

REPORT OF THE APPPC SYSTEMS APPROACH WORKSHOP II

Bangkok, Thailand

30 November – 4 December 2015



Summary

Participants from 20 countries attended the workshop. It opened with a detailed study of the building of systems approaches. This included discussions on plant quarantine principles, dependent and independent measures, and the sources of systems approaches measures – growing, harvest, post-harvest, transport, distribution and intended use. The stages of pest risk analysis, the options for pest risk management and the characteristics of a systems approach were discussed. The fundamentals that an NPPO needs to understand in the building of a systems approach were: the pest biology and association with the export commodity; commercial production practices; residual risk that needs application of phytosanitary measures; points where measures can be applied and that measures must be least trade restrictive, well defined and appropriately adopted; linked to named pests and effective against them; adequately documented, monitored and validated with mechanisms for corrective action.

Other aspects of systems approaches were discussed including: audit and verification; the responsibilities of trading countries; and the nature of an export protocol. A case study concerning the export of tomatoes from New Zealand was presented. The preparation of an SA was described in detail including activities to: determine the hazards and the objectives for measures within a defined system; identify independent procedures that can be monitored and controlled; establish criteria or limits for the acceptance/failure of each independent procedure; implement the system with monitoring as required for the desired level of confidence; take corrective action when monitoring results indicate that criteria are not met; review or test to validate system efficacy and confidence; and maintain adequate records and documentation. Participants were given a brief exercise to identify the independent measures, monitoring, corrective actions and records associated with a systems approach to manage a post-harvest rot of apples. The exercise was based on a NZ export example.

Much of the workshop was devoted to a simulation exercise on the development and negotiation of a systems approach. The participants were divided up into 6 teams of 4-5 persons. Each team was given a task which included the development of phytosanitary import requirements and a systems approach for commodity exports. The teams were to create a systems approach proposal for two tomato commodities for its pseudo-country to export to another pseudo-country. The teams were then to arrange phytosanitary import requirements for the import of two different tomato commodities from a

different pseudo-country. Imaginary pests (pseudonisms – 28 of them) and pseudo-countries were created for the exercise. The pseudonisms included organisms such as: the 8 winged orbiting pest, the Big foot phytoplasma, the cherry spotted desert ghost, the Exuberant purple smotherer, false internal tomato rotter, the crystal headed muncher, Noflapus scalywingus, partly obscured fruit destroyer, silly sedge, and stinker bacterium. Each pseudo-country was provided with the biological information on about eight pseudonisms occurring in its area. A two page data-sheet included information on the damage incurred, conditions for the development of the pest and scientific data on its name, distribution, host range etc. Information was provided on the pseudo-country conditions. Each pseudo-country developed its own quarantine pest list from the list of pseudonisms of the pseudo-countries exporting tomato commodities to them.

The exercise took place in seven stages. These were:

- the building a Systems Approach proposal and development of a quarantine pest list
- each team acted as an exporting country to create a Systems Approach proposal which was then presented to the designated importing country. Then each team acted as an importing country and examined the systems approach proposal presented for the proposed imports to their country.
- the teams negotiated with each other on the systems approaches proposal as importing and exporting countries.
- each team negotiated with an industry/grower stakeholder regarding both the import and export proposals.
- each team undertook a revision of the systems approach proposals as necessary. Unresolved issues were identified.
- the teams developed a presentation of the mock systems approach proposal.
- presentations of their import and export systems were made.

Examples of presentations are shown as appendices.

The feedback from participants indicated that negotiation skills and relationships with industry were regarded as important. Further work with pest risk analysis and with the technical aspects of systems approaches (efficacy of measures) along with the examination of real case studies would be most useful.

Report

1. Opening of the meeting

Dr Piao Yongfan opened the meeting and welcomed the participants from 20 countries. The participants introduced themselves. Dr Piao noted that this was the last APPPC workshop for the 2014-15 biennial work programme.

ISPM 14 was identified as one of the most important ISPMs for the APPPC ISPM implementation work plan. The aim is to help participants better understand the application of ISPM 14 considering measures from pre-planting, field production, harvest and post-harvest activities. These considerations will be incorporated into group exercises. Experts have been provided for the meeting by Australia and New Zealand with assistance with the meeting organization from Thailand.

2. Overview of the workshop – Peter Creaser

Mr Creaser introduced the organization of the meeting. He thanked Thailand for their support for the meeting and the FAO team for organizing the workshop. Mr Creaser mentioned the various areas of expertise of the participants and that all are involved with trade in plant products in one way or another. The examination of systems approach allows NPPO officials to help propose further ways of developing market access. ISPM 14 describes the systems approach and the successful use of this approach needs a good understanding of the aspects involved. The core components of this workshop are:

- the framework of ISPM 14
- the critical control points of a system and
- an interactive session on building a systems approaches for export products.

