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# **Report of the twenty-third session of the Asia and Pacific Plant Protection Commission**

**4 to 8 August 2003, Kuala Lumpur, Malaysia**

**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS  
REGIONAL OFFICE FOR ASIA AND THE PACIFIC  
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**REPORT OF**  
**THE TWENTY-THIRD SESSION**  
**OF**  
**THE ASIA AND PACIFIC PLANT PROTECTION COMMISSION**  
**4 to 8 August 2003**  
**Kuala Lumpur, Malaysia**

**1 Opening of the session and organizational matters**

**1.1 Attendance**

The twenty-third session of the Asia and Pacific Plant Protection Commission (APPPC) was held in Kuala Lumpur, Malaysia from 4 to 8 August 2003. Thirty-nine (39) delegates from 19 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, Republic of Korea, Sri Lanka, Thailand, Tonga and Viet Nam attended the meeting. One delegate from Japan and two from the United States of America attended as observers. There were five observers from Malaysia. There were also representatives of five Non-Government Organizations (NGOs) present. The list of participants is attached as annex I.

**1.2 Introductory remarks by Dato' Ismail Ibrahim, Director-General of Agriculture, Chairperson of the Organizing Committee (presented by Dato' Sofian Mohd. Salleh, Director of Human Resource Development )**

In his address, Dato' Ismail Ibrahim welcomed all participants to this biennial meeting and noted that this is the third time that Malaysia has been given the honour to host the APPPC session. The previous two sessions hosted by Malaysia were in 1967 and 1991.

Dato' Ismail Ibrahim emphasized that the APPPC should play an important role to guide and harmonize the implementation of all the phytosanitary standards and other plant protection activities within the region. With the recent revision of the International Plant Protection Convention (IPPC) and the enforcement of the new agreement on sanitary and phytosanitary measures under the World Trade Organization (WTO), the area of cooperation of the new agreement on sanitary and phytosanitary measures (SPS) under the Plant Protection Agreement for the Asia and Pacific region is further enhanced. Hence, it is imperative that regional cooperation be

strengthened through capacity building programmes and information networking among member countries.

Dato' Ismail Ibrahim also noted that the Commission has established three Standing Committees on plant quarantine, integrated pest management (IPM) and pesticides.

### **1.3 Opening remarks by Dam Quoc Tru, Chairperson of the 22<sup>nd</sup> session of APPPC**

Dam Quac Tru thanked the Government of Malaysia for hosting the 23<sup>rd</sup> session of the APPPC. Mr Tru outlined four main activities of the APPPC over the past two years. The activities are:

- i. Contact with the concerned authorities of the APPPC member governments in pursuance of the acceptance of the revised Plant Protection Agreement for the Asia and Pacific region.
- ii. Technical progress towards the successful completion of 22 years of the IPM project in rice; and on-going IPM projects in vegetables and cotton.
- iii. Work with phytosanitary standards include:
  - a. Development of regional standards: guidelines for the development of heat disinfestations treatments of fruit fly host commodities and training requirements for plant quarantine inspectors.
  - b. Participation in the meetings of the Interim Commission on Phytosanitary Measures (ICPM) and Regional Plant Protection Organizations (RPPOs) annual meetings, etc.
  - c. The development of an FAO technical cooperation programme (TCP) project on South American leaf blight (SALB) in line with the revised Agreement of the Commission.
- iv. In the complex area of synthetic chemical pesticides, the secretariat of the Commission contributed towards organizing the first pesticides regulatory harmonization workshop of the Association of South East Asian Nations (ASEAN) countries in 2002, and the second pesticide regulatory harmonization workshop of ASEAN countries scheduled to be held in August 2003. In addition, the Commission in cooperation with concerned institutions and organizations organized the third Triennial Conference on Biopesticides in 2002.

### **1.4 Welcome address by N.A. Van der Graaff, Chief, Plant Protection Service, FAO, Rome**

Dr Van der Graaff welcomed all delegates and observers to the meeting and expressed gratitude to the outgoing Chairperson of APPPC from Viet Nam.

He then stated his observations about the activities supported by the Commission and its relation to global plant protection issues. He noted the successful implementation of IPM in Asia, particularly, IPM in rice. The IPM programme is now extended to cotton and vegetables. He also mentioned that more attention has been given to phytosanitary issues as required under the WTO SPS Agreement. Work had also started on the establishment of regional standards for phytosanitary measures.

He also noted that initial work had started on a new information system for the APPPC in the region, in line with the International Phytosanitary Portal (IPP).

Dr Van der Graaff discussed FAO's technical cooperation programme (TCP) to support and strengthen plant quarantine activities at national and regional levels. It was noted that the ICPM has developed a business plan to accelerate the adoption and implementation of the international phytosanitary standards.

Concerns over the improper use of pesticides including the management of synthetic pesticides and the importance of harmonizing pesticide regulations and management were highlighted. It was mentioned that substantial attention will be given to the implementation of the Rotterdam Convention on prior informed consent procedure for certain hazardous chemicals and pesticides in international trade, expected to be enforced early 2004.

He reminded the meeting that the actual cooperation on plant protection issues, within the framework of APPPC, is the responsibility of its members.

**1.5 Inaugural address by the Honourable Dato' Dr Mohd Effendi Norwawi, Minister of Agriculture Malaysia (presented by Dato' Abu Bakar Taib, Parliamentary Secretary, Ministry of Agriculture)**

In his address, His Excellency Dato' Dr Mohd. Effendi Norwawi extended a warm welcome to delegates, observers and guests to the opening of the 23<sup>rd</sup> APPPC meeting.

The Minister noted that agriculture in the twenty-first century will not only need to produce enough food for a growing and increasingly urbanized population, but will also remain a key factor in alleviating hunger by providing income and employment to farmers. It needs to address issues on protection of the environment, concern for food safety and quality, and the enhancement of rural livelihoods.

In his speech, the Minister covered a number of areas of importance including globalization and international trade; the role of IPPC in relation to the SPS Agreement; the need for APPPC to be self-financing; importance of capacity building; regional minimum residue level (MRL); IPM on fruits and vegetables and genetically modified crops and foods.

Finally, he stressed that APPPC member countries must continue to give attention to developing the agriculture sector, especially on effective plant protection

strategies to facilitate international trade so they become part of a modern, energetic and competitive region.

## **2 Election of the Chairperson and Vice-Chairpersons of the twenty-third session, the Drafting Committee and the adoption of the provisional agenda and timetable**

### **2.1 Election of the Chairperson and the Vice-Chairperson of the twenty-third session**

Asna Booty Othman, Malaysia was elected Chairperson of the twenty-third session of the APPPC.

The elected Vice-Chairpersons were:

Brian Stynes	Australia
Iftikhar Ahmad	Pakistan
Dam Quoc Tru	Viet Nam

The newly-elected Chairperson, Asna Booty asked the meeting to set terms of reference for the Chairperson.

### **2.2 Election of the Drafting Committee**

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

T K Lim	Australia
Nousa Noor	Malaysia secretariat
Muhamad Omar	Malaysia secretariat

### **2.3 Adoption of the provisional agenda and timetable**

It was noted that agenda item 4 was to be considered after item 9 on the agenda. The draft agenda and timetable were adopted.

## **3 Secretariat report on action taken on recommendations of the twenty-second session of the Commission (agenda item 2)**

Chong Yao Shen, Executive Secretary of the APPPC reported on the activities of the secretariat and working groups since the twenty-second session of the Commission.

### **3.1 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 for the Asia and Pacific region. Some FAO member countries such as Bhutan, Maldives, Japan and the United States of America and one non-FAO

member country (Singapore) have expressed interest in becoming members of the Commission.

### **3.2 Status of the revised Plant Protection Agreement for the Asia and Pacific region**

The revised Plant Protection Agreement for the Asia and 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. It was accepted officially only by Viet Nam. Malaysia was reported to have submitted it to the cabinet for approval while other countries such as China, Korea DPR, New Zealand and the Philippines are in the process of obtaining government acceptance.

The FAO-TCP project on “pest risk analysis (PRA) for South American leaf blight of rubber” that was approved by the FAO Technical Cooperation Department in June 2001 is expected to start soon. The result of the PRA project will be used as the basis for formulating South American leaf blight (SALB) regional standard.

Regarding regional standards, two subjects were recommended for consideration in 2002-2003: “import requirements to prevent the introduction of Mediterranean fruit fly” and “guidelines for the training of plant quarantine inspectors”.

The specification of the regional standards was prepared by Biosecurity Australia in consultation with the APPPC secretariat and the Chairperson of the Standing Committee on Plant Quarantine. A regional standard working group was convened in June 2002 to draft the regional standards and renamed them as: “guidelines for the development of heat disinfestation treatment of fruit fly commodities” and “import requirements for plant quarantine inspectors”. The expert consultation on regional standards for phytosanitary measures and information sharing held in October 2002 at the FAO Regional Office for Asia and the Pacific (FAO/RAP) considered and revised the draft regional standards and recommended sending them to all APPPC members countries for consultation and comments.

APPPC members have made few comments on the draft regional standards. The APPPC secretary sent all comments received to members of the Standard Committee. The draft regional standards were revised by the APPPC secretariat and the Chairperson of the Standing Committee on Plant Quarantine, taking into account the comments from the members and some suggestions from T K Lim, Australia. The revised draft regional standards are submitted for consideration and adoption by this Commission.

The Information Network Sub-Committee was convened as a part of the expert consultation on regional standards and information sharing to consider options for an information network and the use of the IPP as the site of a database of the APPPC. The meeting recommended a site within IPP as the suitable site for the APPPC information exchange. The meeting also recommended the categories of information to be used in the APPPC web page and requested the APPPC secretariat to add the relevant information to the web page.

### **3.3 Development of integrated pest management (IPM) programme in the region**

The FAO programme for community IPM in Asia The fourth phase of the regional IPM rice project was terminated after 22 years of support by donor governments. The national foundations established should continue to support the IPM rice activities in individual countries. A book published by FAO/RAP titled *From farmers' field school to community IPM: ten years of IPM in Asia* was warmly welcomed by a number of authorities.

The FAO-EU IPM programme for cotton in Asia The regional IPM cotton project started officially in October 1999 with a contribution of US\$12 million by the European Union and covered six Asian countries: Bangladesh, China, India, Pakistan, the Philippines and Viet Nam. The European Union intends to continue to support the second phase of the programme. This phase is focused on ecologically depressed agriculture including cotton and extended to six more countries. An additional budget of two million euros was recommended for this phase.

The FAO vegetable IPM programme - phase II This programme commenced in July 2002 and emphasized vegetable IPM farmers participatory training and research with a sharp focus on major crops and pests in five countries: Thailand, Viet Nam, Lao PDR, Cambodia and Yunnan province of China. Other Asian countries may join the programme in the later stages. This phase aims to strengthen and expand the capacity of the government agencies and the NGOs to conduct IPM training and continuing field activities, to create and strengthen groups of small holder farmers to take collective action in support of ecological-based vegetable production and marketing, and to institute a sustainable system for solving the technical problems. This will be accomplished with a budget of US\$2.8 million (US\$1.4 million each from the Netherlands and Australia); the project can run until June 2004.

### **3.4 Implementation of the Rotterdam Convention on the prior informed consent (PIC) procedure for certain hazardous chemicals and pesticide in international trade**

The work on pesticides in the Asia and Pacific region is directed towards harmonization of pesticide regulations. Pesticide regulators from South East Asian countries met in Bangkok in January 2002 to assess the need for harmonization of the pesticide regulatory process. All countries expressed an interest in achieving pesticide regulatory harmonization. Five from ten potential subjects identified within pesticide regulatory process were targeted for immediate action: data submission format, data requirement, labeling, propriety rights and extension for bio-pesticides. Greater efforts must be made to ensure efficient data exchange and emphasized the desire for closer cooperation in pesticide regulatory procedures and the need for long term commitments.

The second workshop on pesticide regulatory harmonization for ten ASEAN countries will be held in August 2003 in Malaysia to follow up the activities recommended previously and discuss the raising of a FAO-TCP project on "assisting ASEAN countries to achieve pesticide regulatory harmonization".

### **3.5 Interim Commission on Phytosanitary Measures (ICPM)**

The fourth and the fifth sessions of ICPM were convened in 2002 and 2003 at FAO headquarters, Rome. APPPC was well represented in both sessions with attendance of 14 and 13 APPPC member countries respectively.

The ICPM-4 adopted the phytosanitary capacity evaluation (PCE) as a mechanism to assist countries access their phytosanitary capacity. On-going efforts have been made to further develop and maintain the PCE, which has been trialed in the Asia Pacific region.

### **3.6 Participation in the technical consultation among Regional Plant Protection Organizations (RPPOs)**

The thirteenth technical consultation among RPPOs was convened in New Zealand in 2001.

The consultation adopted the guidelines for recognition of RPPOs and the new rule of procedure for representatives of the RPPOs attending WTO-SPS Committee meetings and decided on many coordinating activities (including the assistance to APPPC in identification PRA consultant for South American leaf blight) and discussed the issue of diminished access to methyl bromide.

The fourteenth technical consultation among RPPOs was convened in Morocco in 2002.

The session endorsed the Executive Secretary's report.

## **4 Country, regional and international organization reports (agenda item 3)**

### **Country reports**

#### **4.1 Australia**

Recent developments in the area of plant health in Australia include the establishment of Biosecurity Australia, the activities of the office of the Chief Plant Protection Officer (OCPPO), the development of the Plant Health Australia (PHA) and the progress and development of Cooperative Research Centres (CRCs).

Biosecurity Australia was established in 2000 as the policy working group within the Department of Agriculture, Fisheries and Forestry – Australia (AFFA) to separate biosecurity policy/review, market access negotiations and international/regional standards setting from the operational role of the Australia Quarantine and Inspection Service (AQIS).

The OCPPO is responsible for the development and implementation of national policies and programmes of significance to Australia's plant health. In the past two years the OCPPO has been involved in managing 12 major pest and disease incursions, with a total cumulative cost of AU\$22.95 million.

PHA is the national coordinating body responsible for addressing priority plant health issues in Australia, and for promoting confidence in Australia's plant industries. CRCs have been established to undertake cutting-edge research for the agricultural and rural sector. Since 1990, twenty-six (26) CRCs have been established.

