



PRA

Risk, uncertainty & communication

Julian Smith



General background

- Risk
- Information and systematic review
- Probability and working with uncertainty
- Engagement and communication

What is risk - crossing the road

■ What risks

- Width of road
- Visibility on road
- Car numbers
- Car speed
- Road conditions
- Size of cars
- How fast am I
- etc



■ What management

- Pedestrian way
- Bridge
- Speed calming
- Police surveillance
- Legal enforcement on speed
- Vehicle size limit
- Must I cross
- etc

What is risk

- Combination of likelihood and impact
 - How likely an event is to happen, and how much of an effect will it have

- So...
 - If an event cannot occur, it cannot have an impact and there is no risk
 - If an event is likely to occur, but will have no impact, then there is no risk

Show and tell on risk

- Document one example with your neighbour and feedback to the group:

Purpose of a PRA

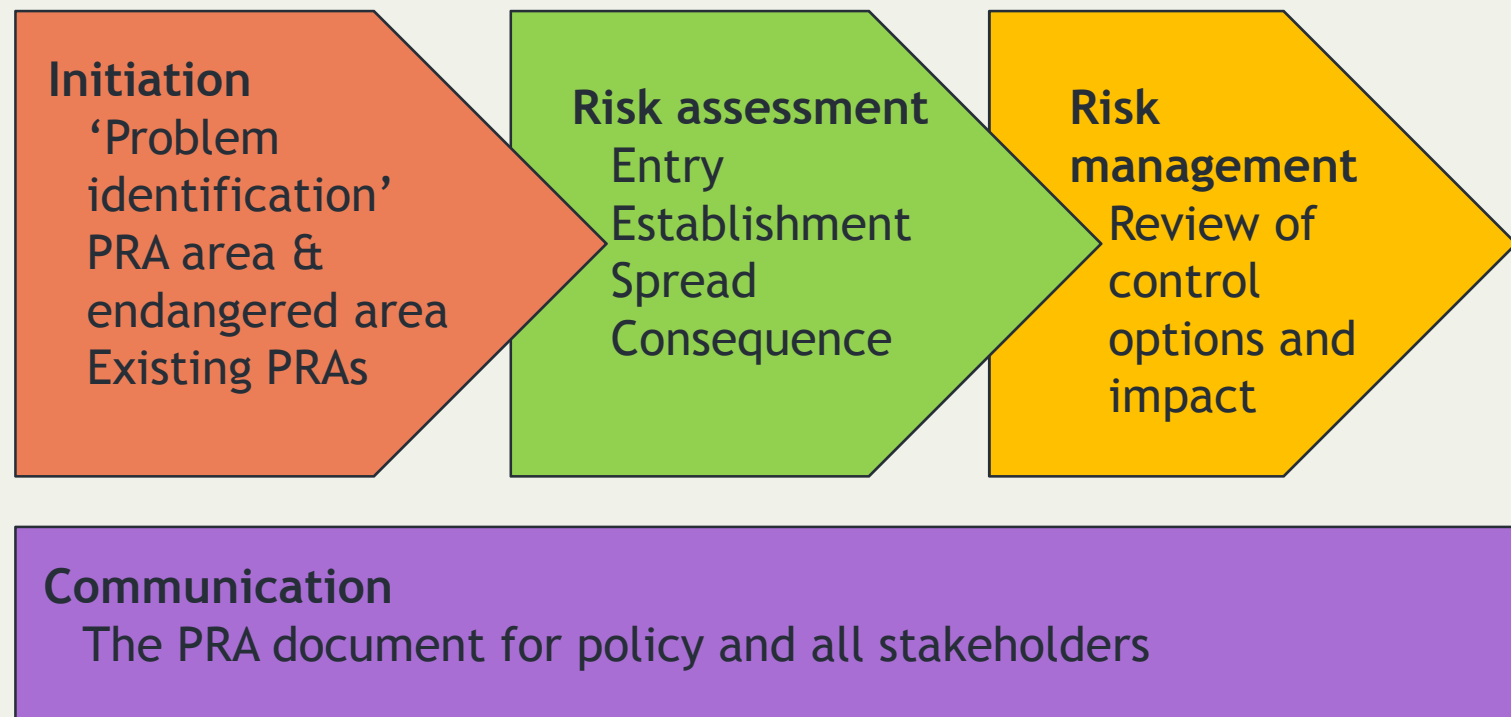


- To capture what is known and not known about the pest and pest pathways
- To assign risk and uncertainty to this knowledge with regards to the likelihood that the pest will gain entry, establish, spread and cause harm
- Harm can be economic, environmental and cultural
- To determine contingency and management strategies
- To communicate to decision- makers areas of prioritisation