The agenda for the meeting is presented in Appendix 1. The participant list is presented in Appendix 2. While ISPM 14 is available at <https://www.ippc.int/en/publications/607/>

3. Building a systems approach, ISPM 14 – A framework unpacked - Nisrine El-Mogharbel

3.1 Introduction

The movement of commodities has brought about greater movement of pests. To counteract this, treaties and agreements have been developed to limit the spread of pests. The most important of these is the WTO Agreement on the Application of Sanitary and Phytosanitary measures (SPS agreement). This agreement is supported by the International Plant Protection Convention (IPPC), the World Animal Health Organization (OIE) and Codex Alimentarius. Sanitary and phytosanitary measures should be based on the standards of these agreements unless scientific justification exists for countries to set non-standard based requirements.

Dr El-Mogharbel then listed the principles of plant quarantine. These included the principles of managed risk, minimal impact, non-discrimination, sovereignty, and ALOP, necessity, technical justification, and equivalence of phytosanitary measures.

Systems approaches is a basic principle that states that integrated independent measures for pest risk management, applied in a defined manner, may provide an alternative to single measures to meet ALOP of an importing party. There must be consistency in the application of ALOP such that discrimination or disguised restriction must not occur. Therefore, the application of phytosanitary measures must use a risk assessment that is appropriate to the circumstances, based on scientific principles, that considers appropriate biological, scientific and economic evidence and takes into account international standards. In summary, ISPM 1 provisions include: harmonization, ALOP, risk assessments, equivalence of phytosanitary measures and appropriate field conditions, and consistency.

3.2 Systems approach (SA): Overview of ISPM 14

An SA integrates at least two independent phytosanitary measures (and any number of dependent measures) that cumulatively reduce pest risk to an acceptable level to meet a country's ALOP. In an SA alternative PMs may be equally effective in achieving ALOP. SA moves away from single treatments and includes a number of measures that can be applied at growing phase, pre-harvest, post-harvest, entry and distribution phases. The aims are to reduce the incidence, viability or reproductive potential of the pest to a level that meets a country's appropriate level of protection. This involves a conception shift from a single step treatments to multiple/integrated step treatments.

An SA may be composed of independent and dependent measures. The types of system approaches may include:

- simple combination of independent measures of known efficacy
- complex and precise systems such as critical control point systems
- or some intermediate between these two.

Pre-harvest measures include – chemical and non-chemical, host status and area freedom.

Post-harvest include - chemical (dips, fumigants) non-chemical Physical cold heat irradiation.

SA components can include those from the following phases:

- growing - treatment, cultivars, certification, low prevalence, PFAs planting time
- harvest - treatment, culling, sanitation, ripeness, time of harvest, handling
- post-harvest - treatment, inspection, sanitation, certification
- transport - treatment, inspection, sanitation, type of transport
- distribution - treatment, inspection, restrict end use, timing, location, quantity, post-entry quarantine, control point between entry and processing
- intended use - heating, cooking, canning, drying etc.

SA burdens and benefits

Using SA brings both burdens and benefits. The burdens may include the need for more data, more complexities being involved, and a change in culture required from those involved. The benefits include more trade opportunities, a more robust system, fewer residues being produced and greater compatibility with ICM/IPM.

In summary, NPPOs need information regarding: the understanding of relevant ISPMs, the identification of pests in the field, the understanding of the biology of the pests, and the identification of the pathway.

3.3 Pest risk analysis (PRA)

PRA was discussed. The key stages were noted – initiation, pest risk assessment and pest risk management. PRAs ask five key questions:

- Is the pest associated with an entry pathway?
- Is the pest absent from the PRA area or is it present and under official control?
- What is the likelihood that the pest will enter, establish and spread?
- What are the negative consequences that may result from the pest being in the PRA area?
- If risk exceeds the ALOP, what phytosanitary measures will reduce the risk?

Pests and quarantine pests were defined (ISPM 5). It was recognized that not all pests are quarantine pests. Also that a single species can be either a harmful pest or a beneficial insect depending on the country in which it is. The example of *Opuntia* and *Cactoblastis* was noted that is in Australia *Cactoblastis cactorum* was introduced deliberately and is a very good biological control agent of *Opuntia* spp; however in the USA *Cactoblastis cactorum* is an accidentally introduced, harmful pest of native cactii.

3.3.1 Stages of PRA

1. Initiation

This stage defines the PRA area, the export area, the pathway and the pest species of potential concern.

2. Pest categorization and risk analysis

This stage notes the quarantine pests on the pathway, estimates the level of risk, and finds the quarantine pests that exceed the ALOP for that pathway.

3. Pest risk management

Here there is the identification of phytosanitary measures that (alone or in combination) reduce the risk to an acceptable level. Measures can be applied at any stage including: Production practices, fruit collection, processing treatment and packaging, transport, and distribution, different types of end use – consumption, plants for growing. Risk management measures are based on: physical, temperature, biological, cultural, irradiation, chemical, combination.

3.3.2 Options for pest risk management

Phytosanitary measures involve the application of:

- mitigation measures – that act directly on pests to reduce their incidence or survivability
- safeguard measures – that act indirectly to reduce the likelihood of pests being on/leaving the pathway to find a suitable host
- procedure measures – that support or validate the efficacy or other measures (inspection, certification, registration)

3.4 Characteristics of a systems approach

The particular characteristics of systems approaches are:

- measures cumulatively achieve ALOP dependent and independent
- at least two independent measures
- potential to apply measures anywhere along the entry pathway
- facilitates a risk management system that is scalable to risk and is least trade restrictive.