Australia has a commitment to integrated pest management (IPM) as a key tool in sustainable pest management. Australia has three well-known industry role models in the successful use of IPM programmes: citrus, vine grapes and pome fruit.

The Australian Pesticides and Veterinary Medicines Authority (APVMA) is responsible for evaluating, registering and regulating agricultural and veterinary chemicals. Food Standards Australia New Zealand (FSANZ), in conjunction with other government agencies, monitors food to ensure that it is safe, and complies with standards for microbiological contaminants, pesticide residue limits (maximum residue limits) and chemical contamination. Australia is leading the world in a move away from conventional chemical insecticides towards options such as biopesticides.

Australia continues to play an important role in ICPM standard setting activities and is an active participant in the APPPC. As such, Australia is funding a regional technical consultation in Kuala Lumpur to discuss draft ISPM standards immediately after the 23<sup>rd</sup> APPPC meeting. Biosecurity Australia is committed to working closely with other APPPC member countries in developing phytosanitary standards that are applicable to the Asia-Pacific region.

Australia has an expanding regional plant health programme, especially in quarantine capacity building, to assist developing countries to address their SPS obligations. A key example is the master class in biosecurity, which will be held in September 2003 for invited representatives from Asia, Pacific, and South and Central American countries.

## **4.2 Bangladesh**

Bangladesh with a total population of 123.1 million is the eighth most populous country in the world. Population growth rate at present is 1.48 percent with a density of 876 per sq km. Average life expectancy at birth has changed from 58 years in 1945 to 61 years in 2000.

Malnutrition due to poverty and inadequate nutrition knowledge is considered a serious public health problem as in other developing countries in South and South East Asia. More than 80 percent of the total population is having a problem of energy intake. About 50 percent of the children are born with low birth weight, 47 percent of the total population suffer either from visible or non-visible goiter, 70 percent of the children and women suffer from anemia. Other malnutrition problems also exist due to low intake of riboflavin, vitamin C etc.

Recently, the Government undertook various policies and programmes resulting in the country attaining self-sufficiency in cereal production. But the production of other food items could not meet the nutritional requirement as per desirable dietary pattern. However, initiatives are being taken and the progress has

been slow. Along with the food production, food safety net programme has been undertaken to meet the needs of the distressed families.

To feed the total population, most of the food items are produced in the country. Production of crops including vegetables and fruits are sometimes hampered to a great extent by natural calamities and also pests and diseases. Promotive and preventive measures are taken by the Government to face the natural calamities. But for controlling pests and diseases, the Ministry of Agriculture has taken special care through policy formulation. Previously pests and diseases were controlled using pesticides to protect the field crops, horticultural crops and also forest plants, but most times it brought health hazard. Considering such negative impact, the Government particularly, the Ministry of Agriculture approved the integrated pest management policy at the highest level. Moreover, new pest surveillance, forecasting and early warning systems have been introduced and the Destructive Insects and Pests Rules, 1996 was also amended. The Ministry of Agriculture started implementation of Strengthen Plant Protection Services in 1991 and continued until June 2002. Subsequently based on the unique results, the project, has been extended until June 2005.

As far as IPM policy is concerned, the basic objective is to enable the farmers to grow healthy crops on a sustainable basis for improving the income and nutritional well-being of farmers and consumers. Meanwhile, the Government has institutionalized plant protection measures in the country. Strong coordination both horizontal and vertical, needs to be ensured for successful implementation of the policies and programmes for safe life in the future.

### **4.3 Cambodia**

The current activities of plant protection in Cambodia cover four areas:

- research on pest problem on major crop
- plant quarantine
- pesticide evaluation
- pest control and extension

Research activities related to crop protection and phytosanitary issues were carried out under the agricultural productivity improvement project (APIP).

The sub-decree on phytosanitary inspection No. 98, dated October 1983 was reviewed so it complied with Protocol No. 8 on SPS harmonization of ASEAN countries and WTO Agreement on SPS. This new sub-decree was enacted on 13 March 2003 with other regulations for strict implementation, are in the process of development.

The sub-decree “standard and management of agricultural material” which includes pesticide management was enacted on 28 October 1998. This sub-decree was implemented by Bureau of Agricultural Material Standard (BAMS), Department of Legal, Ministry of Agriculture Forestry and Fisheries. The plant protection and phytosanitary inspection office plays the role of a technical adviser. Through this sub-

decree, the plant protection and phytosanitary inspection office is responsible for: pesticide surveillance, pesticide effectiveness field trial and pesticide formulation analysis. The Plant Protection Office is an executing agency in pesticide management through:

- IPM programme
- safe use of pesticide training
- pest control, field trial and field demonstration

#### **4.4 China**

Owing to many factors, migratory insect pests and epidemic insect pests and diseases have caused serious infestations in the past few years. A great emphasis has been put on the management of crop pests. During the past two years, the Government has carried out the programme of “demonstration of IPM strategies in major crops” and invested about US\$50 million in the programme of “enhancement of plant protection infrastructures”. Since 2001, the Ministry of Agriculture (MOA) has begun a national survey on agriculture pests in national wide.

Great efforts are being made to improve the quality of agricultural products in China. In the past two years, in order to promote clean food and green food products, the MOA initiated a programme of “action plan for the development of non-polluted agricultural products”. The MOA has promulgated a series of notices and rules to strengthen the management of high toxic pesticides, and the monitoring and detection of pesticide residues. Thirty-seven (37) pesticides were banned or restricted. Eleven (11) pesticides were not registered and the registration of 11 others was cancelled.

Since China became a member of WTO in 2001, the Government has paid more attention to IPPC and SPS than ever. Early this year the domestic legal procedure of adherence to the IPPC was initiated. In line with the IPPC and SPS, the Government has reviewed and modified the national phytosanitary regulations and standards of phytosanitary measures. At the same time, China is actively taking part in the development of international and regional standards of phytosanitary measure.

On the other hand, in order to promote the international trade of agro-products, the Government makes great effort to extend the scope of cooperation in plant protection with other countries. MOA has signed bilateral plant protection cooperation agreements with more than 13 countries from 2001 to 2002. Through the successful phytosanitary negotiation, some kinds of Chinese fruits, vegetables and grains have been given permission to export to the international market.

#### **China (Hong Kong Special Administrative Region [SAR] China)**

Crop farming in Hong Kong concentrates on growing vegetables, flowers and ornamental plants. The available arable land is primarily used for vegetable production to supply the local market. In 2002, 32 100 tonnes of fresh vegetables were produced accounted for 5.2 percent of local consumption.

Pest incidence is considerable in vegetable production under the intensive cropping pattern and subtropical climate in Hong Kong. Commonly occurring pests

include: fall armyworm (*Spodoptera litura*), vegetable leaf miner (*Liriomyza sativae* Blanchard), striped flea beetle (*Phyllotreta striolata*), whitefly (*Trialeurodes vaporariorum* and *Bemisia tabaci*), diamondback moth (*Plutella xylostella*), Palm thrips (*Thrips palmi* Karny), cotton aphid (*Aphis gossypii* Glover), Hawaiian beet webworm (*Hymenia recurvalis* (Fabricius)) and melonfly (*Bactrocera cucurbitae*). Fungal diseases, viral diseases and nematodes may also cause damage when farmers do not attend their crops.

The Agriculture, Fisheries and Conservation Department (AFCD) of the Hong Kong SAR Government continues to evaluate and field-test various environmental friendly pest control measures for development of integrated pest management systems to help local farmers combat major vegetable pests. Applicable technical information is disseminated through farm visits, field demonstration and workshops. The Department actively pursues the development of organic farming and automated greenhouse crop production and studies have been undergoing to evaluate the technical requirements.

The Plant (importation and pest control) Ordinance regulates the import of plants, plant pests and soil. To facilitate traders in the export of plants, AFCD also provides phytosanitary certification services.

Currently, a total of 445 pesticides are registered by the Director of Agriculture, Fisheries and Conservation under the Pesticides Ordinance. The Government actively encourages the development and use of alternative measures, including bio-pesticides, that can reduce the reliance on chemical pesticides in agricultural pest control.

The Administration is revising the Pesticides Ordinance to provide for registration by individual pesticide product rather than active ingredient and the control of pest control service providers by license. It is intended to implement the new measures in 2004.

#### **4.5 DPR Korea**

The Government of the Republic, from the principle of the Juche idea, attaches great importance to the work of plant protection which is important for securing sustainable food production and wholesome ecosystem, and paid deep attention to enhancing functions and role of the infrastructure of the national plant protection system.

From the view point of the given topographical and climate conditions, it was confirmed as the best method for prevention of the outbreak and the damage by the pests to continuously apply and replicate the methods of "right crop in the right time" and "right crop on right soil".

The main problem to be solved for implementation of the pest control strategy in DPR Korea is the fact that the control measures are being taken only when material supply is sufficient to control relevant pests and diseases, without confirming the

economical permission standards according to the features of the individual pests causing damages to the crops.

DPR Korea also face difficulty in taking preventive measures for unexpected massive occurrence of pests and its damage due to lack of scientific preliminary survey and forecasting system of the pests emigrating from the Southeast Asia.

Nationwide measures are taken vigorously for the increase of agricultural production in recent years and accordingly a noticeable progress is being made year-by-year.

Improvement of soil fertility and water management was understood and given priority as one of the main efficient factors for the successful control of the pests.

It is our experience that the protection of the crop damaged by rice water weevil was successful if the early ripening variety is transplanted after the top propagation period of the parent insects and if damage continues to exist, simple watering and saturation watering are adopted, under an expectation of damage by newly generated insects after the stage of parenthood land drainage method is applied for several days.

#### **4.6 Fiji Islands**

Fiji is a small developing island nation. Small in land area, population and other resources. Fiji's small island economy is inherently less diversified than those of developed countries and larger developing countries.

Agriculture forestry and fisheries remain the backbone of Fiji's economy. Such sectors are a vital source of employment and subsistence and provide tremendous potential for further development.

Fiji's economy is agro-based and is more vulnerable to internal and external shocks. Therefore our economic survival depends on our capability and capacity to buffer the shocks and to trade, in other words Fiji's capacity to open up, markets for the agricultural, forestry and fisheries products and its ability to service these markets.

Fiji's strength in agriculture trade is the unique quality of the agro products i.e. the taste and free from pests and diseases. Perhaps focusing on a highly effective Quarantine Department and Service.

Agriculture has accounted for 43 percent of Fiji's foreign exchange earnings. It provides 50 percent of the country's total employment and contributes 19 percent to Fiji's gross domestic product (GDP).

The Government of Fiji and the Ministry of Agriculture has highlighted the vital role that quarantine has to perform in facilitating trade and securing the borders of Fiji from incursions of pests and diseases which are harmful to the plants, animals and human health.

Fiji has very limited quarantine capacity to increase its export of agricultural products due to the following major constraints:

- Fiji quarantine is extremely in short supply as far as indigenous expertise is concerned and as far as financial capacity to obtain the necessary expertises.
- Fiji, like other developing countries, has become signatory to the WTO, yet having difficulty in compliance with international standards because of limitation and standard of facilities and equipment available to quarantine services.

The following recommendations embodied the views and contributions from the private sector, civil societies, government and consultants:

- review the current quarantine legislation;
- incorporate the plant and animal quarantine into one quarantine division;
- improve the Information Technology at the quarantine division;
- capacity building and facilities upgrading.

#### **4.7 India**

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

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 set up exists from block level upwards. At the state headquarters, the plant protection work is being attended by Joint Director (Plant Protection).

At national level, major emphasis is being given on the promotion of integrated pest management to minimize the use of harmful pesticides as well as to protect human health and environment from the hazards of pesticides. Under this programme, the farmers are being trained through farmers' field schools (FFSs) to grow healthy crop and manage pests/diseases with need based use of chemical pesticides. To encourage bio-pesticide industry, the data requirement for the registration of bio-pesticides has been simplified and commercialization of all such bio-pesticides is allowed during the period of provisional registration.

Through regulatory measures, the Government is encouraging the import of elite varieties of seeds and planting materials for increasing production and productivity of various crops. In order to give a boost for the export and import of agricultural commodities, four laboratories with modern facilities have been established at three regional plant quarantine stations, namely, Kolkata, Amritsar, Chennai and at national plant quarantine station, New Delhi. Similar facility is being established at regional plant quarantine station at Mumbai.

#### 4.8 Indonesia

Plant protection and quarantine is acknowledged as an important element of crop production in Indonesia. The Government of Indonesia has, therefore, a strong commitment to strengthen the plant protection and quarantine system of the country.

During the past two years, pest infestations were reported to cause damage in some crops producing areas in Indonesia. Crops attacked included paddy, soybean, peanut, corn, cassava, sweet potato, cashew, cocoa, coconut, clove, citrus, banana, rambutan, cabbage, potato and shallot. Whereas pests identified to cause major damage on those crops were rat (*Rattus argentiventer*), stem borer (*Scirpophaga innotata*, *S. incertulas*, *Chilo suppressalis*, and *Sesamia inferens*), brown plant hopper (*Nilaparvata lugens* Stal.), tungro (virus), blast disease (*Pyricularia oryzae*), locust (*Locusta migratoria*), powdery mildew (*Peronosclero-spora maydis*), stem borer of corn (*Pyrausta furnacalis*), army worm (*Spodoptera litura*), corn pod borer (*Helicoverpa armigera*), rice seedling flies (*Atherigona exigua*), leaf blight of corn (*Bipolaris maydis*), soybean pod borer (*Etiella zinckenella*), soybean leaf roller (*Lamprosema indicata* F.), bean fly (*Ophyomyia phaseoli* Tryon.), green semi-loopers (*Chrysodeixis chalcites*), peanut leaf roller (*Biloba subsecivella* Zell.), brown spot (*Cercosporidium personatum* and *C. arachidicola*), wild pig (*Sus* spp.), leaf rust of peanut (*Puccinia arachidis*), spider mite (*Tetranychus cinnabarinus* Boisd.), brown spot (*Cercospora henningsii*), root-rot disease of cashew, scale pest of coconut, cocoa pod borer, stem borer of clove, coconut cricket, CVPD, banana wilt diseases, fruit flies, Diplodia, rambutan leaf caterpillar, slugs on cabbage, and potato/shallot leaf miner.