Stages of PRA

- PRA is a systematic approach to decide if a pest should be managed using legislation



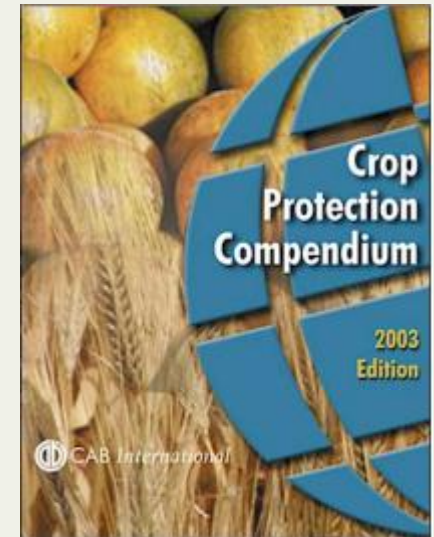
Documentation

- Main elements to document are outlined in ISPM No. 11:
 - Purpose of the PRA
 - Pest, pest list, pathways, PRA area, endangered area
 - Sources of information
 - Categorized pest list
 - Conclusion of risk assessment
 - Risk management options identified
 - Options selected

- Supports the IPPC key principle of transparency

Sources of information

- Comprehensive summaries of information
 - CABI Crop Protection Compendium
 - Quarantine Pests for Europe
- All information from single source is impossible due to:
 - Rapid changes in events
 - Country specific information required
 - Some data are incomplete, or vary, e.g. trade pathways



Systematic review of information

- PRA needs to conclude on a defensible outcome, that can not be seen as biased by the information considered
- Systematic review provides a set of rules that defines:
 - What information is gathered
 - How you give credibility to information i.e. peer or non-peer review
- Example of rules:
 - What information data bases will you search/not search
 - What terms are you to search for e.g. pest names, technical terms
 - What combination on terms
 - What time period will you restrict your self to
 - Filter results by expert opinion

Example

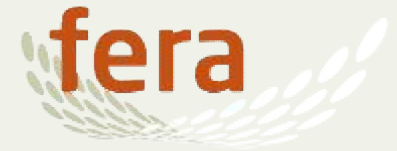


Table 2: Combination of search terms used.

Set #	Combination of search terms
1	<i>Pseudomonas pseudoalcaligenes</i> subsp. <i>citrulli</i>
2	<i>Pseudomonas avenae</i> subsp. <i>citrulli</i>
3	<i>Acidovorax avenae</i> subsp. <i>citrulli</i>
4	<i>Acidovorax citrulli</i>
5	set1 OR set2 OR set3 OR set4
6	set5 AND identify*
7	set5 AND detection
8	set5 AND diag*
9	set5 AND pcr
10	set5 AND fatty acid
11	set5 AND biolog
12	set5 AND monoclonal
13	set5 AND polyclonal
14	set5 AND elisa
15	set5 AND character*
16	Set5 AND (identify* OR detection OR diag* OR pcr OR fatty acid OR biolog OR monoclonal OR polyclonal OR elisa OR character*) which is identical to Set6 OR set7 OR set8 OR set9 OR set10 OR set11 OR set 12 OR set13 OR set14 OR set15

- OVID Host
 (<http://ovidsp.ovid.com/ovidweb.cgi?T=JS&MODE=ovid&PAGE=main&NEWS=n&DBC=y&D=cbuf>) including the following databases:

 - Plant Protection from 1973 -2010

- ISI Web of Knowledge
 (<http://isi02knowledge.com/>), including the following databases:

 - Science Citation Index Expanded, 1970-
 - Social Science Citation Index, 1970
 - Arts & Humanities Citation Index, 1975

- AGRICOLA
 (<http://agricola.nal.usda.gov/>), including the following databases:

 - Article Citation database
 - NAL Catalog

Search results

TABLE 4: Reasons for screening out the abstracts		
Reasons for screening out	Total number of abstracts	% of pool
1) Abstracts not relevant to pest (from title and abstract)	97	58.8
2) Abstracts relevant to pest but not to detection or identification methods	11	6.7
Total number of removed papers	108	65.5
Total number of papers for evaluation	57 (i.e. 165-108)	34.5

