



GUIDELINES FOR THE CONDUCT OF PEST RISK ANALYSIS FOR ASEAN

Background

Extracts from the Report of the 15th Expert Working Group on Harmonisation of Phytosanitary Measures, 2013

27. *The Meeting exchanged views on the criteria for selecting potential pests for PRA and the PRA methodology that has not been established for the development of intra-ASEAN guidelines for the crops.*

28. *The Meeting noted that there was no agreement on the methodology to be followed by the AMSs to conduct the PRA and considered the establishment of common methodology/criteria. Singapore in cooperation with Brunei Darussalam agreed to prepare draft methodology/criteria for conducting PRA for consideration by the EWG-PS before the next meeting.*

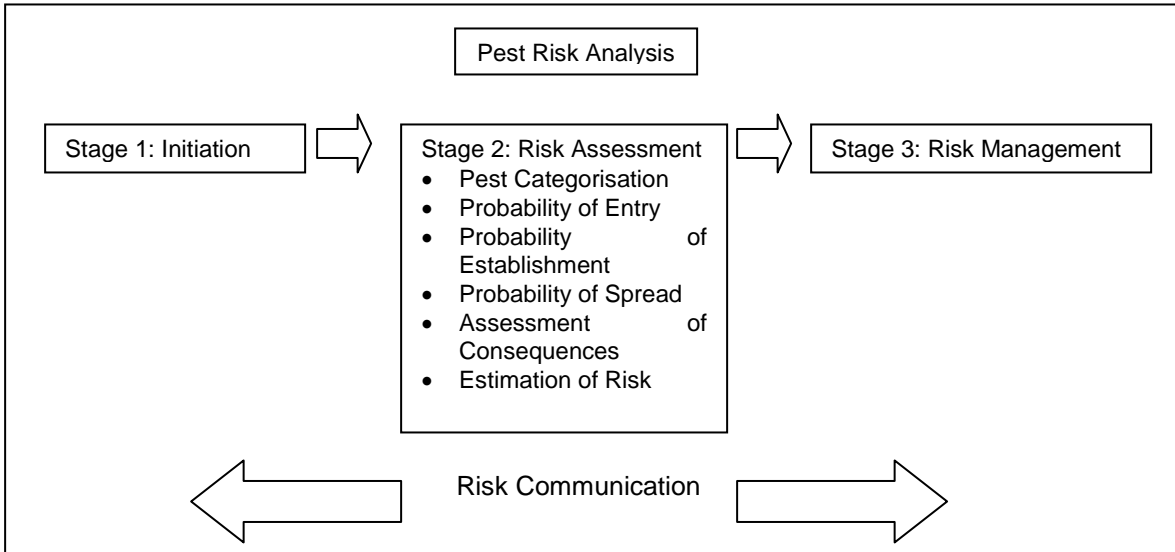
Action Line: Brunei Darussalam, Singapore

During the 15th EWG-PS, the Meeting agreed to document a guideline in the conduct of Pest Risk Analysis (PRA) for ASEAN pertaining to the development of importation guidelines for selected crops within ASEAN. The purpose of this guideline is to ensure a consistent and harmonised approach toward the conduct of the Pest Risk Analysis.

Under the initiative of development of importation guidelines for selected crops within ASEAN, the initiation of the PRA is to provide the technical basis for the establishment of the harmonised importation guidelines within ASEAN and is based on the associated pathways i.e. identified crop commodity. At this moment, the establishment of harmonised importation guidelines is still pending for four remaining crops i.e. Durian fruit, Mango fruit, Corn seed and Coffee bean for consumption. The intent is to provide the harmonised guidelines for the PRA for these remaining crops as well as serve as a reference for future PRA work under the auspices of the Expert Working Group on Harmonisation of Phytosanitary Measures to ensure consistency in its conduct of PRAs.

[1] **Guidelines for the Conduct of Pest Risk Analysis**

[2] The guidelines for the conduct of pest risk analysis follow closely the framework as described in ISPM No. 2 (2007) within the scope of the International Plant Protection Convention.



[3] **(I). PRA Stage 1: Initiation**

- The initiation stage involves four steps:
 - Determination whether an organism is a pest
 - Defining the PRA area
 - Evaluating any previous PRA
 - Conclusion of initiation

[4] **Determination whether an organism is a pest.**

For the purpose of establishment of importation guidelines for the selected crops under the purview of the EWG-PS, the initiation of the PRA involves targeting pests associated with the pathway i.e pathway initiated PRA and compilation of pest lists submitted from respective ASEAN Member States (AMSs) or from the CABI Crop Compendium associated with the pathway.