IPM based control measures which focused mainly on the use of biological control agents, biopesticides, resistant varieties, and farming system were applied to reduce the severity of the damage caused by those pests. Due considerations had been made in controlling the pests. Measures applied commonly those were environmentally friendly, locally specific, acceptable to farmers, inexpensive, and known to cause only minimum negative impact.

As a member of the IPPC, Indonesia has taken all necessary steps to implement the existing ISPMs. Lack of expertise has been identified as a major constraint for the implementation of the standards. To overcome this problem, it is recommended that training programme could be made available for APPPC members in the near future.

At present 30 formulations of biopesticides containing *Bacillus thuringiensis*, *Bacillus coagulans*, *Beauveria bassiana*, *Gliocladium* sp., *Trichoderma koningii*, rotenone, methyl eugenol, and azadirachtin, are registered in Indonesia. Four more formulations containing *Bacillus thuringiensis* and azadirachtin are now being processed for registration.

#### 4.9 Korea, Republic of

With urbanization and industrialization in Korea, the cultivation acreage decreased about 10 percent from 2 055 thousand ha in 1993 to 1 863 thousand ha in

2002. Consequently, cultivation acreage and production of cereals, vegetables, and cash crops are showing gradually decreasing trend. Meanwhile, as the importation of agricultural products from foreign countries is continuously increasing in Korea, National Plant Quarantine Service (NPQS) is carrying out thorough border inspection, monitoring, and control activities to prevent the introduction and spread of exotic pests and diseases.

The occurrence of pests and diseases of rice, which is the most important major food crop in Korea, is changing with the introduction of new rice varieties, change of cultural practices and weather conditions such as unpredictable dry and rainy season. The occurrence of pests and diseases was very low in 2002 as compared with average occurrence rate of last ten years.

IPM in Korea was mainly focused on the basic factors such as pest identification, ecology, and chemical control methods, etc. In 2002, RDA conducted demonstration project for IPM on rice in 37 sites, 549 farmers participated in this project, and they were educated four times. As a result of this, frequency of the pesticide application was reduced from 3.9 times to 2.4 times, and application hour was also decreased from 2.7 hours to 1.6 hours.

The Republic of Korea revised Plant Protection Act (PPA) in November, 2002. The revised PPA allowed importation of live insects for biological control, pollination, education or exhibition purposes after pest risk analysis. As of July 2003, importation of eight species such as *Bombus terrestris*, *Phytoseilus persimilis*, *Encaria formosa* etc. are allowed for pollination and biological control.

In Korea, internet is widely used and accessible to everybody, so most information on phytosanitary measures is available on following websites:

Ministry of Agriculture and Forestry: <http://www.maf.go.kr>

Rural Development Administration : <http://www.rda.go.kr>

National Plant Quarantine Service: <http://www.npqqs.go.kr>

Total 1 064 products of pesticide are now registered in Korea, and they are regulated by different intensity in terms of their toxicity in order to minimize the risk to the human and environment.

The Republic of Korea revised the Pesticide Control Act in June 2002 in harmonization with the prior informed consent (PIC) convention. The Government is going to accept the PIC convention this year.

In order to minimize the negative effects such as agrochemical resistance, destruction of ecosystem and residue in crops, the Rep. of Korea Government is steadily attempting to utilize various kinds of bio-control methods using natural enemies and bio-pesticides.

Considering the rapid increase of public concern and awareness over the environment protection and food safety both domestically and internationally, Korea will steadily pursue the sustainable environment-friendly agriculture as well as quality

production using GAP, in order to get more safe agricultural products without causing any damage to natural environment.

#### **4.10 Lao PDR**

Subsistence agriculture is the main occupation of Lao farmers. Rice production of the country is still not stable from year to year and is often affected by natural calamity such as flood or drought which happens nationwide sometime but frequently in some local areas of the country and consequently insufficiency of food is foreseeable.

Crop farming concentrates on rice, the most important crop, occupying 82-84 percent of the total crop area, and is the staple food for the Lao people.

Pest incidence varies from one season to another and from one region to another. In crop production, the most important groups of pests are generally insects, diseases caused by fungi, bacteria and viruses and weed. Birds, rodents, crabs and snails may be serious pests in certain cropping systems.

Under the pesticide regulations the import, sale, transport and storage of pesticide are controlled through a registration scheme. Presently, there are five registered manufacturers; four manufacturers from Viet Nam and one from Germany. There are 46 active ingredients with 33 trade names permitted to use in Lao PDR.

Over the past years, inoculation of beneficial insect (i.e. *Diadegma semiclausum*, *Microptilis plutellae* and *Cotesia plutellae*) to control the pest damaging cruciferous crop vegetables demonstrates significant results.

Plant protection, especially integrated pest management, is important for implementing the Government objectives of increased market-oriented agricultural product for commercialization and national self-sufficiency. Integrated pest management system will be developed to insure a sustainable productivity in crop production. Initial emphasis will be on developing IPM system for rainfed lowland rice, irrigated rice, cotton, coffee, maize, grain legumes and other commercial crops. Other crops will progressively be subject to IPM.

#### **4.11 Malaysia**

During the 1998 economic crises, the agriculture sector had demonstrated extraordinary resilience. This has prompted the Government to declare agriculture as the third engine of growth for the economy in the new millennium and has taken concerted efforts to further expand the agriculture sector especially in food production and export oriented crops. However this new policy direction comes in the midst of challenges brought upon by trade liberalization and globalization under WTO.

Production of food for domestic consumption is faced with inherent problems of pest infestation, low productivity and increasing labour cost, making it less competitive. Trade liberalization has made it imperative for the country to implement development strategies to make food production more competitive.

Consequently, the Department is implementing several programmes to overcome these problems including:

- pest surveillance and forecasting to control pest outbreak;
- judicious/reduced use of pesticides;
- the use of selective pesticides;
- accreditation of farms with good agricultural practices;
- biological control of pests using barn owl for rats, fish and ducks for weeds and golden apple snail;
- development of IPM/ICP programmes for new crops to meet the requirements of good agricultural practices (GAP) for export market;
- organic farming.

On the other hand, the requirements for scientific justification when imposing any phytosanitary measure under SPS Agreements have a far reaching effect on the future export potential of the country. The main issue being the lack of plant health information, which has hindered recent attempts to gain access to international markets.

Several projects are being implemented to ensure compliance with the SPS Agreement including:

- updating of the host-pest list;
- setting up of a national collection and repository centre for plant pathogens and pests;
- research on effective post harvest treatments;
- implementation of ISPMs such as the establishment of pest free areas of production, the use of integrated measures in a systems approach for pest management, pest risk analysis for quarantine pest, notification for non compliance etc.;
- revision of the existing Plant Quarantine Act and regulations to be consistent with the IPPC and SPS Agreements.

#### **4.12 Myanmar**

Myanmar being an agricultural country, has tried to keep abreast with other nations in the field of plant protection. To meet the international standards, plant protection division has undertaken the responsibilities with the co-operation of member countries of the regional organization, APPPC.

There are no reports of pest and disease outbreaks in this period. Biological control research work as a part of IPM programme is being carried out for cotton, groundnut and vegetables.

Farmers' field school (FFS) were established since the year 2000, at the beginning stage emphasis is made only on the rice farmers.

Plant quarantine works are not expanded in this period, electronic certification was launched starting from end of the year 2002.

#### **4.13 Nepal**

Nepal is basically an agricultural country with 81 percent of population depending on it and GDP accounting 42 percent of the total. Pre and post harvest losses are around 25-35 percent of the total production.

IPM has very successfully covered two-third of the country with male and female trained farmers as 9 684 and 6 782 respectively over a very short period of time. It has reduced the use of pesticides by about 40 percent and increased rice yield by 15-25 percent in the IPM area.

Nepal has revised/reviewed Acts and Regulations of Pesticides and Quarantine. The Pesticide Act is also being reviewed by the legal office of FAO for harmonization purpose.

Nepal has brought in and is bringing many policy changes in line with WTO, SPS measures etc. The Ministry of Agriculture is also being restructured. Further to the approval of three projects on IPM, quarantine and disposal, more projects are hoped to be approved in the near future.

#### **4.14 New Zealand**

MAF has been, over the last two years, undergoing a review of its strategic direction and a document 'biosecurity strategy' has been developed and is now in the final stages of consultation.

The Biosecurity Act 1993 is the principal legislation for the exclusion, eradication and management of pests and unwanted organisms in New Zealand. A substantial amendment was passed in November 1997 and another more recently extend various powers relating to inspection, surveillance, seizure, control and enforcement and also repealed provisions of the Forests Act 1949 relating to biosecurity, which had become redundant as a result of forest biosecurity work being carried out under the Biosecurity Act. The Forest Produce Import and Export Regulations 1989 have also been recently revoked, to remove certain restrictions on the export of non-indigenous forest products.

The on-going development of IHS for plants and plant products is a very large task for plant biosecurity and the group is continuously seeking approaches to streamline their development.

Outbreaks of pests to which MAF officially responded (March 1998 to March 2001) include the downy mildew of carnations (*Peronospora dianthi*) and Cycas necrotic stunt virus. Programmes on the following forestry pests were initiated or continued: Asian Gypsy Moth (only one specimen found), Fall Webworm (*Hyphantria cunea* (Drury)), Dutch Elm Disease, Subterranean Termite, Gum Leaf Skeletoniser, Painted Apple Moth, *Peltoschema sultiralis*, Taiwanese Stag Beetle.

The Biosecurity Authority develops policy and sets standards for the clearance of vessels, aircraft, passengers, cargo, mail, and associated facilities. The delivery of

this service is provided by the MAF Quarantine Service (MQS) which is part of MAF operations.

Arriving luggage is 100 percent screened, either manually searched by quarantine officers, or x-rayed. Since 2001 the number of biosecurity detector dog teams has doubled. Close to 100 percent of mail is currently screened using x-ray technology at the international mail centre in Auckland. Nearly 468 000 containers landed during 2002-03, a 31 percent increase in containers compared with 1999-2000. A recent review of over 11 000 sea containers found that over 30 percent of loaded containers had undeclared wood packaging, and 6.1 percent of loaded containers and 1.6 percent containers had live regulated organisms inside. Some 21 950 line of fresh produce (fruit, vegetables and cut flowers/foilage) were imported commercially last year. Eleven percent did not comply with import requirements.

#### **4.15 Pakistan**

Major crops grown in different ecologies of Pakistan are wheat, cotton, rice, sugarcane, maize, sorghum, millet, rapeseed/mustard and tobacco. Minor crops included pulses, potato, onion, chili and garlic etc. The current yields of major crops in Pakistan are less than 25 percent of the world potential. Insect pests, diseases and weeds are the major constraint causing, on an average, losses of around 20 percent annually. The major insects' 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 are the notorious weed. Moreover, pests in stores, yards and on trade commodities are encountered. The locust situation is calm and the forecast is the same in the coming months. With the exception of few acres of aerial spraying over orchards in Baluchistan, all the plant protection operations are carried out by the private sector.

The pest infestation picture is the same as in the previous years and the usual control operations continue to be taken. In the last four years a tree decline disease has affected mango plants in Shujabad area (Punjab). A reddening leaf malady has affected cotton crop in Sindh in 2002 and 2003; the cause is not known and is being investigated. Mite attack on dates caused heavy losses in Balichistan province in the last two years. Cotton leaf curl virus incited by a Gemini virus and vectored by white flies has been reported in southern Punjab and northern Sindh; a new strain of the virus – popularly called “burewala strain” rendered resistance ineffective in the current varieties. However, it is localized and is being contained through integrated management.

The guidelines on main international standards for phytosanitary measures received from IPPC from time to time have been considered and adopted according to the available and conditions prevalent. Pakistan is committed to implementing the international and regional phytosanitary standards and collaborating in this regard at regional and international level 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

standards. The IPPC 1997 has been ratified in July 2003 and information is being communicated to FAO, Rome.

Pesticides are 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 is registered in Pakistan and hence cannot be used. However, there is need to further improve the enforcement of law and punishing the violations in given time frame. The Pesticide Act has been reviewed and placed before the Agricultural Pesticide Technical Advisory Committee of Federal Government for adoption.

Biopesticide research and development is being encouraged in the country. They are also being registered from international sources. Until 2000, IPM was not institutionalized in Pakistan as in other countries. An analysis of pesticide policy through a UNDP-FAO policy reform project paved the way for the establishment of a national IPM programme in December 2000. Under the umbrella of national IPM, currently three initiatives are being executed with international support in an integrated strategy:

- FAO-EU cotton IPM programme for Asia (2000-2004)
- ADB-FAO cotton IPM programme (2002-2004) and
- AGFUND-FAO pesticide risk reduction for women in Pakistan

While FAO-EU regional project and ADB-FAO project aim at building the capacity of the field facilitators of Agriculture Extension Department and farmers in growing healthy cotton crop through FFS approach, the project on pesticide effect on women seeks to initiate women's participation in cotton IPM. Under the Government of Pakistan national IPM initiative that has been approved in July 2003 at a cost Rs.197 million for five years IPM is being pursued on system wide basis rather than commodity basis. The initiative seeks to reach 50 000 farmers by the end of year 2007.

#### **4.16 Sri Lanka**

The tropical environment in most parts of the country while being conducive for year-round production of tea, rubber, coconut, rice, maize, coffee, cinnamon, pepper, cardamom, vegetables and fruit crops, also poses serious problems in plant protection.

The following pest outbreaks are reported:

- Coconut mite (*Aceria guerreronis*) which spread during the last three to four years is now fairly managed using chemical and biological means.
- Powdery mildew (*Oidium spp*) on *Nephelium lappaceum* orchards causing fruit drop is recurring.
- Aquatic weeds (*Monochoria vaginalis*, *Hydrilla verticillata*, *Colocasia spp* and Alligator weed (*Alternanthera philoxeroides*) affect

irrigation systems while *Parthenium hysterophorus* is prevalent in dry lands. These weeds are being actively managed with collaboration of the Irrigation Department and Regional/Local Administration.

