practices and good pest management.

IPM programmes on rice and vegetables were actively implemented by the Department of Agriculture (DOA) in collaboration with various stakeholders. In the year 2004, DOA conducted a total of 18 IPM training sessions for 471 extension officers. Over 2 500 farmers were trained on IPM practices both formally and informally during the farmers' meeting sessions.

Recently, the organizational structure of the Department of Agriculture of Malaysia has undergone a restructuring exercise, whereby the NPPO has also been restructured to meet the current trend and the changing international trade scenario. In addition, the Government promulgated a new law plant quarantine law to replace the existing one to be consistent with and aligned to the

SPS Agreement, IPPC and International Standards for Phytosanitary Measures (ISPMs). During the last two years, Malaysia has succeeded in spearheading bilateral meetings or discussions for market access with several countries which were “not approachable” before because of stringent phytosanitary requirements.

In Malaysia, the legal framework for the control and management of pesticides was already in place. Legislation related to these controls were enforced and implemented by various government agencies and were well coordinated.

Finally, Malaysia has been very active and supportive of International Cooperation Projects and Programmes for Plant Protection beginning from 2003 until today. It has successfully hosted a number of international/regional workshops and training sessions.

3.11 Myanmar

Myanmar has tried to keep abreast with other nations in the field of Plant Protection. To meet the international standards, the Plant Protection Division has undertaken its responsibilities with the cooperation of member countries of the regional organization, APPPC.

There were rodent outbreaks in the northern parts of Myanmar, but they were not of economic importance. Biological control research, working as part of Integrated Pest Management programme, was carried out for cotton, groundnut and vegetables.

FFS were established since the year 2000 for rice farmers. Expansion was planned for some plant quarantine stations in this period, and electronic certification was launched at the end of the year 2002 at the Yangon Head office and from 2004 at Tamu.

Pesticide Management works were progressing steadily, and consisted of a registration scheme, licensing programme, controlling of Persistent Organic Pollutants, disposal of toxic wastes, and also managing transboundary movement of illegal products.

3.12 Nepal

In Nepal, the Plant Protection Directorate (PPD) was designated as the NPPO and has a national mandate to minimize by 35 percent crop losses due to insect and vertebrate pests through the application of intensive technology and Integrated Pest Management. Presently, 139 officer level facilitators, 535 farmer trainers, 1 000 FFS and 27 500 farmers have already been trained to act as a catalyst in spreading the IPM message.

Some of the major pest outbreaks since 2000 were: *Nilaparvata lugens*, *Spodoptera spp.*, *Helicoverpa armigera*, *Hieroglyphus spp.* and *Pyricularia oryzae*, in sugarcane, rice and maize.

The plant protection infrastructure has been upgraded with an additional Pesticide Registration and Management Section, and the National Plant Quarantine Programme structure was upgraded with eight new additional check posts in the north and south land border.

The new Plant Protection Bill (2005) is in the process of approval to be in consistent with IPPC guidelines, Protocols and the WTO/SPS Agreement.

The National Plant Quarantine Programme (NPQP) has developed a national standard CTV/CGD survey manual (ISPM No. 6), a pest database and preliminary database of 20 tradable crops, a pest risk analysis of maize grain seed (ISPM No. 2), initial work on pest free areas (ISPM No. 4), and conducted training for plant health inspectors (RSPM No. 2).

Pesticides were registered and regulated under the Pesticide Act, 1991 and Pesticide Rules, 1993. The Act regulated the import, manufacture, sale, transport, distribution and use of pesticides to prevent risk to human beings, animals and related matters. The Act established a Pesticide Registration Agency and its functions and powers were to register pesticides by issuing import certificates, ascertaining the criteria for effective, rational and appropriate use of pesticides, gazette registered pesticides, issuance of licenses for the purpose of formulation, import or distribution of pesticides and the appointment of Pesticide Inspectors.

Nepal has already banned Persistent Organic Pollutants (POPs) pesticides (Chlordane, DDT, Dieldrin, Endrin, Aldrin, Heptachlor, Mirex and Toxaphene). The use of BHC, Lindane and Organo-Mercury Compounds: Methoxyethyl Mercury Chloride (MEMC), Ethyl Mercury Chloride (EMC), Phenyl Mercury Acetate (PMA), Phenyl Mercury Chloride (PMC) have been banned because of their persistent nature in the environment.

3.13 New Zealand

Since the last session of the APPPC, New Zealand has continued to develop and refine its biosecurity system. In May 2004, MAF confirmed its intention to restructure its Biosecurity Authority on a “points of intervention” approach based on three streams of activity – pre-clearance, post-clearance and cross-system integration. The restructuring led to the formation of Biosecurity New Zealand, which started operation on 1 November 2004. The establishment of Biosecurity New Zealand has resulted in improved coordination between the departments involved in biosecurity and the consolidation of some central government biosecurity services within MAF, which is officially the lead agency.

Biosecurity New Zealand develops policy and sets standards for the clearance of vessels, aircraft, passengers, cargo and mail. The delivery of the clearance service is provided by MAF Quarantine Service, which is an operational service within MAF.

The Biosecurity Act 1993 is the principal legislation for the exclusion, eradication and management of pests in New Zealand. The Hazardous Substances and New Organisms Act 1996, administered by the Ministry for the Environment, provides for the prevention or management of the adverse affects of new organisms entering New Zealand.

New Zealand continues to develop and review import health standards in accordance with the Biosecurity Act, based on pest risk assessment. Since the 23rd Session of the APPPC, New Zealand has developed a number of import health standards for plants and plant products.

A number of exotic organisms associated with plants were recorded as new to New Zealand by MAF for the period November 2003 – June 2005. MAF has officially responded to the presence of some of these organisms.

New Zealand is active in the development, implementation and promotion of international and regional standards. New Zealand bases its phytosanitary measures and own quarantine and operational standards on the International Standards for Phytosanitary Measures.

3.14 Pakistan

In Pakistan, the major insect pests include bollworms, white flies, aphids and jassids, cutworm, stem borers, codling moth, and fruit flies. The major diseases include rusts, foliar spots, root and crown rots, leaf curl and bunchy top viruses, powdery mildew, and malformation etc. Wild oats and Phalaris were the notorious weed. Moreover, pests in stores, yards and on trade commodities were encountered.

The plant protection methods were regulatory, cultural, mechanical and chemical. The biological and genetic control methods, although being used, remain to be exploited. IPM in cotton and rice has given good results and was expanded to cover more crops and areas. With the exception of a few acres of aerial spraying over orchards in Baluchistan, all the plant protection operations were carried out by the private sector.

The pest infestation picture was the same as in the previous years and the usual control operations continued to be taken. In the last four years, a tree decline disease has affected mango plants in Sindh and Punjab. Mite attack on dates caused heavy losses in Baluchistan Province in the last years. Red Palm weevil was becoming important in Sindh. A new strain of Cotton Leaf curl virus – popularly called “burewala strain” – rendered resistance ineffective in the current varieties. However, it was localized and was contained through integrated management. The locust threat was there, but the situation was calm.

The national IPM programme established in 2000 has executed three major initiatives from 2000 to 2004 in an integrated strategy through the Farmer Field School approach: 1) FAO-EU Regional Project “Cotton IPM Programme for Asia” (2000-2004), 2) ADB-FAO Pakistan Project “Cotton IPM Programme” (2002-2004), and 3) AGFUND-FAO Pakistan Project “Pesticide Risk Reduction for Women in Pakistan (pilot initiative within the FAO/EU Programme for “IPM in Cotton in Asia” (2002-2003). The programme trained 10 000 small-scale farmers by the end of 2004. Under the National IPM initiative approved in July 2003 and effective in 2004, at a cost of Rs.197 million for five years, IPM was being pursued on a system-wide basis rather than a commodity basis. The initiative seeks to reach 50 000 farmers by the end of 2009.

The guidelines on the main international standards for phytosanitary measures received from the IPPC from time to time were considered and adopted according to the resources available and conditions prevalent. Pakistan is committed to implementing the international and regional phytosanitary standards and collaborating in this regard at regional and international levels according to available resources. Training programmes on quarantine operations, pest risk analysis and pest eradication, and upgrading the institutions would be highly beneficial for stringent implementation of the standards.

Pesticides were registered under the Agricultural Pesticide Ordinance 1971 read with the Agricultural Pesticides (Amendment) Act 1992 and 1997. No pesticide identified by the Rotterdam Convention and Stockholm Convention was registered in Pakistan and hence could not be used. Up to the year 2002, 1 441 brands of pesticides and 1 004 products under generic names were registered. Twenty-three pesticides have been de-registered. Further reviews took place to review the situation. Agricultural Pesticides Rules for registration of manufacturing, formulation and repacking units were amended in December 2002, followed by further amendments and policy guidelines by the Cabinet in 2004. The Pesticide Act has been revised and was placed before Parliament for approval in 2005.

3.15 The Philippines

The Philippines, as a developing country, was faced with many challenges resulting from changes in the international order of global trading. The most enormous challenge was the increase in trading of goods and movement of people which increased the risk of pest introduction into the country.

The NPPO, the Bureau of Plant Industry (BPI) through the Plant Quarantine Service, was the agency mandated to regulate the movement of plants and plant products. Regulation was implemented through legislation, regulations, administrative orders and special orders issued by the Secretary of the Department of Agriculture or the Director of the BPI.

The Philippines lagged behind developed countries in the development and the upgrading of the technical and physical infrastructure for implementation, and be consistent with the different international as well as regional standards. This was due mainly to the lack of resources – budget, manpower, physical infrastructure – which has always been the primary constraint of developing countries.

During the first quarter of 2004, a major pest outbreak of corn plant hopper (*Stenocranus pacificus* Kirkaldy) was reported in the Island of Mindanao. The biology of the pest was still under study. The integrated pest management approach consisting of cultural, physical, chemical and information campaign was implemented to control the pest. *Brontispa longissima*, coconut hispine beetle, was detected during the first quarter of 2005 in some of the southern provinces in Luzon. An action plan for controlling the pest was formulated consisting of inter-island and import quarantine, use of biocontrol agent and cultural control.

The national IPM programme was implemented in major rice, corn and vegetable growing provinces. The programme consisted of training programmes for specialists, trainers and farmer field schools. It was very successful in increasing yield and income of rice and corn farmers. It also helped empower farmers technically and it succeeded in putting in place skilled and motivated extension workers and farmers acting as implementers, along with local government mobilizing resources and support in the programme areas.

The Fertilizer and Pesticide Authority was mandated to ensure the availability of fertilizer and pesticide and to regulate their production, distribution, safe use and handling with the aim of protecting human health and the environment. The pesticide regulatory policies and the implementing guidelines were in conformity with existing international standards.

The BPI through the National Pesticide Analytical Laboratory monitored pesticide residues for agricultural crops. The Philippines does not have a National Maximum Residue Limit (MRL), but follows CODEX and the ASEAN harmonized MRL.

3.16 Republic of Korea

To promote the sustainable environment-friendly agriculture at the government level, the Ministry of Agriculture and Forestry (MAF) of the Republic of Korea actively encouraged farmers to use the IPM and Integrated Nutrient Management (INM) in accordance to the environment-friendly Agriculture Promotion Act, which was revised in 2001, and devoted to the development and distribution of microbial pesticides and pest control methods using natural enemies.

The National Plant Quarantine Service (NPQS) of Korea developed the Plant Quarantine Certificate Electronic Exchange System for the purpose of preventing a loss or forgery, and submitted phytosanitary certificates to trade partners in the form of electronic documents. The NPQS also established the One-Stop Civil Application Settlement System which enabled importers to request for the inspection of imported plant and plant products and to confirm the status of inspection progress (by using internet). By establishing a prompt plant quarantine system, the NPQS saved a significant amount of time and personnel resources.

In order to cope with a new outbreak of prohibited pests and the active exchanges between the Republic of Korea and the Democratic People's Republic of Korea, the NPQS adjusted the prohibited areas of some prohibited plant and plant products, and newly opened the Goseong sub-branch office in April 2005, to be in charge of plant quarantine for the plant and plant products moved between the two countries. In addition to this, the NPQS of Korea endeavored to secure the plant quarantine circumstance, in which the harmonization with International Phytosanitary Standards could be realized without difficulties, by promoting the specialization of plant quarantine officers

through the diversification of training and education programmes for plant quarantine personnel, etc.

The Rural Development Administration monitored the occurrence of major pests all over the country by operating 149 monitoring stations of rice and 1 403 observatory posts of rice and major vegetables, and provided the data for pest control. Also, in order to sustain environment-friendly agriculture, control techniques using natural enemies for greenhouse pests were provided to farmers. The Review Standard for the Registration Test Method of Bio-Pesticide and the Registration Application Document Act was established in April 2005, and encouraged the development and registration of low-toxic, non-residual, environment-friendly bio-pesticides such as the natural extracts and sex pheromone.

In relation to the International Cooperation in Plant Protection Development Project, the Rural Development Administration is carrying out the following two projects:

- i. “UNDP/Environment-Friendly Agriculture Project (2003-2007)” aimed at the development of “Environment-Friendly and Sustainable Farming” and its settlement in the country.
- ii. “Cooperation Project on Forecasting of Rice Insect Pest (2001-2005)” aimed at the establishment of the early-detection-system against brown plant hopper (*Nilaparvata lugens*) through the bilateral cooperation between the Republic of Korea and the People’s Republic of China.

3.17 Sri Lanka

Inter-institutional cooperation among scientists and fostering of plant protection activities in the National Agricultural Research System (NARS) were strengthened through establishment of the National Committee on Plant Protection. This committee had been given the mandate of identifying national priorities on plant protection and development of inter-institutional coordination as and when required for issues related to plant protection.

As a result of regular and consistent involvement in plant protection activities, no significant pest outbreaks in major crops were reported during the period under review. Yet, plant protection activities were concentrated on a number of perennial pest problems in order to contain or manage them to avoid serious economic repercussions.

Zygogramma bicolorata, a promising biocontrol agent was airlifted from Bangalore, India to initiate a biocontrol programme for the alien invasive weed, *Parthenium hysterophorus*. Control of noxious aquatic weeds received considerable momentum. A central rearing unit for multiplication of *Cyrtobagous salviniae*, the effective biocontrol agent of salvinia, was established. *Neochetina bruchi*, an effective biocontrol agent for water hyacinth, was brought in from Thailand for mass rearing and subsequently released into aquatic habitats. Meanwhile, the alligator weed (*Alternanthera philoxeroides*) and the giant mimosa (*Mimosa pigra*), which were considered as recently introduced invasive species, were gradually invading into new habitats.

An outbreak of vegetable leaf minor, *Liriomyza huidobrensis*, reported several years back, was successfully brought under control through the introduction of the exotic biocontrol agent *Diglyphus isaea* coupled with neem-based pesticides.

Broad-scale and in-depth studies on the impact of community IPM in rice revealed that the programme returned very high dividends in terms of both yield and income with parallel reduction in insecticide use. The investment incurred for training could be recovered seven-fold within a single season.

Farmer's pest management skills and decision-making earned through the rice IPM programme have been successfully extrapolated to management of vectors of vector-borne diseases in rice ecosystems.

Implementation of ISPM No. 15 has been initiated. Pest risk assessment on carnation rooted stocks has been developed. Pest free areas to fulfill Australian requirements for exporting pineapple have been officially declared.

The government has given top priority to pesticide control and regulation. All pesticides classified under class I of the WHO classification and all persistent organic pollutants declared under the Stockholm Convention have been banned in the country. All arrangements have been finalized to ratify the Rotterdam Convention in the near future. A road map to implement the international Code of Conduct on Distribution and Use of Pesticides has been developed.

3.18 Thailand

Batocera davidis Deyrolle was the most serious longhorn stem borers in durian in the northeast and in the east. Imidacloprid, acetamiprid and thiametoxam were recommended for application. The outbreak of coconut beetle covered the whole southern region and part of the central region. The parasite, *Asecodes hispinarum* Boucek, was released. The parasites are now established in the Samui environment.