3.4.1 Setting up an SA

An NPPO needs to understand:

- the pest biology and association with the export commodity
- commercial production practices
- residual risk that needs application of phytosanitary measures
- points where measures can be applied.

Measures of an SA must be:

- least trade restrictive
- well defined and appropriately adopted
- linked to named pests
- effective against named pests
- adequately documented, monitored and validated
- with mechanisms for corrective action.

3.4.2 SA Measures for consideration include:

Pre planting measures include:

- healthy planting materials
- resistant and less susceptible cultivars
- field conditions
- pest exclusion
- registration of export area and training.

Pre harvest measures include:

- field pest crop management (treatments, pesticides, biological control, cultural controls, pest mating disruption)
- protected conditions (glasshouse production, fruit bagging, netting)

- area of low pest prevalence.

Commodity form and pest association

- commodity factors (above or below ground produce, smooth or rough surfaces, other plant structures)
- pest factors (size, visibility, internal/external life stages, damage caused, behaviour)
- contaminants (weed seeds, trash or soil)

Measures at harvest

- harvesting conditions (time of year, stage of development, harvest technique)
- pathway exclusion/ removal (infested product, contaminants – trash)
- selection and or inspection.

Measures at post-harvest treatment and handling

- commercial quality treatment and processes (controlled atmosphere, washing, brushing, waxing, dipping)
- inspection and grading (including maturity)
- sanitation
- packing processes and condition
- screening of storage and export areas

Measures for transportation, import and distribution

- supply chain/transport conditions (temperature, atmosphere, humidity, packaging)
- disinfestation treatments (fumigation, temperature, surface sterilization, chemical dips, irradiation)
- restrictions (end use, points of entry, import window)
- post-entry quarantine

Other factors that influence risk:

- pest mobility (natural or assisted dispersal, need for a vector, mechanical transmission)
- other issues (consider the complete life cycle etc)

In summary:

The components of a PRA, from ISPMs 2 and 11, were summarized:

- initiation – identify pathways with a potential hazard, identify pests on the commodity, identify potential quarantine pests
- pest risk management – estimate potential for entry, establishment and spread, identify quarantine pests
- documentation – recommendations.

3.5 Factors affecting risk and systems approaches

These may include the intended use of the product (e.g. consumption) or the commodity processing (where any pests are killed or removed).

With plant propagation materials, factors include: the pests involved, the host environment, the form of the product on importing, any high health status, weed risk and any quarantine measures applied.

3.6 Audit and verification are essential procedures for:

- audit of exports (production and packing processes/facilities/processes, treatment facilities/processes, surveillance systems, competent authorities (NPPOs))

- verification – accreditation/registration of export production, packing and treatment facilities, phytosanitary certification
- visual inspection – verification of pest freedom to a specified tolerance, in-field, pre-export or on arrival.

3.7 Responsibilities of the trading partners were noted:

Importing countries should provide specific information regarding its requirements including:

- identifying pests of concern, phytosanitary import requirements
- points needing further clarification
- audit the system once in place and specify actions for non-compliance

Exporting countries should provide sufficient information to support evaluation and acceptance of the systems approach including:

- information on pest/host relationship, commodity production, and export pathway data sufficient to support the proposed SA
- relevant references
- pest management measures proposed for the SA and relevant efficacy data
- monitoring their SA-maintaining appropriate records, reporting, reviewing and maintaining the system
- certifying the effectiveness of their SA.

3.8 Export protocols need to be developed.

The bilateral arrangement is between NPPOs, with stakeholder consultation, and should include information on:

- commodity exported
- pests covered
- areas of production
- participating organisations
- operational procedures, including verification and review
- contingency or corrective action plans.

4. Building a Systems Approach – Case study – exporting New Zealand tomatoes

Joanne Wilson

4.1 Introduction

Systems approaches can be more difficult to implement than a post-harvest treatment. The difficulties were noted and may be related to the:

- biological characteristics of pest
- biological characteristics of host and its production
- availability of measures
- practicality or feasibility of measures
- producer etc. acceptance
- importing country acceptance.

Types of measures include pest reduction, pest exclusion, pest removal, pest elimination. Measures can be applied pre-production, during production, at harvest, post-harvest and during shipping and distribution as discussed earlier.

Dr Wilson then discussed the preparation of a systems approach based on the material in Annex 1 of ISPM 14. This included actions to:

1. determine the hazards and the objectives for measures within a defined system.
2. identify independent procedures that can be monitored and controlled.
3. establish criteria or limits for the acceptance/failure of each independent procedure.
4. implement the system with monitoring as required for the desired level of confidence.
5. take corrective action when monitoring results indicate that criteria are not met.
6. review or test to validate system efficacy and confidence.
7. maintain adequate records and documentation.

4.2 Tomato exports from New Zealand

Dr Wilson described in detail a real case of the use of systems approach involving tomato exports from New Zealand.

With the New Zealand tomato industry, there are less than 300 growers, most with large 5-20 hectare high technology greenhouses. Few tomatoes are grown outside in the field situation for export. There are a large number of specialty varieties used with a production of fresh exports to Australia with a value of only \$8.9m.