[5] **Defining the PRA Area – ASEAN Region**

Since the PRA supports the establishment of importation guidelines for the selected crops for trade within ASEAN, the PRA area is defined as comprising the ASEAN region.

[6] **Conclusion of Initiation**

The compilation of pest lists associated with the pathway determines that the process may continue to PRA Stage 2.

[7] (II) PRA Stage 2: Pest Risk Assessment

After identifying the pests as possible candidates for Phytosanitary measures, the risks related to the pests should be evaluated according to the established and internationally accepted Pest Risk Assessment procedures. The assessment should abide to the principles of necessity, minimal impact, transparency, equivalence, risk analysis, managed risk and non-discrimination set out in ISPM No. 1: 2006. The basis for the conclusion of risk assessment at the end of Stage 2 involves either an acceptable or unacceptable risk associated with the pest or pests and this should be spelled out clearly in the documentation of the PRA.

[8] 1. Pest Categorisation**Criteria in the Selection of Quarantine Pest**

[9] For the purpose of the PRA for the establishment of importation guidelines for the selected crops within ASEAN, the following criteria to define the “quarantine pest” should be satisfied;

- a. Quarantine Pest should be selected based on being absent in 5 or more AMSs i.e. limited distribution within PRA area and being subjected to or considered for official control.
- b. Quarantine Pest should be selected having the potential to cause injury to the pathway i.e. plants (plant part i.e. seed, plant etc) or plant products in the PRA area. [ISPM No 5: QP is 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]

[10] Table 1 summarises the criteria in the selection of Quarantine Pest.

[11] Table 1: Pest Categorisation Table

Pest		<i>Being absent in 5 or more AMSs (Y/N)</i>	Targeted Plant Part Affected	<i>Potential to cause injury to pathway (Y/N)</i>	Consider Further* (Y or N)
Common Name	Scientific Name				

[12] *For a particular pest to be consider further for Pest Risk Analysis, both “Being Absent in 5 or more AMSs) and “Potential to cause injury to pathway” should be answered as “Yes”.

Where the potential to cause injury is not clear at this preliminary stage, the pest should be retained on the list for further PRA.

[13] 2. Assessment of Introduction and Spread**[14] 3. Assessment of Economic Impacts**

[15] It is acknowledged that there are various ways to assess the probability of introduction and spread as well as the economic impacts i.e. quantitative or qualitative. An example of a Pest Risk Assessment is provided in the annex 1.

[16] (III) PRA Stage 3: Pest Risk Management

[17] Stage 3 involves the identification of phytosanitary measures that (alone or in combination) reduce the risk to an acceptable level (ISPM No. 2: 2007).

[18] Importation guidelines (Annex 2) should only be established for unacceptable risk associated with a pest or pests and should be feasible for adoption within the ASEAN region. The importation guidelines should also be chosen based on the principles of minimal impact, equivalence, non-discrimination set out in ISPM No. 1: 2006.

[19] The implementation of particular phytosanitary measures should not be considered to be permanent (ISPM No. 11: 2013). The phytosanitary measures should be monitored and reviewed to ensure that any new information that becomes available does not invalidate the decision taken.

[20] Common Aspects pertaining to PRA

[21] The guidelines are not meant to be prescriptive in the risk assessment method used BUT, there are common aspects regarding any risk assessment methods used that are expected to be abided by.

[22] Uncertainty

The nature of degree of uncertainty associated with the risk should be recognised and documented when performing PRAs. More details in point 3.1 in ISPM No. 2 (2007).

[23] Documentation

Documenting PRA should cover the general PRA process and each analysis made. The quantitative or qualitative estimate of the probability of introduction or a pest or pests and a corresponding quantitative or qualitative estimate of economic consequences (including environmental consequences) in the conclusion of the overall risk rating of a pest or pests should be documented in a clear manner and technically justified by the circumstances complying to the principle of transparency.

[24]The source of information and rationale for decisions i.e. assessment of introduction and spread and economic impacts should be clearly demonstrated providing justifiable conclusion to stand up to any technical scrutiny.