Integrated pest management (IPM) IPM programmes which have been in operation since 1984 with FAO support until 2002 contributed significantly to save costs including environmental costs. The programmes is now operated with local funds and modified to include a curriculum on soil ecology during training of trainers (ToT) and FFS. An intenerated pest and vector management (IPVM) programmes was initiated in collaboration with several organizations in rice eco-systems where vector-borne human parasites exist. IPM in vegetable crops is gaining popularity.

Legislative developments and NPPO structure Regulations under the 1999 Act are being finalized. Until such time they become operational, the existing regulations will continue.

International standards for phytosanitary measures (ISPM) Pest risk analysis for sensitive materials including bio-pesticides and organic fertilizers are yet to begin as scientists with skills are wanted.

New regional standards for phytosanitary measures (RSPM) Sri Lanka proposes:

- provision of guidelines and training to meet SPS requirements
- international collaboration in testing GM and LM materials

Pesticide regulation Sri Lanka has been active in limiting imports of highly toxic chemicals using administrative procedures. Sophisticated pesticide analytical facilities are yet to be installed. PIC procedures are implemented and the PIC secretariat has been informed of the banning of five chemicals.

Review of status of plant protection organization and strengthening FAO has agreed to provide experts to review and propose means for strengthening the NPPO in Sri Lanka.

#### **4.17 Thailand**

Plant protection development is aimed at utilizing IPM technology in the sanitary and phytosanitary areas. The policy and master plan of agricultural pesticide year B.E. 2545-2549 (2002-2006) is the principle guideline for implementation of the representative of the Government and private sectors. Highly hazardous pesticides will be banned following PIC Convention and FAO code of conduct. The National Bureau of Agricultural Commodity and Food Standard (ACFS) is the new organization that will be commissioned to consolidate works in various agencies on agricultural commodity and food standards in harmony with pertinent international standards. Pesticide residue detection in fruit and vegetable and agriculture processing has to be strengthened to support the Government policy on “food safety year 2004”.

#### **4.18 Tonga**

Tonga is one of the major exporting countries of agricultural products in the South Pacific region. Tonga seasonally imports fresh plant commodities from New Zealand, Australia and United States. As exports and imports of plants and plant products gradually increase, Tonga has concerns about introduction of new quarantine pests.

Under these circumstances, Tonga Ministry of Agriculture, Forestry and Food (MAFF) has implemented appropriate phytosanitary measures at ports of entry and has developed and improved plant quarantine systems during the last two years in order to prevent the introduction of new quarantine pests taking into account the consistency with the WTO SPS Agreement and relevant international standards on phytosanitary measures.

Tonga MAFF is the designated national plant protection organization. Within MAFF, Quarantine and Quality Management Division (QQMD) is the authority that oversees the quarantine and export operations and activities while the Research and Extension Division (RED) oversees and conducts the plant protection research and advisory activities. QQMD has been mandated to maintain the regulatory functions in quarantine, export inspection and quality control, and to facilitate trade. QQMD ensures systems and programmes are developed to maintain export quality assurance and ensure safe imports so to protect Tonga's agricultural industries, its pristine environment and biodiversity, and the health of the people. QQMD also ensures importations of pesticides are in compliance with the national pesticide legislations and other international guidelines.

The QQMD is responsible for maintaining a quarantine barrier at the ports, airports and post office mail center in Tonga. MAFF-QQMD has developed the quarantine operation manual for quarantine inspectors. The manual contains policy and standards or guidelines for clearance of vessels, aircrafts, passengers, cargo and mail. The quarantine operations are cost-recovery for all services.

The role of the RED of MAFF is to develop and maintain research in plant protection and production, and manage plant pest surveillance programmes. In cases of pest incursions and outbreaks, both divisions are required to collaborate to efficiently and effectively control and/ or eradicate the pest involved. Pesticide management programmes such as screening of applications for imports of pesticides, approval and issuing of permits to imports pesticides, training of farmers on safe use of pesticides and pesticide awareness programmes are also overseen by RED. Tonga Trust, a non-government organization also assists RED in pesticide awareness programmes and training for civil public communities.

MAFF-QQMD provides export inspection and certification. Depending on the importing country requirements, certification may be provided through end-point consignment inspection, or through audited, accredited exporter facility and inspection programmes.

#### 4.19 Viet Nam

In the process of economic renovation and international integration, Viet Nam continues to achieve a great success in the agricultural sector over the past two years. Important crops with high potential of exports have been increasing in terms of production and export. Plant protection activities have contributed to assuring the food security programme and have played an important role in the international trade.

Pest infestation status during 2001-2003 were under control without significant losses to agricultural production. New occurrence of pests with high potential of spreading and causing damages recorded in Viet Nam during 2001-2003: *Balansia oryzae* (*Ephelis oryzae*) coconut beetle (*Brontispa sp.*), sugarcane white grub (*Alissotum impressicolla*) and pineapple root rot diseases.

During 2002-2003, the national IPM programme is running 13 IPM-related projects which are directly implemented by the National IPM Committee with assistance/collaboration from various international organizations. In the past two years, then National IPM programme has trained a total of 3 036 trainers and nearly 128 500 farmers. Community IPM activities have been carried out in 22 provinces with a wide range of studies conducted by IPM farmer groups. Activities include field studies, field days, village planning meetings, farmer training of trainers, FFS, rat management, disease management.

Pesticide registration and management scheme has been thoroughly reviewed. As of June 2003, about 350 a.i. with 1 164 trade names have been registered for use, 19 a.i. including 33 trade names of pesticides are restricted in use and 28 a.i. are banned in Viet Nam. Bio-pesticides are also widely applied to pest control with 59 products being registered in 2003. All recommendations of WHO, UNEP, FAO with regard to the PIC and POP conventions have been considered and accepted to protect the health of human and the environment.

The plant quarantine system of Viet Nam is being further strengthened in order to effectively carry out commodity inspection activities. The highest legal instrument concerning phytosanitary measures are the Ordinance on Plant Protection and Quarantine, the revision of which was approved on 25 July 2001. The legislation on plant quarantine was reviewed and amended in the light of the IPPC, WTO-SPS Agreement and other international standards. In order to implement ISPMs, Viet Nam has officially transformed three international standards into national ones and applied other ISPMs.

However, there remains some points related to regulatory and analytical capabilities that need to be improved in order to meet the objectives of plant quarantine. The number of national plant quarantine standards is still insufficient and great efforts to develop more standards to respond the rapidly changing situation are being made.

## **Regional and international organization reports**

### **4.20 Japan (observer)**

Japan is one of the major importing countries of agricultural products in the world. As a number of imports of plants and plant products gradually increase, Japan has some concerns about introduction of new alien pests.

Under these circumstances, Japanese plant quarantine authorities have implemented appropriate phytosanitary measures at the entry points and have improved plant quarantine systems in order to prevent the introduction of new alien pests taking into account the consistency with the WTO-SPS Agreement and relevant international standards on phytosanitary measures.

On the other hand, many countries have been requesting Japan to lift the import prohibition on their agricultural products. Japan has been lifting import prohibitions as soon as possible if the proposed phytosanitary measures secure the protection level equivalent to prohibition, upon evaluation from a technical and scientific view point.

Regarding research on plant quarantine, for the effective enforcement of plant quarantine and the appropriate implementation of phytosanitary measures based on a sound technical justification, Japan has been conducting the following researches:

- development of inspection techniques;
- pest risk analysis;
- development of disinfestation treatment;
- collection of pest information from other countries;
- biology of quarantine pests;
- accumulation of import and export inspection data.

### **4.21 ASEANET**

Dr Soetikno, representing ASEANET, gave a brief overview of the scope and activities of ASEANET.

ASEANET is a regional technical cooperation network for sustainable development through capacity building in taxonomy. It was established in September 1998 after getting endorsed by the ASEAN senior officials on the environment (ASOEN) at its 9<sup>th</sup> meeting in Singapore.

The mission of ASEANET are:

- to assist member countries implement and fulfill national obligations under the convention on biological diversity (CBD);
- to play a lead role in regional activities in support of the global taxonomy initiative (GTI) and;
- to facilitate preparations by member countries in compliance with requirements of the SPS Agreement under the WTO.

ASEANET activities focus on four core areas of capacity-building:

- information and communication technology (ICT);
- human resource development;
- rehabilitation of collections;
- new technologies in identification and taxonomy.

For further information please visit the website: <http://www.mardi.my/aseanet>

#### **4.22 CAB international (CABI)**

Loke Wai Hong, regional representative for the South East Asia regional centre of CABI, introduced CABI as a global non-profit organization generating, validating and delivering knowledge solutions in the applied life sciences through information products and services and by utilizing its expertise in biodiversity for the benefit of agriculture, industry and the environment. The two major divisions of CABI are: CABI Bioscience and CABI Publishing.

CABI Bioscience is a multidisciplinary scientific capability providing research, training, consultancy and other specialized services worldwide. It was formed as the consolidation of four previous renowned CABI international institutes, viz. IIE, IMI, IIBC and IIP. It is dedicated to tackling some of the world's major problems: raising agricultural productivity in sustainable systems; characterizing, conserving and utilizing functional agro-biodiversity; managing environmental change; protecting the environment from the damaging effects of human activity, and building human capacity. Its 18 programmes are placed under three main areas of activity: crop and sustainable pest management; ecology, systematics and biodiversity; environment and industrial microbiology.

CABI Publishing is a leading applied life sciences publisher, producing and marketing worldwide a range of printed and electronic products within the areas of agriculture, forestry, natural resource management, socio-economics, veterinary science and related disciplines, including human health.

CABI's information for development programme assists developing countries in the acquisition and management of scientific information. Working in partnership with other Bodies, the programme: assists in the design and planning of sustainable library and information systems; contributes to capacity building through training in information and biological sciences, including use of the FFS approach; acts as a facilitator in the transition to new media delivery mechanisms such as the internet; and delivers information content in innovative formats, such as encyclopedic compendia, to meet developing country needs.

CABI seeks to alleviate poverty and improve livelihoods and health by preserving and using biodiversity, promoting sustainable agriculture, encouraging responsible use of natural resources and reducing the gap that exists in access to scientific and technical knowledge between developed and developing countries. CABI's approach is inclusive, integrating stakeholders in participatory ways. The geographic foci of CABI's development activities are sub-Saharan Africa and lower income countries of the Asia-Pacific and tropical America.

#### **4.23 International Rubber Research and Development Board (IRRDB)**

The IRRDB, established in 1937, is a research and development network which brings together the natural rubber research institutes in virtually all the natural rubber producing countries. Much of the work of the IRRDB is centred on specialist groups, covering breeding, physiology, exploitation, plant protection, agronomy, biotechnology, technology and end uses, and socio-economics. Each group has a liaison officer who acts as the link between the group, the secretariat and the Board. Experts from each group meet together at regular intervals to exchange ideas and to formulate proposals for the new activities. Membership of the IRRDB introduces a valuable new dimension by enabling the research institutes to share their experiences and problems, to avoid wasteful duplication of work and when necessary to pool their financial resources in order to undertake activities which are too large or expensive for a single institute.

The IRRDB conducts country surveys of the severity and distribution of all known diseases of *Hevea*. Based on the close cooperation that exists between IRRDB pathologists, an “early warning system” has been set up to advise all countries of the occurrence of outbreaks of extra-serious or unusual diseases. In recent years several such warnings have been issued, enabling the pathologists to take appropriate action. A good example is the *Corynespora* spp. outbreak in Sri Lanka. As a result, the IRRDB has organized two workshops on this disease.

For many years the IRRDB has stressed the need for a concerted effort on SALB, covering methods for eradication, prevention and treatment. The fact that high-yielding Asian clones in particular has been found to be extremely susceptible has resulted in the IRRDB organizing a collection expedition (1981), with the cooperation of the Brazilian plant breeders in the Amazon jungle. The objective was to provide a wider genetic base in effort to breed for SALB resistance. The IRRDB has also awarded SALB Fellowships to plant pathologists from member countries to carry out research in Brazil and enable them to have first-hand experience on SALB. It has also supported the Association of Natural Rubber Producing Countries (ANRPC) in organizing SALB workshop in Brazil for the plant pathologists and plant quarantine officers from Asia and Africa.

The IRRDB Board congratulates the APPPC for its decision to organize the pest risk analysis (PRA) on SALB and would offer it fullest cooperation to ensure its success.

#### **4.24 International tropical fruits network (TFnet)**

Khairuddin Tahir, CEO of TFnet, gave a brief overview of the scope and activities of TFnet.

The TFNet, initiated by FAO member countries, was established in July 2000. It is a membership based network, intergovernmental and inter-institutional in nature. TFNet currently has 37 members global consisting of governments, non-governmental organizations (NGOs) and the private sector coming from various regions of the world.

TFNet's mandate is to promote the production, processing, consumption, marketing and international trade of tropical and sub-tropical fruits. Among the projects which have been and will be implemented by TFNet with its partners such as FAO, Fulbright programme and CABI are: conservation and sustainable utilization of traditional fruit species; developing technical guidelines on organic fruit cultivation; country studies on strategies and action plan for sustainable development of tropical fruit industry and global information system on tropical and subtropical fruits.

Other projects in the pipeline which are expected to be implemented in the next three years include: study on cooperatives and the new economy; productivity and competitiveness of tropical fruit export; clinical study on effect of fruit consumption on cholesterol level and blood pressure.

#### **4.25 US Department of Agriculture-Animal and Plant Health Inspection Service (USDA-APHIS)**

Dennis Hannapel, USDA-APHIS, Director Australasia-Oceania, gave a brief overview of USDA-APHIS activities in the Asia and Pacific region.

In 2003, the major challenge facing the APHIS was the creation of the Department of Homeland Security. All of the plant protection and quarantine personnel at US ports of entry were transferred to the Border Protection Agency along with US Customs and Immigration. APHIS will still maintain responsibility over SPS trade issues, export certification and domestic programmes. APHIS has maintained an active presence in the Asia and Pacific region with offices in Japan, China, Korea, Australia, and the Philippines, to address bilateral SPS matters. Further expansion of APHIS involvement in the region is anticipated with potential new offices being projected for Taiwan, Thailand and India.