The pest of major concern is the bacterium *Candidatus Liberibacter solanacearum*. This was first found in New Zealand in 2008. The pest identity, distribution, hosts affected, transmission, control options and market response were investigated. The hosts include tomato, capsicum, potato and other solanaceous crops. The pathogen is spread by the psyllid vector *Bactericera cockerelli* (tomato/potato psyllid). Crop losses depend on vector pressure. Symptoms on tomato were noted. Measures were to target the vector. Control measures included: yellow sticky traps, pesticides, generalist predators, removal and destruction of affected leaves, removal and destruction of alternate hosts around glasshouses, removal of truss at harvest and post-harvest fruit brushing.

Development of a systems approach included consideration of the following factors:

1. Determination of the hazards and objectives for measure with a defined system. The hazard was the vector and the objective was the prevention of infection or psyllid presence on the fresh tomatoes as the time of export.
2. Identification of independent procedures that could be monitored and controlled at different stages:
 - a. pre-production – pest reduction using pest free seedlings from suppliers with psyllid controls and pre-season glasshouse cleaning
 - b. production – using controlled entry to glasshouse, greenhouse dedicated clothing and hygiene, destruction of infested seedlings, removal and destruction of diseased plants, yellow sticky traps for monitoring and to limit psyllids migrating into greenhouse, pesticide application(s) as required, biological controls/generalist predators, management of alternate hosts and buffer zones around greenhouses
 - c. harvest – pest reduction by removal of trusses during harvest.
 - d. post-harvest – pest reduction using double door entry, traps in brushing area, waste plant material managed

Pest removal – export only tomatoes with trusses removed, remove psyllid eggs, nymphs or adults by brushing, segregation from non-brushed or non-compliant product.

- e. verification – documented code of practice available for pest reduction
 - inspection used to verify pest removal.
 - audits used for system verification.
3. Criteria or limits of acceptance were established for each independent procedure. This involved: pest reduction by removal of infested seedlings, minimal entry to glasshouse, no psyllids in post brushing secure area; and pest removal by all trusses being removed, all tomatoes being brushed, and re-infestation prevented.
4. The system was then implemented with appropriate monitoring. Independent measures include pest controls, truss removal, brushing and post-harvest pest controls.
5. Corrective action was taken when required. Pest reduction include destruction of infested and waste material, pesticide applications, export suspension if high pest numbers found. Pest removal by re-dressing or re-directing for sale in New Zealand, re-brushing or fumigating, or suspension of packhouses if psyllids found in the secure area.
6. Review or test to validate the system efficacy and confidence. The system can be reviewed by examination of pest management records, non-compliance reports and corrective actions, system procedures, industry standards, phytosanitary inspection records, internal and external third party audit procedures, interception reports in the importing country.
7. Maintenance of adequate records and documentation for:
 - production site and grower - registration details, documented system for meeting the export protocol, staff training records, pest management records, crop monitoring records, inventory records.
 - packhouse - registration details, documented system for meeting the export protocol, inventory, staff training records, pest management records, internal audit reports, phytosanitary inspections.
 - exporter - registration details, documented system for meeting the export protocol.

A system summary was discussed. This is presented in Appendix 3.

A short group exercise concerning the management of a post-harvest rot on apples was undertaken. This involved a country that reported the presence of the rot on 3 consignments of imported apples. The problem was found to be on a few production sites only. The risk assessment and problem management, using systems approaches, were discussed.

4.3 Simulation exercise

4.3.1 Elements of the exercise

This is a short summary of the elements of this exercise. It is impossible to present a record of all the discussions and negotiations included in this exercise – so just the more important elements are presented here. The parts of the exercise were spread through the meeting interdispersed with some other agenda items (see Appendix 1). However, there is sufficient to indicate how carefully designed the exercise was so that it replicated as accurately as possible the conditions of the development of market access proposals with the subsequent negotiations and the use of systems approaches. The names of the pseudo-countries involved and pseudonisms (imaginary organisms) are deliberately constructed to be humorous and unlikely so that they cannot be confused with real countries and real pests.

The participants were divided up into 6 teams of 4-5 persons. Each team was given a task which included the development of phytosanitary import requirements and a systems approach for commodity exports. The teams were to create a SA proposal for 2 commodities (tomatoes in two forms of the six submitted – fresh for consumption, fresh for processing, seedlings, seeds, dried or preserved) for its pseudo-country to export to another pseudo-country. The teams were then have to arrange phytosanitary import requirements for the import of 2 different tomato commodities from a different pseudo-country.

The exports and imports were outlined in each team's pseudo-country profile. The profile also contained a list of pseudonisms (mythical pests created by Dr Maynard) that exist in each pseudo-country. The teams were also provided with a pseudonism list for the pseudo-country from which they were importing.

4.3.2 Stages of the exercise

Group exercise 1 - Start of simulation exercise in building a Systems Approach proposal - development of a quarantine pest list for proposed imports and provide to the exporting country.

Group exercise 2a – Each team acted as an exporting country to create a Systems Approach proposal to address quarantine pests of concern to importing country or provided justification for removing the quarantine pest from the pathway for the commodity being exported. This was then presented to the designated importing country.