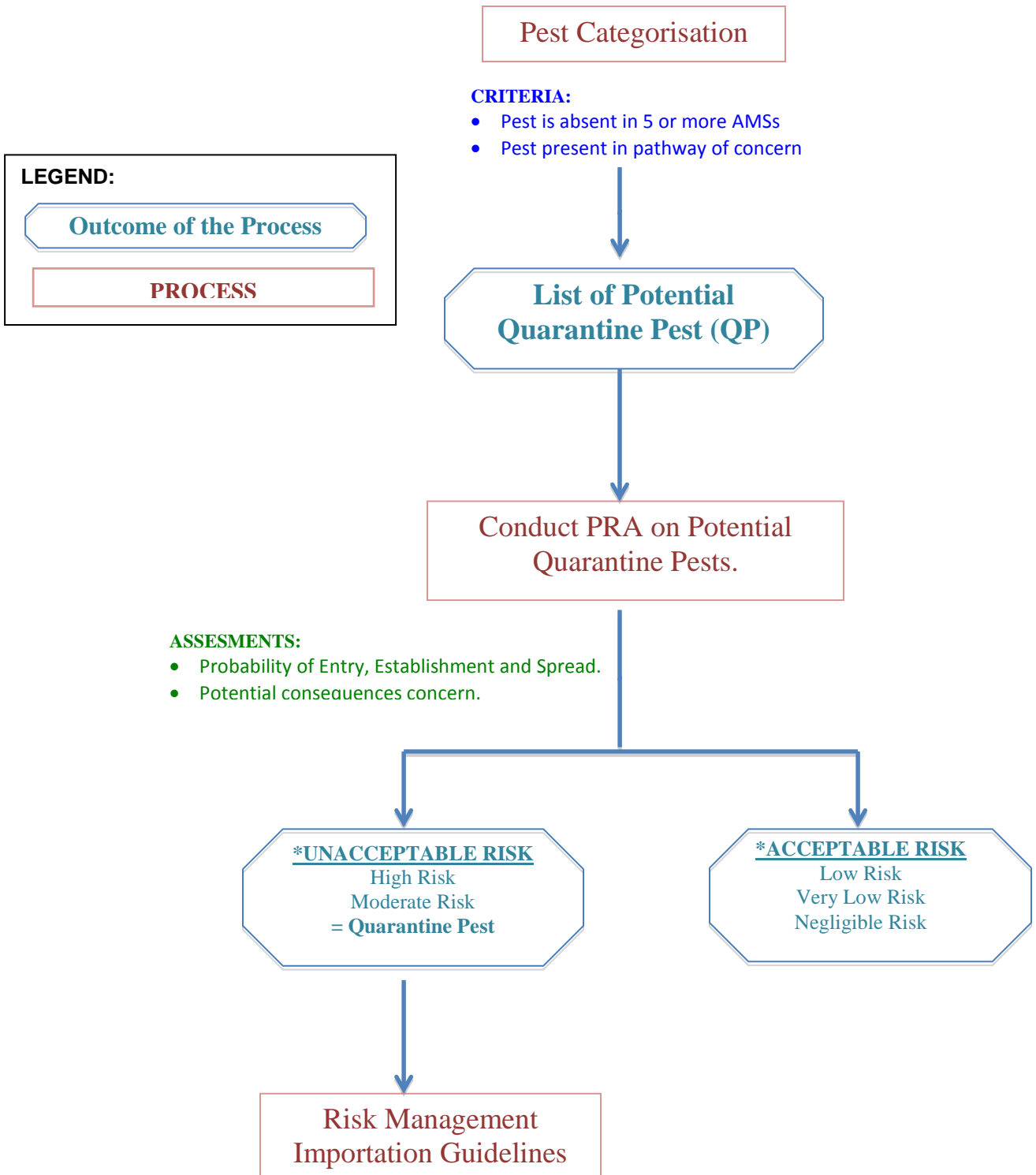


Figure 1: PRA process

** Risks are presumptive only and it will depend on the agreed ALOP for a particular crops or*

[25] References

Biosecurity Australia (2001) .Draft Guidelines for Import Risk Analysis.
http://www.daff.gov.au/__data/assets/pdf_file/0016/22561/iraguidelines.pdf