During the period 2004-2005, IPM technology was emphasized for okra, asparagus, orchid, baby corn, and cotton. Farmers realized that IPM technology could effectively control the right target pests, and was safe for consumers and the environment. The Good Agricultural Practice (GAP) Book of nine crops namely apple, citrus, grape vine, potato, onion, shallot, garlic, tomato seed and corn seed, were produced as manuals for the extension workers.

The Department of Agriculture (DOA) announced a wood packaging certification scheme to meet the ISPM No. 15 requirements. Treatment providers and wood packaging manufacturers that met requirements would be authorized to apply an internationally recognized mark to wood packaging materials produced for use in the export trade. The DOA has conducted pest risk analysis on citrus, potato, tomato seed, onion, apple, shallot, corn seed, grape, and garlic. The DOA and Bureau of Agricultural Commodity and Food Standard (ACFS) have been registered as 'IPP editors' for information exchange and setting up the national phytosanitary information website.

The DOA has merged the Hazardous Substance Act B.E. 2535 (1992) with other Laws. At present there were 96 pesticides banned and 11 pesticides under surveillance schemes. In 2004, 90.81 percent of pesticide samples met the standard while 9.19 percent were substandard. The Sub-Committees for Registration of Pesticides, under the responsibility of the DOA, appointed working groups for consideration of pesticide labels, toxicological data of pesticides, experimental designs and efficacy results, biochemical pesticides registration, microbial pesticides registration, and pesticide surveillance and evaluation. In 2004, pesticide residues frequently detected were cypermethrin, chlorpyrifos, methamidophos, endosulfan, triazophos, ethion, methyl parathion, methidathion, monocrotophos and carbendazim. The promising botanical pesticides, apart from neem, were two other plants, *Derris elliptica* and *Stemona spp.*, which are still being studied.

3.19 Tonga

Recent developments in Tonga's plant protection and quarantine area included the establishment of the National Codex Committee (NCC), National Biosafety Committee (NBC), the activities of the NCC-Imports/Exports Standards Sub-Committee and the NBC, progress in the development of

new plant health related legislation, progress and development in market access, exports and imports operations.

The NBC was established in 2003 as an interim policy/reviewing body with the Department of Environment in association with the Ministry of Agriculture, Forestry and Food (MAFF), the designated National Plant Protection Organization and other government agencies working at all ports of entry. The NBC completed the development of the National Biosafety Framework (NBF) in 2004, including the development of the national Import Risk Assessment (IRA) for the importation of Living Modified Organisms (LMOs) in compliance with the CBD/CP and ISPM No. 11 rev. 2. In addition, the Biosafety Act 2004 was completed and shall be used as the legal framework for the implementation of the NBF. MAFF under the NBF is the operational arm of the NBF basically in the conduction of IRA for the trans-boundary movement of LMOs.

The NCC was established early in 2003 as the national policy authority within MAFF supported by the Ministry of Health and is responsible for the development and implementation of national policies and programmes on food safety issues. With the technical assistance of FAO, a Food Safety bill was drafted and the national import and export guidelines and food quality assurance standards were developed, with specific guidelines and attention given to pesticide residue and labeling.

The Quarantine and Quality Management Division (QQMD) of the MAFF was the national coordinating body responsible for addressing priority plant and quarantine health issues in Tonga, and for promoting confidence in Tonga's agricultural export industries. The Agricultural Export Commodities Act 2002 was finally gazetted and the legal export guidelines prescribed will be implemented next year for export operations. The Research and Extension Division (RED) of the MAFF was the agency responsible for pest management research and pest surveillance. MAFF was still the executing authority for the national pesticide code of conduct. In 2002, the amendment of the 1988 Pesticides Act was finally gazetted in 2004.

Tonga NPPO continued to participate in international and regional phytosanitary standard setting. The QQMD was an active participant in the drafting of the ISPMs during the regional technical consultations in Fiji and Samoa in 2004 and 2005, respectively, and after the 23rd APPPC Session. Tonga has always committed to working in association with the members of the Pacific Plant Protection Organization and the Asia Pacific Plant Protection Commission in the discussion of market access issues and biosecurity operation procedures.

3.20 Viet Nam

Agriculture production continued with great success over the past two years. Plant protection work contributed significantly to the minimizing of losses caused by pests and played an important role in facilitating trade following international rules.

Viet Nam is now in the final stage of accession to WTO and has committed itself to implementing the SPS agreement immediately after acquiring membership as of February 2005; Viet Nam has submitted to the Director-General of FAO, the Instrument of Adherence to IPPC and has deposited the Instrument of Acceptance for the revised text 1997 of IPPC.

During 2004-2005, pest infestation was lower than previous years. New detections of pests recorded during 2004-2005 were: white peach scale (*Pseudaulacaspis pentagona*), bean weevil (*Acanthoscelides obtectus*) and Mexico bean weevil (*Zabrotes subfasciatus*).

The National IPM programme continued with 13 IPM-related projects which were directly implemented by the Plant Protection Department in collaboration with various stakeholders, particularly

farmers. A new programme “3 reduction 3 gain” was initiated and the first success was recorded soon after the implementation.

The plant quarantine system was further strengthened and received support from the Government and international bodies. The legislation on plant quarantine continued to be reviewed/amended in line with IPPC, WTO/SPS and other international/regional standards. Up till present, three ISPMs (1, 2 and 5) have been adopted as national standards, and three other ISPMs (4, 6 and 8) will be adopted this year. ISPM No. 15 “Guidelines for wood packaging materials” was implemented on 1 October 2004 for export commodities.

Pesticide registration and management schemes continued to improve. As of April 2005, 491 a.i. with 1 403 trade names were registered for use, 17 a.i. including 29 trade names of pesticides were restricted for use and 28 a.i. were banned, including endosulfan (banned from April 2005). Bio-pesticides were also encouraged to be used for pest control, and more than 60 products were registered.

At present, the Plant Protection Department–NPPO carries out the following international projects/programmes:

- i. IPM in rice assisted by DANIDA, Denmark Government
- ii. Phytosanitary Capacity Building Project for the Mekong Region (CLMV) Countries, second Phase assisted by NZAID, New Zealand Government
- iii. Improvement of Plant Quarantine Treatment Against Fruit Flies on Fresh Fruits 2005-2007 assisted by JICA, Japan Government
- iv. Integrating Effective Phosphine Fumigation Practices into Grain Storage System in Australia, China and Viet Nam assisted by ACIAR, Australia
- v. Various trainings/workshops under ASEAN cooperation programme

Regional and international organization reports

3.21 Japan (observer)

Japan is one of the major importing countries of agricultural products in the world. As various kinds of agricultural products from many countries were imported, there were concerns about the introduction of new alien pests. Under these circumstances, Japan’s plant quarantine authority implemented appropriate phytosanitary measures and improved the plant quarantine system to prevent the introduction of new alien pests in accordance with the WTO-SPS Agreement and relevant international standards on phytosanitary measures.

To facilitate IPM, MAFF felt it was necessary for prefectural governments to develop the indicator for farmers to easily comprehend the degree of activities related to IPM practice. To do so, MAFF established an expert group in last November and the group had been examining “the Guideline for the IPM Practice Indicators”.

The Plant Protection Station (PPS) initiated a pest risk analysis for the quarantine pests of imported wood packages to prevent such pests from being introduced into Japan. The PRA-report had been completed and published at the website of the PPS last March. (The URL is <http://www.pps.go.jp>.)

Japan:

- i. Prohibited the import of host plants grown in countries/regions where sixteen species of significant pests (e.g. Mediterranean fruit fly, etc.) were present.
- ii. Also requested growing site inspection in exporting countries in the case of the import of the host plants grown in countries/regions where ten species of significant pests (e.g. sugar beet nematode, etc.) were present.
- iii. Added 46 species of pests (e.g. onion thrips and two spotted spider mites, etc.) to non-quarantine pests last April. At present the number of non-quarantine pests is 109 species.

Agricultural pesticides could not be manufactured, imported, distributed and used without the registration granted by the Minister of Agriculture, Forestry and Fisheries under the Agricultural Chemicals Regulation Law in Japan. The inspection on human health and environmental effect, etc., for the registration was conducted by the Agricultural Chemicals Inspection Station (Incorporated Administrative Agency).

Training courses on the disinfestation technique of fruit fly were held since 1988, for plant quarantine experts of developing countries where fruit flies are present, in order to provide them up-to-date techniques. By 2004, 85 trainees from 31 countries participated in this training course. This year five trainees from five countries participated.

3.22 Pacific Plant Protection Organization (PPPO)

The PPPO reported the undertaking of two major projects. They were biosecurity, and trade support and plant health support. There was one recent major achievement, which was the availability of the online Pacific Islands Pest list database PLD launched and officiated on 24 May 2005.

3.23 Report from CropLife Asia

CropLife Asia was introduced as a regional node for CropLife International, which provided training on the safe use of products for IPM. The major emphasis was to continually improve training of farmers. CropLife Asia hoped to create a bigger impression at the next APPPC meeting upon further implementation of its programmes. Delegates could log on to www.croplifeasia.org to find out more.

3.24 International Rubber Research and Development Board (IRRDB)

The IRRDB, established in 1960, was a research and development network which brought together the natural rubber research institutes in virtually all the natural rubber producing countries. Current emphasis included research on SALB in Brazil, and had offered fellowships in its programmes. So far, the Association of Rubber Producing Countries had organized three workshops in Brazil, which had led to the strengthening of efforts in SALB research and the highlighting of the role of Plant Quarantine Officers in the rubber industry. In May 2004, the IRRDB with the cooperation of Michellin and CIRAD (French Agricultural Research Centre for International Development), organized a SALB workshop.

3.25 Impact assessment of IPM-FFS implemented by the FAO-EU IPM Programme for Cotton in Asia

Investment in rural education and farmer training has become an important component of development assistance. In the past, these activities were considered as public goods whose benefits were often taken for granted. Sometimes, cost-effectiveness analysis had been applied with the aim to maximize the effectiveness of limited public funds through targeted placement of education programmes. More recently, however, the question of investment efficiency had also been raised with farmer training activities. Hence, training was considered as an investment with an identifiable stream of benefits that occurred over time. Especially a publicly funded training programme that followed the Farmer Field School approach should be subject to rigorous analysis and scrutiny because of the widespread perception that this concept was too expensive. Thus treating an FFS programme in the context of cost-benefit analysis could help to answer the question of whether FFS was a justifiable investment from the point of view of the donor and implementing countries. Hence, the objective of this presentation was to investigate the economic efficiency of investment in training farmers under the FFS approach as undertaken by the FAO-EU IPM Programme for Cotton in Asia.

Results of the analysis indicated that the public investment of the EU to implement the IPM Programme for Cotton in Asia was economically justified. This judgment could be made with some confidence since the analysis used rather conservative assumptions. In reality, the viability of the investment might be stronger. If the national programmes continued to support IPM under their regular extension activities, farmers were likely to continue to practise IPM beyond the two years assumed in this analysis. Also, national governments might undertake additional investments in IPM-FFS resulting in further scaling-up of the programme. For example, the Government of Pakistan had committed significantly more of its budget for IPM, expressing its willingness to diffuse the programme further.

In conclusion, the analysis of the benefits and costs of the FAO-EU IPM Programme for Cotton in Asia showed that even under conservative assumptions, the investments made by the project paid off. Overall, this study showed that in order to conduct meaningful benefit-cost analysis, a well-designed impact assessment scheme was a necessary pre-condition to obtain the basic data required for such analysis. To sustain the benefits from FFS programmes, it was crucial that enabling policy conditions were in place in order to create incentives for farmers to continue IPM practices. Moreover, institutional models for up-scaling IPM and the role of FFS thereof needed to be developed. Furthermore, a long-term ex post impact analysis would be needed to verify the critical assumptions of the analysis presented here.

3.26 US Department of Agriculture-Animal and Plant Health Inspection Service (USDA-APHIS)

Mr Gary T. Greene, USDA-APHIS Regional Director, Asia and Pacific region, presented an overview of the USDA-APHIS current activities. Its roles and responsibilities in the region primarily dealt with trade facilitation, management of pre-clearance programmes, market access facilitation, liaison with the US-based staff to address SPS related issues, SPS capacity building, eradication programmes and other ad-hoc activities involving animal and plant health issues.

Contact information was provided from the six APHIS area offices in the region: Australia, China, Japan, the Philippines, Republic of Korea, and the newly-established area office in Taiwan Province of China. APHIS is anticipating future expansion by opening area offices in Beijing and Shanghai, China, Thailand and New Delhi, India.

APHIS highlighted the US import regulation on Wood Packaging Materials (WPM) which was the most recent issue involving trade between the US and its trading partners within Asia and the Pacific region. It emphasized the USDA announcement that all solid wood entering the United States as of 16 September 2005 must meet the new IPPC, ISPM No. 15 standard. Please visit PPQ homepage: www.aphis.usda.gov/ppq/swp/index.html for more information.

4. Discussion on the approval of two Regional Standards for Phytosanitary Measures

Dr John Hedley, Chairperson of the Standing Committee on Plant Quarantine, presented two RSPMs for adoption. He provided an account of their development. Dr Hedley noted the similarities of the draft RSPM No. 3 with an ISPM on the same subject and ground-breaking nature of RSPM No. 4.

4.1 APPPC RSPM No. 3: Requirements for the Establishment and Maintenance of Pest Free Areas for Tephritid Fruit Flies

The Chairperson informed the Commission of the several changes made to the draft. RSPM No. 3 was then adopted without further changes. The full text of RSPM No. 3 is in Annex II.

4.2 APPPC RSPM No. 4: Guidelines for the Confirmation of Non-Host Status of Fruit and Vegetables to Tephritid Fruit Flies

The Chairperson informed the Commission of the several changes made to the draft. After some deliberation, it was agreed that the last sentence of Section 4, first paragraph, line 4 "*The control replicate should be punctured as per Section 3.4 whilst using the same experimental conditions*" be removed. RSPM No. 4 was then adopted. The full text of RSPM No. 4 is in Annex III.

The delegates were informed that should there be any conflict arising between RSPMs and ISPMs, international standards should take precedence.

5. Progress in implementation of the provisions of the International Code of Conduct on the Distribution and Use of Pesticides; and the Convention on the Prior Informed Consent (PIC)

Dr Niek Van der Graaff, Chief of Plant Protection Service, FAO Rome provided an update on the Rotterdam Convention. The Convention came into force on 24 February 2004. The first conference of Parties was held in September 2004. The meeting decided the Secretariat would be a joint one presided over by FAO (dealing primarily with pesticides) and UNEP (dealing with industrial chemicals). The Parties agreed to include 14 additional chemicals making a total of 41. A chemical review committee was established, with membership based on geographic distribution, to make recommendations to the COP on which chemicals may be introduced into the system.

The second meeting would be held in Rome to discuss compliance and the work programme, and budget. The number of parties had increased from 60 to 98.

5.1 Discussions of the presentation

To a question raised concerning the relationship of the PIC to the Montreal Protocol, the delegates were informed that the only area where there might be an overlap of interest was the usage of methyl bromide. At present, exemption from the Montreal Protocol was still permitted for

pre-shipment and quarantine purposes. The delegates were advised not to examine any other substance which was already being handled in another convention.

6. Overview of the International Plant Protection Convention's (IPPC) activities including ICPM-7

Dr Niek Van der Graaff, Chief of Plant Protection Service, FAO Rome reviewed the purpose of the IPPC and noted its relationship with other relevant organizations. He noted that the IPPC had 139 contracting parties and that 93 of these had accepted the 1997 amendments. This meant that the 1997 revised convention would come into force on 2 October 2005. Dr Van der Graaff then noted the interim measures adopted in 1997, the functions of the ICPM and the bodies established by the ICPM. Some of the implications of the change from an ICPM to the Commission on Phytosanitary Measures were described.

