

# **ACERA Project 0709 International Comparison of Quarantine Risk Analysis Systems.**

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# Caution

***Examples presented in this presentation does not generalize the countries common practice. These examples are not presented to criticize the practice but to demonstrate how decision on risk is arrived.***

# Overview of the Presentation

- My work at QUT & CRCNPB
- What the Gold Standards (ISPM) offer
- PRA pest/ pathway,
- What are my observations
- Discussion for pest/pathway
- How am I proceeding further

# My Job

- Evaluate and compare qualitatively different quarantine risk assessment schemes.
- Evaluate how different risk analysis approaches deal with uncertainty
- Investigate and develop standardised measures of effectiveness for these schemes.

# Gathering Information

Help from

Biosecurity Australia

Plant Health Australia

Australia Quarantine and Inspection service

International Organisations

CSL, UK

CFIA, Canada

Department of Agriculture and Cooperation,  
and Internet

# Pest Risk Analysis

Def: *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.*

Stage-1 Initiation

Stage-2 Risk Assessment (RA)

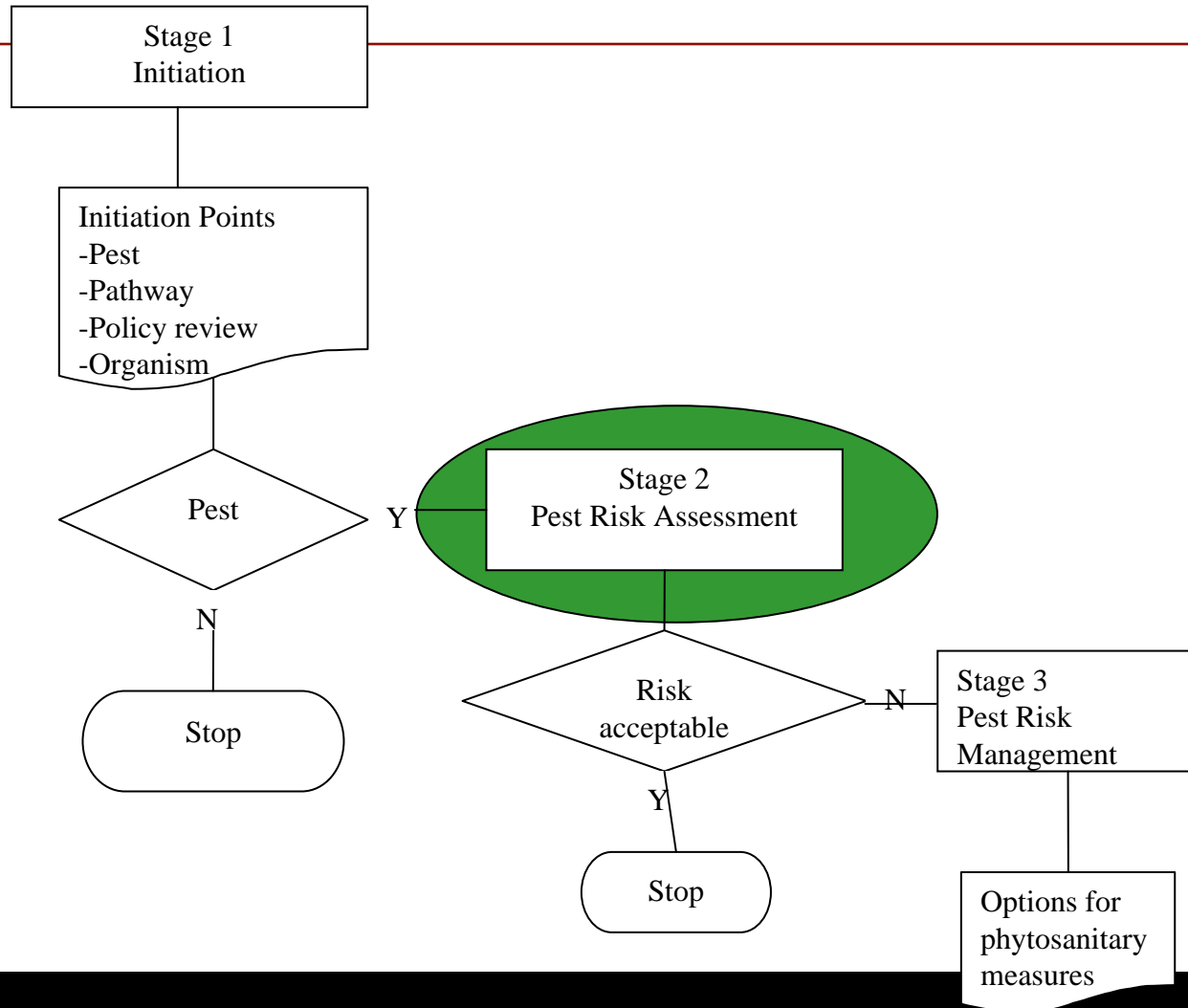
Stage-3 Risk Management

Stage-4 Risk Communication

# PRA process Includes

- Cooperation in the provision of information
- estimating minimal impact
- Non-discrimination
- Harmonization
- Transparency
- Avoidance of undue delay.