Guidelines for Pathway-Initiated Pest Risk Assessments, U.S. Department of Agriculture Animal and Plant Health Inspection Service, Plant Protection and Quarantine Permits and Risk Assessment, Commodity Risk Analysis Branch, 4700 River Road, Unit 133, Riverdale, MD 20737-1236

ISPM No. 1 (2006): Phytosanitary Principles for the Protection of Plants and the Application of Phytosanitary Measures in International Trade

ISPM No. 2 (2007): Framework for Pest Risk Analysis

ISPM No 11 (2013): Pest Risk Analysis for Quarantine Pests

[26] **Annex 1: An illustrative example of a Pest Risk Assessment**

[27] For a qualitative evaluation, the likelihood of the following probabilities could be categorized as either Low or Moderate (Medium) or High (or High, Moderate, Low, Very Low and Negligible Risk etc), which is described as below;

Likelihood Descriptive definition

- **High** - The event would be very likely to occur.
- **Moderate (Medium)** -The event would occur with an even probability.
- **Low** - The event would be unlikely to occur.

Similarly, for a quantitative evaluation, grades may be allocated to determine the final computation of the scores.

[28] To facilitate Pest Risk Assessment/ Analysis in Stage 2 of PRA; table 2 such as below should be produced.

[29] **Table 2: Example of Table for Pest Risk Assessment**

Scientific name	Probability for entry (Ecological/climatic conditions), establishment or spread (biological considerations) in PRA area		Potential for consequences		Total Risk Level
	Risk Level	Comments	Risk Level	Comments	
FRUIT					
<i>Citrus leprosis virus</i>					
Order: Mononegavirales					
Family : Rhabdoviridae					
Genus : Unassigned Rhabdoviridae					
Common name : Leprosis of Citrus					
<i>Citrus leprosis virus</i>	VERY LOW	<p>1) DISTRIBUTION</p> <p>Asia: China, India, Indonesia (Java), Japan, Philippines, Sri Lanka.</p> <p>America: Mexico, USA (Florida, Mississippi), Belize, Costa Rica, Guatemala, Honduras, Nicaragua, Panama, Argentina, Bolivia, Brazil, Colombia, Paraguay, Peru, Uruguay, Venezuela.</p> <p>Africa: Egypt, South Africa</p> <p>PROB. CLIMATE-HOST INTERACTION: MODERATE</p> <p>2. HOST</p> <p>Major hosts:</p> <p><i>Citrus deliciosa</i> (mediterranean mandarin) <i>Citrus reshni</i> (Cleopatra mandarin) <i>Citrus reticulata</i> (mandarin)</p>	MODERATE	<p>1) ECONOMIC IMPACT</p> <p>Economic Impact:</p> <p>If proper mite control is not undertaken when the disease first appears, severe losses in quantity and quality of yield may occur. Fruits with lesions have low commercial value, especially for direct consumption. In severe cases, twigs may die, jeopardising future fruit production. Furthermore, untreated orchards may serve as a source for the mite and citrus leprosis may spread to other plantations in the area.</p> <p>Citrus leprosis usually occurs in cycles; when citrus prices are high, growers control the mites but when prices fall, chemical treatments for mites and other pests and pathogens are applied to a lesser extent and the incidence of citrus leprosis increases. In São Paulo State, Brazil, when there is inoculum in the area and miticides are not sprayed, 2-3 years are enough to completely spread the disease in the orchard. The large orchards contribute to the occurrence and spread of the</p>	VERY LOW

[30] **A) CRITERIA IN DETERMINING THE PROBABILITY OF INTRODUCTION (ENTRY & ESTABLISHMENT) AND SPREAD**

[31] The probability of introduction and spread is dependent on the following factors summarized into the following sub-headings:

- Host-Climate Interaction
- Host Range in PRA area

- Establishment and Spread

[32] i) Probability of Host-Climate Interaction (A)

Availability of host material and similarity between the climates of the AMS are the basis in establishing the likelihood. A world map climate classification can be used as the basis for assessing the similarity of climate among AMS member states e.g. Koppen-Geiger Climate Classification by Kottek *et al* 2006.

The following probability table (Table 3) can be used to determine the risk in host-climate interaction.