### **5 Implementation of the revised Plant Protection Agreement for the Asia and Pacific region (agenda 4)**

#### **5.1 Discussion on the approval of two regional standards for phytosanitary measures**

Dr Hedley, Chairperson of the Standing Committee on Plant Quarantine, chaired this section of the meeting. Members considered the comments provided on the two draft standards.

With the draft standard "guidelines for the development of heat disinfestations treatments of fruit fly host commodities", the proposal was made by China that paragraph four section 2.2.1.2 methods, be amended so that each replicate should have "200 or more fruit fly individuals". The meeting discussed this part and finally agreed to change the figure to "100 or more fruit fly individuals". The other amendments arising from comments were generally accepted, with some editorial amendments. The session then adopted the standard (see annex II).

With the standard “training requirements for plant quarantine inspectors”, the comments provided by members were accepted. Some editorial changes were considered. The session then adopted the standard (see annex III).

Dr Hedley then asked the meeting for subjects for consideration as future standards. Proposals were provided by Australia, China and Malaysia. These were considered later in the meeting.

## **5.2 Initiative on setting up APPPC information system**

David Nowell, IPPC Secretariat (FAO, Rome), described the development of the IPP. He noted the working groups (WG) held and the adoption of the WG report by the ICPM3. Information was provided on how NPPOs and RPPOs can utilize the IPP as procedures for the registration of official contact points. Dr Nowell then went on to illustrate the IPP and how the APPPC site was accessed within the IPP. NPPOs were requested to provide information on official contact points and to ensure existing information is accurate and up-to-date.

Wan Normah Wan Ismail reported that the APPPC web page has already been initiated on a trial run basis in the IPP system. Despite incompatibility between information categories required by the Sub-Committee on Information Networking and the existing structure of the IPP website, most of the information has been successfully entered. However, improvement will be required following further instructions from the IPP Administrator of the IPPC Secretariat.

## **6 Progress in integrated pest management in the region, by CTA of FAO IPM regional project on cotton and vegetables (agenda item 5)**

### **6.1 Updates on status implementation of FAO regional vegetable IPM programme in South and Southeast Asia - phase II**

Brief description phase II (2002 to 2007) programme:

This project builds on the success of the phase I of the FAO inter-country programme (ICP) for vegetable IPM in South and Southeast Asia, which, since April 1996, has carried out applied research, extension and farmer education activities to promote and support integrated pest management in vegetables by Asian smallholder farmers. During phase I, the ICP focused on enhancing governments’ and NGO’s capability to implement training programmes in seven countries using the “training of trainers” (ToT) and “farmers’ field school” (FFS) approach. More than 600 trainers and 30 000 farmers and 30 000 farmers have been trained since the beginning of phase I.

Phase II (2002-2007) of the ICP emphasized vegetable IPM farmer participatory training and research in five countries in the greater Mekong sub-region, with a sharper focus on major crops and pests. Specifically the programme will:

- strengthen and expand the capability of government agencies and NGOs to carry out IPM training and continuing field activities;

- create and strengthen groups of smallholder farmers so that they can take collective action in support of ecologically-based vegetable production and marketing; and
- Institute sustainable arrangements for the solution of technical problems. Phase II is programmed to be more sensitive to quality control of participatory training and research activities, gender, impact assessment and regional issues. The project provides advice, organizes training, and arranges exchange of expertise and funds field studies and follow-up activities in the field.

These activities will be carried out in close collaboration with other regional, national and local IPM-related projects funded by governments, donor agencies and NGOs.

## **6.2 Progress in the FAO-EU IPM programme for cotton in Asia**

The programme continues to focus on more innovative ways to address the needs of small scale farmers, such as poverty alleviation, gender equity, minimizing health hazards, protection of the environment, more efficient cotton production and leading towards more sustainable development. The monitoring mission, the PSC meeting and the mid-term review mission took note of these developments in the participating countries. An important activity for the year 2003 is the implementation of annual planning and refresher practicums for all active IPM facilitators in Bangladesh, China, India and Pakistan. These practicums provided the opportunity for all active IPM facilitators (both farmer facilitators, NGO and government employed IPM facilitators) to share their experiences in implementing farmer education. An important aspect of the practicum is the setting up of posters illustrating and describing the different activities carried out by the IPM facilitators. In addition to sharing experiences, IPM facilitators were reminded of the need to enhance quality farmer education that will enrich farmer field research, strengthen sustainable farmer groups at village level, and encourage farmers to educate other farmers through F2FS or field days. It is hoped that this activity will be an annual affair focusing on reaching greater heights of farmer education quality.

The first half of the year also saw an international seminar on evaluating the impact studies implemented by most of the countries. This is the first time after setting up baseline studies that scientists, researchers, national IPM programme managers and IPM facilitators were able to get together to examine the data collected thus far and make suggestions to move forward with the impact assessment of the programme in each country. The valuable support from an international team of experts from Germany and Thailand greatly facilitated the seminar.

In line with the resolutions of the programme steering committee meeting in Anhui, China in 2002 and taking cognizance of the recommendations of the mid-term review mission, the Programme Management Unit in Bangkok organized a formulation mission to prepare for a succeeding phase of this programme - participatory IPM Asia programme.

The FAO-EU IPM programme for cotton in Asia continues to move towards achieving the targets set by the project document.

## **7 Progress in the implementation of the provisions of the international code of conduct on the distribution and use of pesticides, and the convention of prior informed consent (PIC) (agenda item 6)**

The code of conduct was amended by the FAO Council in November 2002, as being authorized by the FAO Conference in 2001. The Conference in 2001 had been unable to adopt the code, as a reference to proprietary data was, by number of countries, considered to be at variance with the TRIPS Agreement. This reference was ultimately removed from the Convention text. The code remained in line with FAO's policy to reduce risk associated with the use of pesticides to health and environment and to support and strengthen sustainable agricultural development. The code now provided the framework for a complete management infrastructure that covers pesticides throughout their life cycle, addressed all areas of pesticide management and provided a point of reference for government and the pesticide industry. The list of stake holders had expanded, the role of training on all matters related to pesticide management had been stressed, the life cycle concept had been incorporated and the promotion of IPM and IVM had been stressed. New terms had been included (GAP, expanded IPM definition) while others had been brought in line with present days usage (risk, hazard). Issues on protective clothing and the need for research on alternatives and applications methods and equipment were addressed. The code called for technical assistance on data evaluation and for post registration surveillance and monitoring studies. Attention was given to the collection of empty containers and the proper siting of pesticide plants. The prohibition of import, sale and purchase of pesticide products falling in WHO class I was suggested. There was a need for licensing schemes for traders, and the reduction of the potential for pesticide accumulation of pesticides. The Article on Information Exchange had been completely changed and simplified. Responsibilities for obsolete pesticides should be shared among all relevant parties.

The history, objectives, operations and benefits of the Rotterdam Convention were revised. Achievements in the period since the adoption of the Convention in 1998 had been the implementation of the interim PIC procedure, including the establishment of the interim chemical review committee and the inclusion of further pesticides and chemicals in the procedure, and the preparation of the First Conference of Parties (COP). Some 128 countries participated in the interim PIC procedures. At present, there were 44 parties to the Convention, which would come into force when 50 countries had become a Party. It was, therefore, expected that the Convention would enter into force by the end of 2003/early 2004 and the first COP was planned in the period August-December 2004. Workshops on the interim procedure had been held and further workshops were planned in Samoa for the Pacific and in China for Asia. Most countries in the region participated in the interim procedure, four experts of the region participated in the Interim Chemical Review Committee.

## **8 Overview of the International Plant Protection Convention's (IPPC) activities (agenda item 7)**

Progress over the last two years was reviewed. It was recalled that the ICPM4 had agreed on a strategy plan, which includes standard setting, information exchange, dispute settlement, technical assistance and capacity building, an administrative framework, and preparation of the IPPC and cooperation with other organizations. The Standards Committee had been established consisting of 20 experts, which includes three experts from the Asian region and three experts from the Pacific region. Six new standards and two addendums to existing standards had been adopted. Three new standards were in consultation with countries, including a standard on PRA for living modified organisms. ICPM5 had raised serious concerns about the needs for specific standards, the slow pace of adoption of standards and priorities for standard settings. A focus group has met on the subject, and its report would be considered by the RPPO meeting and the strategic planning group, which would make a recommendation to ICPM6. Work had continued on the IPP and a Dispute Settlement Body had been established. There was increasing demand for technical assistance. Regional technical consultations on draft ISPMs were held when funds permitted. The phytosanitary capacity evaluation (PCE) tool was widely used in technical assistance projects. The PCE was further developed. A business plan had been developed by the bureau and was adopted by ICPM5. It identified the need for a substantial increase in outputs and in the related resources. The plan had received wide support by FAO members in various governing bodies of FAO, in the preparation of the 2004-2005 programme of work and budget. The ICPM5 had also endorsed the establishment of a voluntary trust fund with the purpose to provide resources to benefit developing countries, in particular, to increase the participation in standard setting. The IPPC had strong links with RPPOs, the WTO SPS Committee and the convention on biological diversity and its Cartagena Protocol. Future initiatives would concentrate on increase in the pace of standard setting, greater participation by developing countries and further implementation of information exchange and technical assistance.

It was noted that only 46 signatories to IPPC have accepted the 1997 revision.

## **9 Progress in the implementation of plant quarantine in the Asia and Pacific region (agenda item 8)**

Dr Hedley, Chairperson of the Standing Committee on Plant Quarantine, noted that development work within the IPPC had continued over last two years.

### Regional standards

The work during this last period involved the first meeting of a APPPC working group to draft standards, 17 to 19 June 2001, and the first meeting of the APPPC regional Standards Committee, 29 October to 1<sup>st</sup> November 2002. After the standards had been drafted and checked by the APPPC Standards Committee, the draft standards were forwarded to all members for consideration. As there were few comments from members on the standards, a further meeting of the APPPC Standards Committee was not held. The comments were considered by the secretariat and the

Chair of the Standards Committee and the results of this consideration were presented to the meeting.

After some discussion of a point raised by China, the meeting supported the publication of the reports of the APPPC regional Standards Committee on the APPPC web site.

#### Regional technical consultations on draft international standards for phytosanitary measures

The third consultation was held 6 to 8 August 2002. The second consultation was held prior to the 22<sup>nd</sup> APPPC session and the fourth will be held following the 23<sup>rd</sup> APPPC session. Recommendations for amending draft ISPM's are sent to the Standards Committee for consideration. The third consultation was funded by the New Zealand Ministry of Foreign Affairs and Trade and the IPPC secretariat.

#### Information exchange mechanisms for the APPPC

The information exchange requirements for members and the development of a mechanism was discussed at the meeting during 29 October to 1 November 2002. David Nowell described how an information exchange system for the APPPC could operate within the IPP. The meeting went on to sketch out the list of subjects headings that would be included in an APPPC website.

#### South American leaf blight pest risk analysis (SALB PRA)

The PRA TCP has been approved for some time but FAO has been unable to locate an expert consultant/facilitator.

#### Local border plant quarantine project

This regional project requires the participation of three countries. FAO has not been able to arrange this.

### **10 Progress in agricultural pesticide management in the Asia and Pacific region (agenda item 9)**

S.L. Weerasena, Chairperson of the Standing Committee of Pesticides noted that there had been substantial developments in the management of pesticides in the Asia Pacific region. These developments are reflected in the activity reports of member countries.

The IPM programmes implemented in the countries were successful not only with reduction of pesticide use, but also in the promotion of the concept of organic farming.

Most of the countries in the region have recently revised or are in the process of revising pesticide legislation to address the health and environmental concerns.

At international level, FAO has held workshops on harmonization of pesticide use and the disposal of obsolete/unwanted and banned pesticides. Outcomes of these workshops are being made available to sub-regional countries.

The use of biopesticides has increased in the region and workshops had been held to share knowledge and experience.

## **11 Consideration of recommendations of the fourteenth technical consultation among Regional Plant Protection Organizations (agenda item 10)**

Mr Shen, Executive Secretary of APPPC, reported on the recommendations of the fourteenth consultation among Regional Plant Protection Organizations (TC14).

The TC14 was held 9 to 13 December 2002 in Marrakech, Morocco. The meeting discussed issues arising from the thirteenth technical consultation as well as the fourth session of the ICPM.

### Future of methyl bromide for quarantine and pre-shipment applications

The secretariat provided the TC with a discussion document on the future use of methyl bromide. The TC noted that there remains a lack of suitable alternatives to methyl bromide while at the same time there are concerns that availability of methyl bromide could be more limited in the future. The TC suggested that, where appropriate, elements concerning alternative in-transit treatments should be integrated into the general standard-setting programme and that points relating to methyl bromide should be adequately addressed in new ISPMs. The TC also suggested that the ICPM could identify the issues of immediate importance which could be made known to the technology and economic assessment panel of the Montreal Protocol before its next meeting.

### The position of the technical consultation in IPPC work programme priorities

The TC discussed points raised in the strategic planning and technical assistance working group (SPTA) regarding the role of the TC with respect to IPPC work programme priorities and the need for the IPPC secretariat to participate in future meetings. The meeting noted that the TC can contribute to the work programme of the IPPC, in particular for:

- promoting the development and use of ISPMs;
- coordinating phytosanitary expertise especially with respect to the development of international standards and related explanatory documents;
- facilitating the country consultation process for draft ISPMs; and
- supporting other objectives of the IPPC work programme as necessary.

The meeting also agreed that the continued representation of the IPPC secretariat in the TC is essential to provide coordination between the ICPM, RPPOs and the IPPC secretariat.

## Complexity of language of the ISPMs

The TC discussed problems associated with the practical application of ISPMs and agreed that simple language should be used in order to facilitate understanding and implementation by a wider audience. It considered that inclusion of an additional editorial step I the standard-setting process as inappropriate; and instead:

- urges participants in working group, stewards appointed for each standard, to ensure that language used in standards is clear and simple;
- urges the TC to ensure that language used in draft ISPMs is clear, simple and focused, and strongly suggests that this is added to the functions of the standards committee.

The 15<sup>th</sup> TC will be hosted by the Pacific Plant Protection Organization and South Pacific Commission from 29 September to 3 October 2003 in Fiji Islands.