Dr Van der Graaff discussed the standard setting programme describing the changes to the system made by ICPM 7 and the fast track procedure. The standards recently adopted were listed along with those in the consultation process at the moment. The priorities for standards were noted from the ICPM members and those proposed by the SPS Committee of the WTO. The work programmes of the IPP and technical assistance were outlined.

In the following discussion, it was noted that methyl bromide was being used as treatment of wood packaging materials in some countries. The delegates were informed that the Forest Quarantine Research Group and the relevant Technical Panel looked into the feasibility of new alternatives by studying new data that became available from time to time. An alternative treatment might gain approval should research data become supportive.

The delegates were informed that there was a current focus group looking at the terms of reference for the international recognition of pest free areas and areas of low pest prevalence. It also considered innovative ways for funding the IPPC. Among the proposals were mandatory assessed and voluntary contributions, third-party contributions, or surcharges levied on the issuance of phytosanitary certificates.

7. Progress in implementation of plant quarantine in Asia and the Pacific region

Dr Hedley briefly noted some of the developments regarding ISPMs and the ICPM. He mentioned that the NRT of the IPPC would soon be coming into force. Activities of the past biennium were noted:

- i. The regional workshop on draft ISPMs in Kuala Lumpur 2003 and Bangkok 2004
- ii. PCE training workshop in 2004 and 2005, Kuala Lumpur
- iii. The development of RSPM No. 3 and RSPM No. 4 (specifications, working groups, standards committee, consultation)
- iv. Regional IPP pilot workshop, followed by regional workshops, Kuala Lumpur 2005

Regarding the Regional Workshop on the International Standards, Pest Risk Analysis and Phytosanitary Capacity Evaluation (PCE), the delegates were reminded of their obligations and follow-up actions required. Information pertaining to the workshops should be sent to Ms Asna Booty Othman in Kuala Lumpur, NPPO Malaysia by the end of October 2005, to enable the tabulation of proposals for the funding of future projects.

RSPM No. 3 and RSPM No. 4 were adopted under agenda 4.

8. Progress in integrated pest management in the region

Dr Iftikhar Ahmad, Deputy Director General of the Pakistan Agricultural Research Council presented the progress in Integrated Pest Management in the region. The full report is attached as Annex IV.

8.1 Discussions on the presentation

8.1.1 Extension of IPM projects

Delegates agreed that there was a need to extend IPM projects to south Asian and other countries. For existing projects, there would be a need to proceed to a second phase, where refinement of parameters such as the review of pesticides as being an agriculture input should be put into place. There was also a suggestion to include Hazard Analysis at Critical Control Point (HACCP) for quality control and the monitoring of migratory pests on a regional basis to be included in IPM.

8.1.2 Curriculum for IPM of cotton

The delegates were informed that a curriculum for IPM of cotton was already developed and tested in 1996. However, this curriculum would vary with regional differences, and would be expected to change continuously.

8.2 Presentation on role of IPM in good agricultural practices

Ms Patcharee Menakanit of the Pest Management Division, Bureau of the Agricultural Product Development, Department of Agricultural Extension, Thailand, presented a paper on the role of IPM in good agricultural practices.

9. Progress in agricultural pesticide management in Asia and the Pacific region

Dr Gamini Manuweera, Registrar of Pesticides, Department of Agriculture, Sri Lanka presented a paper on the progress in agricultural pesticide management in Asia and the Pacific region. The full report is attached as Annex V.

10. APPPC Standing Committee meetings on IPM, Plant Quarantine and Pesticide Management

10.1 Standing Committee on Plant Quarantine

10.1.1 Attendance

The meeting was attended by following delegates:

| | |
|-------------------|--|
| Australia | : Dr Brian Stynes, Mr Robert Schwarz |
| Bangladesh | : Mr Md. Abdul Awal |
| Cambodia | : Mr Heng Chhun Hy |
| China | : Ms Wu Xiaoling, Mr Wang Yuxi, Mr Wang Yiyu |
| FAO | : Mr PiaoYongfan, Dr Niek Van der Graff |

| | |
|--------------------------|---|
| Fiji | : Mr Hiagi Munivai Foraete |
| Japan | : Mr Hitoshi Ono |
| India | : Dr P.S. Chandurkar |
| Indonesia | : Mr Suparno SA, Mr Arfany Bastony |
| Lao PDR | : Mr Khennavong Vilaysouk |
| Malaysia | : Ms Wan Normah Wan Ismail, : Mr Michael Ranges Nyangob, Mr Yip Kin San, : Mr Ho Haw Leng |
| Nepal | : Ms Nabin C.T.D. Shrestha |
| New Zealand | : Dr John Hedley, Mr Gavin Edwards |
| Philippines | : Ms Merle B. Palacpac |
| Republic of Korea | : Mr Jin-won Hwang |
| Thailand | : Mr Udorn Unahawutti, Ms Puangpaka Komson, : Ms Oratai Eurtrakool, Mr Sawai Aunsonti, : Mr Surapol Yinasawapun, Dr Walaikorn Rattanadechakul |
| Tonga | : Mr Sione Foliaki |

10.1.2 Appointment of the Chairperson

The meeting was chaired by Dr John Hedley.

10.1.3 Programme of activities for the next two years

The meeting concentrated on considering items for the next biennial work programme.

10.1.3.1 Regional International Standards for Phytosanitary Measures

The Committee reviewed the lists of topics and priorities prepared by the ICPM and the APPPC ISPM review meeting. The group then prepared a list of possible topics for the APPPC priority list. These were discussed and then the group selected two/possibly three for recommendation to the session for the work programme for the next biennium. The list of possible topics included the following:

- i. Specific standard on a group of pests, e.g. scales
- ii. Specific standard, guidelines for micro-propagation material (tissue culture)
- iii. Nematodes – detection in plant products
- iv. Implementation of Plant Quarantine at Border Crossings
- v. Emergency Measures
- vi. Risks associated with non-agricultural items

The two topics selected were Specific Standard on a Group of Pests e.g. scales, and Emergency Measures. If additional resources are available for the construction of a third RSPM, the third priority would be Specific Standard, Guidelines for Micro-propagation Material (tissue culture). Australia

has agreed to input resources into the standard on scales. China will draft the specification for the standard on Emergency Measures.

10.1.3.2 Review of ISPMs

It is expected that a meeting to review ISPMs will take place in the next biennium. It is likely that monies will be available through the IPPC Secretariat.

10.1.3.3 Training assistance

The Executive Secretary will arrange further meetings on PRA, the PCE or the IPP if funds become available.

10.1.3.4 Projects

The Executive Secretary will investigate the possibility of working the ASEAN Plant Health Programme.

10.1.3.5 SALB

The Standing Committee noted the progress with the PRA for South American Leaf Blight (SALB). A meeting is to be held in January to examine the latest information, collected by the expert who visited South America, for input into the SALB PRA. If possible, work on the production of the SALB standard will begin. It was noted that the standard would include training programmes for officials regarding detection, identification and control of the organism.

10.1.4 Discussions on the presentation

The Convention agreed that there was a need to give more attention to rubber, by improving training facilities and opportunities, as well as follow-ups to standards relating to SALB. Delegates were also informed that emergency procedures of SPS apply to all crops, including rubber.

10.2 Standing Committee on Pesticide Management

The meeting was chaired by Dr Gamini Manuweera.

10.2.1 Members of the meeting:

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|------------------|---|
| China | : Mrs Yang Yong Zhen |
| FAO | : Dr Yun Zhou |
| India | : Mr Amand Shah |
| Malaysia | : Mr Halimi Mahmud |
| Sri Lanka | : Dr Gamini Manuweera |
| Thailand | : Mr Arunpol Payakpan, Mr Chaiyos Supatanakul : Dr Rattanaporn Promsattha, Ms Krisana Chutpong : Ms Lamai Chugiatwatana |
| Viet Nam | : Mr Dam Quoc Tru |

10.2.2 Recommendations of the meeting

The Committee referred to the recommendations made at the 23rd APPPC on pesticide management and recognized that there were a number of important activities that needed to be refocused on during the next two years with more specific thrust areas. Among the major issues discussed included (not in priority order):

- i. Poor progress on the initiatives of the efforts on harmonization of pesticide regulatory systems, standards, data requirements and protocols etc.
- ii. Lack of information exchange among the pesticide regulatory authorities of member countries for efficient national, bilateral and multilateral pesticide risk reduction programmes.
- iii. Further commitments on matters pertaining to ratification and implementation of the Rotterdam Convention in order to enjoy full benefits.
- iv. Difficulties in promotion of biopesticides among farmers.
- v. Disposal of obsolete pesticides.

The Committee was of the view that the activities to be identified for the next two years should be more pragmatic and focused, with achievable goals within the stipulated time period. Accordingly, the following recommendations were made as priority areas:

- i. Ratification Rotterdam Convention
 - a) Member countries should report to the RC Secretariat with a copy to the APPPC Secretariat on progress and difficulties, constraints, if any, in ratification of the Convention as soon as possible, in order to identify areas for support, if any.
 - b) Member countries should organize national consultative meetings with the relevant stakeholders to initiate the ratification process and individual countries should consult with the RC Secretariat for technical assistance, if required.
- ii. Implementation of the Rotterdam Convention
 - a) Member countries should report to the RC Secretariat with a copy to APPPC Secretariat on progress and difficulties, constraints, if any, in implementation of the convention obligations (e.g. import responses, notification of regulatory action).
 - b) Promote development of NIP and/or explore the possibilities of making use of existing inter agency coordination mechanisms for efficient implementation of the programme and include the RC in regular national meetings of the Pesticide Committee or similar bodies.
- iii. Harmonization and information exchange of regulatory activities
 - a) FAO should consider prioritizing financial assistance to sub-regional activities pertaining to the topic.
 - b) National pesticide regulatory procedures and data requirements to be linked through the APPPC website; in countries where there is still no national website carrying the above information, soft copies should be sent to the Chairperson of the Standing Committee to incorporate into the APPPC website.
- iv. Extension of TA programmes of FAO on management of obsolete pesticides in countries in the region should be extended.

- v. The country representatives to the meetings of international instruments and conventions should ensure dialogue prior to the meeting for coordinated efforts in areas of common interest to the countries of the region.
- vi. Some of the member countries expressed their willingness to explore the possibility of hosting or assisting any inter sessional meetings or programmes (bilateral, multilateral) to facilitate the above initiatives if need arises.

10.2.3 Discussions of the presentation

10.2.3.1 Pesticide Technical Cooperation Programme

The delegates were informed of the need to accelerate the pesticide technical cooperation programmes, stressing the key element of regulation enforcement.

10.2.3.2 Guidelines for the disposal of pesticides

FAO clarified that guidelines for the disposal of pesticides had already been published, and available on the FAO website.

10.2.3.3 Technical assistance for ratification

The representative from India offered technical assistance to other member countries of APPPC in connection with ratification of the Rotterdam Convention. FAO welcomed any form of assistance, and was willing to work out the details with the interested parties.

10.3 Standing Committee on IPM

The meeting was chaired by Dr Iftikhar Ahmad.

10.3.1 Attendance:

The meeting was attended by the following:

| | |
|------------------|--|
| China | : Dr Xia Jingyuan, Mr Zhao Lijun |
| Indonesia | : Mr Halomoan Lumbantobing |
| Myanmar | : Ms Hnin Hnin Naing |
| Pakistan | : Dr Iftikhar Ahmad |
| Srilanka | : Dr A.A.L. Amarasinghe |
| Thailand | : Mr Paisan Ratanasatien, Dr Turnjit Sattayavirut, : Ms Srisurang Likhitekaraj, Ms Chanpen Prakongvongs, : Ms Patcharee Menakanit, Ms Watchreeporn Orar, : Ms Lawan Jeerapong, Ms Varee Chareonpol, : Ms Areepan Upanisakorn, Ms Sirada Timprasert |

10.3.2 Appointment of the Chairperson and Rapporteur

Mr Paisan Ratanasatien from Thailand was appointed as Chairperson of the Standing Committee on IPM. Dr A.A.L. Amarasinghe from Sri Lanka was appointed as Rapporteur.

10.3.3 Review of the progress in Integrated Pest Management

The country delegates highlighted the key achievements in IPM, the details of which had already been presented in the general meeting under agenda item 8.

Delegates also reviewed the progress made against the recommendations proposed in the work plan of 2003-2005 of the 23rd Session of the APPPC. In most countries, the achievements had been in line with the proposed work plan of the 23rd APPPC.

The delegates, while reviewing the past efforts, recognized the achievements of the IPM implementation in the APPPC region using the FFS approach and pointed out various challenges for the region:

- i. Safe food
- ii. Increased farmers' income
- iii. Protection of the environment
- iv. Developing guidelines for applicability of FFS-IPM approach to all main cropping systems
- v. Regional research on the role of GMOs in IPM
- vi. Linking IPM and Good Agricultural Practices (GAP)
- vii. IPM for invasive species
- viii. Awareness about IPM and GAP
- ix. Increased use of Biological Control in IPM and GAP
- x. GAP Standards
- xi. Regional cooperation on monitoring and management of major migratory pests

10.3.4 Proposed work plan (2005-2007)

The Group recommended:

- i. Developing programmes in participating countries to link IPM and GAP
- ii. Research on GAP Standards according to relevant needs of countries in the region
- iii. Organization of yearly workshop by APPPC Secretariat to share experiences of implementing GAP in member countries
- iv. Approval of the FAO-ASEAN and FAO-SAARC initiative on Farmer Education in IPM and GAP
- v. Introducing HACCP in horticulture
- vi. Evaluation of the impact of GMOs

10.3.5 Discussions on the presentation

10.3.5.1 Position of transgenic crops in APPPC

The Convention duly noted the growing interest in transgenic crops, and would study its position in APPPC.

10.3.5.2 Regional Standards for GAP

The delegates were informed that there was no forum to establish regional standards for GAP.

10.4 The APPPC programme of work for 2006-2007

The APPPC programme of work for 2006-2007 was presented by Mr Piao Yongfan, Executive Secretary of the APPPC.

10.4.1 Discussion and identification of the programme of work for 2006 to 2007 and its financial resources

Three Standing Committees of the APPPC proposed a tentative work plan for the next two years based on group discussions. However, as the amended Article of Agreement for establishing the mandatory financial contributions by the members of the Commission has still not entered into force, the Secretariat of the Commission may have to make adjustments in line with the FAO regular programme budget, in the implementation of the following proposed programme of work for 2006 to 2007:

The secretariat will emphasize the following activities:

- i. Regional Standard Setting including a meeting of the APPPC Standard Committee.
- ii. Continue to carry out the Regional TCP “Pest Risk Analysis of South American Leaf Blight of Rubber”. Effort for formation and implementation of other TCP projects during 2006-2007 will be made.
- iii. Further improvement and enhancement of the plant protection information exchange among member countries through the IPP.

The following meetings have been identified and will be held subject to finance being available and according to the priorities identified by the Commission.

10.4.1.1 Consultations and meetings

- i. Expert consultation on Draft Regional Standards for Phytosanitary Measures, in 2006, Bangkok, Thailand
- ii. APPPC Standard Committee meeting on review of the draft RSPMs in 2007
- iii. Regional meeting of review on Draft ISPMs (Seventh and Eighth in 2006-2007)
- iv. Expert consultation on Pest Management in 2006
- v. Workshop on Pesticide Management in 2006
- vi. 25th Biennial Session of APPPC in 2007

10.4.1.2 Training programme/workshops

- i. Workshop on Pest Risk Analysis for South American Leaf Blight (SALB) of Rubber supported by Regional TCP project in 2006
- ii. Training on Implementation of ISPM No.15 will be explored by seeking external budget from developed countries or other donor agencies and FAO’s relevant project if appropriate
- iii. Other training programmes according to member countries requirements in the field of plant protection based on availability of budget source

10.4.1.3 Assist in carrying out activities of the various working groups of the APPPC's Standing Committees based on available resources

Once the Commission has its own financial resources, it may wish to use the funds to carry out more development support activities of the Standing Committees. There is urgent need to accept the amended Article of the Agreement for establishing the mandatory financial contribution by the member states of the Commission.