Qualitative probability

■ Likelihood of event

- Very unlikely
- Unlikely
- Likely
- Very likely

■ Scale of impact

- Negligible
- Low
- Medium
- High

Working with uncertainty

- Sources of uncertainty
 - Data
 - Missing, inconsistent, conflicting, imprecise
 - Judgement
 - Subjective, time-limited, expertise-limited
 - Methodology
 - Undeveloped, untested, inconsistent, not repeatable, pathways not considered or described inappropriately
 - Other
 - Pest & human behaviour, random events, unexpected events, complexity of biological systems

Scales of uncertainty

Rating	Uncertainty
Very high	Little or no information - “Best guess”
High	
Moderate	
Low	
Very low	Extensive, peer-reviewed information

Adding qualitative uncertainty

Very High Confidence	High Confidence	Moderate Confidence	Low Confidence
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- **Scale of impact**

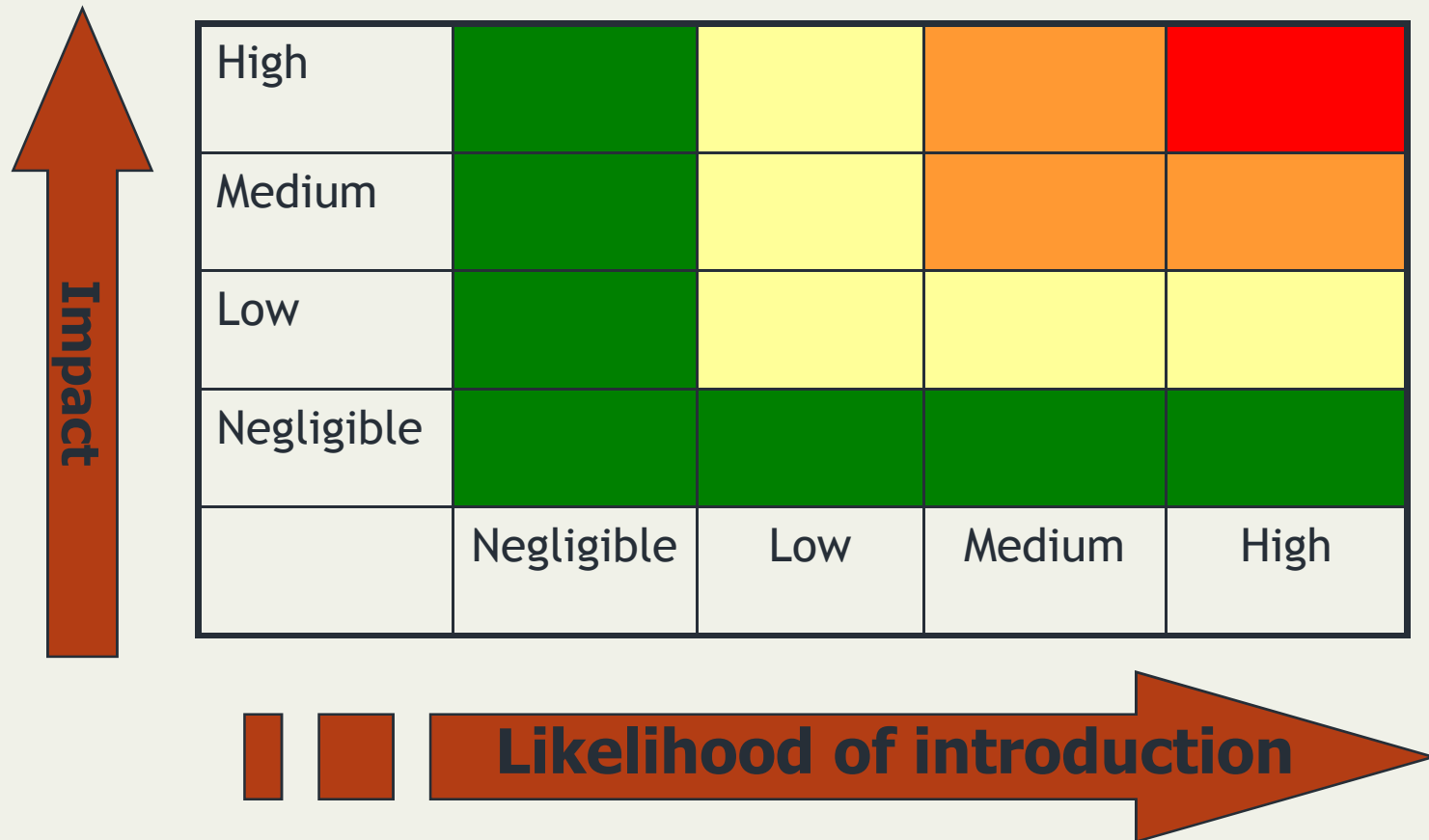
- Negligible impact
 - Low confidence
 - Moderate confidence
 - High confidence
 - Very high