# Pest Risk Analysis Structure

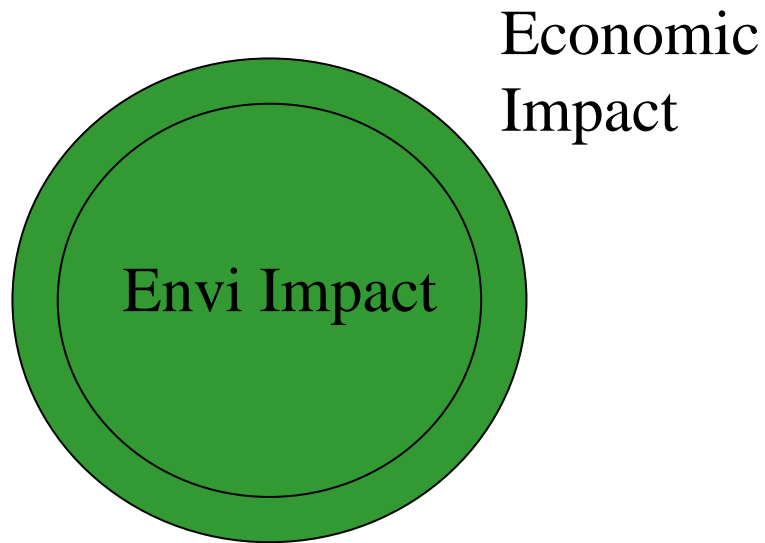


# ISPM Procedure for Conducting RA

Pest risk = Probability of introduction  $\times$  Magnitude of Impact,  
=  $\Pr(I) \times MI$

$\Pr(I) = \Pr(\text{Entry}) \times \Pr(\text{Establishment}) \times \Pr(\text{Spread})$   
=  $\Pr(E) \times \Pr(\text{Est} | E) \times \Pr(S | \text{Est}, E)$

# ISPM Procedure for Conducting RA



$$\text{Magnitude of Impact} = \text{Economic} + \text{Social} + \text{Environmental}$$

