Pest Risk Analysis

Concept, Framework and Methodology

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Outlines

- PRA in terms of different frameworks.
- PRA Concept
- PRA steps (Methodology)
- Conclusion
PRA and international context

• WTO-SPS-agreement, 1995: “Members shall ensure that any sanitary or phytosanitary measure is … based on scientific principles and is not maintained without sufficient scientific evidence”

• IPPC, 1997: “Phytosanitary measures should be technicall justified, transparent,....

• “Responsibilities of an official NPPO shall include ...the conduct of pest risk analyses
# PRA and international Standards

<table>
<thead>
<tr>
<th>ISPM 02</th>
<th>Framework for pest risk analysis</th>
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</thead>
<tbody>
<tr>
<td>ISPM 11</td>
<td>Pest risk analysis for quarantine pests</td>
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<tr>
<td>ISPM 21</td>
<td>Pest risk analysis for regulated non quarantine pests</td>
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Legal Framework of PRA (Egypt)

• Decision of plant quarantine work committee on 3 March 2013 (has the ministerial decree force)

• The decision decided that: risk analysis study should be conducted before importation of regulated plants or plant materials from new origin

• draft legislat ing - chapter 3 article(1)Describing the related PRA
Important definitions

pest  any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products. Note: In the IPPC, “plant pest” is sometimes used for the term “pest” [FAO, 1990; revised ISPM 2, 1995; IPPC, 1997; CPM, 2012]

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]
Important definitions

pest risk (for quarantine pests)
The probability of introduction and spread of a pest and the magnitude of the associated potential economic consequences [ISPM 2, 2007]

pest risk analysis
(agreed Interpretation) The process of evaluating biological or other scientific and economic evidence to determine whether an organism is a pest, whether it should be regulated, and the strength of any phytosanitary measures to be taken against it [ISPM 2, 1995; revised IPPC, 1997; ISPM 2, 2007]
Risk Analysis framework
Hazard X Risk

• **Hazard**: the threat, the substance that causes damage

• **Risk**: the probability that exposure to the hazard will occur and lead to harm

  “Risk = f (probability * severity) “

  Risk = Hazard + exposure

• **Risk assessment**: the process by which hazard, exposure and risk are determined
Examples Hazard X Risk

- Driving a car is hazard

- Getting flat tires is a risk
Examples Hazard X Risk

• The **shark** is a **hazard**

• A **hungry shark** is more **hazardous** than one that has just fed.
Examples Hazard X Risk

The shark will only be a risk if a diver swim near it.

The risk, presented by the shark, can be diminished if the diver is protected by a steel cage.
In a similar way

• All plant pests represent a hazard.
• But this plant pests will represent a risk, depending:
  – The characteristics of the pest.
  – The conditions of the specimens that entry to a new area
  – The pathway
  – The postharvest treatments and processes
  – The environmental conditions in the reception area
  – Etc. etc.

By all this conditions, that can vary from country to country, is no possible standardize the Phytosanitary measures
**PRA Steps (Methodology)**

1- **Pest Risk Initiation:**
   - pest
   - pathway
   - policy

2- **Pest Risk Assessment:**
   - Pest categorization (characteristics of q-pest?)
   - Consequences of introduction
   - Likelihood of introduction

3- **Pest Risk Management**
   - Identification and evaluation of risk reduction options
Pest Risk Assessment

1- Preparing the Pest List
2- Consequences of Introduction

1. Climate-Host Interactions
2. Host Range
3. Dispersal Potential
4. Economic Impact
5. Environmental Impact
Pest Risk Assessment

• 3- Likelihood of Introduction

1. Quantity of commodity imported annually

2. Survive postharvest treatment

3. Survive shipment

4. Not detected at port of entry

5. Moved to suitable habitat

6. Contact with host material
Pest Risk Assessment

The total risk =

Likelihood of introduction + consequences of introduction

Table 5. Summary of pest risk potential

<table>
<thead>
<tr>
<th>Pest</th>
<th>Consequences of Introduction</th>
<th>Likelihood of Introduction</th>
<th>Pest Risk Potential$^1$</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Aegorhinus superciliosus</em></td>
<td>Medium (9)</td>
<td>High (16)</td>
<td>High (25)</td>
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<tr>
<td><em>Graphognathus leucoleoma</em></td>
<td>High (10)</td>
<td>High (16)</td>
<td>High (26)</td>
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<tr>
<td><em>Pseudococcus viburni</em></td>
<td>Medium (9)</td>
<td>High (16)</td>
<td>High (25)</td>
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<tr>
<td><em>Pseudococcus calceolariae</em></td>
<td>Medium (9)</td>
<td>High (16)</td>
<td>High (25)</td>
</tr>
<tr>
<td><em>Agrobacterium tumefaciens</em></td>
<td>High (10)</td>
<td>High (16)</td>
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* Bill bug (raspberry weevil)
* whitefringed beetles
* Californian mealybug
* pink mealybug
* bacterial gall
Risk matrix

- **High**
  - Medium
  - Low

- **Low**
  - Medium
  - High

- **Likelihood**
  - Low
  - Medium
  - High

- **Impact**
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<th></th>
<th>Very low</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Very high</th>
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**Risk matrix**

**Likelihood**

**Impact**
Risk Management

- Defining the available options for managing the risks
- Selecting the proper options up on the rate of risk

**Low:**
Pest will typically not require specific mitigation procedures. The port-of-entry inspection to which all imported commodities are subjected can be expected to provide sufficient phytosanitary security.

**Medium:**
Specific phytosanitary measures may be necessary.

**High:**
Specific phytosanitary measures are strongly recommended. Port-of-entry inspection is not considered sufficient to provide phytosanitary security.
System Approach
(Integrated Measures for Pest Risk Management)

• Determined the critical risk point during all production stages (form the farm to final use) of the commodity and setting the package of the measures should be taken to reduce or prevent the risk.
Risk communication

• Continues proses during all stages of risk analysis study with (the exporting country- research institutes – privet sector – other stakeholders)

• When any additional information required during conduction the PRA.

• Need to explain unclear points.

• Discussing the comments of the exporting country on the drafted results of PRA before setting the final import permit requirements.
Process of risk evaluation as defined by the FAO and WHO
Conclusion

• The main purpose of PRA is to mitigate the risk by setting import requirements. (ALoP)

• **Zero risk doesn’t exist**
Thank you!

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Useful videos

- https://www.youtube.com/watch?v=9pSPI_jAHK0&index=1&t=53s&list=PLSGs6DSUr1pODFmdXhPHx_AHUisg1dhli
- https://www.youtube.com/watch?v=mHlGRiais8