10.4.2 General discussions of the presentation

The convention noted the need for better interactions among member countries to enable the working of the programmes. On the continual demand for funding and assistance, the convention agreed that there should be explorative efforts to secure financing.

10.5 Side event: Presentations of the Rotterdam Convention Secretariat

Three papers were presented and discussed:

- i. Presentation by the Rotterdam Convention Secretariat on how the RC addresses countries' needs and real problems in pesticide management
- ii. Presentation by Sri Lanka on the benefits of the Rotterdam Convention from an importing Party's perspective and the mobilizing of stakeholders to initiate the ratification process
- iii. Presentation by Chinese DNA on the role of the Rotterdam Convention in the development of national policy on pesticide management, particularly from an exporting Party's perspective

11. Date and venue of the twenty-fifth session

The Session agreed that the twenty-fifth session in 2007 will be hosted by China, and proposed that the twenty-sixth Session be hosted by India in 2009.

12. Other business

12.1 Special group for discussion on financial support

The report on the discussion was presented by Dr John Hedley. The group would look into the strategic plan and business plan for the APPPC over the next five years in the area of finance and work programme, including a road map of activities. The details would be finalized in a meeting in New Delhi, to be financed by the Indian Government. The plans would be distributed to member countries for comments, and forwarded to the IPPC Secretariat for endorsement.

13. Adoption of the report

The report was adopted.

14. Closing of the Session

The Chairperson thanked all the delegates and the organizing committee for making the meeting a success and closed the Session.

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**REGIONAL STANDARDS
FOR PHYTOSANITARY MEASURES**

**REQUIREMENTS FOR THE ESTABLISHMENT
AND MAINTENANCE OF
PEST FREE AREAS FOR TEPHRITID FRUIT FLIES**

APPPC RSPM No. 3

INTRODUCTION

SCOPE

This standard provides guidelines for the establishment, maintenance and verification of pest free areas for tephritid fruit flies. It does not provide a description of the components required for the establishment and maintenance of pest free places of production or pest free production sites for fruit flies.

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DEFINITIONS AND ABBREVIATIONS

| | |
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| buffer zone | An area in which a specific pest does not occur or occurs at a low level and is officially controlled, that either encloses or is adjacent to an infested area, an infested place of production, an area of low pest prevalence, a pest free area, a pest free place of production or a pest free production site, and in which phytosanitary measures are taken to prevent spread of the pest [ISPM No. 10, 1999; revised ISPM No. 22, 2005] |
| delimiting survey | Survey conducted to establish the boundaries of an area considered to be infested by or free from a pest. (FAO, 2004). |
| detection* | The discovery of a specimen of the target pest. |
| emergency action | A prompt phytosanitary action undertaken in a new or unexpected phytosanitary situation. [ICPM, 2001] |
| FAO | Food and Agriculture Organization. |
| FF-PFA* | Acronym for fruit fly pest free area |
| incursion | An isolated population of a pest recently detected in an area, not known to be established, but expected to survive for the immediate future [ICPM, 2003] |
| IPPC | International Plant Protection Convention, as deposited in 1951 with FAO in Rome and as subsequently amended. [FAO, 1990; revised ICPM, 2001] |
| NAPPO | North American Plant Protection Organization. (NAPPO, 2004). |
| National Plant Protection Organization | Official service established by a government to discharge the functions specified by the IPPC. [FAO, 1990; formerly Plant Protection Organization (National)] |
| NPPO | Acronym for National Plant Protection Organisation |
| official | Established, authorized or performed by a National Plant Protection Organization. [FAO, 1990] |
| outbreak | A recently detected pest population, including an incursion, or a sudden significant increase of an established population in an area. [FAO, 1995; revised ICPM, 2003] |
| Pest Free Area | An area in which a specific pest does not occur as demonstrated by scientific evidence and in which, where appropriate, this condition is being officially maintained. [FAO, 1995] |

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| pest free place of production | Place of production in which a specific pest does not occur as demonstrated by scientific evidence and in which, where appropriate, this condition is being officially maintained for a defined period. [ISPM No. 10, 1999] |
| pest free production site | A defined portion of a place of production in which a specific pest does not occur as demonstrated by scientific evidence and in which, where appropriate, this condition is being officially maintained for a defined period and that is managed as a separate unit in the same way as a pest free place of production. [ISPM No. 10, 1999] |
| phytosanitary action | An official operation, such as inspection, testing, surveillance or treatment, undertaken to implement phytosanitary measures [ICPM, 2001; revised ICPM, 2005] |
| phytosanitary measure (agreed interpretation) | Any legislation, regulation or official procedure having the purpose to prevent the introduction and/or spread of quarantine pests, or to limit the economic impact of regulated non-quarantine pests [FAO, 1995; revised IPPC, 1997; ISPM, 2002] <i>The agreed interpretation of the term phytosanitary measure counts for the relationship of phytosanitary measures to regulated non-quarantine pests. This relationship is adequately reflected in the definition found in Article II of the IPPC (1997).</i> |
| phytosanitary procedure | Any official method for implementing phytosanitary measures including the performance of inspections, tests, surveillance or treatments in connection with regulated pests [FAO, 1990; revised FAO, 1995; CEPM, 1999; ICPM, 2001; ICPM, 2005] |
| phytosanitary regulation | Official rule to prevent the introduction and/or spread of quarantine pests, or to limit the economic impact of regulated non-quarantine pests, including establishment of procedures for phytosanitary certification. [FAO, 1990; revised FAO, 1995; CEPM, 1999; ICPM, 2001] |
| quality assurance* | the activities focused on providing confidence in fulfilling quality requirements within the coordinated activities of an organization that directs and controls quality (quality management) |
| quarantine pest | A pest of potential economic importance to the area endangered thereby and not yet present there, or present but not widely distributed and being officially controlled. [FAO, 1990; revised FAO, 1995; IPPC, 1997] |
| regulated article | Any plant, plant product, storage place, packaging, conveyance, container, soil and any other organism, object or material capable of harbouring or spreading pests, deemed to require phytosanitary measures, particularly where international transportation is involved. [FAO, 1990; revised FAO, 1995; IPPC, 1997] |
| standard | Document established by consensus and approved by a recognized body that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context. [FAO, 1995; ISO/IEC GUIDE 2:1991 definition] |

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| surveillance | An official process that collects and records data on pest occurrence or absence by survey, monitoring or other procedures. [CEPM, 1996] |
| survey | An official procedure conducted over a defined period of time to determine the characteristics of a pest population or to determine which species occur in an area [FAO, 1990; revised CEPM, 1996] |
| treatment | Official procedure for the killing, inactivation or removal of pests, or for rendering pests infertile or for devitalization [This reference does not exist. It should give the source as indicated in the glossary 2005, i.e. [FAO, 1990, revised FAO, 1995; ISPM No. 15, 2002; ISPM No. 18, 2003; ICPM, 2005] ISPM Pub. No. 5, 2005] |

* Indicates terms which are not included in ISPM No. 5 Glossary of Phytosanitary terms.

OUTLINE OF REQUIREMENTS

The general requirements to be considered in the establishment of a fruit fly pest free area (FF-PFA) include: consideration of the need for a buffer zone; preparation of a public awareness programme; identification of resources; and administrative elements of the system (development of documentation and review systems, record keeping and quality assurance programme).

The major elements of the FF-PFA are: establishment of the FF-PFA; verification and declaration of the FF-PFA; and maintenance of the FF-PFA. These elements include the surveillance operational activities of trapping and fruit sampling, confirmatory identification of any fruit fly species detected, and regulatory controls on the movement of host material or regulated articles.

Additional points that need to be considered include: planning for corrective action should target fruit flies be detected within the FF-PFA; change in the status of all or part of the FF-PFA; and reinstatement (where possible) of all or part of the FF-PFA and establishment of specific trading arrangements if required.

GENERAL REQUIREMENTS

1. Background

Although ISPM No. 4 (*Requirements for the establishment of pest free areas*) provides the general guidance on the establishment of PFAs, the need for additional guidance on establishment and maintenance of PFAs for fruit flies was recognized. This standard describes the requirements for establishing and maintaining a FF-PFA. The target pests for this standard include insects of the order Diptera, family Tephritidae.

The establishment of a FF-PFA and its recognition by trading partners implies that no other phytosanitary measures are required for the target species of fruit fly for host commodities sourced from within the FF-PFA, if the phytosanitary integrity of the host commodity is maintained throughout harvest, sorting, storage, packaging and transport.

2. General Requirements

A pest free area is “an area in which a specific pest does not occur as demonstrated by scientific evidence and in which, where appropriate, this condition is being officially maintained” (see ISPM No. 4).

Fruit fly pest free areas may occur naturally or following the successful implementation of pest eradication programmes (see ISPM No. 9: *Pest Eradication programmes*). The decision to establish a FF-PFA is made by NPPOs based on technical and socio-economic feasibility.

Technical factors to consider in determining the feasibility of establishing a FF-PFA in a country may include components such as: pest population levels, geographic isolation, climate, geography and availability and feasibility of methods for pest eradication. All the procedures used for establishment and maintenance of the FF-PFA should be documented, audited and endorsed by the NPPO.

2.1 Buffer zone

In areas where geographic isolation is not considered adequate to prevent reinfestation of a FF-PFA or where there are no other means of preventing fruit fly movement to the FF-PFA, a buffer zone will need to be established. Some of the factors which should be considered in the establishment of a buffer zone include:

- pest suppression techniques which may be used to reduce the fruit fly population including: selective insecticide bait spraying, sterile insect techniques, male annihilation technique, biological control, mechanical control;
- the target fruit fly species and its biology, host availability, cropping systems, natural vegetation including adjacent forest or natural ecosystems, climatic conditions;
- the geographic features of the area under consideration; and
- the proximity of large urban areas that may make the control of fruit fly species of economic concern difficult and/or costly.

2.2 Identification

NPPOs should have in place adequate infrastructure and trained personnel available to identify captured specimens of the species in an expeditious manner. Where expertise is not available within the country the NPPO may identify a competent authority in another country to undertake identifications.

2.3 Public awareness

An important factor in the establishment and maintenance of FF-PFAs is the support and participation of the people living within the FF-PFA, individuals that may travel to or through the area, and other parties with interests in the area. The FF-PFA status can be maintained only if there is no introduction of target species through the movement of infested fruit. The public and stakeholders should be informed of the importance of establishing and maintaining the pest free status of the area. This awareness may include information on exotic species of quarantine concern. The programme helps to achieve compliance with the phytosanitary measures for the FF-PFA. It may include the following elements:

- permanent or temporary roadblocks in selected areas;
- posting signs at FF-PFA entry points and transit corridors;
- fruit fly host commodity disposal bins at the borders of FF-PFAs or buffer zones, awareness brochures;
- public information campaigns;

- systems to allow certified fruit fly free fruit movement within the FF-PFA; and
- penalties for non-compliance with FF-PFA requirements.

2.4 Documentation and review

All procedures used in the establishment and maintenance of a FF-PFA should be adequately documented. The procedures should be reviewed and updated regularly. Any corrective measures implemented to refine or re-establish a FF-PFA should also be documented.

2.5 Record keeping

Records of all procedures (such as surveillance, detection and response activities) undertaken in the establishment and maintenance of a FF-PFA should be retained for as long as possible. Such records may be used to build confidence in the systems implemented and should be made available to trading partners on request.

2.6 Quality assurance

The FF-PFA programme, including the surveillance procedures (both trapping and fruit sampling when used), regulatory control, and corrective actions should comply with the documented and approved procedures. The effectiveness of the programme should be monitored by the NPPO and/or trading partner, as appropriate, using quality assurance procedures.

The procedures should also record formal delegations of responsibilities to key personnel, for example:

- management representative – officer with defined authority and responsibility to ensure the systems/procedures are implemented and maintained appropriately;
- nominated reference entomologist – officer with responsibility for the authoritative identification of fruit flies to species level; and
- other formal delegations where appropriate.

All operational activities should strictly follow documented and approved procedures, and will be subjected to both internal and trading partner audit as appropriate.

3. Specific Requirements

3.1 Determination of the FF-PFA

The following characteristics of a FF-PFA should be considered in the determination of a specific area:

- target fruit fly species and their distribution within the country;
- commercial and non-commercial host species;
- geographical area (detailed maps showing the boundaries, natural barriers, entry points and host locations in the area);
- any existing regulations which may affect fruit movement;
- climatic data (rainfall, relative humidity and temperature); and
- buffer zones (where necessary).

3.2 Establishment of the FF-PFA

The following should be developed and implemented:

- surveillance activities for establishment of the FF-PFA;
- regulatory controls on movement of regulated articles within and in transit through the FF-PFA and buffer zone (if required);
- the establishment of buffer zones where necessary.

3.2.1 Surveillance activities for establishment of the FF-PFA

A regular survey programme for fruit flies of economic concern should be established and implemented. Generally it is considered that trapping, using an established trapping network throughout the FF-PFA, is sufficient to determine fruit fly absence or presence in an area. Should a population of fruit flies be detected during the establishment phase using lure-responsive trapping methods, fruit sampling may be used to provide additional information regarding the level of infestation and location of the infestation.

For species that are non-responsive to specific pheromone lures, fruit sampling may be used during the establishment phase of a FF-PFA. However, non-pheromone lure based traps (i.e. food-based traps) are generally used for large scale monitoring of FF-PFAs where non-pheromone lure responsive fruit flies are to be monitored. Should a population of non-pheromone lure responsive fruit flies be detected during the establishment phase, fruit sampling may be used to provide additional information regarding the level of infestation and location of the infestation.

Surveillance should be undertaken for at least 12 months in the FF-PFA, or a period agreed to by consultation with prospective trading partners, using specific trapping and fruit sampling procedures throughout the potential FF-PFA. Trapping and sampling procedures should be applied to both commercial and non-commercial host material. These procedures are used to demonstrate that the pest is not present in the potential FF-PFA. There should be no detections (adult or immature stages) of the target species during the survey period. Trapping and/or fruit sampling techniques adopted should follow established protocols for the target species of concern.

3.2.1.1 *Trapping procedures*

This section contains general information on trapping procedures. There are long-established trapping systems that have been used to survey fruit fly populations.

Trap type and lures

Traps used for fruit flies depend on the target species, the season and the nature of the attractant. The most widely used traps contain para-pheromone or pheromone lures that are male specific. Lures for capturing non-pheromone responsive species or females of both lure and non-lure responsive species are based on food or host odours. Historically, liquid protein baits have been used to catch a wide range of fruit fly species. Liquid protein baits capture both females and males, with a slightly higher percent of females captured (though identification of the fruit flies can be difficult owing to premature decomposition of trap catches caused by the liquid nature of the trap). Dry synthetic protein baits which are commonly used for some fruit fly species are female biased. These baits tend to capture fewer non-target organisms and when used in dry traps prevent decomposition of captured specimens.

Trap density

Trap density is critical for fruit fly surveys and will be dependant on the target fruit fly species, trap efficiency and biotic and abiotic factors. Density may change depending on the programme phase, with possibly different densities being required during the establishment and maintenance phases of the FF-PFA. Trap density will also be dependant on host occurrence from production to marginal areas and the risk associated with potential points of entry.

Trap deployment

In FF-PFA programmes an extensive trapping network should be deployed over areas where host plants are found. The trapping network layout will depend on the characteristics of the area, host distribution and biology of the fruit fly of concern. One of the most important features of trap placement is selecting a proper trap location and trap site within the selected host tree. If low growing host plants (strawberries, cucurbits etc.) are to be monitored or the availability of suitable host trees is limited, traps should be placed as close as possible to the canopies of non-host shade trees or an artificial equivalent, 1 – 2 metres above the ground.