## **12 The APPPC programme of work for 2004 to 2005 (agenda item 11)**

### **12.1 Reports of the meeting of the APPPC Standing Committees**

#### **12.1.1 Meeting of the APPPC Standing Committee on integrated pest management (IPM)**

##### (i) Attendance

The meeting was attended by the following:

Bangladesh	Md. Habibur Rahman
China	Piao Youngfan
Indonesia	Halomoan Lumbantobing Herdradjat N.
Malaysia	Mat Hassan Othman Mohammed Mohd Saleh
Myanmar	May May Khin
Pakistan	Iftikhar Ahmad
Thailand	Prasert Anupunt
TFNet	Chua Piak Chwee

##### (ii) Appointment of the Chairperson and Rapporteur

Iftikhar Ahmad from Pakistan was appointed as Chairperson of the Standing Committee on IPM. N. Herdrajat was appointed as Rapporteur.

##### (iii) 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 3.

Delegates also reviewed the progress made against the recommendations proposed in work plan of 2002-2003 of the 22<sup>nd</sup> session of the APPPC. In most countries, the achievements had been in line with the proposed work plan of the 22<sup>nd</sup> APPPC.

The delegates while reviewing the past efforts, pointed out various challenges for the region:

- consumer education on IPM and IPM produce;
- premium on crops grown through IPM practices;
- policy makers role in creating enabling environment for IPM through organizational and policy support;
- demonstrating FFS-IPM approach as an instrument of community development;
- developing guidelines for applicability of FFS-IPM approach to all main cropping systems in the depressed ecologies in the region;
- developing and mobilizing plural support mechanisms for post-FFS farmer groups;
- further research on the role of GMOs in IPM;
- development of standardized tools for IPM impact assessment;
- institutionalization and quality assurance of IPM;
- women participation in IPM programmes.

(iv) Proposed work plan (2004-2005)

<b>No.</b>	<b>Activity</b>	<b>Supporting agency/party</b>
1.	Regional IPM newsletter through IPP	FAO
2.	Regional IPM workshop	APPPC/FAO IPM projects and other organizations
3.	Expert and facilitator exchange among Asia Pacific region and other regions	Bilateral and multilateral basis/IPM projects
4.	Regional directory of IPM experts	APPPC/FAO IPM projects
5.	Policy support for IPM in the member countries	APPPC/FAO IPM projects national IPM programme
6.	IPM curriculum module development and IPM capacity building in higher education institutions	APPPC/FAO IPM projects national IPM programmes

## 12.1.2 Meeting of the APPPC Standing Committee on Plant Quarantine

### (i) Attendance

The meeting was attended by the following delegates:

Australia	Brian Stynes TK. Lim
CABI-SEARC	Soetikno Sastroutomo
Cambodia	Buntuon Simona
China	Wu Xiaoling Wang Fuxiang Zhao Minggang
FAO	Chong-yao Shen David Nowell Niek Van der Graaff
Japan	Suzuo Saito
Indonesia	Suparno SA Islana Ervandiari
Malaysia	Asna Booty Mazlan Saadon Wan Normah Wan Ismail
New Zealand	John Hedley
Republic of Korea	Kwon Eun-Oh Lee Jeong-sam
Thailand	Udorn Unahawutti Puangpaka Komson

### (ii) Appointment of the Chairperson

Dr J. Hedley chaired this meeting.

### (iii) Review of progress in plant quarantine

The Standing Committee noted with satisfaction the development and adoption of two regional phytosanitary standards. The continuing of the regional technical consultations and the situation with the SALB PRA were discussed.

### (iv) Programme of activities for the next two years

The Standing Committee considered the following:

- a. South American leaf blight (SALB)  
The difficulties with pursuing the PRA TCP were noted. It has been decided to rephrase some parts of the TCP to ensure that the PRA is developed by a group of experts from within the region. Follow-up work to produce the standard is needed to

facilitate the acceptance of part II of the revised Plant Protection Agreement for the Asia and Pacific region was emphasized.

b. Regional standards

The Committee spent some time discussing the list of standards prepared during the plenary discussions. It was suggested that lower priority be accorded to the specific pest subjects (until the ICPM has created a suitable format), the manual for fumigation treatment (references are available from a number of sources), guidelines for monitoring *Ceratitis capitata* and determination of a systems approach for the management of fruit flies. The meeting supported the development of two standards:

- pest free areas for fruit flies
- guidelines for determination of non-host fruit fly status

Australia agreed to prepare draft specifications for the two new standards for consideration by the Standard Committee. The Committee agreed that two-three working group meetings would be needed for this work (the first for scientific experts to prepare a framework and a second to prepare the standards) requiring some US\$50 000. Malaysia offered to check various sources (APEC, TFNet, ASEANET and Griffith University) for funds. It is hoped that the commissions funds (from FAO) will be available to fund meetings of the Standards Committee.

c. Regional technical consultation on draft standards

Australia will be funding the fourth consultation in Kuala Lumpur in 9 to 12 August 2003.

d. Information network

The Standing Committee noted the development of the APPPC website within the IPP. It is hoped that the secretariat will be able to continue to add material to this website. Technical assistance will be available through FAO to assist countries in learning to use the IPP and to develop their own information systems. The Information Officer should be able to assist in the development of this programme.

e. TCP Project on land border quarantine

The TCP project is still at the proposal stage.

Finally the meeting discussed ways of achieving a more consistent understanding of terms, concepts and standards through the region, and methods to make the information in country reports more readily available to interested parties.

### 12.1.3 Meeting of the APPPC Standing Committee on Pesticides

#### (i) Attendance

The Standing Committee on Pesticides was attended by the following delegates:

China, Hong Kong	Lok Wai-shing
DPR Korea	Pak Chun Il
	Kong Ung Gil
Fiji	Hiagi Foraete
Indonesia	Catur Putra Budiman
Laos	Phaydy Phiaxaysarakham
Myanmar	May May Khin
Malaysia	Ismail Hashim
Nepal	K.K. Shrestha
Pakistan	Arif Nadeem
Sri Lanka	Sarath L. Weerasena
Thailand	Thihrapol Unjitwatana
Vietnam	Dam Quoc Tru
Crop Life Asia	George Fuller
	Alan Browning
FAO	P.K. Saha

#### (ii) Appointment of the Chairperson

Sri Lanka was elected to chair the APPPC Standing Committee on Pesticides for 2004 and 2005. S.L. Weerasena of Sri Lanka was entrusted with the chairpersonship.

#### (iii) Review of the progress in pesticides

The Committee reviewed the progress of work undertaken and the following were noted:

- a) The IPM programmes implemented in countries were successful not only in the reduction of pesticide use, but also in the promotion of the concept of organic farming.
- b) Reduction of herbicide usage should be considered as an IPM priority.
- c) The problem of disposing obsolete and unwanted pesticides was highlighted by all countries.
- d) Committee decided to prioritize further and streamline the recommendations already made in 2001.

#### (iv) Recommended work programme for 2004 and 2005

- a) Harmonization of regulatory procedures in pesticides

- Information exchange between countries on pesticide registration for harmonization should be facilitated and continued.
  - Registration information on biopesticides should be exchanged between countries.
  - Information on outputs derived during the 1<sup>st</sup> and 2<sup>nd</sup> FAO-sponsored harmonization workshop on pesticides for ASEAN countries should be shared with the sub-regional countries.
- b) Promotion of safe handling of pesticides  
Training programmes and workshops on safe handling of pesticides should be implemented with FAO/donor assistance.
- c) Organic farming  
Promotion of organic farming should be prioritized for the region and action plans need to be developed immediately.
- d) Disposal of obsolete/unwanted and banned pesticides  
Procedures for disposal of obsolete/unwanted and banned pesticides as arrived at during the global workshop held in 2002 sponsored by FAO should be shared with regional and sub-regional countries.
- c) Prior informed consent (PIC)  
Continuation of submission of information on status of PIC and the Designated National Authority (DNA) for pesticides to the APPPC secretariat.

## **12.2 Discussion and identification of the programme of the work for 2004 to 2005 and its financial resources**

The Executive Secretary outlined the proposed programme of work for 2004 to 2005. He commented that 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 2004 to 2005.

The secretariat will emphasize on the following activities:

- regional standard setting including a meeting of the APPPC Standard Committee;
- continue to carry out the regional TCP, first is “pest risk analysis of South American leaf blight of rubber”. Another two projects during the 2004-2005 are “strengthening the land border plant quarantine” and “assisting ASEAN countries towards achieving pesticide regulatory harmonization”;
- establish the plant protection information system.

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

#### Consultation and meeting

1. Expert consultations on draft regional standards for phytosanitary measures, in the early part of 2004, Bangkok, Thailand.
2. Expert consultation on capacity building towards monitoring and management of migratory pests, in the early part of 2004, Bangkok, Thailand.
3. Expert consultation on the strengthening land border plant quarantine facilities in Asian countries, in the later part of 2004, Bangkok, Thailand.
4. Expert consultation on the development of bio-pesticides use in plant pest management, in the early part of 2005 in Bangkok, Thailand.
5. Pesticide regulatory harmonization meeting for 7 South Asian countries, in the early part of 2005 in Bangkok, Thailand.
6. 24<sup>th</sup> biennial session of Asia and Pacific Plant Protection Commission (APPPC), date and venue will be decide later.

#### Training programme/workshops

1. Workshop for pest risk analysis for South American leaf blight (SALB) of rubber supported by regional TCP project.
2. Training programme for land border quarantine inspectors through regional TCP or FAO/TCDC project.
3. Workshop on inter-country forecasting system and control for brown planthopper (BPH) in the East Asia, may be supported by the Republic of Korea.
4. PRA training course proposal may seek budget from UNDP or other donor agencies and FAO's on-going relevant project.
5. Other training programmes according to member countries requirements in the field of plant protection.
6. TFNet proposed a consultation on IPM for selected tropical fruits. Funds to be located.

Assist in carrying out activities of the various working groups of the APPPC's Standing Committees on:

1. plant quarantine
2. IPM
3. pesticide

#### **13 Date and venue of the twenty-fourth session of the APPPC (agenda item 12)**

Two member countries, Pakistan and Sri Lanka, offered to host the 24<sup>th</sup> session of APPPC in 2005. The meeting decided that the secretariat and the Chair and Vice-Chairs will nominate the country to hold the meeting at a later date.

## **14 Other business (agenda item 13)**

- (i) Increased funding for the IPPC  
The meeting noted the financial constraints faced by the IPPC and called upon APPPC delegates to ask their representatives at the FAO Conference in November 2003 to support the increased funding of the IPPC.
- (ii) Government action on conventions  
The meeting strongly encouraged members to seek their government's action in accepting:
- the APPPC amendment concerning mandatory contributions;
  - the revision of the Plant Protection Agreement for the Asia and Pacific region;
  - the 1997 revision of the IPPC and;
  - the Rotterdam Convention.
- (iii) Terms of reference for the Chair of the APPPC  
The meeting endorsed a terms of reference for the Chair of the APPPC. The Chairperson will assume the duty for a period of two years. Duties will include:
- chairing the APPPC session;
  - participation in meetings related to APPPC's activities where appropriate e.g. development of regional standards;
  - coordinating programmes carried out by the three standing committees of the APPPC;
  - monitoring all programmes/activities through the executive secretary;
  - maintaining the sustainability in solving the technical problems.

## **15 Adoption of the report (agenda item 14)**

The report was adopted.

## **16 Closing of the session (agenda 15)**

Prior to the closing of the meeting, it was noted that this session was the last for Messrs Shen and Saha as they would be retiring from FAO shortly. The meeting thanked them both for their dedicated work over the past years in supporting the APPPC and developing its activities.

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**Guidelines for the development of heat disinfestations treatments  
of fruit fly host commodities**

**Scope**

These guidelines describe methods for identifying and developing appropriate heat disinfestation treatments against quarantine fruit flies in host commodities traded by APPPC member countries.

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**Definitions and abbreviations**

APPPC	Asia and Pacific Plant Protection Commission
area	An officially defined country, part of a country or all or parts of several countries (FAO, 1990; revised FAO, 1995; CEPM, 1999; based on the World Trade organization Agreement on the application of sanitary and phytosanitary measures).
commodity	A type of plant, plant product, or other article being moved for trade or other purpose (FAO, 1990; revised ICPM, 2001).
disinfestation *	Application of a phytosanitary treatment to kill a pest or pests in a commodity.
eclosion *	Metamorphosis to the adult from the egg, pupa, cocoon, puparium or last nymphal instar ( for some insect).

endangered area	An area where ecological factors favour the establishment of a pest whose presence in the area will result in economically important loss (FAO, 1995).
entry (of a pest)	Movement of a pest into an area where it is not yet present, or present but not widely distributed and being officially controlled (FAO, 1995).
equivalence	The situation of phytosanitary measures which are not identical but have the same effect (FAO, 1995; revised CEPM, 1999; based on the World Trade Organization Agreement on the Application of Sanitary and Phytosanitary Measures).
establishment	Perpetuation, for the foreseeable future, of a pest within an area after entry (FAO, 1990; revised FAO, 1995; IPPC, 1997; formerly established).
fecundity *	The potential reproductive capacity of an organism or population; the number of eggs an animal produces during each reproductive cycle.
heat disinfestation *	Application of a heat treatment to kill a pest or pests infesting a commodity
heat treatment	The process in which a commodity is heated until it reaches a minimum temperature for a minimum period of time according to an officially recognized technical specification (ISPM Pub. No. 15, 2002).
host range	Species of plants capable, under natural conditions, of sustaining a specific pest (FAO, 1990).
Instar *	The period or stage between moults, numbered to designate the various periods, e.g. the first instar is the stage between the egg and the first moult.
introduction	The entry of a pest resulting in its establishment (FAO, 1990; revised FAO, 1995; IPPC, 1997).
IPPC	International Plant Protection Convention, as deposited in 1951 with FAO in Rome and as subsequently amended (FAO, 1990; revised ICPM, 2001).
National Plant Protection Organization (NPPO)	Official service established by a government to discharge the functions specified by the IPPC (FAO, 1990; formerly Plant Protection Organization [national])

pest	Any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products (FAO, 1990; revised FAO, 1995; IPPC, 1997).
Pest Risk Analysis (PRA)	The process of evaluating biological or other scientific and economic evidence to determine whether a pest should be regulated and the strength of any phytosanitary measures to be taken against it (FAO, 1995; revised IPPC, 1997).
pest risk assessment (for quarantine pests)	Evaluation of the probability of the introduction and spread of a pest and of the associated potential economic consequences (FAO, 1995; revised ISPM Pub. No. 11, 2001).
pest risk management (for quarantine pests)	Evaluation and selection of options to reduce the risk of introduction and spread of a pest (FAO, 1995; revised ISPM Pub. No. 11, 2001).
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; ISC, 2001).
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).
spread	Expansion of the geographical distribution of a pest within an area (FAO, 1995)
SPS Agreement	The WTO Agreement on the application of sanitary and phytosanitary measures
systems approach(es)	The integration of different pest risk management measures, at least two of which act independently, and which cumulatively achieve the appropriate level of phytosanitary protection (ISPM Pub. No. 14, 2002).
treatment	Officially authorized procedure for the killing or removal of pests or rendering pests infertile (FAO, 1990, revised FAO, 1995; ISPM Pub. No. 15, 2002).
WTO	World Trade Organization

\* terms not included in the Glossary of phytosanitary terms

## **Outline requirements**

Development of a heat disinfestation treatment involves a number of steps. Prior to the development of the treatment, the fruit fly pest or pests should be correctly identified and biological data collected. An appropriate heat disinfestation method should be selected and then small-scale trials undertaken to determine the most heat tolerant stage of the most heat tolerant species of fruit fly. Fruit may be infested using natural or artificial means and 3 000-5 000 fruit fly individuals may be used.