Group exercise 2b – Each team acted as an importing country and examined the systems approach proposal presented for the proposed imports to their country.

Group exercise 3 – The teams negotiated with each other on the systems approaches proposal as importing and exporting countries. This was done in two phases – allowing amendments to the proposed systems approaches where necessary.

Group exercise 4 – In this stage, each team had to negotiate with an industry/grower stakeholder regarding both the import and export proposals.

Group exercise 5 – This stage provided an opportunity for each team to undertake a revision of the systems approach proposals as necessary. Unresolved issues were identified.

Group exercise 6 – Here each team developed a presentation of the mock systems approach proposal.

Group exercise 7 – the teams made their presentations of their import and export systems.

Presentations included information on:

- where imports are from
- what commodities are being exported
- what measures are being used for exports
- a rationale for these measures
- details on the bio-security system regarding commodity imports (monitoring, inspection)
- any unresolved issues
- other relevant information.

4.3.3 Essential background and procedures of the exercise

Imaginary pests (pseudonisms) and pseudo-countries were created for the exercise. By doing this any possible argument about the presence of pests in a country, the systems and their efficiency within a country was avoided. Also, all participants were put at an equivalent level of knowledge about each pseudonism i.e. no participant could have a specialized knowledge of a pest being worked on. The situation in the real world was duplicated in that the knowledge available on some pests was limited.

There were some 28 pseudonisms created. They included: the 8 winged orbiting pest, the big foot phytoplasma, the cherry spotted desert ghost, the exuberant purple smotherer, false internal tomato rotter, the crystal headed muncher, Noflapus scalywingu, partly obscured fruit destroyer, silly sedge, and stinker bacterium.

Each pseudo-country was provided with the biological information on about eight pseudonisms occurring in its area. This two page data-sheet included information such as:

- summary section including: a description of the damage incurred, indicative signs of the presence of the pseudonism, conditions for the development of the pest.
- information sheet including: common name, scientific name, symptoms and signs, diagnostic confirmation, where and when it occurs, distribution, description, host range, life cycle or disease cycle and epidemiology, damage.

Each pseudo-country was provided with the following type of information e.g. for the pseudo-country Trifoilli les Oies, team members were provided with:

- the country's own pseudonisms – eight-winged orbiting pest, big foot phytoplasma, cherry spotted desert ghost, creaky footed tail trembling mite, false internal tomato rotter, false star grub, fine seeded paspalum, fluffy flat snout etc
- Trifoilli les Oies is to import fresh tomatoes for processing and tomato seeds from pseudo-country Starlandia
- Trifoilli les Oies is to export fresh tomatoes for consumption and dried tomatoes to pseudo-country UmpaLumpa.

Information was provided on the pseudo-country conditions e.g. summer high humidity maxima average 30-42°C. Spring and autumn are warm and dry. High humidity and present of pests in summer limits tomato production in summer months. Winter has moderate temperatures with cool-cold condition over night with high levels of soil moisture. Best tomato growing is during the cooler months.

Each pseudo-country developed its own quarantine pest list from the list of pseudonisms of the pseudo-countries exporting tomato commodities to them. These lists were discussed by the trading partners to ensure that the pseudonisms occurred on the relevant pathways.

4.3.4 Presentations

Two presentations are shown in Appendices 4 and 5 of material presented by the teams representing the pseudo-countries Starlandia and Umpalumpa.

5. Feedback on the workshop

Participants provided feedback on the workshop. An important point has been the concept of a quarantine pest. The pathway needs to be carefully identified. Where there is a closed system to a processor there might not be the need for measures. Some duplication of measures has been noted.

The particular aspects that were found to be useful included the work on negotiation. Several participants mentioned this. There was an increase in the understanding of the position of another country. The general interaction process and sharing of knowledge was also beneficial. Several participants found it useful to learn of New Zealand's approach with the tomato export case study. The

section with industry discussion was interesting to all participants. This had not been done before – and provided a good indication of the problems that could arise when dealing with stakeholders.

In any future exercises, it was suggested that the roles of team members could be defined. Some members wanted to use real pests – but the use of pseudonyms to provide an equal basic knowledge for the exercise was explained. Some participants suggested that more exercises focussing on PRA would be helpful. The section with industry participation was thought by some participants to be so important that it was suggested that discussion with industry should take place before and after inter-pseudo-country negotiation.

The usefulness of case studies was stressed and more studies would be useful for participants. It was explained by the organizers that a large case study was planned for this meeting but the industry involved asked for it to be withdrawn immediately prior to the meeting. It was suggested that some of the material to be used in the workshop be provided to participants before the workshop. One participant would have liked to have seen some of the quarantine activities in the workshop host country.

In future training workshops, it was suggested that they include: more basic information on pest risk analysis; training in negotiation – in particular regarding working with industry; presentations by each participant on SA in their country; more discussion on real situations; training on the practical elements of SA systems including some training with efficacy and confidence levels for measures. Some participants noted that they would like to hear of some success stories where SA has been used.