Traps should not be hung below the foliage canopy of host trees, and should be a minimum of 1 metre above the ground. If more than one type of trap is deployed at a trapping site (e.g. two different lure traps), the traps should be separated by a minimum of 3 metres and should not be deployed in the same host tree.

Geographic positioning systems (GPS) and global information systems (GIS) are useful tools for management of a trapping network.

Preferred host(s) and fruit maturity

Trap location should take into consideration the presence of the preferred hosts of the target species. As the pest is associated with mature fruit, the location of traps should follow the sequence of fruit maturity in host plants. Consideration should be given to commercial management practices in the area where host trees are selected. For example, the regular application of insecticides (and/or fungicides) to selected host trees may have a false-negative effect on the trapping programme.

Trap servicing

The frequency of trap servicing during the period of trapping will be dependent on:

- attractant persistency (i.e. longevity of the bait)
- the retention system if it affects the quality of specimens
- rate of catch
- season of fly activity
- environmental conditions.

It is important that lure material does not contaminate the external surface of the trap, nearby soil or plant material. It is equally important to ensure that there is no cross-contamination between lure types, or between lures and other chemicals.

Trap replacement

Traps have a definite working life, and the replacement of traps should be undertaken periodically based on the expected longevity of the trap in the particular environment. The condition of each trap should also be examined during trap servicing and inspection activities, and where applicable (e.g. signs of deterioration), traps should be replaced.

Trap inspection

The frequency of inspection during the period of trapping will depend on the level of fly activity, response periods required at different times of the year, relative number of target and non-target fruit flies expected to be caught in a trap, and the need to prevent specimens from deteriorating and thus preventing identification.

Record keeping

All trapping and servicing data should be recorded. Records should be kept up-to-date and be readily available.

3.2.1.2 Fruit sampling procedures

With fruit flies that are not responsive to traps, the following factors should be considered if fruit sampling is to be used as a surveillance method. It should be noted that fruit sampling is particularly effective in small-scale delimiting surveys in an outbreak area. However, it is labour intensive, time consuming and expensive due to the destruction of fruit.

Host preference

Fruit sampling should take into consideration the presence of hosts of the target species. Sample fruit should be targeted based on maturity and apparent signs of infestation.

Targeting high risk areas

Fruit sampling should be targeted to areas likely to have presence of infested fruits such as urban areas, abandoned orchards, rejected fruit at packing houses, fruit markets and sites with a high concentration of primary hosts.

Sample size

Factors to be considered include:

- the sample size should be based on a statistical study to ensure samples provide an adequate level of confidence of fruit fly detection within the host commodity
- the sample size, the number and weight of fruits per sample should be planned based on the availability of primary host material in the field
- samples may include fruit with infestation symptoms on a tree, fallen fruit or rejected fruit (at packing facilities) if this is scientifically accepted.

Procedures for holding fruit

Fruit samples should be brought to a facility for holding, fruit dissection, pest recovery and identification. Fruit should be labelled, transported and held in a secure manner to avoid contamination and mixing of fruit. Where it may be necessary for eggs/larvae to be grown out for identification purposes it is important that the fruit be held in suitable conditions to maintain the viability of immature insects.

Record keeping

All fruit sampling data should be recorded to permit trace-back of detections. Records should be kept up to date and be readily available.

3.2.2. Regulatory controls on the movement of host material or regulated articles

Regulatory movement controls for regulated articles are required to prevent the entry of target pests into the FF-PFA. These controls will depend on the assessed risks (after identification of likely pathways and regulated articles) and may include:

- listing of the target fruit fly species on a quarantine pest list;
- listing of regulated articles for which movement is controlled;
- publishing of regulations if necessary, including restriction of the movement of certain products within areas of a country or countries;
- specification of import requirements into a country or area; and
- inspection of regulated articles and examination of relevant documentation and, where necessary, application of appropriate non-compliance actions (e.g. treatment, reshipment or destruction).

3.2.3 Additional technical information for establishment

Additional information may be useful during the establishment phase of FF-PFAs. This may include:

- historical records of detection, biology and population dynamics of the target fruit fly species, and previous survey activities for the designated target fruit fly species in the FF-PFA;
- the results of previous actions taken following detections of fruit flies in the proposed FF-PFA;
- records of the commercial production of host crops in the area, an estimate of non-commercial production, and the presence of wild host material; and
- lists of the other fruit fly species that may be present in the FF-PFA.

3.3 Verification and declaration of pest freedom

The NPPO verifies the fruit fly free status of the area (see ISPM No. 8: *Determination of pest status in an area*) by checking the compliance with the procedures set up in accordance with this standard (surveillance and regulatory controls). The NPPO declares the establishment of the FF-PFA and notifies trading partners as appropriate.

3.4 Maintenance of the FF-PFA

Following the establishment and declaration of a FF-PFA, this status should be maintained. The NPPO should continue to administer all management and operational aspects associated with the FF-PFA (for example, surveillance activities and regulatory controls).

3.4.1 Surveillance for maintenance of the FF-PFA

After verifying and declaring the FF-PFA, the official surveillance programme should be continued at a level assessed to be required for maintenance of the FF-PFA, for as long as the FF-PFA is operational. Regular (for example monthly) technical reports of survey activities should be generated. This may be the same as for surveillance procedures during the establishment phase with differences in density and trap locations dependent upon the assessed level of risk of introduction

and establishment of the target fruit fly species. It is likely that there will be lower densities required in commercial production sites and higher densities at points of entry and urban areas.

Additional surveillance within the declared FF-PFA may be required for non-target exotic fruit fly species of economic concern.

3.4.2 Regulatory controls on the movement of host material and regulated articles

These are the same as for establishment. See section 3.2.2.

3.4.3 Planning for corrective action

The NPPO should have plans for corrective action that may be implemented if the target pest is detected in the FF-PFA (see Annex I). This should include:

- criteria for the declaration of an outbreak/incursion, and the determination of the outbreak area and suspension area/s within the FF-PFA;
- criteria for reinstatement of a FF-PFA suspension area following an outbreak;
- procedures for responding to post-harvest interceptions, including interceptions by trading partners in imported host material;
- criteria for initiating further surveillance;
- rapid identification of target fruit fly species;
- the rapid implementation of delimiting survey/s (trapping and fruit sampling)
- eradication measures;
- notification of corrective actions to trading partners as appropriate.

A corrective action plan should be initiated within 72 hours of the detection, if previously determined criteria for the initiation of corrective action are met.

Similar corrective action plans may be prepared for non-target exotic fruit fly species.

3.5 Suspension, termination and reinstatement of FF-PFA status

3.5.1 Suspension and termination

The status of the FF-PFA will change when an outbreak of the target pest occurs or procedures are found to be faulty.

If the criteria for an outbreak are met, this should result in the implementation of the corrective action plan as specified in this standard and immediate notification of trading partners (see ISPM No. 17: *Pest reporting*). The whole or part of the FF-PFA may be suspended or terminated. Where a suspension is put in place, the criteria for lifting the suspension should be made clear. If the control measures are not effective and the pest becomes established within an area of the FF-PFA, the pest free status of the area, or of the infested area of the FF-PFA, should terminate. Trading partners should be informed of any change in FF-PFA status as soon as possible.

Other circumstances, such as inadequate movement controls or the detection of the target pest upon imported products, may also result in suspension of the FF-PFA.

If bilateral arrangements have been made to cover non-target exotic fruit fly species, the status of the country of FF-PFA will change if the species are detected, until surveillance defines the distribution of the pest.

3.5.2 Reinstatement of the pest free area status

Reinstatement may take place when:

- following an outbreak, reinstatement criteria agreed to between trading partners have been met;
- following identification of non-compliance in implementing agreed procedures and appropriate corrective actions have been implemented to address the non-compliance to the satisfaction of the trading partners.

3.6 Specific trading arrangements

When a FF-PFA requires complex measures for its establishment and maintenance to provide a high degree of phytosanitary security, an operational plan based on bilateral arrangements may be negotiated and developed between trading partners.

Corrective action planning following the detection of a target species of fruit fly in the FF-PFA

Corrective action plans (emergency action plans) should be developed in case target species of fruit fly are detected within the FF-PFA after establishment of the FF-PFA. Corrective action plans should take into account the biology of the fruit fly concerned, the geography of the FF-PFA area, climatic conditions and host distribution within the area. The elements to consider in designing a corrective action plan include:

1. Criteria for the declaration of an outbreak/incursion, determination of the outbreak area and period of FF-PFA suspension

Occasionally a single piece of fruit infested with larvae of target fruit fly species may enter the FF-PFA. This may result in the detection of a single male or female fruit fly. In most cases this level of incursion may not result in the establishment of a population within the FF-PFA. To be able to deal with varying levels of detection of target fruit fly species within the FF-PFA, criteria for managing small and larger detections should be determined.

1.1 Declaration of an outbreak and suspension of FF-PFA

The number of flies, time period and area over which target species are detected will serve as triggers or criteria for suspension of FF-PFA status. These triggers or criteria are generally negotiated and agreed upon with prospective trading partners.

Following the declaration of an outbreak and suspension of FF-PFA status, it will be necessary to determine different zones around an outbreak area and the period of time during which the FF-PFA status is removed. These may include:

- **the suspension zone**, which would comprise the area where FF-PFA status has been suspended (the entire FF-PFA area need not be suspended if it can be demonstrated through surveillance activities that the outbreak remains localized within a small area of the total FF-PFA). Host commodities may not leave this area without an alternate phytosanitary measure.
- **outbreak zone(s) or areas**, which would comprise the area/s within the suspension zone where control measures will be implemented to eradicate the suspected population of target fruit fly species.
- **the FF-PFA suspension period** (or length of time that the suspended area of the FF-PFA should remain without FF-PFA status after control measures for the target species of fruit fly have ceased) will also need to be determined. The period of suspension is generally based on the generation time of the target species of fruit fly. The purpose of this period is to prove that the target species of fruit flies has been eradicated from the previously infested area.

The size and number of zones will depend on the circumstances in the FF-PFA and on the biology of the particular fruit fly species concerned. The zones should be defined according to size, location in relation to the finding of the fruit fly(ies) and, where appropriate, the number and distribution of supplementary traps.

2. Control measures in the identified zones

These may include:

- setting the time period for the implementation and continued application of control measures;
- determining and mapping the relevant zones;
- informing relevant personnel and agencies (and providing contact details);
- initiating and defining delimiting surveys (including supplementary trapping, the frequency of trap checking and the amount of fruit sampling);
- rapid identification of target fruit fly species;
- eradication actions (chemical treatments, use of sterile insect techniques, destruction of affected fruit etc.);
- post-control monitoring (procedures and time scale);
- implementing regulatory controls to prevent movement of host material through or from suspension zone.

3. Criteria for reinstatement of a FF-PFA after an outbreak and actions to be taken

The criteria for determining that eradication has been successful should be determined and the actions to be taken may include:

- no further detections of target fruit fly species after the completion of control measures for a previously determined time period;
- notification of appropriate agencies;
- re-instatement of normal surveillance levels;
- lifting suspensions of host commodity movement.

4. Notification of trading partners as appropriate

Trading partners should be notified in a timely manner when suspensions have been implemented or lifted. Timing of notifications may be detailed in bilateral arrangements between trading partners.

**REGIONAL STANDARDS
FOR PHYTOSANITARY MEASURES**

**GUIDELINES FOR THE CONFIRMATION OF
NON-HOST STATUS OF FRUIT AND VEGETABLES
TO TEPHRITID FRUIT FLIES**

APPPC RSPM No. 4

NOTE: This standard is a developmental method standard. As such, although it provides the most up-to-date guidelines available as adopted by the 24th Session of the Commission, it will be subject to review at the next meeting of the Commission.

INTRODUCTION

SCOPE

This standard describes tests for determining the host status of a fruit or vegetable variety at a defined stage of maturity to a particular tephritid fruit fly species. A fruit or vegetable may be classified as a non-host, conditional non-host or potential host on the basis of these tests.

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Glossary of phytosanitary terms, 2002. ISPM No. 5, FAO, Rome.

NZ Ministry of Agriculture and Forestry (MAF) Standard.

DEFINITIONS AND ABBREVIATIONS

| | |
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| commodity | A type of plant, plant product, or other article being moved for trade or other purpose [FAO, 1990; revised ICPM, 2001] |
| conditional non-host (of a fruit fly species)* | Fruit and vegetables at a specified maturity and specified physical condition that cannot support the development of viable adults of a fruit fly species |
| eclosion* | The process of larva hatching from an egg or emergence of an adult insect from a pupa |
| fecundity* | The average number of eggs laid per insect over a specific time period |
| fruit and vegetables | A commodity class for fresh parts of plants intended for consumption or processing and not for planting [FAO, 1990; revised ICPM, 2001] |
| fruit fly* | Insect of the order: Diptera: family Tephritidae. |
| fruit fly host ¹ * | Any fruit or vegetable in which under field conditions fruit flies oviposit, the eggs hatch into larvae, and the larvae acquire sufficient sustenance to form pupae from which viable adults emerge. |
| gravid female* | Female fruit flies with fertilised eggs |
| incursion | An isolated population of a pest recently detected in an area, not known to be established, but expected to survive for the immediate future. [ICPM, 2003] |

¹ Based on Armstrong, J.W. 1986. Pest organism response to potential quarantine treatments. Proceedings 1985 ASEAN PLANTI Regional Conference on Quarantine Support for Agricultural Development 1:25-30. ASEAN Plant Quarantine and Training Institute, Serdang, Selangor, Malaysia.

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| non-host (of a fruit fly species)* | Fruit or vegetables that will not support the complete development of a fruit fly species regardless of the stage of maturity and physical characteristics |
| National Plant Protection Organization | Official service established by a government to discharge the functions specified by the IPPC [FAO, 1990; formerly Plant Protection Organization (National)] |
| NPPO | National Plant Protection Organization [FAO, 1990; ICPM, 2001] |
| outbreak | A recently detected pest population, including an incursion, or a sudden significant increase of an established pest population in an area. [FAO, 1995, revised ICPM, 2003] |
| oviposition* | The act of laying or depositing eggs within a fruit |
| teneral adults* | Condition of the adult shortly after eclosion when its cuticle is not fully sclerotized or fully mature in colour |

* Indicates terms which are not included in ISPM No. 5 Glossary of Phytosanitary terms.

OUTLINE OF REQUIREMENTS

Non-host or conditional non-host status at a particular stage of harvest maturity can be used as a phytosanitary measure to ensure freedom from fruit fly infestation. To facilitate the determination of this status, this standard describes the general and specific requirements for testing the response of a fruit or vegetable variety at a defined stage of maturity to a particular tephritid fruit fly species.

A series of laboratory and field trials, using a specific fruit damaging technique, are used to determine host status, the results of which are interpreted in the following way:

- if punctured fruit (used in the botanical sense) show no sign of fruit fly infestation then the host is described as a non-host
- if unpunctured fruit, from either laboratory or field trials, are not infested by a fruit fly species but damaged fruit is, the host is described as a conditional non-host
- if both punctured and unpunctured fruit become infested, the commodity is described as a potential host.

Specific requirements should be followed for each stage of the testing – using punctured fruit in laboratory tests, unpunctured fruit in laboratory tests and unpunctured fruit in field or glasshouse tests. These requirements concern the testing of the fecundity of the fruit flies, the development of fruit fly populations, the selection of fruit used for the tests, the holding of the fruit after exposure to fruit flies and the assessment of the tests.