[33] Table 3: Probability of Host-Climate Interaction (A) for the movement of pest between exporting and importing countries derived using the combination of climate classification from Koppen-Geiger Climate Classification (Produced by Department of Agriculture & Agrifood, Brunei Darussalam)

From Country	Going Into Country									
	Brunei (Af)	Cambodia (Am, As)	Indonesia (Af)	Lao PDR (Am, As)	Malaysia (Af)	Myanmar (Am, As)	Philippines (Af, Am)	Singapore (Af)	Thailand (As)	Vietnam (Am, As)
Brunei (Af)		Moderate	High	Moderate	High	Moderate	Moderate	High	Moderate	Moderate
Cambodia (Am, As)	Moderate		Moderate	High	Moderate	High	Moderate	Moderate	Moderate	High
Indonesia (Af)	High	Moderate		Moderate	High	Moderate	Moderate	High	Moderate	High
Lao PDR (Am, As)	Moderate	High	Moderate		Moderate	High	Moderate	Moderate	Moderate	Moderate
Malaysia (Af)	High	Moderate	High	Moderate		Moderate	Moderate	High	Moderate	Moderate
Myanmar (Am, As)	Moderate	High	Moderate	High	Moderate		Moderate	Moderate	Moderate	High
Philippines (Af, Am)	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate		Moderate	Moderate	Moderate
Singapore (Af)	High	Moderate	High	Moderate	High	Moderate	Moderate		Moderate	Moderate
Thailand (As)	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate		Moderate
Vietnam (Am, As)	Moderate	High	Moderate	High	Moderate	High	Moderate	Moderate	Moderate	

[34] The classification of the climate is in accordance to Koppen-geiger Climate Classification as follows:-

Af – Tropical climate

Am – Tropical monsoonal

As – Tropical savanna

[35] Average value of the Probability of Host-climate interaction (A) should be enumerated such as in Table 4 below:-

[36] **Table 4: Example of enumerating Probability of Host-Climate Interaction (A) for movement of pest between exporting and importing countries.**

FROM COUNTRY	GOING INTO					
	Cambodia	Indonesia	Lao	Myanmar	Philippines	Thailand
Brunei	Moderate	Moderate	Moderate	Moderate	High	Moderate
Malaysia	Moderate	Moderate	Moderate	Moderate	High	Moderate
Singapore	Moderate	Moderate	Moderate	Moderate	High	Moderate
Vietnam	High	Moderate	High	High	High	High
PROBABILITY (A)	Moderate					

[37] ii) Probability of Host Range (B)

[38] Probability of host range should be assessed by looking at the list of host range or hosts associated with the particular pest as well as its geographic distribution.

[39] The following ratings¹ can be used to determine the risk in host range:

[40] Number of major host(s) or associated host(s)
Probability² Low to High: Qualitative

Low	1 – 10 host species
Medium <u>/Moderate</u>	11 – 100 host species
High	101 to more than 1000 host species

And

[41] Distribution of major host and associated host in the importing or receiving AMSs
Probability² Low to High: Qualitative

Low	Less than <40% of the listed hosts present in the importing AMSs
Medium/ <u>Moderate</u>	40-60% of the listed hosts present in the importing AMSs
High	60-100% of the listed hosts present in the importing AMSs

[42] Thus **Probability of Host Range (B)** is the interaction between Probability of the Number of major and associated host(s) AND the Probability of Distribution of major

¹The ratings of Low (1-10 host species or less than 40%), Medium (11-100 host species or between 40 – 60%) etc for the number and distribution of host(s) are not meant to be prescriptive but as a guide and would be dependent on the situation for respective host range.

² Examples of terms used for qualitative evaluation of probabilities of risk: High, Moderate (Medium), Low or High, Moderate (Medium), Low, Very Low and Negligible Risk or otherwise.

host(s) and associated host(s) in the importing or receiving AMSs. For example, the result of interaction;

[43] i) Prob. of the number of major host(s) or associated host(s) (High) x Prob. of the Distribution of host(s) in importing AMS (High) = **High OR**

[44] ii) Prob. of the number of major host(s) or associated host(s) (Low) x Prob. of the Distribution of host(s) in importing AMS (Moderate/Medium) = **Low**

[45] This should be inserted into the table below (Table 5) and the average Probability of Host Range (B) should be calculated accordingly.