Participants were asked how they might promote SA in their countries. A range of proposals were put forward. These included: repeating what has been learnt in the workshop; show to staff how SA links with other standards; and develop guidelines for industry and farmers on how SA can be used to facilitate exports. One proposal was that it would be most useful if there was an independent organization that could help with systems approaches particularly in the area of efficacy data. The idea of a statement from the group endorsing the SA workshop as a most useful learning experience was put forward.

Appendix 6 includes all the points made by the participants in the feedback exercise.

6. Closure of the workshop

Dr Piao closed the meeting – commenting that this workshop had included a most comprehensive training exercise. He was sure that participants will pursue the use of the SA techniques learnt in their own countries. The system approach process is associated with many standards and this must be recognized at all times. Also, important within in the workshop was the practice of communication skills in the role play within the exercises. In the past the concentration has been on technical issues – but this has extended to the relationships with industry. He suggested that in future meetings, participants will have to describe their own experiences.

Dr Piao noted that if countries want to have specific training this should be brought to the attention of the Secretariat so that the activities of the Commission can be extended. He thanked for the speakers for their contributions and the host country, Thailand, for their support of the workshop.

Agenda

Monday 30 November

10:00	Opening Ceremony Opening remarks by Secretary of APPPC	Piao Yongfan
10:30	Overview of the Workshop by Peter Creaser	
10:45	Group Photograph	
10:45-11:00	Morning Tea	
11:00	Building a Systems Approach ISPM 14 – a framework unpacked	Nisrine El-Mogharbel
12:30–14:00	Lunch	
14:00	Building a Systems Approach (cont.) ISPM 14 – a framework unpacked	
15:30–16:00	Afternoon tea	
16:00	Building a Systems Approach - Simulation exercise Group exercise: Start of simulation exercise in building a Systems Approach proposal - development of a quarantine pest list for proposed imports and provide to the exporting country	Glynn Maynard
16:30	Group exercise: Exporting country to create a Systems Approach proposal to address quarantine pests of concern to importing country	
17:00	Close of day 1	
19:00	Welcome activity	

Tuesday 1 December

09:00	Building a Systems Approach (cont.) Critical control points	Joanne Wilson
10:30–11:00	Morning tea	
11:00	Building a Systems Approach - Simulation exercise (cont. from Day 1)	Glynn Maynard

- Group exercise: Exporting country creates a Systems Approach proposal to address quarantine pests of concern to importing country
- 12:00 Present your Systems Approach proposal to the importing country
- 12:05 Consider the Systems Approach proposal for the proposed **imports** into your country
- 12:30–14:00 Lunch
- 14:00 Group exercise: Negotiations - Round1 Phase 1 (negotiate Systems Approach proposal with importing country)
- 14:30 Group exercise: Negotiations - Round1 Phase 2 (negotiate Systems Approach proposal with importing country)
- 15:00-15:30 Afternoon Tea
- 15:30 Building a Systems Approach (cont.) Joanne Wilson
Critical control points - Case Study
- 17:00 Close of day 2

Wednesday 2 December

Field Trip

- 07.30 Depart hotel
- 10.30-12.00 Visit “rose apple” farm in Ratchaburi
- 12.00-13.30 Lunch
- 13.50-14.30 Visit packing facility
- 17.00 Arrive hotel
- 17.30 Welcome dinner hosted by Office of the National Bureau of Agricultural Commodity and Food Standards (ACFS)

Thursday 3 December

- 09:00 Building a Systems Approach - Simulation exercise (cont.)
Group exercise: Revision of Systems Approach Proposal;
- 10:30–11:00 Morning tea

- 11:00 Building a Systems Approach - Simulation exercise (cont.)
Team exercise: i) Consult with industry/grower on import proposal;
ii) Consult with industry/grower on export proposal.
- 12:30–14:00 Lunch
- 14:00 Building a systems approach - Simulation exercise (cont.)
Revision of systems approach proposal
– further negotiations with importing country if needed
- 15:00–15:30 Afternoon Tea
- 15:30 Building a systems approach - Simulation exercise (cont.)
Create a presentation on mock Systems Approach proposal, include:
- i) Where you are importing from;
 - ii) What commodities you are exporting;
 - iii) What are the phytosanitary measures that are you using for your export;
 - iv) Explain the rationale for each phytosanitary measure;
 - v) What is your Quarantine system in regards to the commodity that you are importing – (details of your monitoring if you have one; inspection system if you have one, etc.);
 - vi) What issues remain unresolved if any;
 - vii) Any other relevant information.
- 17:30 Close of day 4

Friday 4 December

- 09:00 Finalizing presentations of revised mock systems from simulation exercise
- 09:30 Presentations by Groups (15 mins per group)
Groups 1 and 2
- 10:00–10:30 Morning tea
- 10:30 Presentations by Groups (15 mins per group)
Groups 3, 4, 5, 6
- 11:30 Discussion of issues and questions
- 12:00–13:30 Lunch
- 13:30 Workshop summary and outcomes
- 14:30 Close of Workshop

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Summary of NZ Tomato Export System