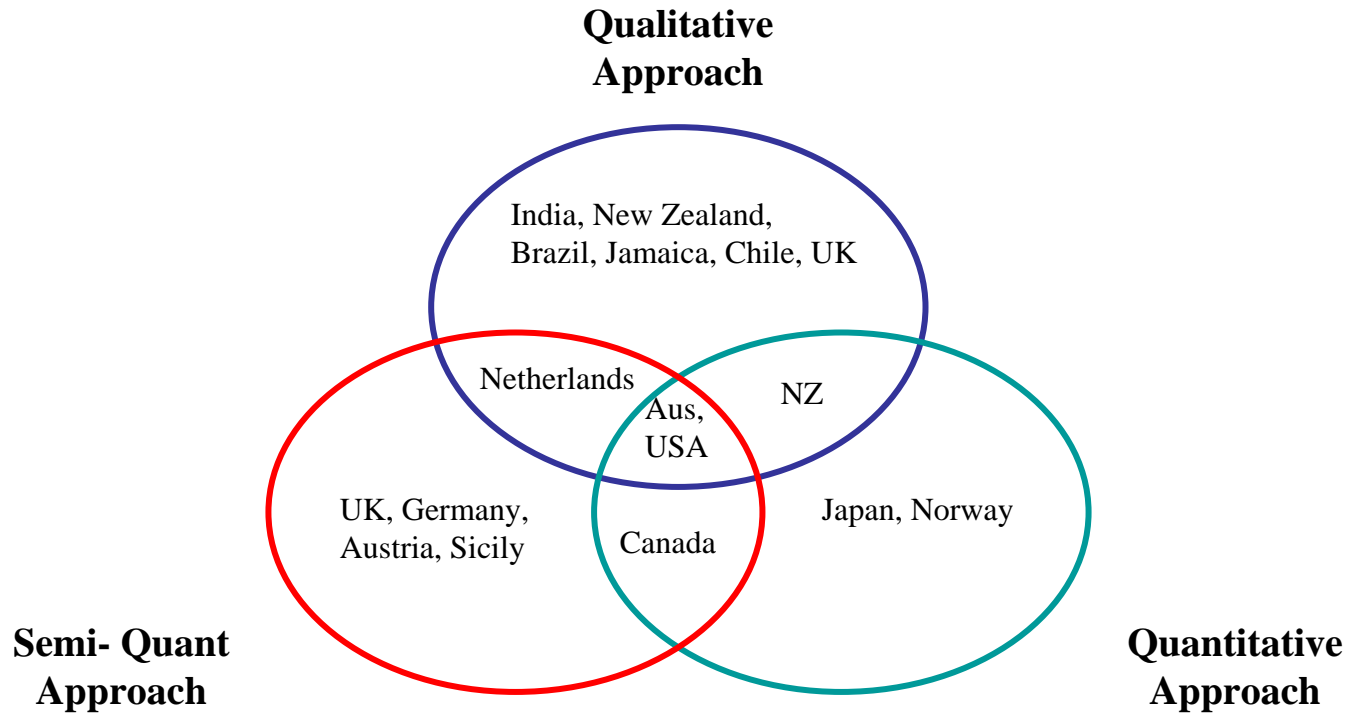
# My objective for the presentation

- Evaluate and compare qualitatively different quarantine risk assessment schemes.

# Evaluating Quarantine Schemes

- Are questions posed clearly and unambiguously?
- Are the answers pre-specified?
- How many choices of answers are available?
- Is assistance given for risk rating?
- Are standardised terms used to answer questions?
- Which other methods are used to standardise answers?
- Do they comply with the standards?
- Is stakeholder involved in the PRA process?

# Approaches Used



# Observations

## Qualitative methods:

- **Risk assessment:** Subjective
- **Risk scoring:** Low, Medium, High
- **Uncertainty:**
  - Overall
  - Component level
- **Judgement:** Expert opinion.

# Semi-quantitative Approach

Country	Scoring system	Union	Judgement
Australia	1-6	Australia	Expert opinion
Netherlands	1-9(O) /1-5 (N)	EPPO	Expert opinion
Canada	1-3 & 0-3	NAPPO	Multiplication
USA	1-3 & 0-3	NAPPO	Summation
Germany	1-9(O)/1-5(N)	EPPO	Mean of Mean's
UK	1-9 (O)/1-5(N)	EPPO	Expert opinion

# Methodological differences between countries

Country	Technique	Pr(I)	Impact
Australia	Probabilistic & Subjective	Uniform distribution 1-6	Expert knowledge (A-F)
Netherlands	Structured Questionnaire	1-9/1-5	1-9/1-5
Canada	Structured Questionnaire	1-3	0-3

# Economic impacts

Country	Direct effect	Indirect effect	Comply with ISPM
Australia	Pre-specified Local Regional National level	Pre-specified Local Regional National level	Partially
EPPO	Pre-specified	Pre-specified	Partially
USA	Analyst specifies	Assessed	Partially
Canada	Analyst specifies	Assessed	Partially

# Observations

Scheme	Comm Stake holders	Transparency	Consistency	Guidance on cat Likeli	Impact	Overall decision	Time
AUS	Yes	Not clear	Yes	No	Yes	Decision Matrix	Lengthy
EPPO	No	Yes	No	No	No	Expert Opinion	Reasonable
NAPPO	Not explicit	Yes	Yes	Yes	Yes	Decision Matrix	Reasonable
NZ	Yes	Not clear	No	No	No	Expert opinion	Reasonable

# Acknowledging Uncertainty

Country	Entry	Establishment	Spread	Impact	Overall
Australia	No	No	No	No	Yes
Germany (O)	No	No	No	No	Yes
Netherlands (O)	Yes	Yes	Yes	Yes	Yes
USA	Yes	Yes	Yes	Yes	Yes
Canada	Yes	Yes	Yes	Yes	Yes
EPPO	Yes	Yes	Yes	Yes	Yes

Propagation of uncertainty into final decision none of the above

# Discussion

- Converting subjective rating into numbers under product rule.
- Concerns with the average and cumulative rule
- Concerns with the Canadian system
- Additive rule in a Multiple Criteria Decision Analysis
- Uncertainties addressed and not addressed
- Variability?

# Conclusions

- Most of the PRA's do not follow the guidelines in true sense.
- They are not transparent in doing so.
- Even when risk assessing schemes such as EPPO, NAPPO, Australia, NZ exist their implementation is not uniformly observed.
- Scores must not be averaged directly.

# Where am I going from here?

- Develop methods
  - for making the comparisons possible.
  - for incorporating parameter uncertainty into the models.

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**Thanks for your attention  
Any Questions Suggestions?**

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