GENERAL REQUIREMENTS

1. Background

Non-host or conditional non-host status at a particular stage of harvest maturity can be used as a phytosanitary measure to ensure freedom from fruit fly infestation. However, published records of hosts for particular fruit fly species may not always be reliable for determining non-host status for phytosanitary purposes. It is frequently difficult or impossible to validate old records. Fruit fly

species may be correctly identified, but in many cases host details such as the fruit or vegetable variety, the stage of maturity, and the skin condition (damaged or undamaged) at collection were not recorded. Thus, published host records may be misleading, incomplete or incorrect for negotiating market access protocols and the development of a standard method for determining host status under defined, reproducible conditions was highly desirable. Such a method has important ramifications for international trade in many fresh fruit and vegetable commodities.

This standard uses well-known techniques in the form of a standard to provide a regular methodology for solving the problem of inaccurate host status records or the absence of host status information. These guidelines are “new” in this format and trading partners will need consultation before using them. It is likely further information will be available in the near future, so the standard will be reviewed at the next meeting of the Commission.

Where APPPC members use these guidelines, they are encouraged to inform the APPPC Executive Secretary particularly when improvements or additions are made to the techniques.

2. Methodology

2.1 Basic guidance

Basic guidance for host status testing includes the following:

- in determining the host status of a fruit variety at a particular (described) stage of maturity, the methods outlined in this document should be adhered to;
- the host status of each variety of fruit (at the described stage of maturity) should be determined separately;
- each fruit fly species for which determination of host status studies are required should be tested separately;
- the three stages noted in Figure 1 can be conducted sequentially or concurrently.

2.2 Pre-requisites for host status testing

The following points should be considered as prerequisites to the commencement of host status trials:

- a list of all fruit fly species occurring in the exporting country (list i)
- a list of fruit fly species for which the exporting country considers host-status testing to be necessary (list ii)
- information supporting the non-host status of the fruit variety concerned to some of the fruit flies found in the exporting country. Survey data should show:
 - that the fruit variety is not a recorded host of those fruit fly species excluded from list (ii)
 - that the fruit fly species excluded from list (ii) is highly host specific on one host species (i.e. is recorded from only one host species).

For each fruit fly species listed as requiring host-status testing, the exporting contracting party should provide the importing contracting party with reports giving the results of host-status testing in accordance with this standard.

Consultation with trading partners prior to and during trials will increase the understanding of NPPOs and their confidence in the trial results.

2.3 Overview of methodology

The standard describes tests for determining the host status of a fruit or vegetable variety at a defined stage of maturity to a particular fruit fly species (Diptera: Tephritidae). A fruit variety may be classified as a non-host, conditional non-host or a potential host on the basis of these tests.

There is a series of tests involving laboratory cages trials and field trials. Laboratory cage trials using punctured and unpunctured fruit provide a robust test and are mandatory. This system can be supplemented by field trials using punctured fruit if required. The results of trials are interpreted in the following manner:

- if no survival is recorded in a damaged fruit, regardless of maturity, then the fruit is described as a non-host to the fruit fly species tested
- if no survival is recorded in a damaged fruit at a specific maturity, then the fruit is described as a conditional non-host to the fruit fly species tested
- if no survival is recorded in undamaged fruit at a particular stage of maturity then the fruit is described as a conditional non-host
- if either damaged or undamaged fruit become infested, then the fruit is described as a potential host.

The term potential host is used because the trials are forced, no-choice tests using laboratory reared flies and these may over represent the population pressure actually found in the field situation.

Physical damage to fruit (i.e. breaks in the skin surface) may provide fruit flies the opportunity to oviposition where this opportunity is precluded by undamaged skin. Therefore, when determining host-status of a fruit, consideration should be given to both physically damaged and undamaged states of the fruit.

For the purpose of these trials physical damage to fruit is achieved by puncturing fruit with entomological pins. The terms punctured and unpunctured fruit are used to describe damaged and undamaged fruit in this standard, as these terms reflect the actual methods used to damage fruit in the trials.

The suggested sequence of tests is as follows:

The first test is of punctured fruit in a laboratory cage to determine if a commodity can be a host to a fruit fly species if it is punctured. The results of trials are interpreted in the following manner:

- if the fruits do not become infested, then the commodity is regarded as a non-host to that fruit fly species
- if the commodity does become infested, even if only one adult of that fruit fly species develops, then the commodity is either a host or conditional non-host to that fruit fly species.

The second test is a laboratory cage test using unpunctured fruit to determine if fruit may be a conditional host. The results of trials are interpreted in the following manner:

- if the unpunctured fruit does not become infested, then the commodity is regarded as a conditional non-host

- if the unpunctured fruit does become infested, even if only one adult fruit fly develops, then the commodity is regarded as a host unless the third test (as noted below) shows it to be a conditional non-host.

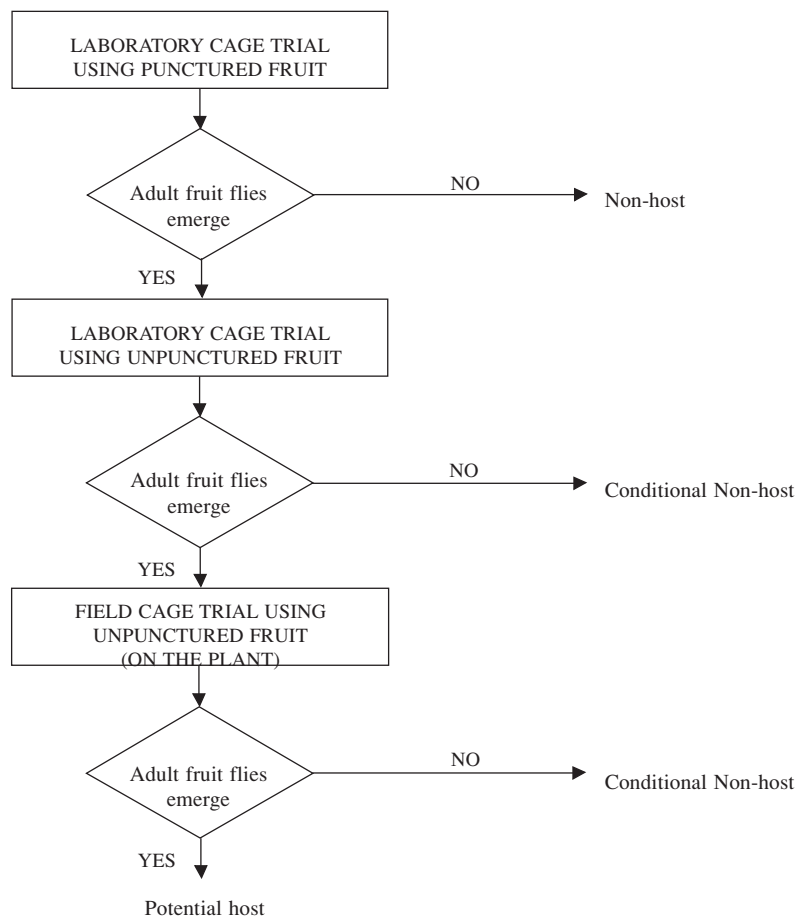
The third test is a field cage trial using unpunctured fruit to determine if a fruit found to be a host under laboratory conditions (as in the second test) may be a conditional non-host under field conditions. The laboratory cage trial are recognized as stringent tests that may not duplicate what happens in the field. The results may indicate:

- if the unpunctured fruit under field conditions does not become infested, then the commodity is regarded as a conditional non-host
- if the unpunctured fruit under field conditions does become infested, even if only one adult fruit fly develops, then the commodity is regarded as a host.

The number of flies that should be used in host status trials is selected to try to truly reflect field populations. This has been the subject of debate for many years. The only country that has established a standard for host testing in New Zealand. Their standard states that the number of gravid females to be used per cage should be adequate to ensure 250-500 viable eggs are laid per 500 gm of fruit. To assess the potential oviposition load that trial fruit may be exposed to, fecundity tests on colony flies are undertaken. The average fecundity per female is then used to calculate the required number of females per cage.

In this standard a minimum potential oviposition load of 1 000 viable eggs per replicate was chosen for laboratory trials. However, for field/glasshouse trials a minimum potential oviposition

Figure 1: Diagram of the host testing stages



load of 1 500 viable eggs per replicate was chosen. The higher rate of 1 500 eggs per replicate is to compensate for higher adult mortality that may be experienced when laboratory reared flies are released in the field. Additionally, the exposure period for field/glasshouse trials is 48 hours compared to 24 hours for laboratory trials to allow laboratory reared flies to acclimatise to field conditions.

SPECIFIC REQUIREMENTS

3. Laboratory cage trial using punctured fruit

The following basic components are required to conduct a laboratory cage trial:

- adult fruit flies for oviposition
- fruit of the defined variety and harvest maturity to be tested and
- conditions/facilities for fruit holding.

3.1. Adult fruit flies

Adult fruit flies should be obtained from laboratory colonies. The laboratory colonies of multivoltine species used should be no more than one year old or, if older than one year, they should have been replenished with wild flies at least once every 12 months. Records of colony performance and replenishment will be required in addition to host status results.

3.2 Fecundity test

Prior to conducting host status trials, a fecundity test should be conducted on gravid females from the laboratory colonies. This allows the estimation of the potential oviposition load to which the replicates of the test fruit may be exposed.

At least five replicates, each of 10 gravid females per cage, should be used for the fecundity tests. Cages should have fine mesh of minimum dimensions of 300 mm x 300 mm x 300 mm. Measures should be taken to prevent access by ants and *Drosophila spp.* Each cage should contain a source of sugar and water.

Oviposition receptacles can be either a hollowed, punctured dome of a known host or an artificial egg device. If a dome is used, its edges should be sealed to prevent flies from getting under the dome. Oviposition receptacles should be exposed to gravid females for a period of 24 hours.

After 24 hours exposure, the eggs should be washed from the dome or the artificial egg device. Those embedded in the dome should be carefully eased out of the fruit tissue and washed from the dome. The eggs should then be placed on moist filter paper, counted and held for a sufficient period to determine egg hatch. This allows the calculation of the mean number of viable eggs per gravid female over a 24-hour period.

The number of gravid females to be used per replicate should be adequate to ensure that each replicate is exposed to a potential oviposition load of a minimum of 1 000 viable eggs.

3.3 Fruit flies used in the trials

Each fruit fly species for which host-status studies are required should be tested separately.

The determined number of gravid females should be caged with test fruit for 24 hours. The trial will consist of 5 replicates each with the same number of gravid females per cage.

Gravid females for the laboratory cage trials should be obtained from the same cage of flies used in the fecundity test. Flies should be at their peak fecundity.

3.4 Test fruit

The host status of each fruit variety should be tested separately. A variety may be described formally in an application for proprietary rights² or, where this is not the case, a variety should be described including distinctive commodity characteristics when present. Colour photographs of the trial commodity are required if a variety has not been formally described under proprietary rights.

Test fruit of the described variety should be grown under conditions that exclude the use of chemicals that may deleterious to fruit flies (e.g. insecticides, miticides).

Test fruit should be collected at the stage of maturity accepted for export harvest. The stage of maturity should be described by the grower/supplier.

The trials should be replicated three times with trial fruit sourced from different producers for each replicate. For each replicate five batches, each with a minimum of 500 g of fruit, should be used. Whole fruit should be used, irrespective of the weight of individual fruit. The weight and number of fruit used per replicate should be recorded just prior to exposure to the flies.

A control using a minimum of 500 g of a known primary/preferred host should be run concurrently with the 5 trial replicates. This provides evidence that the experimental procedures adopted do not prevent the successful emergence of fruit flies. The control replicate should be exposed to the same number of gravid females as determined in section 3.1.

Before exposure of a fruit to female flies, the skin of the trial fruit and control fruit should be punctured 50 times penetrating through and puncturing the pericarp of the fruit using entomological pins of size 3. The punctures should be distributed evenly across the surface of the fruit. When placed in the trial cage, fruit should be randomly orientated (e.g. stem end up, blossom end up) in a single layer. Fruit should remain in the cages for a period of 24 hours.

Cages should have minimum dimensions of 300 mm x 300 mm x 300 mm and be covered with a fine mesh. Measures should be taken to prevent access by ants and *Drosophila spp.* Each cage should contain a source of sugar and water.

Trials should be conducted under optimum conditions for fruit fly activity. The minimum and maximum temperatures and relative humidity should be recorded during the period of caging.

At the end of the 24-hour period the number of dead flies per cage should be recorded. High adult mortality may indicate unfavourable conditions (e.g. excessive temperature) or contamination of trial fruit (e.g. insecticides).

3.5 Fruit holding

After exposure to gravid females for 24 hours, the fruit should be removed from the cage and held over a suitable pupation medium. Sawdust, sand or vermiculite may be used. The medium should be obtained from untreated sources and be sterilised (e.g. 120°C for a minimum of two hours).

² International Code of Nomenclature for Cultivated Plants 1980; International Union for the Protection of New Varieties of Plants 1991.

Each replicate of fruit should be held separately so that the number of pupae and adults emerging can be recorded per weight of fruit for each replicate.

Fruit that breaks down rapidly (such as eggplant, bitter melon, cucumber, tomato, banana and most citrus) should be held above the pupation medium on a container covered by fine mesh which allows the passage of juice into the container but prevents larvae entering the container.

Each replicate should be held in individual containers that allow adequate ventilation yet prevent the access of ants and *Drosophila* spp.

The minimum and maximum temperatures and relative humidity should be recorded each day during the period of fruit holding.

After an appropriate holding period (which may vary with temperature and host) the pupation medium should be sieved to extract pupae. Fruit should be dissected (but not discarded) to determine the presence of larvae. If larvae are present, the fruit should be held until all larvae have pupated.

The numbers of pupae should be recorded and pupae held in a moistened pupation medium until eclosion. All emerging adults should be counted and identified after morphological characteristics have developed (teneral adults should not be used for identification).

3.6 Assessment and interpretation

If no adults emerge from the control replicate, the laboratory cage trial should be repeated.

If adults emerge from the control replicate and no adults emerge from the replicates of trial fruit, then the trial commodity at the described stage of maturity is regarded as a non-host to the fruit fly species tested.

If one or more adults are reared from the trial replicates, then the commodity is considered to be a potential host. A laboratory cage trial using unpunctured fruit should be undertaken.

4. Laboratory cage trial using unpunctured fruit

A laboratory cage trial using unpunctured fruit should be conducted if flies have emerged from the punctured test fruit in the laboratory cage trial described in section 3. Trial methodology and procedures are identical to that described in section 3, except that fruits are not punctured.

Each fruit fly species for which host-status studies are required should be tested separately.

4.1 Assessment and interpretation

If no adults emerge from the control replicate, the laboratory cage trial using undamaged fruit should be repeated.

If adults emerge from the control replicate and no adults emerge from any of the replicates of trial fruit, then the trial commodity at the described stage of maturity can be regarded as a conditional non-host to the fruit fly species tested.

If adults of one or more of the fruit fly species to be tested emerge from trial replicates, then field trials should be undertaken.

5. Field cage/glasshouse trials using unpunctured fruit

A field cage or glasshouse trial using unpunctured fruit should be conducted if flies have emerged from the undamaged test fruit in the laboratory trial described in section 4.

Trial methodology and procedures are basically similar to those described in section 3, except that fruits are not punctured and remain attached to the test host plant. The fruiting host plants may be exposed to the test fruit fly species either by caging fruit in the field or by using potted fruiting host plants in a glasshouse.

Each fruit fly species for which host-status studies are required should be tested separately.

5.1 Adult fruit flies

Adult fruit flies should be prepared as in 3.1.

5.2 Fecundity test

Prior to conducting host status trials a fecundity test should be conducted on gravid females from the laboratory colonies. Test should be made as per section 3.2 except that the exposure period is 48 hours.

The number of gravid females to be used per replicate should be adequate to ensure that replicates are exposed to a potential oviposition pressure of at least 1 500 viable eggs.

5.3 Field cage trial

The trials should be replicated three times. For each replicate five batches of approximately 500 g of undamaged fruit attached to the parent plant should be used. The plants should be grown under conditions that exclude the use of chemicals that may be deleterious to fruit flies.

