Principles of pest risk assessment – guidance as per ISPM 2, 11, etc.

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Around the world, the three components of Risk Analysis…

Risk Analysis

Define the scope

Assess the risk

- Identify hazard(s) and adverse event(s)
- Estimate probability (likelihood)
- Estimate consequences
- **ID uncertainty**

Manage the risk (if we need or if we can)

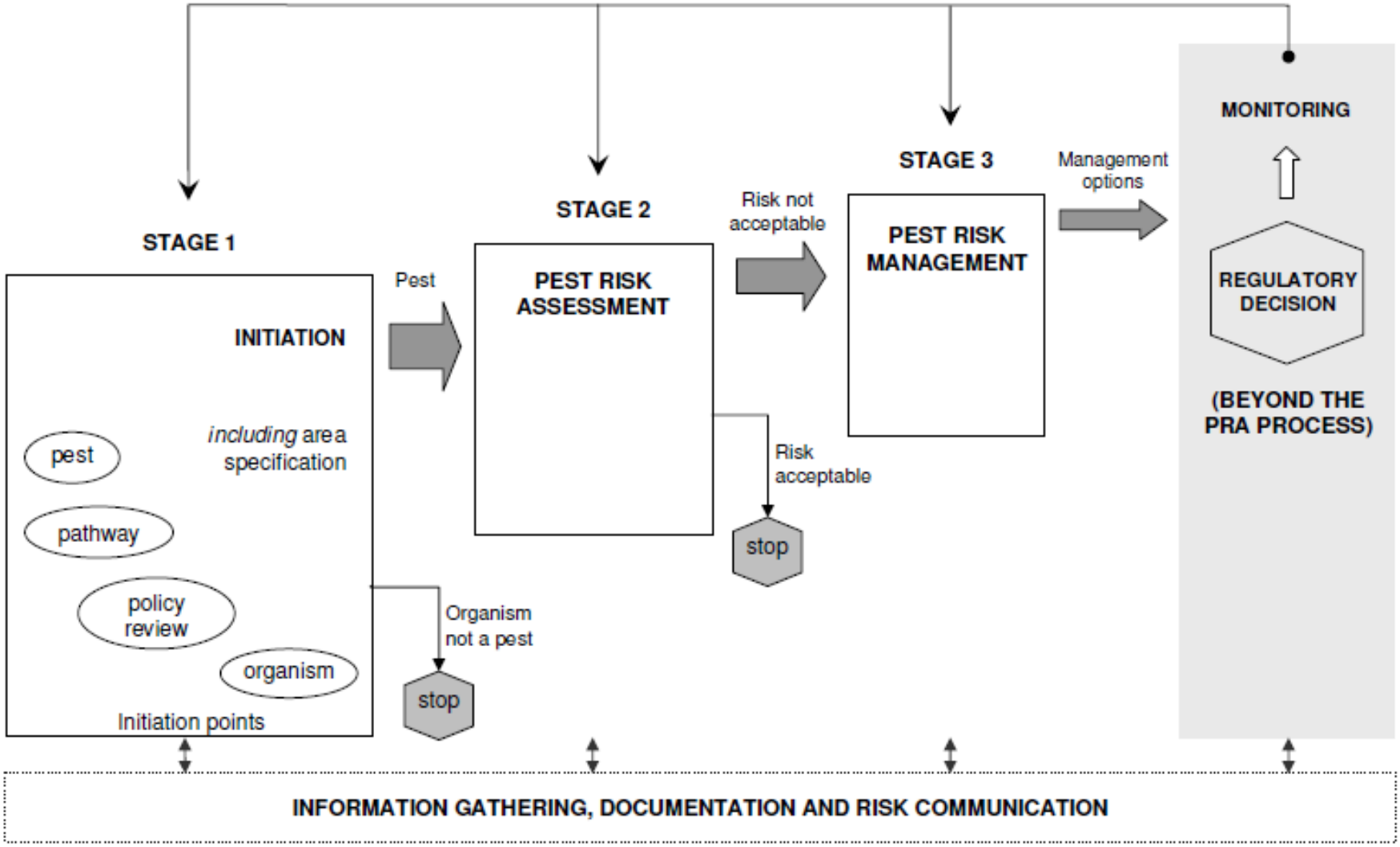
- Identify options
- Evaluate options
- Recommend options

Communicate about the risk

ISPM 2 – Framework for Pest Risk Analysis

- Detailed guidance on initiation – PRA stage 1
- Summary of stage 2 - pest risk assessment – and stage 3 – pest risk management (other ISPMs available for these parts)
- Aspects common to all stages
  - Uncertainty
  - Information gathering
  - Documentation
  - Risk communication
  - Consistency, undue delay

Pest Risk Analysis flow chart – ISPM 2



[7] This appendix is not an official part of the standard. It is provided for information only.