[46] **Table 5: Example of enumerating Probability of Host Range (B) for the movement of pest between exporting and importing countries.**

FROM COUNTRY	GOING INTO					
	Cambodia (Am, As)	Indonesia (Af)	Lao (am, As)	Myanmar (Am, As)	Philippines (Af, Am)	Thailand (As)
Brunei (Af)	High	High	High	High	High	High
Malaysia (Af)	High	High	High	High	High	High
Singapore (Af)	High	High	High	High	High	High
Vietnam (Am, As)	High	High	High	High	High	High
PROBABILITY (B)	High					

[47] iii) Probability of Establishment and Spread (C)

[48] **Probability of establishment and spread (C)** in the importing country/PRA area can be assessed by evaluating the following factors:

- Availability of suitable host;
- Biology of the pest – which includes reproduction methods, lifecycles, dispersal mechanisms (potential vectors and natural enemies in the PRA area);
- Pest management, cultural and commercial procedures at the point of origin;
- Survival of pest during transport or storage;
- Minimum population for establishment and suitability of the environment in PRA area based on the climate conditions of the importing country.

The likelihood decided on the pest will be the result of the interactions of the above factors.

[49] To facilitate determining the risk (Low, Medium, High) the following probability can be applied:

Low	<ul style="list-style-type: none"> • Pest has low reproductive potential; • It has slow dispersal capability.
Medium / <u>Moderate</u>	<ul style="list-style-type: none"> • Pest has high reproductive potential <i>OR</i> • Pest capable of rapid dispersal.

High	<ul style="list-style-type: none"> • Pest has high biotic potential, e.g., many generations per year, many offspring per reproduction (“r-selected” species), <i>AND</i> • Evidence exists that the pest is capable of rapid dispersal, e.g., over 10 km/year under its own power; via natural forces, wind, water, vectors, etc., or human-assistance.
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[50] **Overall Probability for entry, establishment or spread**

[51] The likelihoods from step i,ii & iii may be combined according to the following Matrix of Rules in Table 6 or to established standard matrix of rules.

[52] **Table 6. Matrix of Rules for combining descriptive likelihood (adopted from Biosecurity Australia, 2001)**

		Likelihood2					
		High	Moderate	Low	V. low	E. low	Negligible
Likelihood 1	High	High	Moderate	Low	Very low	Extremely low	Negligible
	Moderate	Moderate	Low	Low	Very low	Extremely low	Negligible
	Low	Low	Low	Very low	Very low	Extremely low	Negligible
	V. low	Very low	Very low	Very low	Extremely low	Extremely low	Negligible
	E. low	Extremely low	Extremely low	Extremely low	Extremely low	Negligible	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible

[53] **Risk Level for Probability of Entry, Establishment and Spread = Prob. of Host Climate Interaction (A) X Prob. of Host Range (B) X Prob. of Establishment and Spread (C).**

[54] **B) POTENTIAL FOR CONSEQUENCES**

[55] For a qualitative evaluation, the impact can be described as either to be **Negligible, Minor, Moderate, Significant and Highly Significant** which can be explained as follows (Modified from Biosecurity Australia, 2001) or by any other established standard assessment criteria.:

- *A Negligible impact is not usually distinguishable from normal day-to-day variation in the criterion.*
- *An impact of minor significance is not expected to threaten economic viability, but would lead to a minor increase in mortality or morbidity, or a minor decrease in production. For non-commercial factors, the impact is not expected to threaten the*

intrinsic value of the criterion, although the value of the criterion would be considered as disturbed. Effects would generally be reversible.

- *A moderate or significant impact would threaten economic viability through a moderate increase in mortality or morbidity, or a moderate decrease in production. For non-commercial factors, the intrinsic value of the criterion would be considered as significantly diminished or threatened. Effects may not be reversible.*
- *A highly significant impact would threaten economic viability through a large increase in mortality or morbidity, or a large decrease in production. For non-commercial factors, the intrinsic value of the criterion would be considered as severely or irreversibly damaged.*

[56] In assessing the potential consequences, the impact to the following factors can be assessed;