Pathway Step	Measure	Risk Management Outcome	Monitoring	Contingencies	Documentation
Pre-production	Pest Reduction	<ul style="list-style-type: none"> Pest free seedlings Pre-season cleaning, fogging & weed control 	<ul style="list-style-type: none"> Visual checks of seedlings entering greenhouse Production site inspection 	<ul style="list-style-type: none"> Spraying or drenching infested seedlings Destroy infested seedlings Re-clean, fog etc. 	<ul style="list-style-type: none"> Industry Code of Practice Grower standard operating procedures (SOP)
Production	Pest Reduction	<ul style="list-style-type: none"> Pest has limited entry to greenhouse Low level infestations are managed 	<ul style="list-style-type: none"> Staff entry, hygiene and training records Trapping and scouting records Alternate host management Internal audit 	<ul style="list-style-type: none"> Retraining of staff Measures invoked when pest thresholds reached Alternate hosts removed or sprayed 	<ul style="list-style-type: none"> Industry Code of Practice Grower SOP Grower registration to programme
Harvest	Pest Removal	<ul style="list-style-type: none"> No pests hidden under calyx 	<ul style="list-style-type: none"> Visual checks of harvested fruit 	<ul style="list-style-type: none"> Redress 	<ul style="list-style-type: none"> Grower SOP Grower registration
Post-harvest	Pest Removal	<ul style="list-style-type: none"> All pests remaining on fruit surface removed by brushing 	<ul style="list-style-type: none"> Visual checks Internal audit Phytosanitary inspection 	<ul style="list-style-type: none"> Re-brush Fumigate Direct to domestic market 	<ul style="list-style-type: none"> Packhouse SOP Packhouse registration
	Pest Reduction	<ul style="list-style-type: none"> Pest has limited entry to packhouse Pests unable to reinfest fruit after brushing 	<ul style="list-style-type: none"> Staff entry, hygiene and training records Trapping records Internal audit 	<ul style="list-style-type: none"> Re-brush Fumigate Direct to domestic market 	<ul style="list-style-type: none"> Packhouse SOP Packhouse registration Exporter registration



External Audit


Starlandia




COMMODITIES FOR EXPORTING

1. Tomato fruits for processing
2. Tomato seeds







QUARANTINE PEST LIST FOR TRIFOUILLI LES OIES




1. False pink spot fungus (*Falsus pinkusfungus* Person) → 
2. Large mummifying fungus (*Mumia voluminus*)
3. Occasional Blotch Virus



SYSTEM APPROACHES for fruits

Pathway steps	Phytosanitary Measures	Rationale
Pre-planting	<ul style="list-style-type: none"> - Grower registration - Maintain hygiene (soil fumigation / solarization) - Showing Healthy seeds 	<ul style="list-style-type: none"> - Soil borne fungus - virus



SYSTEM APPROACHES for fruits

Pathway steps	Phytosanitary Measures	Rationale
Planting (Production)	<ul style="list-style-type: none">- Apply broad-spectrum fungicides- Sanitation remain (remove unhealthy plants, weeds)	fungus





SYSTEM APPROACHES for fruits

Pathway steps	Phytosanitary Measures	Rationale
Harvest	<ul style="list-style-type: none">- Pick under-ripe fruit	fungus





SYSTEM APPROACHES for fruits

Pathway steps	Phytosanitary Measures	Rationale
Post- harvest	<ul style="list-style-type: none">- Sorting, cleaning, washing, brushing and packing- No calyx on fruits	fungus



SYSTEM APPROACHES for seed




Pathway steps	Phytosanitary Measures	Rationale
Pre-planting	<ul style="list-style-type: none"> - Grower registration - Screen-house/Greenhouse - Maintain hygiene (soil fumigation / solarization) - Healthy seeds 	<ul style="list-style-type: none"> - Soil borne fungus - virus



SYSTEM APPROACHES for seed



Pathway steps	Phytosanitary Measures	Rationale
Planting (Production)	<ul style="list-style-type: none"> - Apply broad-spectrum fungicides - Trapping system - Sanitation remain (remove unhealthy plants, weeds) 	<ul style="list-style-type: none"> - fungus - Virus - Vector of virus


SYSTEM APPROACHES for seed



Pathway steps	Phytosanitary Measures	Rationale
Harvest	<ul style="list-style-type: none"> - Hygiene of harvest equipment 	Infestation and Re-infestation



SYSTEM APPROACHES for seed

Pathway steps	Phytosanitary Measures	Rationale
Post-harvest	<ul style="list-style-type: none">- Heat treatment: over 40°C  <ul style="list-style-type: none">- Based on one year experiments of the heat treatment.	Eliminate virus

Umpalumpa

Phytosanitary Measures for export

Quarantine Pests	System approach
<ol style="list-style-type: none"> 1. <i>Noplapus scalywingus</i> 2. Occasional blotch virus 3. Sucker bug 4. Terrible Plantbiosecurity-bacterium 	<p>Pre-production</p> <ol style="list-style-type: none"> 1. Registration of farmers with sufficient digit numbers which include information 2. Training and GAP (IPM)/ICM) & GMP (seeds & seedlings selection, proper drainage, sanitation, 3. Heat treatment of seeds over 40 ° C to eliminate bacteria and virus.

System approach for QP

Quarantine Pests	System approach
	<p>Production</p> <ol style="list-style-type: none"> 1. Application of GAP (IPM)/ICM) & GMP seedlings selection, proper drainage, sanitation, 2. Synchronous planting and one generation only per year 3. Harvesting management by finishing the product before end of September 3. Heat treatment of seeds over 40 ° C to eliminate bacteria and virus.