Confirmatory trials to demonstrate the efficacy of the treatment to the level required by the importing country (according to the appropriate level of protection for that country) may use 30 000 or more fruit fly individuals. Appropriate care should be taken over the siting of heat sensors and temperature recording during treatment and the security of the fruit after treatment.

The consideration of other factors that reduce the risk of entry and establishment may allow the heat disinfestation treatment to be used as a component of a systems approach. Large-scale trials may be needed to confirm the commercial and operational feasibility of the treatment.

## **General requirements**

### **Background**

Phytosanitary measures are often required for imported commodities to prevent the introduction of quarantine pests, including fruit flies. Such measures need to be appropriate for a specific commodity and effective against the quarantine pests of that commodity.

APPPC member countries cover a wide climatic range and the many different pests present, including fruit fly species, have different geographic distributions and host ranges. For this reason, there may be differences between countries in their phytosanitary requirements for the importation of fruit fly host commodities.

Usually, phytosanitary measures are developed on a country/commodity/pest specific basis through a process of bilateral negotiation between the National Plant Protection Organizations (NPPOs) of the importing and exporting country.

In developing phytosanitary management options, APPPC member countries should take note of the principle of equivalence and therefore be prepared to use different treatments that are equivalent.

For example, alternative phytosanitary management options such as cold disinfestation treatments, chemical disinfestation treatments, irradiation, area freedom, systems approaches, or combinations of the above may be appropriate for consideration of equivalence where feasible.

Among the above measures, heat treatment is regarded as one of the measures that is environmentally friendly and free from residues.

## **Purpose**

The purpose of the standard is to provide a sound basis for APPPC member countries in developing heat disinfestation treatment against quarantine fruit flies in host commodities. It is intended to facilitate trade of the commodities by member countries.

### **1. Identification of quarantine fruit fly species associated with a commodity**

Fruit fly species associated with the country/commodity combination should be identified by a pest risk assessment. Information on the status of fruit fly pests in the importing and exporting country and on host preferences should be comprehensive and well documented. Where not available, research should be undertaken.

A fruit fly can be listed as a quarantine pest for a country only if it meets the criteria of the definition of quarantine pest.

### **2. Identification and development of appropriate heat disinfestation treatment**

#### **2.1 Identification of suitable heat disinfestation treatment**

Heat is commonly used as a physical disinfestation treatment for fruit flies. Heat treatments include hot water dips, vapour heat treatment (VHT) and high temperature forced air (HTFA).

Factors influencing the selection of a treatment include:

- impact on commodity
- effectiveness on the target pests
- post-harvest shelf-life
- feasibility including cost
- requirement of importing country

Heat disinfestation options are best developed on a case by case basis for each country/commodity/pest combination using the general guidelines described in this standard.

#### **2.2 Development of heat disinfestation treatment**

##### **2.2.1 Determination of the most tolerant developmental stage of the most tolerant fruit fly species for country/commodity combination**

Where more than one quarantine fruit fly species is identified for a specific country/commodity combination, it is necessary to determine which stage of

which species is the most tolerant to the treatment that is being proposed. Any large scale confirmatory testing that is required can then be restricted to this species and life stage.

It is important to seek relevant technical expertise (e.g. from biometricians, entomologists) and to consult the relevant scientific literature to ensure that laboratory tests and trials are designed and conducted appropriately. With all tests and trials, untreated controls are required.

Where new treatments are to be developed, it is appropriate for the relevant NPPOs to agree bilaterally on experimental design including the quantity and quality of data required to meet the importing country's requirements.

### **2.2.1.1 Materials**

#### **Experimental fruit**

Fruit for use in disinfestation experiments should:

- be identified botanically, including details of variety or cultivar if this may impact pest response to the treatment;
- be free from any chemical treatment before its use in the trial;
- be described in relation to stage of maturity, size, shape and quality;
- be infested at a susceptible stage;
- be in normal commercial condition.

#### **Experimental insects**

The following points must be considered when insects are used in heat disinfestation experiments:

- the insects should be identified taxonomically; it may be necessary to test for differences within the pest population;
- reference specimens should be made available;
- the laboratory colony should be founded from an appropriate source, preferably from a large quantity of field infested host fruit; ensuring that other species, parasites and disease are removed. This can be aided by rearing different fruit fly species in different rooms;
- the laboratory colony should be founded from appropriate numbers of individuals (100-1 000);
- the laboratory colony should be appropriately handled during its rearing history to ensure peak vigour for the duration of experiment;
- laboratory colonies should be regularly refreshed with new wild flies so that the genetic diversity of the laboratory specimens can be considered to be representative of the population in the field;
- the health of the laboratory colony should be regularly checked by monitoring such factors as per cent hatchability, mean pupal

- weight, developmental time, eclosion percentage, sex ratio of enclosed flies and the fecundity of each generation;
- methods and conditions of rearing should be carefully documented.

### **2.2.1.2 Methods**

#### **Infestation of experimental fruit**

Experimental fruit can be infested through natural (this is preferred) or artificial means.

If not known, it may be necessary to conduct studies on the fruit to determine the most susceptible stage and conditions for infestation.

Natural infestation involves exposing the experimental fruit to ovipositing females of experimental fruit fly species for a set period of time. This is usually done in a laboratory cage under strict conditions. Care should be taken to ensure that the population of ovipositing females in the cage at peak vigour (see 2.2.1.1), that the number of flies per cage, exposure time, number of fruit per cage and experimental conditions are adequately controlled. The time allowed for oviposition in the fruit should be kept as short as possible.

Artificial infestation involves placing the experimental species into the trial fruit. A known number of eggs or larvae of appropriate stage are placed directly into the fruit using a method that is biologically appropriate and minimizes damage to the fruit and insects. Appropriate untreated controls are required.

#### **Determine the most tolerant fruit fly species**

The most tolerant species should be identified through small-scale trials by determining appropriate dose response curves. Small-scale trials should be conducted using replicates of fruit fly individuals (each replicate should have 100 more fruit fly individuals).

“Naked” (*in vitro*) insect trials are appropriate to determine the most tolerant species. This involves taking differently staged eggs and larvae of different species, dipping them directly into hot water (or appropriate heat source) and then transferring them to an appropriate rearing medium. Care should be taken to select an appropriate number of insects, treatment levels and exposure times. Thermometers and other measuring devices must be accurately calibrated.

#### **Determine the most tolerant fruit fly development stage**

The most tolerant development stage of the fruit fly should be identified also through small-scale trials in artificially or naturally infested fruit by determining appropriated dose response curves. This

could be identified by exposing the experimental fruit to ovipositing females of the experimental fly species for a set of period of time to achieve the most tolerant stage. Small-scale trials should be conducted using replicates of fruit fly individuals (each replicate should have 200 more fruit fly individuals). Also, importing countries are likely to require efficacy to be determined by *in vitro* trials.

### **2.2.2 Determination of heat desinfestation treatment**

For the determination of the heat disinfestation treatment, the experiment should use the most tolerant developmental stage of the most tolerant fruit fly species.

Treatments of infested experimental fruit would normally be undertaken first on a small scale. Small-scale trials should be conducted using 3 000-5 000 individuals. Following this, confirmatory test on large-scale trials would normally be required to establish the technical validity of the treatment and to demonstrate the required level of efficacy. 30 000 or more fruit fly individuals should be used in a large-scale trial.

It is necessary to demonstrate that the treatment unit has adequate heating, cooling, insulation, humidity and thermostat controls. In the case of vapour heat treatment and high temperature forced air units, the coolest points should be determined based on a temperature map of the inside of the unit. Heat sensors should be located at these points and placed in the largest fruit in the treatment batch. The rate of heating and cooling should be accurately recorded with measurements taken at appropriate pre-determined intervals (e.g. every two minutes).

Treatment units and facilities may need to be approved or certified by the NPPO before treatment commences. It may be agreed between the NPPO of the importing and exporting countries for officials from the importing countries to observe the trials.

NPPO officials should ensure the temperature specifications are met. The owner/operator for the facility is responsible for its efficient operation

Treatment facilities must be located in a secure area to prevent reinfestation of treated fruits (post-treatment security).

Treated experimental fruit and untreated controls must be held in a secure location under physical conditions that are favourable for the fruit and for the survival of the insect species.

Pupae should be retrieved under appropriate conditions at an appropriate time. All fruit should be examined to find any remaining larvae.

### **2.3 Treatment efficacy**

The level of efficacy required by importing countries for individual phytosanitary treatments must meet the ‘appropriate level of protection’ (ALOP) of the importing country. ALOP is defined by the WTO in the SPS Agreement as: the level of protection deemed appropriate by the (WTO) member establishing a sanitary or phytosanitary measure to protect human, animal or plant life or health within its territory.

WTO members have the sovereign right to determine their own ALOP. The ALOP may therefore vary from country to country but it must be based on scientific justification and applied consistently within each country.

NPPOs generally require a very high degree of efficacy for treatments developed against quarantine pests such as fruit fly. Often, lengthy, large scale trials are required to show that individual treatments are highly effective against the target pest on the commodity.

Traditionally, many of the treatments developed against fruit fly have used probit 9 mortality as a measure of treatment efficacy. However, it is a measure of mortality. Pest risk, on the other hand, must be recognized as being related to the number of survivors and therefore the initial infestation rate must be considered in determining whether the level of efficacy corresponds to the ALOP.

To attain the level of protection to deal with the level of risk associated with fruit fly pests, other factors that may reduce the risk of entry and establishment such as the likelihood of infestation in the imported commodity, survival rate, reproductive potential or establishment potential should be considered. . Also, in cases where the natural rate of pest infestation in the field is low and the chances of survival and reproduction are poor, the probit 9 standard could be too stringent and therefore detrimental. Some countries are proposing a less severe treatment combined with modifications in packing, distribution, and inspection. Recognizing that treatments may range in severity depending on the risk allows expanded use of controlled atmospheres, systems approaches, and other treatments, which have not in the past met probit 9 requirements.

The heat disinfestation treatment could also be used as a component in a ‘systems approach’ or combination treatment (see ISPM No. 14).

### **2.4 Treatment evaluation**

Before commercial trade commences, further large-scale trials may also be required to confirm that the treatments are not only technically sound but also commercially and operationally feasible. The treatment system must be reliable under commercial loading methods and likely product distributions.

## **2.5 Approval**

Where the evaluation exercises are successful, both parties need to endorse the treatment. The approved treatment may then be part of the trade access agreement between the two countries for the commodity involved.

## **2.6 Documentation**

All records and data should be kept and made available for audit by NPPO officials if this is required.

**Training requirements for plant quarantine inspectors**

**Scope**

The standard provides guidance on the development of training requirement for plant quarantine inspectors in phytosanitary inspection theory, methods and procedures.

**References**

- Determination of pest status in an area*, 1998. ISPM Pub. No. 8, FAO, Rome.  
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*Guidelines for pest risk analysis*, 1996. ISPM Pub. No. 2, FAO, Rome.  
*Guidelines for Phytosanitary Certificates*, 2001. ISPM Pub. No. 12, FAO, Rome.  
*Guidelines for regulating wood packaging material in international trade*, 2002. ISPM Pub. No. 15, FAO, Rome.  
*Guidelines for the notification of non-compliance and emergency action*, 2001. ISPM Pub. No. 13, FAO, Rome.  
*Principles of plant quarantine as related to international trade*, 1996. ISPM Pub. No. 1, FAO, Rome.  
*Regulated non-quarantine pests: concept and application*, 2002. ISPM Pub. No. 16, FAO, Rome.
- National Certificate in biosecurity (border quarantine) with strands in international cargo clearance, international vessel clearance, international aircraft clearance and international mail clearance. Training programme established through Forest Industries Training and Education Council of New Zealand Incorporated.
- Australian Quarantine and Inspection Service (AQIS). Certificate II in quarantine inspection: various generic, technical and site-specific modules.
- USDA module phytosanitary legislation background documents
- biological references PCE
- Agreements WTO (SPS), IPPC, APPPC and other relevant international agreements as appropriate
- National legislation

**Definitions and Abbreviations**

APPPC	Asia and Pacific Plant Protection Commission.
Codex	Codex Alimentarius Commission.
Consignment	A quantity of plants, plant products and/or other articles being moved from one country to another and covered, when required, by a single phytosanitary certificate (a consignment may be composed of one or more commodities or lots.) (FAO, 1990; revised ICPM, 2001).