A cage should be placed around the selected fruit be it a single fruit, group of fruits or a whole plant. A replicate of a minimum of 500 g of fruit may comprise more than one cage preferably on one plant but if not possible, on adjacent plants. Should the replicate be divided into multiple cages, the number of gravid females per cage should be evenly distributed between cages to maintain the potential oviposition pressure (1 500 viable eggs) as specified in 5.2.

A suitable cage shall consist of a supporting frame enclosed by a fine gauze cage with minimum dimensions of 300 mm x 300 mm x 300 mm. The mesh should be of a size to ensure containment of the flies and allow airflow.

Where the cage is in place on a tree/plant branch, the cage end(s) should be securely fastened around the branch or stem to prevent escape of the flies and the entry of ants and predators. A source of sugar and water should be provided in each cage for the gravid females.

The minimum and maximum temperatures and relative humidity should be recorded each day for the duration of the trial.

Gravid females for the trial should be obtained from the same cage of flies used for the fecundity test in section 5.2.

A control using approximately 500 g of a known host should be run concurrently with the 5 trial replicates and under exactly the same field conditions. Control fruit should be punctured as per section 3.4 whilst under the same experimental conditions and exposed to the same number of gravid females as the trial fruit as determined in section 5.2.

After exposure to gravid females for 48 hours, the fruit should be removed from the plant and each replicate weighed and the number of fruit recorded. The number of dead flies per cage should also be recorded.

5.4 Glasshouse trials

For glasshouse trials, test fruit should be grown in containers (e.g. pots) of a size that allows normal plant development, including fruit production. The plants should be grown under conditions that exclude the use of chemicals that may be deleterious to fruit flies.

Cages dimensions should be slightly larger than the height and width of the trial plants.

The frame of the cage should be covered by gauze fine enough to exclude *Drosophila spp.* and other fruit infesting insects. It should be constructed to ensure that flies introduced into the cage would not escape.

Plants in containers are placed in the cage immediately before the trial commences and should be protected from ants. Fruit should be at the described stage of export harvest maturity.

Five batches of approximately 500 g of whole fruit attached to parent plants should be used for each of three replicates. Each batch should be in separate cages. Whole fruit should be used, irrespective of the weight of individual fruit. The weight and number of fruit used per replicate should be recorded subsequent to exposure to gravid females and immediately after harvest.

Depending on the weight of fruit produced per plant, it may be necessary to use multiple plants/cages to achieve the minimum of 500 g of fruit per replicate. Regardless of the number of cages and plants used to house 500 g of fruit, the number of flies/replicate should be evenly distributed amongst the cages.

Gravid females for the trial should be obtained from the same cage of flies used for the fecundity test in section 5.2.

A control replicate using approximately 500 g of a known host should be run concurrently with the 5 trial batches and under exactly the same glasshouse conditions. Control fruit should be punctured as per section 3.4 whilst under the same experimental conditions and exposed to the same number of gravid females as the trial fruit as determined in section 5.2.

After exposure to gravid females for 48 hours, the fruit should be removed from the plant and each replicate weighed and the number of fruit recorded. The number of dead flies per cage should also be recorded.

5.5 Fruit holding

Fruit should be held as described in section 3.5.

5.6 Assessment and interpretation

If no adults emerge from the control fruit, the field or glasshouse trial using undamaged fruit should be repeated.

If adults emerge from the control fruit and no adults emerge from any of the replicates of trial fruit, then the trial fruit at the described stage of export harvest maturity is regarded as a conditional non-host to the fruit fly species tested.

If adults of the fruit fly species in the trial emerge from test fruit in any one replicate, then the fruit is considered a potential host for quarantine purposes.

PROGRESS IN INTEGRATED PEST MANAGEMENT (IPM) IN ASIA AND THE PACIFIC REGION (Agenda Item 8)

The delegates of the 23rd Session of the APPPC, while reviewing the past efforts, pointed out various challenges for the region:

1. Consumer education on IPM and IPM Produce
2. Premium on crops grown through IPM practices
3. Policy makers role in creating enabling environment for IPM through organizational and policy support
4. Demonstrating FFS-IPM approach as an instrument of Community development
5. Developing guidelines for applicability of FFS-IPM approach to all main cropping systems in the depressed ecologies in the region
6. Developing and mobilizing plural support mechanisms for post-FFS farmer groups
7. Further research on the role of GMOs in IPM.

Regional and National Programmes of the APPPC member countries directed their efforts to realize objectives that meet these challenges. FAO-EU Programme for cotton in Asia and FAO Regional Vegetable Programme played the key role in these efforts.

FAO-EU IPM Programme for Cotton in Asia

During its five-year implementation that ended in December 2004, the Programme promoted more ecological production methods in its member countries, where over 50% of the world's cotton is grown. The member countries included Bangladesh, China, India, Pakistan, Philippines and Viet Nam.

Implemented by FAO with a total budget of 12 million Euro and funded by EU, the programme was established with the purpose of responding to the needs of cotton producing countries to tackle rising production costs, increasing pollution of the environment due to excessive pesticide use, deteriorating health of farmers and increase in poverty.

The Programme succeeded in showing that farmer education through the Farmer Field School (FFS) approach is crucial for encouraging more sustainable agricultural production. The FFS approach was an effective method of empowering and mobilizing farm families and of developing the enhanced management skills necessary for a sustainable pro-poor and environmentally-friendly agricultural and rural development. The experiences gained from this Programme may benefit many on-going and future endeavors to reduce poverty and conserve precious natural resources.

Of its six member countries, the Programme most likely left a sustainable impact in India, Pakistan, and China.

In India, it had a remarkable impact in the States of Karnataka and Maharashtra where FFSs were recognized as the model for government-farmer interaction, and state funds are allocated to continue and expand project activities. In Pakistan, although the country did not have previous

experience with IPM field schools, as of 2004, the provinces of Sindh and Punjab already embraced FFSs as the dominant interface between government and farmers. FFSs filled the need that regular extension had not been able to satisfy. Importantly, in order to sustain the IPM activities, the Pakistan National Programme organized the 5th IPM Farmer Congress at Sukkur, Sindh from 23-25 April 2005 for providing a platform for sharing the progress of IPM projects. The congress reviewed the IPM activities carried out during the past cotton season and farmers shared their experiences. Main outcome of the congress was the formation of Sindh Agriculture Development Organization (SADO) and the action plan of SADO for 2005. The organization will work as an IPM network of all district and village organizations in Sindh. A national congress has been proposed to be held at the end of 2005 to integrate IPM farmer organizations at the national level. In China, in the Provinces of Anhui, Hubei and Shandong and some areas in Henan and Sichuan, the Programme succeeded in establishing a strong team of young and gender-balanced facilitators. Farmer education in IPM helped cut pesticide applications from an average of 12 to 7 per season.

During its five-year period, the Programme organized 25 Training-of-Facilitators (ToF) courses for 794 facilitators in the six member countries. Overall, the number of facilitators exceeded the target of a capacity to educate 50 000 farmers per year. The success of an IPM enabling policy support in some countries and the encouraging impact assessment results have created an conducive environment for addressing policy implications of IPM in member countries. During the period, the Programme organized 2 114 FFSs for 53 725 farmers. The impact assessment results showed that FFS alumni increased their income by 25%, and reduced pesticide use by more than 40% as compared to the control sample.

FAO Regional Vegetable IPM Programme in Asia

The misuse and overuse of pesticides in vegetable production in tropical Asia provides the rationale for the establishment of the Programme. Since 1996, the programme has worked with governments and NGOs in its seven member countries to develop robust national programmes aimed at carrying out applied research, extension and farmer education activities. This is to promote and support Integrated Pest Management (IPM) in vegetables by Asian smallholder farmers.

During its first phase, the Programme focused on enhancing the governments' and NGOs' capability to implement training programmes in its member countries using the 'Training of Trainers (TOT)' and 'Farmer Field School (FFS)' approaches. More than 600 trainers and 30 000 farmers have been trained since the beginning of the first phase.

The achievements in the first phase led to the second phase (2002-2007) which was financed by multiple donors including Netherlands, Australia, and Norway with contributions worth US\$ 7.5 million. Placing emphasis on vegetable IPM farmer participatory training and research with a shaper focus on major crops and pests, the second phase covers Cambodia, Lao PDR, Thailand, Viet Nam, and Yunnan Province of China P.R. in the Greater Mekong Sub-region.

At their 5th bi-annual meeting in Luang Prabang, Lao People's Democratic Republic, from 27-29 April 2005, representatives of the Programme's Greater Mekong Sub-region member countries shared and discussed their country progress and experiences during the first phase, as well as programme strategies and implementation plans until 2007. To address diversity among the country programmes in terms of programme development, each country analyzed constraints faced, needs, as well as challenges and opportunities. The meeting was also attended by resource persons, representatives of NGOs, FAO-IPM staff from each member country as well as donor representatives.

Noteworthy is the fact that the government of Viet Nam is putting significant resources into work towards safe vegetables and development of related standards; in Thailand, the Department of

Agriculture has established standards for Good Agriculture Practices (GAP) while the Department of Agricultural Extension is organizing activities to train farmers on these standards. The on-going process of decentralization related to government budget allocations to the provincial level has created a unique potential for IPM-FFS training, particularly where local governments favour such farmer training.

There is a need for the member countries to formulate strategies for continued vegetable IPM training implementation beyond the completion of the current Phase II in 2007.

New Proposed Initiatives:

i. ASEAN-FAO Programme on Quality Farmer Education for Poverty Alleviation and Market Competitiveness (ASEAN-FAO QFarmED)

Building on the achievements of the FAO-EU IPM Programme for Cotton in Asia, FAO is proposing the ASEAN-FAO Programme on Quality Farmer Education for Poverty Alleviation and Market Competitiveness. In line with the Hanoi Plain of Action (1999-2004) and the Vientiane Action Plan (2004-2010), the proposed technical assistance development programme provides for concerted efforts at reducing poverty among small farmholders in ten Southeast Asian countries through quality farmer education aimed at promoting efficient and sustainable crop management in increasingly liberalized markets. These countries are Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam.

The programme proposes to provide technical assistance in the promotion of quality farmer education through farmer-led IPM Farmer Field Schools (FFS) in the ASEAN region. The quality farmer education through FFS will focus on the development of farmers' skills including management and decision-making skills, leadership skills and other necessary critical skills that enable farmers to identify and analyze problems as well as to organize community action, information networks and other village-based programmes.

ii. SAARC Rural Education Enhancement Programme

Building on successful experiences of previous regional IPM programmes, FAO has formulated a technical assistance development programme aimed at SAARC countries of Bangladesh, Bhutan, Cambodia, India, Nepal, Pakistan, Sri Lanka and possibly Maldives.

Being considered by potential donors, the proposed programme represents a concerted assault on the poverty endemic among smallholders farming ecologically depressed land in the region by promoting efficient crop management practices in an increasingly free market context.

The Programme will provide the SARRC member countries with technical assistance in promoting participatory IPM as the entry point for the installation of farmer-led extension modalities in the region. It will also help scale up quality rural education programmes to reach substantial numbers of beneficiaries by increasing the size of current interventions, by shifting to holistic approach of cropping systems.

ASIA-PACIFIC FOREST INVASIVE SPECIES NETWORK WORKSHOP

In cooperation with Asia Pacific Association of Forestry Research Institutions (APAFRI), APPPC provided technical support to facilitation of the Asia-Pacific Forest Invasive Species Network Workshop which was held in Ho Chi Minh City, Viet Nam, from 22 to 25 February 2005.

APPPC member countries closely cooperated in building a bridge between the Forestry section and Agriculture section to deal with invasive species management in the region.

The experiences and successes of handling the outbreaks of *Brontispa longissima* (coconut leaf beetle) provide valuable lessons for multidisciplinary approaches to managing invasive species whether in agriculture or forestry. It is increasingly evident that activities, whether with forestry or agriculture, are intimately connected and have profound effects on each other – whether with the movement of invasive species into an area, or solutions to the problems. This reinforces the view that such problems cannot be solved without the active collaboration of both sectors.

During the workshop, the forestry and agriculture specialists shared with the attendants their experiences in handling invasive species. The meeting jointly developed an Asia-Pacific strategy to work in a multidisciplinary manner to address the invasive species management.

Coconut Beetle Outbreak in APPPC Member Countries

The Expert Consultation on Coconut Beetle Outbreak in APPPC Member Countries was held by the FAO Regional Office for Asia and the Pacific in Bangkok from 26-27 October 2004. It was attended by representatives from 11 countries including Cambodia, China, Indonesia, Lao People's Democratic Republic, Malaysia, Maldives, Myanmar, Pakistan, Sri Lanka, Thailand and Viet Nam. An international consultant from Fiji joined FAO technical officers to facilitate the expert consultation. The objective was to exchange experiences and lessons learned among the member countries that were facing the outbreaks.

According to the country reports presented at the Consultation, there were coconut beetle outbreaks in nine countries with moderate to serious infestation (up to almost 60% of the planted areas attacked). Following recommendations emerged from the expert consultation:

Outlook and Recommendations:

In addressing the pest outbreaks, it is often unsustainable to rely on chemical insecticides. A better approach is to introduce effective biological control agents that attack only the coconut beetle and do little harm to the environment, thus restoring the balance that contributes to sustaining a sound coconut ecosystem.

Brontispa longissima is one of the most serious pests of coconut in Asia and the Pacific. If left untreated, the pest could cause costly damages to the coconut industry. In Viet Nam, the damages could have been in excess of one billion US\$ over a 30-year period.

Brontispa could be managed successfully in sustainable and environment-friendly way through classical biological control.

It is of concern that the economies of many countries in Asia and Pacific are threatened due to the serious outbreak of the pest. The invasive species demonstrates the need for strengthening the technical information base, quarantine and IPM capabilities within the countries in the region.

The Consultation further recommends that individual countries should strengthen their own database of crop pests and natural enemies, conduct independent impact assessments to facilitate an enabling environment for both biological control and IPM and further strengthen the regulatory framework of plant quarantine, as well as compliance with the guidelines of the ISPM #2 and #3, and pesticide management with concurrent activities for enhancing capacity of extension staff.

Other Activities:

FAO supported TCP projects in Thailand, Viet Nam, Nauru, and Maldives. The Viet Nam project showed a return on investment of US\$ 3 000 for every dollar? invested by FAO in this project.

Under TCP/THA/3003, FAO provided technical backstopping to Coconut FFS Curriculum Development Workshop in Ranong, Thailand, from 16-18 March 2005. The workshop was attended by representatives from DOA, DOAE, and farmer representatives. They shared their experiences in research and application of bio-control measures, using farmers' practice to develop an operational FFS curriculum. The two government agencies were working together to seek funding from national and local governments to ensure sustainable biological control of *Brontispa* and to improve livelihood of coconut farmers.

In the last two years, IPM activities were funded by DANIDA in Bangladesh, Cambodia, Thailand and Viet Nam. The EU supported an IPM-FFS programme in the Wang Watershed Management Project in Bhutan. A bilateral IPM programme supported by Norway was initiated in Nepal. The Asian and Pacific Coconut Community based in Jakarta has initiated an IPM programme in coconut with funding support from Common Funds for Commodities in which IPM-FFS was the selected form for educating farmers about managing rhinoceros beetle and the imported coconut mite. FAO provides technical support to this programme.

The member countries need to continue to concentrate on the challenges elaborated in the 23rd session.

PROGRESS IN AGRICULTURAL PESTICIDE MANAGEMENT IN ASIA AND THE PACIFIC REGION (Agenda Item 9)

1. Status of implementation of the Rotterdam Convention in Asia and Pacific

The Rotterdam Convention requires its Party to notify the Secretariat when taking a national final regulatory action to ban or severely restrict a chemical. According to the Convention Secretariat, in the Asian region, 6 Parties and 4 Participating States have submitted notifications, while in the Pacific region two Parties and one non-Party state submitted notifications.