Documenting uncertainty

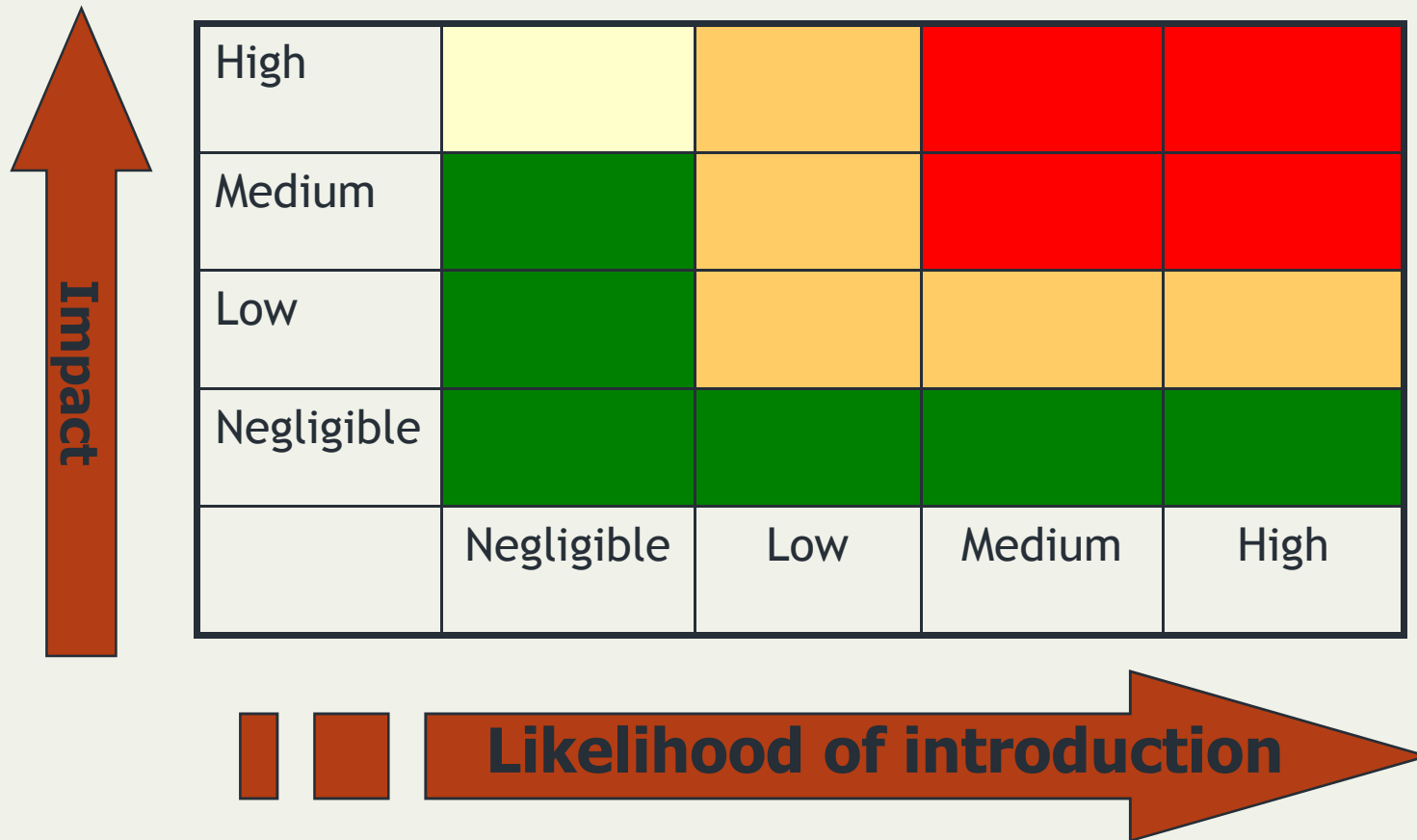
Element	Rank	Uncertainty
Probability of Entry	High	Low
Probability of Establishment		
Probability of Spread		
Direct Consequences	Low	High
Indirect Consequences		
Overall Risk		

- Support with a narrative on the basis of uncertainty
- Identify how uncertainty can be reduced e.g. research on existing data or gaining of new data

