IPPC Webinar Series : Climate change and phytosanitary measures

AGENDA

Webinar 2 : Risk assessment
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PEST RISK ASSESSMENT

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Presentation outline

- **Definitions**

- **Why pest risk assessment?**

- **Steps in pest risk assessment**

- **Pest threats & PRAs conducted in Ghana**

- **Conclusion**

- **References**

- **Acknowledgements**

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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]

Risk: Is the possibility of something bad happening. Risk involves uncertainty about the effects/implications of an activity with respect to something that humans value, often focusing on negative, undesirable consequences.

An analytic discipline with three parts:

- **Risk assessment:** determine what the risks are
- Risk management: evaluating alternatives for mitigating the risk
- Risk communication: presenting this material in an understandable way for decision makers and/or the public (farmers)

DEFINITIONS CONT'D

Pest risk assessment (for **quarantine pests**):

Evaluation of the probability of the **introduction** and **spread** of a **pest** and the magnitude of the associated potential economic consequences [ISPM 2, 1995; revised ISPM 11, 2001; ISPM 2, 2007]

Pest risk assessment (for **regulated non-quarantine pests**):

Evaluation of the probability that a **pest** in **plants for planting** affects the **intended use** of those **plants** with an economically unacceptable impact [ICPM, 2005]

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WHY PEST RISK ASSESSMENT?

- The prevailing climate found in a region are the primary determinant of the suitability of that area to support pests and diseases (Bradshaw *et al*., 2024)

- Future changes in temperature and rainfall patterns may make the environmental suitability of a region more or less favourable for existing populations and cause populations to move to other regions where those pests and diseases may not be established (Bradshaw *et al*., 2024)

- Climate change could create opportunities for new pest threats and therefore there is the need to continually monitor this 'risk' by undertaking pest risk assessment for prompt and informed decision making to mitigate the effect of this risk.

PEST RISK ASSESSMENT

Pest Risk Analysis
adapted from ISPM No. 2 (2007)
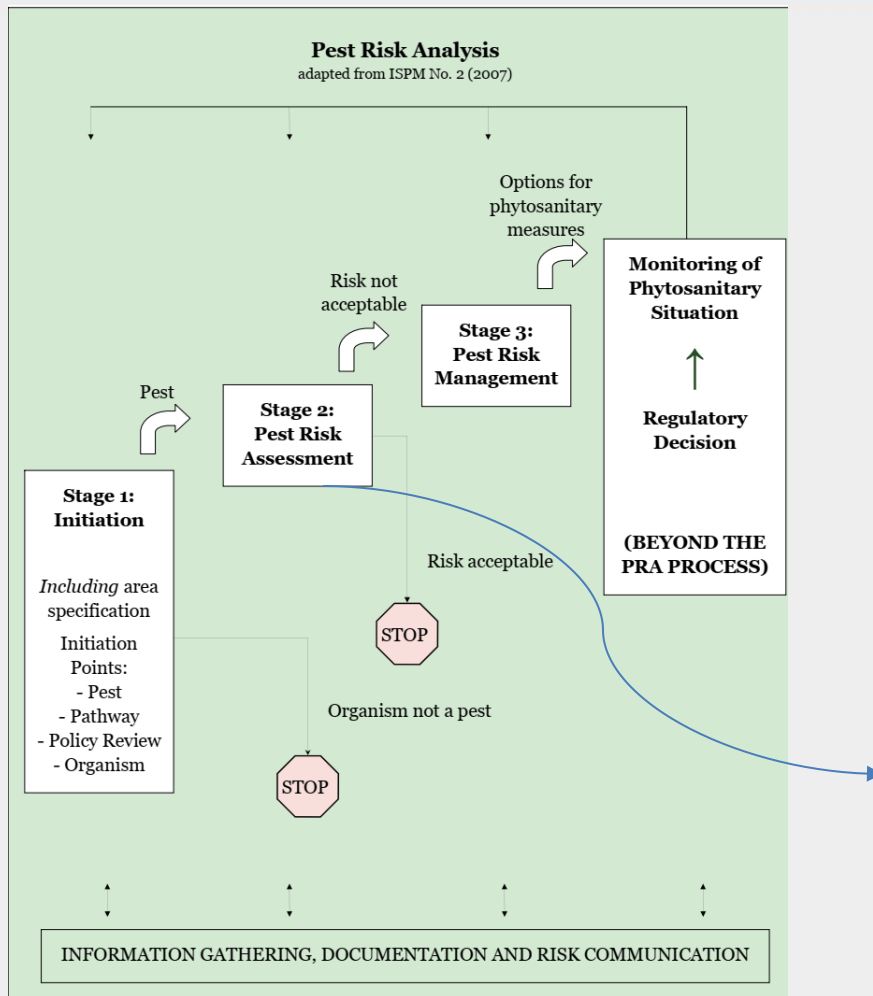
Pest risk assessment can be broadly divided into three interrelated steps:

- pest categorization

- assessment of the probability of introduction (entry & establishment) and spread

- assessment of potential socio-economic and environmental consequences

PEST CATEGORIZATION

Pest Risk Assessment step 1 : Pest categorization

- Elements of categorization of a quarantine pest

  - Identity the pest (Taxonomy and nomenclature)

  - Presence or absence in the PRA area

  - Regulatory status

  - Potential for establishment and spread in the PRA area (climate, vectors, alternative host plants)

  - Potential for economic and environmental consequences in the PRA area

  - Organizing pest categorization data

  - Conclusion of pest categorization

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PROBABILITY OF INTRODUCTION

Pest Risk Assessment step 2a : Probability of Introduction (Entry & establishment)

Probability of entry:

- Identification of pathways for a PRA initiated by a pest
- Probability of the pest being associated with the pathway at origin
- Probability of survival during transport or storage
- Probability of pest surviving existing pest management procedures
- Probability of transfer to a suitable host (in the case of potential weeds, suitable habitat)
- **Probability of establishment:**
- Availability of suitable hosts, alternate hosts and vectors in the PRA area
- Suitability of environmental conditions
- Cultural practices and control measures
- Other characteristics of the pest affecting the probability of establishment

PROBABILITY OF SPREAD

Pest Risk Assessment step 2b: Probability of spread

Probability of spread after establishment

- suitability of the natural and/or managed environment for natural spread of the pest
- presence of natural barriers
- the potential for movement with commodities or conveyances
- intended use of the commodity
- potential vectors of the pest in the PRA area
- potential natural enemies of the pest in the PRA area.

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ASSESSMENT OF POTENTIAL ECONOMIC CONSEQUENCES

Pest Risk Assessment step 3: Assessment of potential socio- economic and environmental consequences

- Assessment of potential socio-economic consequences
- Pest effects
- Direct pest effects
- Indirect pest effects
- Analysis of economic consequences
- Time and place factors
- Analysis of commercial consequences
- Analytical techniques
- Non-commercial and environmental consequences
- Conclusion of the assessment of economic consequences
- Endangered area

RISK ASSESSMENT CONT'D

- UNCERTAINTY

  – Identification of Uncertainty

  – End of Stage 3 – Pest Risk
    Assessment

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PEST THREATS IN GHANA

Ghana NPPO together with is its relevant stakeholders (Development Partners—(CABI), Academia (UG and UCC) and Research (OPRI, BNARI) has conducted PRA for 14 Invasive Alien Species (IAS) and some are as follow:

Red palm weevil – Photo by Eric Isselée.

Chinese bruchid-CABI

Northern root knot nematode – Rusinque *et al*., 2022

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PRAs CONDUCTED IN GHANA

2021

- *Thrips parvispinus* (Tobacco thrips)
- *Liriomyza sativae* (Vegetable leaf miner)
- *Liriomyza trifolii* (American serpentine leaf miner)

2022

- *Callosobruchus chinensis* (Chinese bruchid)
- *Banana bunchy top virus* (bunchy top of banana)
- *Diaphorina citri* (Asian citrus psyllid)
- *Meloidogyne enterolobii* (Pacara earpod tree root-knot nematode)
- *Meloidogyne hapla* (Northern root knot nematode)
- *Rhynchophorus ferrugineus* (Red palm weevil)

2023

- *Prays citri* (citrus flower moth)
- *Trioza erytreae* (African citrus psyllid)
- *Aleurothrixus floccosus* (woolly whitefly)
- *Maize dwarf mosaic virus* (dwarf mosaic of maize)
- *Maize lethal necrosis* (corn lethal necrosis)

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CONCLUSION

As a result of the pest risk assessment, all or some of the categorized pests may be considered appropriate for pest risk management.

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- ISPM No. 2: Framework for Pest Risk Analysis

- ISPM No. 11:   PRA for Quarantine Pests

- ISPM No. 21:   PRA for Regulated Non-Quarantine Pests

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THANK YOU FOR YOUR ATTENTION

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