System approach for QP

Quarantine Pests	System approach
	<p>Harvest</p> <ol style="list-style-type: none"> 1. Selection of seeds & seedlings 2. Harvesting by end of September <p>Post Harvest and Storage</p> <ol style="list-style-type: none"> 1. Safe storage 2. Store seedlings below 15 ° C 3. Seed treatment over 40 ° C. 4. GAP, Selection of fruits to obtain seed without contamination of weed seeds 5. Molecular and serological testing 6. Certification incorporating freedom from QP as additional declaration and treatments as special condition

Biosecurity/Quarantine System

- X no. of Plant Quarantine Station at different Ports of Entry with all requisite testing facilities (detection, identification, treatments etc.)
- Import conditions available on official website.
- Online system to process the application for speedy disposal
- SOP for inspection with sampling regime detail
- Quarantine treatments provider accredited by NPPO
- Post-entry quarantine facility for further study under controlled condition.

Unresolved Issues

- With the Importing Country **LUNAPAIS**: No
- With Exporting Country **TRIFOUILLI LES OIES**
- Pre-shipment inspection by the importing country before approving market access.

Feedback from participants on the APPPC workshop- ISPM14, Systems Approach (SA) held Nov 30-4 Dec 2015, Bangkok, Thailand

Q1. What did you find useful about the workshop?

- Sharing of knowledge and experiences
- The exercises
- Discussions with Industry and its crucial role to get some perspective
- Discussions with other countries
- Learning negotiation techniques
- SA being based on pest information and pathways
- Got a better idea about the negotiation process and who is involved (Industry/growers, other NPPOs)
- The workshop tells us about how to implement SA (the way of doing it, how to address problem in implementing SA, more confidence during negotiation for import and export in the future)
- Systematic way used in a SA
- Learning about NZ experience and examples given of a SA (tomatoes without truss)
- The importance of transparency to ensure smooth negotiations
- Industry's role is critical and important in ensuring the sustainability of the Systems Approach (SA)
- Sharing opinion about implementation of SA
- Have a group statement to endorse all members of the APPPC to choose System Approaches
- How to consider critical control points, and SA should not be a barrier for trade.

Q2. Is there anything you would change?

- Need more time and case studies for new participants on SA
- Import and export from same country
- Use a real example (pseudo country with real pest)
- Sharing experience of other countries on implementation of SA
- Define the roles in each team of participants; e.g. as negotiator, technical expert, trade and market access officer may be a good way to go
- Go to the port to see an activity there at the border for quarantine purposes (e.g. inspection, certification check etc.)
- Give homework tasks to cut short the time spent in exercises for reading
- Provide more exercises around the PRA (Pest Risk Analysis) stage
- Have a discussion with Industry as a first step prior to discussion with importing country in the exercises
- Use real examples of pests and then more case studies
- Whole lecture on PRA process before the exercises start
- Have 2-4 countries instead of 6 and have more themes to negotiate (different import and export commodities and priorities like in real bilateral talks)

- Integrate audits into a systems approach as a teaching tool.

Q3. What should be included in the next workshop?

- Exposure to other measure (MAT: Male Annihilation Technique; SIT: Sterile Insect Technique, etc.), should discuss confidence level (efficacy) of each measure so at the end the risk will be very low
- Basic information about PRA
- More case studies on technical justifications, real examples from participating countries
- More discussion on different commodities (real situations)
- Sharing of different countries experience in implementing SA
- Engagement techniques for NPPOs and how to convince industry (practical skills)
- Practical elements in packhouse, field etc.
- Examples of success stories
- What are the participant countries doing already in SA so they can fill any gaps
- More on concept of PFA (Pest free Area)
- Minimum ALOP to any SA
- Market access requests
- Industry engagement and various techniques to convince Industry
- Inspection techniques/ Approach.

Q4. How would you promote the use of a SA in your country?

- Convince managers (or directors) to use Systems Approaches
- Training (colleagues)
- Developing a pilot system
- NPPO understanding of entire SA pathway- Independent checks in the SA: in the field, in the packhouse, and treatment facilities.
- Involvement from treatment provider
- Provide some of the reading materials to colleagues
- Training in SA for farmers, packing house, exporters
- Exporter training and capacity building
- Develop guidelines for industry
- Get commitment from growers
- Build up capacity in our country by cooperation among stakeholders including industry, growers and quarantine officials
- Use ISPM14 to develop policy within our country and roll it out
- Have a division that works on SA in our NPPO and establish scientific basis for our approach in our policies
- Listen to the voice of industry & involve them in SA/export
- Include SA in the GAP standard (Gap: Good agriculture practice)
- Documenting SA experience as an example
- Forum to discuss problem in implementing SA

- Research required, and international and national agreement for bilateral obligations.

Q5. Is there anything that would help you to promote a SA?

- Policy
- National IPM program
- Cooperation between governments
- Good facilities for testing
- Available quarantine measures
- Good expertise to build a SA and negotiation
- Cooperation and Collaboration between NPPO and private stakeholders