i	<p>Economy;</p> <p>I) the production value of crop for each of the AMS was used to reflect the value of the industry to the country. The higher the production value, significant impact to the PRA country would be expected should the Pest comes and affect the industry.</p> <p>OR</p> <p>II) Introduced pests are capable of causing a variety of direct and indirect economic impacts. These are divided into three primary categories (other types of impacts may occur):</p> <p>a) Lower yield of the host crop, e.g., by causing plant mortality, or by acting as a disease vector.</p> <p>b) Lower value of the commodity, e.g., by increasing costs of production, lowering market price, or a combination.</p> <p>c) Loss of foreign or domestic markets due to presence of new quarantine pest.</p> <p>The following impact ratings can be used in determining the economic impact of the pest.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">Negligible/ Minor</td> <td>Pest causes any one or none of the above impacts</td> </tr> <tr> <td>Moderate</td> <td>Pest causes any two of the above impacts</td> </tr> <tr> <td>Significant/ Highly Significant</td> <td>Pest causes all three of the above impacts</td> </tr> </table>	Negligible/ Minor	Pest causes any one or none of the above impacts	Moderate	Pest causes any two of the above impacts	Significant/ Highly Significant	Pest causes all three of the above impacts
Negligible/ Minor	Pest causes any one or none of the above impacts						
Moderate	Pest causes any two of the above impacts						
Significant/ Highly Significant	Pest causes all three of the above impacts						

ii	<p>Environmental impact – Consider the usage of pesticide and fungicide in the control and management of the pest.</p> <p>As an example, the impact score below can be used;</p> <table border="1" data-bbox="386 384 1385 642"> <tr> <td data-bbox="386 384 651 422">Negligible/ Minor</td> <td data-bbox="651 384 1385 422"> <ul style="list-style-type: none"> • Use of Biocontrol agent to control. </td> </tr> <tr> <td data-bbox="386 422 651 548">Moderate</td> <td data-bbox="651 422 1385 548"> <ul style="list-style-type: none"> • Use of Biocontrol agent and Synthetic Chemical to Control. • Use of class 3 (slightly toxic³) & 4 (non-toxic) pesticides to control. </td> </tr> <tr> <td data-bbox="386 548 651 642">Significant/ Highly Significant</td> <td data-bbox="651 548 1385 642"> <ul style="list-style-type: none"> • Use of Synthetic Chemical to control. • Use of class 1 (most toxic) & 2 (moderately toxic) pesticides to control. </td> </tr> </table>	Negligible/ Minor	<ul style="list-style-type: none"> • Use of Biocontrol agent to control. 	Moderate	<ul style="list-style-type: none"> • Use of Biocontrol agent and Synthetic Chemical to Control. • Use of class 3 (slightly toxic³) & 4 (non-toxic) pesticides to control. 	Significant/ Highly Significant	<ul style="list-style-type: none"> • Use of Synthetic Chemical to control. • Use of class 1 (most toxic) & 2 (moderately toxic) pesticides to control.
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Significant/ Highly Significant	<ul style="list-style-type: none"> • Use of Synthetic Chemical to control. • Use of class 1 (most toxic) & 2 (moderately toxic) pesticides to control. 						
iii	<p>Eradication cost – Consider the cost and effort in eradicating the pest.</p> <table border="1" data-bbox="386 741 1385 1062"> <tr> <td data-bbox="386 741 651 846">Negligible / Minor</td> <td data-bbox="651 741 1385 846"> <ul style="list-style-type: none"> • Non significant amount of resources (capacity and monetary) spent on the eradication efforts of the pest. </td> </tr> <tr> <td data-bbox="386 846 651 951">Moderate</td> <td data-bbox="651 846 1385 951"> <ul style="list-style-type: none"> • Moderate amount of resources (capacity and monetary) spent on the eradication effort of the pest. </td> </tr> <tr> <td data-bbox="386 951 651 1062">Significant / Highly significant</td> <td data-bbox="651 951 1385 1062"> <ul style="list-style-type: none"> • Significant amount of resources (capacity & monetary) spent on the eradication effort of the pest. </td> </tr> </table>	Negligible / Minor	<ul style="list-style-type: none"> • Non significant amount of resources (capacity and monetary) spent on the eradication efforts of the pest. 	Moderate	<ul style="list-style-type: none"> • Moderate amount of resources (capacity and monetary) spent on the eradication effort of the pest. 	Significant / Highly significant	<ul style="list-style-type: none"> • Significant amount of resources (capacity & monetary) spent on the eradication effort of the pest.
Negligible / Minor	<ul style="list-style-type: none"> • Non significant amount of resources (capacity and monetary) spent on the eradication efforts of the pest. 						
Moderate	<ul style="list-style-type: none"> • Moderate amount of resources (capacity and monetary) spent on the eradication effort of the pest. 						
Significant / Highly significant	<ul style="list-style-type: none"> • Significant amount of resources (capacity & monetary) spent on the eradication effort of the pest. 						
iv	<p>Quarantine pest in country –Consider whether the concerned pest is listed as a quarantine pest in the ASEAN member state (AMS) of concern. Those with ‘NO INFORMATION’ on QP would have significant impact as shown below in the impact scoring table.</p> <table border="1" data-bbox="386 1325 1385 1535"> <tr> <td data-bbox="386 1325 651 1398">Negligible/ Minor</td> <td data-bbox="651 1325 1385 1398"> <ul style="list-style-type: none"> • Not listed in Quarantine Pest List of importing AMS of concern. </td> </tr> <tr> <td data-bbox="386 1398 651 1535">Significant/ Highly Significant</td> <td data-bbox="651 1398 1385 1535"> <ul style="list-style-type: none"> • Listed in the Quarantine Pest List of importing AMS of concern as regulated pest. • Information on the Quarantine Pest List is Not available. </td> </tr> </table>	Negligible/ Minor	<ul style="list-style-type: none"> • Not listed in Quarantine Pest List of importing AMS of concern. 	Significant/ Highly Significant	<ul style="list-style-type: none"> • Listed in the Quarantine Pest List of importing AMS of concern as regulated pest. • Information on the Quarantine Pest List is Not available. 		
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Significant/ Highly Significant	<ul style="list-style-type: none"> • Listed in the Quarantine Pest List of importing AMS of concern as regulated pest. • Information on the Quarantine Pest List is Not available. 						