ISPM 5 – Glossary of Phytosanitary Terms

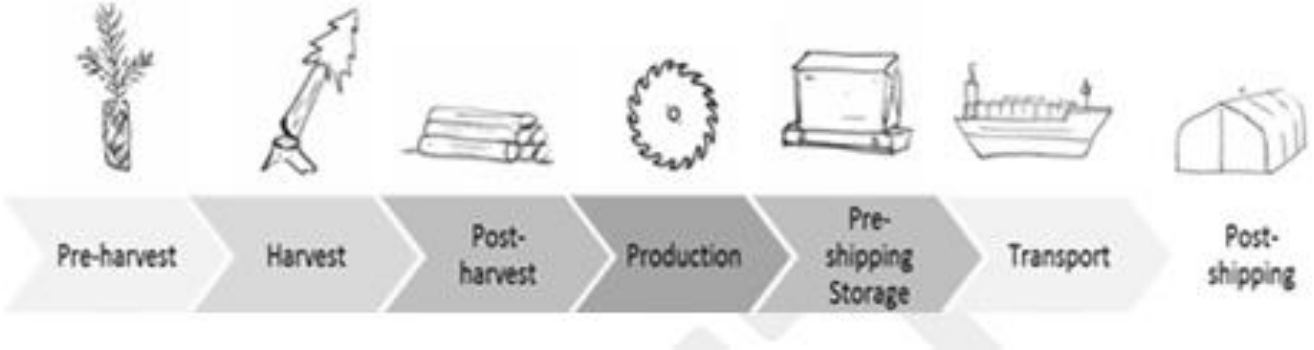
- 193 phytosanitary terms and definitions
- 2 supplements
  - Guidelines on interpretation and application of concepts of official control and not widely distributed
  - Guidelines on the understanding of potential economic importance and related terms
  - Appendix to supplement 2 – terminology from the CBD in relation to ISPM 5

Pest – ISPM 5

Any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products

Pathway – ISPM 5

Any means that allows the entry and spread of a pest



ISPM 11 – Pest Risk Analysis for quarantine pests

- Additional detail on initiation points – stage 1
- Detailed guidance on Pest risk assessment – stage 2, and
- Pest risk management stage 3
- Four annexes – prescriptive of the standard
  - Environmental risks
  - LMOs
  - LMOs as pests
  - Plants as Q-pests

Pest Risk Assessment – ISPM 5

Evaluation of

- the probability (or likelihood) of the introduction (*entry and establishment*) and spread of a pest

and

- the magnitude of the associated potential economic consequences

ISPM 11 – Pest categorization – is it a quarantine pest?

- Identity
- Presence/absence in PRA area
- Regulatory status
- Conclusions

ISPM 11 - Probability of entry of a pest

Probability of the pest being **associated with the pathway at origin**

- Prevalence of pest in source area
- Seasonality
- Cultural and management practices and harvest/post-harvest procedures at origin
- Occurrence of life stage that could be associated with commodities, containers, conveyances

ISPM 11 - Probability of entry of a pest

Probability of pest **survival during transport or storage**

- Commercial procedures applied to consignments at origin
- Prevalence of pest likely to be associated with consignment
- Speed and conditions of transport
- Duration of life cycle in relation to time in transport and/or storage
- Vulnerability of life-stages during transport or storage

ISPM 11 - Probability of entry of a pest

- Probability of the pest **surviving existing pest management procedures**
- Probability of pest **transferring to a suitable host**
  - Time of year of importation
  - Intended use
  - Few or many destination points in PRA area
  - Dispersal mechanisms, including vectors

ISPM 11 - Estimating likelihood of establishment

- Likelihood of pest entering the endangered area
- Likelihood of pest coming into contact with host material in endangered area
  - Availability (presence, appropriate ripeness) of suitable hosts
  - Dispersal ability of pest
  - Seasonality
- Survival and reproduction

ISPM 11 - Estimating likelihood of spread

- Suitability of natural environment for natural spread
- Presence of barriers
- Potential movement with commodities/conveyances
- Intended use
- Potential vectors and natural enemies of the pest in the PRA area

Potential consequences of introduction

- Plant mortality
- Yield loss/reduction in plant vitality
- Loss of quality/marketability
- Loss of export markets
- Increased costs of production

ISPM 11 – Assessment of potential economic consequences

- Direct/indirect pest effects – crop losses, type, frequency of damage, environmental effects, control measures, social effects …
- Economic consequences
  - Time and place factors
  - Commercial consequences
  - Non commercial and environmental consequences

ISPM 11 - Assessment of potential consequences

Endorses a very broad range of approaches:

- No analysis
- Determining the value at risk
- Quantitative analytical techniques

What is uncertainty?

When you have **uncertainty**, it means that you're not really sure

The noun **uncertainty** describes

- A state of doubt
- The state of being unsure of something

Degree of uncertainty

Pest Risk Assessment (estimation of likelihood of introduction and economic consequences) involves many uncertainties

- Extrapolation to a hypothetical situation in the PRA area
- Important to document areas and degrees of uncertainly and indicate where expert judgement has been used
- Improves transparency; useful to identify research needs

Uncertainty and risk analysis

- A key component of risk analysis is **identifying and documenting** uncertainty
- A key component of decision-making is **considering** uncertainty

Other important ISPMs when conducting pest risk assessment

ISPM 8 – pest status in an area

ISPM 19 - guidelines on regulated pest lists

ISPM 21 – RNQPs

ISPM 27 - diagnostic protocols for regulated pests

ISPM 28 – phytosanitary treatments for regulated pests

ISPM 32 - categorization of commodities according to their pest risk

ISPM 38 – international movement of seeds

Final remarks

- The next set of lectures today will deal specifically with seed issues and pest risk assessment
  - Seeds as pests and as pathways for pests
  - Regulated pest database for seeds
  - Intended use as a risk factor
  - Pest listing
  - Determining pest risk
  - Opportunities and challenges in harmonizing pest risk assessments for seeds
  - Emerging pest risks – government and industry perspective

Thanks for your attention!