For each 41 chemical listed in Annex III, each Party must transmit to the secretariat a response concerning the future import of the chemical. Every six months the secretariat must inform all Parties of the responses received through the PIC Circular and the website. Exporting party has to ensure that export do not occur in contrary to the import decision. The level of the import response rate among the Parties in Asia is 71%.

A developing country or a country with an economy in transition that is experiencing health or environment problems caused by a severely hazardous pesticide formulation under conditions of use in its territory, may propose to the Secretariat the listing of the severely hazardous pesticide formulation in Annex III of the Convention. In the reporting period there is no proposal submitted.

Furthermore, the Convention also contains provisions regarding export notification. When a Party is exporting a chemical that is banned or severely restricted in its own country, it is obliged to provide an export notification to the importing Party. As this information is provided directly from the exporting Party to the importing Party, the Secretariat does not have any information available on the status. Parties may wish to report to the APPPC on their experience with either sending or receiving export notification.

To ensure the effectiveness of the Convention, Parties have to fully implement it. Governments may wish to report to the APPPC on their experience with submitting notification, import response, export notification, proposing severely hazardous pesticide formulation that causes health or environmental problems and ensue the compliance with the Convention.

2. Technical Assistance

During the reporting period, a number of technical assistance activities have been undertaken in the region. It includes a regional training workshop to introduce to the designated national authorities on how the Convention operates; a training and awareness raising workshop with regional officers of FAO and UNEP and the regional centre of the Basel Convention to discuss opportunities for the regional delivery of the technical assistance; and a consultation with the ASEAN working group on multilateral environmental agreements (AWGMEAS) to promote the ratification and implementation of the Rotterdam Convention in the ASEAN region. In response to requests from Governments, national meetings were held in China and Sri Lanka with the aim to develop national strategy for ratification and implementation of the Convention.

2.1 Regional training workshop for the designated national authorities (DNAs) (March 2004 in China)

In response to requests for training in the implementation of the Convention, in March 2004, the Secretariat of the Rotterdam Convention organized the Asian Regional Training Workshop in Beijing. 47 participants from 17 countries attended the workshop. The workshop provided practical training on the key operational elements of the Convention. It included case studies and discussion in small groups on the preparation and submission of notifications of final regulatory actions, review of decision guidance documents and preparation and submission of import responses, review and completion of the incident report form for severely hazardous pesticide formulations, and an exercise on export notifications.

The participants agreed that as a result of the workshops they had gained practical experience in the implementation of the key elements of the Convention, having worked on the forms and guidance for the preparation and submission. They also understood how these forms were processed by the secretariat and their role in the operation of the Convention.

In addition, the workshops provided an opportunity for countries to share their experience in working towards ratification and implementing of the Convention and to identify national and regional priorities. Participants also considered how existing cooperative mechanisms and activities might be used in addressing those priorities. The full reports of the workshop are posted on the Rotterdam Convention website.

2.2 Training and awareness raising workshop with regional officers of FAO and UNEP and the regional centre of the Basel Convention (October 2004 in Thailand)

In September 2004, at its first meeting, the Conference of the Parties to the Rotterdam Convention adopted a decision (RC-1/14) on the regional delivery of technical assistance inviting regional entities and organizations to make full use of synergies.

To review options, representatives from the regional offices of FAO and UNEP, the regional centres of the Basel Convention and the Secretariat of ASEAN were invited to a meeting in Bangkok in October 2004. This meeting provided an opportunity to discuss how the various offices might cooperate with the secretariat as regional partners in the delivery of technical assistance. In view of the large number of regional and sub-regional organizations in existence, particular attention was paid to the identification of potential partners in the regional delivery of technical assistance. It also presented an opportunity to share experiences and lessons learned in defining country needs and developing technical assistance to meet those needs.

Among others the APPPC has been considered as one of the most relevant regional partner. As follow-up the Secretariat of the Rotterdam Convention, partially in cooperation with APPPC, have undertaken a number of activities in Asia, as reported below.

2.3 Consultation between the Secretariat of the Rotterdam Convention and the ASEAN working group on multilateral environmental agreements (AWGMEAS) on promoting the ratification and implementation of the Rotterdam Convention in the ASEAN region (May 2005, Cambodia)

The Association of Southeast Asian Nations (ASEAN) has established a working group on multilateral environmental agreements, which meets annually. In cooperation with the ASEAN secretariat, a day was added to the working group meeting held in May 2005 with the objective of

considering the status of implementation of the Rotterdam Convention and identifying opportunities for further cooperation.

The working group agreed that its primary role and the role of the ASEAN secretariat in connection relation to the implementation of the Rotterdam Convention would consist of providing a mechanism for the exchange of information on the status of ratification and implementation among ASEAN members. It was also agreed that further efforts should be made to raise awareness of the importance of ratification of the Rotterdam Convention at more senior levels in ASEAN (for example, among ASEAN senior officials on the environment and participants in the ASEAN ministerial meeting on the environment). Countries should approach the Rotterdam Convention secretariat directly regarding assistance with the ratification or implementation of the Convention. A copy of the meeting report was posted on the Rotterdam Convention website.

2.4 Inter-Agency Workshop on China's Ratification and Implementation of Rotterdam Convention, December 2004

Organized by State Environmental Protection Administration (SEPA), the above workshop was held in Sanya, Hainan Province of China, from 13-15 December 2004. Thirty-four participants from eight ministries or commissions under the State Council and provincial government agencies including officials from the Rotterdam Convention Secretariat, Australian experts and the FAO were present.

The workshop recognized that by enhancing the information exchange on hazardous chemicals among countries in international trade, Rotterdam Convention plays an important role in improving environmental management on chemicals. Its ratification and implementation is significant to China, progressively meeting international standards and setting up an example to other Asian countries. It helps China to understand restriction of use of chemicals and pesticides and how to protect public health and ecological environment. Importantly, it facilitates the adjustment of product structure of Chinese pesticide industry and accelerates the development of high potent pesticides with minimum residue. The workshop recognized the importance of the establishment of an organic system in implementing Rotterdam Convention, which was essential to the obligation in the implementation work of China. The country had made great efforts in establishing and developing the management infrastructure for chemicals.

To meet both national and international requirements for plant protection, the Agriculture Ministry has already conducted institutional restructuring activities and established the Plant Protection and Quarantine Division in charge of various activities related to plant protection. The capacity building set a good example for other developing countries.

Having clearer understanding of the basic framework and components of the Convention, the participants reached agreement on the necessity of ratifying the Convention. They also deemed it necessary to establish the implementation mechanism in China to enhance inter-agency coordination, facilitate information exchange, mobilize resources and respond to potential problems. Accordingly, they agreed to promote the formulation of the country's NIP and looked forward to the issuance of NIP Guidance of the Rotterdam Convention.

The above efforts partially facilitated the ratification of the Convention by China, in March 2005. The summary report of the consultation is available on the Rotterdam Convention Secretariat website.

2.5 National Consultation on the Ratification and Implementation of Rotterdam Convention in Sri Lanka, April 2005

Sri Lanka has yet to ratify the Rotterdam Convention. However, since 1998 the country has implemented the interim Prior Informed Consent (PIC) procedure, on voluntary basis with a view to improve chemicals management. The procedure was implemented through the Designated National Authorities (DNAs) namely the Registrar of Pesticides (ROP) of the Department of Agriculture and the Central Environmental Authority (CEA) representing pesticides and industrial chemicals respectively.

In the context that the voluntary PIC procedure cease to operate from 24 February 2006 a National Consultation Forum on Ratification and Implementation of the Rotterdam Convention was held in Sri Lanka from 18-21 April 2005. Representatives from the Ministry of Agriculture, Livestock, Lands and Irrigation, the Ministry of Environment and Natural Resources, the Ministry of Healthcare and Sanitation, the Ministry of Industries and Investment Promotion, the Ministry of Foreign Affairs, the Customs Department, the Import and Export Control Department, the National Planning Department, the Central Environmental Authority, and leading chemicals importers and public interest groups attended the meeting.

They discussed the development of a national strategy for the ratification and implementation of the Convention, which would complement the implementation of Basel and Stockholm Conventions as well as the recommendations of UNITAR-assisted action plan on integrated chemicals management.

The forum recognized that the ratification and implementation of the convention was of great benefit to the country for efficient management of chemicals. A Cabinet Memorandum would be developed in consultation with the two respective DNAs and other relevant agencies. The legal framework and infrastructure facilities would also be reviewed and strengthened in order to manage chemicals efficiently. A need for establishment of a Technical Advisory Committee for industrial chemicals similar to that of pesticides was identified. The forum agreed to establish a drafting committee for the preparation of the Cabinet Memorandum by mid of May 2005 and to submit the Memorandum to the Cabinet by end of June 2005 for approval.

To entertain benefits of the convention without further delay, the DNAs would acknowledge export notifications (as needed), prepare and submit import responses for pesticides and industrial chemicals in Annex III of the Convention as appropriate. The DNAs would also update notifications of final regulatory action for banned or several restricted chemicals, where necessary, and take initiatives in establishing a system for collecting poisoning information in respect of Severely Hazardous Pesticide Formulations.

The summary report of the consultation is available on the Rotterdam Convention Secretariat website.

3. Regional Workshop on International Code of Conduct on the Distribution and Use of Pesticides: Implementation, Monitoring and Observance

The workshop was held in Bangkok, Thailand, from 26-28 July 2005. It was attended by the Asia and Pacific Plant Protection Commission (APPPC) member countries, which included Bangladesh, Cambodia, China, Democratic People's Republic of Korea, India, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Republic of Korea, Sri Lanka, Thailand, and Viet Nam. Other participants included delegates from governments of Japan and

Singapore, UNEP and WHO, representatives from CropLife and PANAP, as observers, and resource persons from FAO, Rome.

The participants discussed, how best the new provisions of the Code of Conduct, revised in 2002, be used to strengthen its guidance to reduce the adverse effects of pesticides on health and the environment and to support sustainable agricultural practices. They assessed the status of implementation of the revised Code at the country level and identified needs, priorities and emerging issues. They also discussed the implications of those new provisions of pesticide management in respective countries. Participants shared the information on the status of observance of the Code in Asia and jointly developed mechanisms for improved monitoring, collaboration and information exchange.

The workshop recognized that all countries in the Asia region are committed to implementing the Code and have made significant progress in promoting the judicious and responsible use of pesticides in support of sustainable agricultural development and improved public health. It was noted that all countries have passed national legislation to regulate the use of pesticides and have established institutions to register the products used in the respective countries. Products that are highly hazardous to the user, consumer or the environment have been banned or severely restricted. All countries support the integrated pest management approach as a means to promote less hazardous and more environmentally friendly alternatives.

The workshop delegates carefully reviewed the draft guidelines on monitoring and observance of the revised Code. Suggestions were made to further improve the questionnaire and its clarity of understanding. In order to strengthen the implementation of the Code of Conduct, the country delegates adopted the following recommendations:

1. The revised Code of Conduct is recognized as a useful document for all countries to review its pest and pesticide management policies for the purpose of protecting human health, the environment and to ensure a sustainable development.
2. Using the proposed guidelines for monitoring Code implementation can be an effective instrument to assess national pesticide management capabilities and capacities and the effectiveness of present regulatory mechanisms. All governments are therefore encouraged to use the guidelines to strengthen their self-monitoring mechanisms to improve decision-making and environmental performance.
3. The delegates recognized that the monitoring of the Code of Conduct couldn't be adequately handled by a single organization. Under the leadership of the designated authority, countries are therefore encouraged to use their inter-sectoral cooperation mechanisms to set-up a broad-based collection and review of country data, also involving industry and civil society organizations where appropriate. This data collection should cover all aspects of pesticides use including public health. This will encourage cooperation and reflect the actual situation in the country more accurately, and thus become more useful for decision-makers in agriculture, environment and health.
4. Results from the regular monitoring of the implementation of the Code should be submitted to the appropriate policy makers in the country for information, and to FAO for compilation and summary. In addition, the option for ad-hoc reporting should be made widely known and encouraged.
5. Particular attention should be given to the monitoring of effects of pesticides on human health and livestock, especially in poorer rural communities, and on important ecological functions such as natural pest suppression, pollination and nutrient recycling that support sustainable agricultural production.

6. More information is needed on pesticide use as it relates to residues in food, the environment, and effects on wildlife, in order to enable the authorities to minimize risks.
7. Participants identified the need for improving knowledge on risk assessment and risk analysis in order to strengthen risk evaluation of pesticides as part of the registration process.
8. Existing pest management policies should be linked with specific pesticide use targets in order to achieve a comprehensive pest and pesticide management strategy with mutually synergistic benefits. This could be achieved through a systematic promotion of good agricultural practices (GAP), including IPM, organic farming, biocontrol agents, biopesticides, appropriate application equipment and others in the context of a broad education of the public, especially the farmers.
9. Generally, the setting of more specific targets in all areas of the Code would facilitate the measurement of the level of compliance.
10. While recognising huge differences between the individual countries, regional similarities exist. Exporting countries should increasingly take on their special responsibilities under the Code; all countries should comply with the concerned international conventions and ensure product quality meeting international standards (e.g. FAO/WHO specifications, ISO standards, etc.); and emerging economies should request assistance to attain a high regional level of achievement of Code compliance.
11. More information exchange should be encouraged between regulatory authorities of the countries in the region, particularly neighbouring countries. A harmonized system of classification and standards would strengthen the information exchange and communication.
12. All countries should have inventories on stocks of obsolete pesticides. Access to facilities for safe disposal of obsolete and leftover pesticides, and used containers are needed.

**PLACE AND DATE OF SESSIONS OF
THE ASIA AND PACIFIC PLANT PROTECTION COMMISSION**

| | | | |
|---------------|---|----------------------------|--------------------------------|
| First | – | Bangkok, Thailand | 3 to 7 December 1956 |
| Second | – | Kandy, Sri Lanka | 2 to 7 December 1957 |
| Third | – | New Delhi, India | 7 to 12 December 1959 |
| Fourth | – | Manila, Philippines | 11 to 19 June 1962 |
| Fifth | – | Canberra, Australia | 26 November to 2 December 1964 |
| Sixth | – | Kuala Lumpur, Malaysia | 27 March to 3 April 1967 |
| Seventh | – | Noumea, New Caledonia | 15 to 23 July 1969 |
| Eighth | – | Jakarta, Indonesia | 4 to 11 October 1971 |
| Ninth | – | New Delhi, India | 2 to 9 November 1973 |
| Tenth | – | Canberra, Australia | 9 to 16 February 1976 |
| Eleventh | – | Kathmandu, Nepal | 22 to 29 September 1978 |
| Twelfth | – | Chiang Mai, Thailand | 27 October to 3 November 1980 |
| Thirteenth | – | Manila, Philippines | 18 to 23 April 1983 |
| Fourteenth | – | Jakarta, Indonesia | 5 to 10 August 1985 |
| Fifteenth | – | Bangkok, Thailand | 27 to 30 October 1987 |
| Sixteenth | – | Suweon, Republic of Korea | 26 to 30 September 1989 |
| Seventeenth | – | Kuala Lumpur, Malaysia | 2 to 7 October 1991 |
| Eighteenth | – | Beijing, China | 23 to 28 August 1993 |
| Nineteenth | – | Los Banos, Philippines | 27 November to 1 December 1995 |
| Twentieth | – | Chiang Mai, Thailand | 26 to 29 August 1997 |
| Twenty-first | – | Yogyakarta, Indonesia | 19 to 23 July 1999 |
| Twenty-second | – | Ho Chi Minh City, Viet Nam | 17 to 21 September 2001 |
| Twenty-third | – | Kuala Lumpur, Malaysia | 4 to 8 August 2003 |
| Twenty-fourth | – | Bangkok, Thailand | 5 to 9 September 2005 |