[57] Risk Level for Potential Consequences = Average of the impact score/ consequences (i-iv) for the particular PRA area being assessed.

³ Based on US Environmental Protection Agency Classification of Toxicity Classes of Pesticides.

[58] **C) OVERALL ASSESSMENT OF RISK**

[59] The total risk level can be calculated as a function of the likelihoods or probability of the entry, establishment and spread (**Y-AXIS**) and the risk level of the potential consequences (**X-AXIS**) or impact resulting from the event in accordance to the Risk Estimation Matrix in Table 7. The outcome should be inserted into the appropriate column in Table 2.

[60] **Table 7. Risk Estimation Matrix (adopted from Biosecurity Australia, 2001)**

[Note: Moderate can also be referred to as Medium]

Likelihood of entry, establishment and spread	<u>High</u>	Negligible	Very low	Low	Moderate	High	Extreme
	<u>Moderate</u>	Negligible	Very low	Low	Moderate	High	Extreme
	<u>Low</u>	Negligible	Negligible	Very low	Low	Moderate	High
	<u>V. Low</u>	Negligible	Negligible	Negligible	Very low	Low	Moderate
	<u>E. Low</u>	Negligible	Negligible	Negligible	Negligible	Very low	Low
	<u>Negligible</u>	Negligible	Negligible	Negligible	Negligible	Negligible	Very low
		<u>Negligible</u>	<u>Very low</u>	<u>Low</u>	<u>Moderate</u>	<u>High</u>	<u>Extreme</u>
		Consequence of entry, establishment and spread					

[61] Note: Information on the Biology, Ecology, Dispersal, Host Range, Economic Consequences, Quarantine pest of which Country, Environmental impact and cost of eradication will come from CABI Compendium Online Edition (2013) – [refer to the latest edition of the compendium], scientific references (e.g. scientific papers, books, plant journals e.g. Plant Science Journal, Journal of Plant Research, American Journal of Plant Sciences), results of previous PRAs conducted and Internet searches.

Annex 2:



**INTRA-ASEAN PHYTOSANITARY GUIDELINES FOR
THE IMPORTATION OF *CROP***

INTRODUCTION

Common Name (Crop)	
Scientific Name (Crop)	
Type of Commodity	
Use of the Commodity	
Production Areas	

QUARANTINE PESTS OF CONCERN

Scientific Name	Common Name (If any)

REQUIREMENTS**I. PRE-EXPORT REQUIREMENT**

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II. ENTRY REQUIREMENT

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III. PHYTOSANITARY CERTIFICATE

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Note: The Guidelines was developed based on the pest list ASEAN Member States and CABI Crop Protection Compendium (*to quote the edition used*).

Notes:

1. These guidelines are not mandatory but should be followed to facilitate trade within the ASEAN Community.
2. Member States may not be obliged to follow these guidelines in case where there is a change in the pest status of the exporting country or in the event of emergencies.