IPPC	International Plant Protection Convention, as deposited in 1951 with FAO in Rome and as subsequently amended (FAO, 1990; revised ICPM, 2001).
ISPM	International Standard for Phytosanitary Measures (CEPM, 1996; revised ICPM, 2001).
LMO	Living modified organisms.
NPPO	National Plant Protection Organization (FAO, 1990; ICPM, 2001).
OIE	Office International des Epizooties.
Pathway	Any means that allows the entry or spread of a pest (FAO, 1990; revised FAO, 1995).
Phytosanitary Certificate	Certificate patterned after the model certificates of the IPPC (FAO, 1990).
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; ISC, 2001). The agreed interpretation of the term phytosanitary measure accounts for the relationship of phytosanitary measures to regulated non-quarantine pests. This relationship is not adequately reflected in the definition found in Article II of the IPPC(1997).
post-entry quarantine	Quarantine applied to a consignment after entry (FAO, 1995).
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 non-quarantine pest	A non-quarantine pest whose presence in plants for planting affects the intended use of those plants with an economically unacceptable impact and which is therefore regulated within the territory of the importing contracting party (IPPC, 1997).
regulated pest	A quarantine pest or a regulated non-quarantine pest (IPPC, 1997).
risk profiling	The use of specific information to direct phytosanitary procedures to areas of highest risk.

SPS Agreement	WTO Agreement on the application of sanitary and phytosanitary measures.
wood packaging material	Wood or wood products (excluding paper products) used in supporting, protecting or carrying a commodity (includes dunnage) (ISPM Pub. No. 15, 2002).

## **Outline of requirements**

National Plant Protection Organizations (NPPOs) have the responsibility to train plant quarantine inspectors. NPPOs may utilize educational organizations, special training institutes, modular programmes or in-service systems.

A number of subject areas for such training include :

- Human resource management to deal with personal skills and occupational health and safety issues.
- Plant health and impact on trade and the environment to cover basic plant health, international agreements and standards, phytosanitary principles, legislation, regulations and national policies, pest risk analysis, regulated pests, product identification.
- Administrative procedures such as conveyance clearance, mail clearance, cargo clearance, passenger clearance, phytosanitary certification, general phytosanitary documentation, liaison with relevant border agencies and authorities, prosecution for non-compliance with phytosanitary regulations and auditing accredited service providers.
- Technical procedures such as pest diagnosis, sampling regimes for inspection, inspection procedures for different commodities, the use of electronic detection systems, phytosanitary actions and treatments, post-entry quarantine and passenger systems.

## **General requirements**

### **1. Purpose**

Plant quarantine inspectors face a wide variety of tasks on a daily basis in the inspection of regulated articles. To effectively accomplish this work, it is desirable for the inspectors to have a sound educational background in agriculture and general knowledge in trade and the environment and have specific training in phytosanitary procedures used in compliance assurance. Harmonization of inspector training across the APPPC region will increase understanding and cooperation among NPPOs in the region. This standard lists most, if not all, of the areas of training for inspectors whilst recognizing that inspectors need specific training in regard to the areas in which they are responsible.

The standard, in describing subject areas for training of plant quarantine inspectors, aims to:

- provide a sound basis for the development of effective and efficient plant quarantine inspectors;
- achieve a consistent approach to training of inspectors across the APPPC region.

## **2. Administration of training systems**

The NPPO should undertake to provide opportunities for training plant quarantine inspectors (IPPC Article IV.2 [h]) in the appropriate subject areas listed below.

It is recognized that different countries (or different states or provinces within a country) may have different areas of concern and may focus on those phytosanitary areas deemed to have the greatest potential need, use and benefit (e.g. different potential pathways for pests). NPPOs should provide suitable expertise and resources for the conduct of a training programme.

Each NPPO has to determine the most efficient way of training its staff. At present there are many methods used by different agencies. These include:

- training at a special training institute;
- training at an existing educational institute with special courses;
- using training modules as part of a course, as stand-alone units or as self study unit;
- on the job training by NPPO officials in the home country or in another country.

Also, such training would involve the preparation of training programmes for each inspector over a period of years. This is likely to involve continuing training as an officer's job responsibilities change or new procedures are introduced.

Each training system would involve the normal administration including the identification of qualification levels, examination setting and marking and appropriate record keeping.

Some countries within the region have quarantine inspectors with multiple responsibilities - for plant health, animal health and food. In such cases, the training programme described in this standard would only cover the plant health aspects of training required.

It may be possible for countries of a region to share training opportunities and hence the costs of establishing training systems.

NPPOs are encouraged to consider the following subject areas for their training programmes. Nevertheless, the modules in which specific training is provided may be different from the heading of the listed subject areas. Some NPPOs have training modules relating to specific areas of operation. For example, training for inspectors at an airport may include aspects of aircraft, passenger and baggage clearance, garbage disposal, etc.

### **3. Subject areas for training**

#### **3.1 Human resource management**

Training modules for plant quarantine inspectors may include these aspects of human resource management:

##### **3.1.1 Personal skills**

These may include:

- communication skills
- interpersonal communication
- dealing with clients
- conflict management
- cultural sensitivity
- language skills
- computer literacy
- report writing
- public awareness campaigns
- taking legal statements
- on the job training of other staff

##### **3.1.2 Occupational health and safety issues**

These may include:

- safety in the work place
- dangerous work areas such as wharves and ship inspections
- recognition and handling , where authorized, of hazardous materials
- handling equipment
- handling toxic and treated commodities
- handling suspect packages and commodities
- identification of safety signs and symbols
- maintenance of equipment/facilities
- application of quarantine treatments

#### **3.2 General knowledge of plant health, trade and the environment**

##### **3.2.1 Basic plant health**

A basic knowledge of the biotic factors involved in plant health e.g. insects, mites arachnids, nematodes, molluscs, weeds, fungi, bacteria, viruses and allied entities is essential. This would include also a knowledge of how these pests may be carried with regulated articles and moved between countries. The basic information should include an understanding of the impact of pests on commercial production, the environment and human health.

Where inspectors act on behalf of other agencies, such as public health and sanitary agencies, in the inspection for spiders, frogs and other hitch-hiker/contaminants, they may need appropriate training. This

also applies where inspectors are involved with inspections relating to hull fouling and ballast water under the International Maritime Organization (IMO).

### **3.2.2 International agreements and standards**

Inspectors need to be aware of the WTO SPS Agreement, IPPC and relevant regional plant protection agreements and the associated standard setting by IPPC, CODEX, OIE and regional plant protection organizations. Inspectors need to have an understanding of the use of the glossary (ISPM 5) terminology.

Inspectors need to be aware of the role of the IPPC in describing the responsibilities of NPPOs and the relevant ISPMs to commodity import and export certification.

### **3.2.3 Phytosanitary principles**

Inspectors need to understand the basic principles of phytosanitary measures such as prevention, eradication, control/containment of quarantine pests. Inspectors should be aware of the principles of plant quarantine as related to international trade (ISPM No. 1).

### **3.2.4 Legislation, regulations and national policies**

It is essential that inspectors are familiar with their national quarantine legislation, regulations and policies. They must understand the structure of the NPPO, their lines of reporting and know their powers, and their limitations, under the legislation. Inspectors may need to be aware of related legislation and regulations of other government agencies (e.g. customs, immigration, health, railways, civil aviation, post and telecommunication, port, airport and border authorities as appropriate).

### **3.2.5 Pest risk analysis**

Inspectors should understand the need for pest risk analysis, the components of assessment and risk management, and how the process is involved in the preparation of import requirements or export certification (ISPM Pub. No. 2 and No. 11, FAO, Rome).

Inspectors need to be aware of the risk assessment process associated with the introduction and spread of regulated pests on regulated articles.

Inspectors should be able to supervise/apply appropriate required risk management procedures that are commensurate with the risk.

### **3.2.6 Regulated pests**

Inspectors should be aware of regulated pests, both quarantine pests and regulated non-quarantine pests, that may threaten their domestic industries and the environment. This should involve knowledge of the origin and the major pathways of introduction of these pests and the risk of their introduction and spread. They should be able to report such pests.

### **3.2.7 Product identification**

Inspectors need to be able to recognize a variety of regulated articles in order to apply regulations correctly e.g. fruit, vegetable, cereals, seeds, flowers, ornamental, processed plant material, propagative material, forest produce (logs, lumber, manufactured articles), cane products, and growth media.

Inspectors may also need to be aware of the operation of Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) regarding endangered species and the Convention on biological diversity, particularly in relation to the entry of invasive alien species that may threaten the environment. (CITES aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival. The Convention of Biological Diversity has as its objectives the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.)

Some countries may require inspectors to deal with documentation concerning LMO material and. issues relating to the Cartagena Protocol. (The Cartagena Protocol on Biosafety to the Convention on Biological Diversity was adopted by the Conference of the Parties to the Convention on 29 January 2000, and deals with ensuring an adequate level of protection is provided for the safe transfer, handling and use of living modified organisms (LMO) resulting from modern biotechnology.)

## **3.3 Administrative procedures**

### **3.3.1 Clearance procedures**

#### **Conveyance clearance (air, sea, land)**

Inspectors need to be able to apply the procedures relating to phytosanitary clearance when a conveyance (aircraft, ship, train, truck, etc.) enters the country. These procedures may involve inspection, documentation checking, treatment, seizure, rejection, containment of risk items, and garbage disposal.

### **Mail clearance**

Inspectors should be familiar with the handling and screening process for mail and the appropriate inspection techniques to detect regulated articles.

### **Cargo clearance**

Procedures used include: documentation checking, inspection, applying/supervising any appropriate treatment, detention, destruction, and refusal of entry. Inspectors should be able to apply entry clearance procedures for consignments of plant material and other regulated articles.

### **Passenger clearance**

Inspectors should be trained in dealing with passengers and passenger baggage. This includes:

- questioning skills for dealing with passengers;
- baggage inspection skills;
- using profiling data to target inspections and other phytosanitary procedures;
- liaise effectively with associated agency personnel;
- procedures for seizure, release and treatment of goods.

### **3.3.2 Phytosanitary certification**

Inspectors should be able to check:

- The implementation of the guidelines for phytosanitary certificates as described in ISPM Pub.No. 12 and export certification system, ISPM Pub. No.7.
- Compliance with the import requirements of the importing country.
- The application of the export certification system of the exporting country.

### **3.3.3 General phytosanitary documentation**

Inspectors should be familiar with the phytosanitary documents relating to import, export and domestic movement of regulated articles. This may also include documentation relating to:

- *The import and release of biological control agents* (ISPM Pub. No.3).
- *Wood packaging materials* (ISPM Pub.No. 15).
- *Notification of non-compliance* (ISPM Pub. No.13).
- Import requests and permits.
- *Regulated non-quarantine pests* (ISPM Pub. No.16).
- Declarations.

- This may include CITES documentation in some countries.

### **3.3.4 Liaison with relevant border agencies and authorities**

Inspectors should be aware of appropriate procedures and protocols to liaise with relevant government agencies including:

- customs
- immigration
- railways and civil aviation
- communication, post and telecommunication
- environment
- health
- banks
- port, airport and any other border authorities as appropriate

### **3.3.5 Prosecution for non-compliance with phytosanitary regulations**

Inspectors should be familiar with the documentation and procedures to support prosecutions for deliberate non-compliance with phytosanitary regulations. Such non-compliance includes:

- the smuggling of prohibited materials;
- erroneous entry or falsification of import-permits (including false product descriptions), phytosanitary certificates or other phytosanitary documents;
- breaking of quarantine seals on containers or packaging.

In some countries inspectors undertake prosecution and may require appropriate training.

### **3.3.6 Auditing of accredited service providers**

Inspectors may be trained to undertake audits of third party service providers and audits of approved quarantine premises and facilities.

## **3.4 Technical procedures**

### **3.4.1 Use of detection systems**

Inspectors should be trained in the use of various detection systems where they are used by NPPOs such as:

- X Ray transmission imaging machines
- scanners used for containers
- thermal scanners for wood and logs
- animal detectors
- inspection at checkpoints

### **3.4.2 Sampling regimes for inspection**

Inspectors need to be familiar with sampling regimes for the inspection of different kinds and quantities of regulated articles. This will involve the determination of the sample size, the number of samples required, and the method of collection of samples from the different types and volumes of plant material on other regulated articles.

### **3.4.3 Inspection procedures for different commodities**

Inspectors need to be able to use different inspection techniques for different commodities and consignments such as bulk, containers, various forms of packaging, bags, sacks or boxes, individual items, passenger baggage using the following methods:

- visual examination including field inspections, monitoring, surveys;
- microscopic examination;
- electronic tests or analysis;
- analytical methods.

### **3.4.4 Pest diagnosis**

Inspectors need to be trained to be able to:

- recognize the signs, symptoms and presence of pests associated with regulated articles;
- use diagnostic tools to aid in primary identification of biotic agents;
- collect and preserve specimens for submission to experts for identification;
- recognize weed seed contaminants and collect samples for submission to experts for identification;
- know where to refer specimens when special expertise is required;
- know how to deal with lack of definite diagnoses;
- recognize contamination of non-regulated articles with regulated articles.

### **3.4.5 Phytosanitary actions and treatments**

Inspectors need to be trained in the use of and supervision of those actions and treatments that may be required. These may include phytosanitary actions to :

- hold
- prohibit entry
- destroy material (by burial or incineration) or
- processing for a different end-use with negligible quarantine risk

Treatments including :

- fumigation
- physical disinfestation using low temperatures, heat, or irradiation
- chemical disinfestations

#### **3.4.6 Post-entry quarantine**

Inspectors should be familiar with the principles and application of post-entry quarantine. Post-entry quarantine may be undertaken in authorized specially designed and secure glass-house, isolated planting areas or special monitoring programmes to observe the imported materials for the incidence of pests. Post-entry quarantine may have different degrees of security to deal with different levels of risk, for example:

- high security using special secure facilities with diagnostic and destruction equipment
- medium security facilities which are audited by the NPPO.

Inspectors should be able to use correct procedures for handling material destined for post entry quarantine.

#### **3.4.7 Procedures for detecting and dealing with new pests**

Inspectors need to be familiar with procedures for detecting new pests, such as pest surveillance and control, containment and eradication procedures for newly detected quarantine pests.