Risk matrix



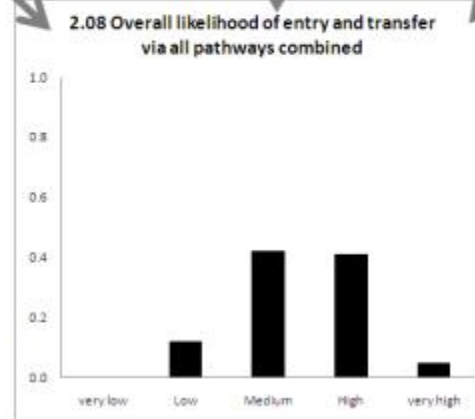
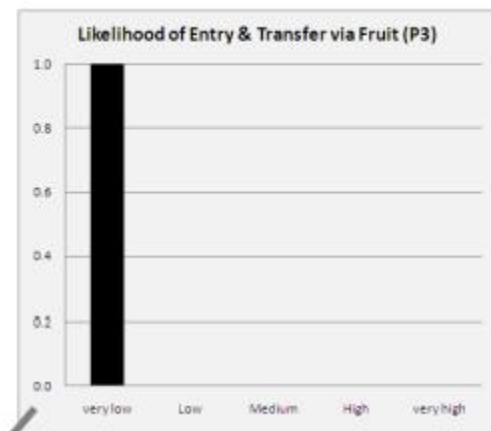
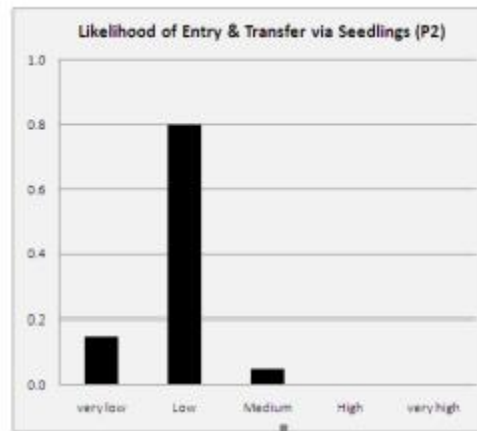
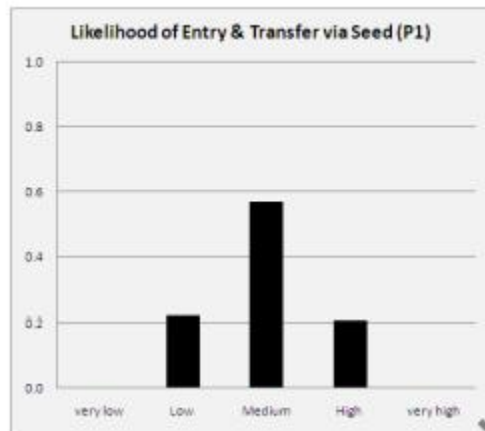
Risk matrix, with upper limits on uncertainty



Combining risk elements

<u>Risk element</u>	<u>Categories / Rating</u>	<u>Interpretation</u>
Entry x	0, 1, 2, 3	
Establishment x	0, 1, 2, 3	
Spread =	0, 1, 2, 3	
Likelihood	0, 1, 2, 3, 4, 6, 8, 9, 12, 18 or 27	Negligible Low Medium High

Quantitative evaluation on risk and uncertainty



Managing risk down

- Existing practices
 - These will have been considered during the risk assessment and reflected in the overall risk rating

- New practices
 - Applied to the pest or pathway
 - How practical, how reliable, at what cost, what reduced risk is achieved
 - How certain are we that management will be adopted

Communicating on risk

Why? Who? What? When? How?

- Multi-stakeholder consultation
 - Get information
 - Give and test information
 - Ask the appropriate questions to the appropriate stakeholders
- Scientific evidence
 - Complex, technical subjects require plain summaries
 - Uncertainty needs to be identified, attributed to gaps in knowledge and degree of criticality
- Policy development
 - Demonstrate listening
 - Weighted outcomes based on breadth of views
 - Acknowledging compromise

Steps of PRA

- Pest Initiation & categorisation
 - Establishing reasonable cause to progress a PRA and defining the area under consideration and at risk
- Pest Risk Assessment
 - Establishes probability of pest entry, establishment (introduction) and spread
 - Associates direct and indirect consequences of pest in terms of commercial, environmental and social metrics
- Pest Risk Management
 - Evaluation of additional control practices; cost and benefit, likelihood of adoption etc
- Communication
 - Reconcile the PRA outcomes with opinions of multiple stakeholders

Any questions!

- If you have any questions please feel free to contact:
 - julian.smith@fera.co.uk
 - chris.malumphy@fera.co.uk