

♦ EPPO Standards ♦

GUIDELINES ON PEST RISK ANALYSIS

CHECK-LIST OF INFORMATION REQUIRED FOR PEST RISK ANALYSIS (PRA)

PM 5/1(1) English



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APPROVAL

EPPO Standards are approved by EPPO Council. The date of approval appears in each individual standard.

REVIEW

EPPO Standards are subject to periodic review and amendment. The next review date for this EPPO Standard is decided by the EPPO Working Party on Phytosanitary Regulations.

AMENDMENT RECORD

Amendments will be issued as necessary, numbered and dated. The dates of amendment appear in each individual standard (as appropriate).

DISTRIBUTION

EPPO Standards are distributed by the EPPO Secretariat to all EPPO member governments. Copies are available to any interested person under particular conditions upon request to the EPPO Secretariat.

SCOPE

EPPO Guidelines on Pest Risk Analysis are intended to be used by National Plant Protection Organizations, in their capacity as bodies responsible for the establishment of phytosanitary regulations and the application of phytosanitary measures while respecting the requirements of the International Plant Protection Convention, ISPM no. 1 (Plant quarantine principles as related to international trade) and ISPM no. 2 (Guidelines for pest risk analysis). They are also used by the technical bodies of EPPO to formulate recommendations on phytosanitary measures to the National Plant Protection Organizations.

REFERENCES

- OEPP/EPPO (under revision) *EPPO standards*. PM 1/2(4). *EPPO A1 and A2 lists of quarantine pests*. OEPP/EPPO, Paris.
- OEPP/EPPO (1996) *International standards for phytosanitary measures*. No. 5. *Glossary of phytosanitary terms*. EPPO Technical Publications no. 1026.
- FAO (1993) *International standards for phytosanitary measures*. No. 1. *Principles of plant quarantine as related to international trade*. IPPC Secretariat, FAO, Rome.
- FAO (1995) *International standards for phytosanitary measures*. No. 2. *Guidelines for pest risk analysis*. IPPC Secretariat, FAO, Rome.
- FAO (1997) *International Plant Protection Convention* (revised text). FAO, Rome.

DEFINITIONS

Pest risk analysis: 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 it.

Regulated non-quarantine pest: a non-quarantine pest whose presence in plants for planting affects the intended use of those plants with an economically unacceptable impact and which is therefore regulated within the territory of the importing contracting party.

Regulated pest: a quarantine pest and/or a regulated non-quarantine pest.

OUTLINE OF REQUIREMENTS

Pest risk analysis is defined in the 1997 revision of the IPPC as "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 it". EPPO Guidelines on pest risk analysis provide detailed guidance on the analysis of risk from individual pests for a defined area, in relation to their potential status as quarantine pests or regulated non-quarantine pests. Individual guidelines concern different elements of pest risk analysis, and also the different purposes for which pest risk analysis is performed. The guidelines are based on the many years of experience of EPPO experts in the EPPO Panel on Pest Risk Analysis and EPPO Panel on Phytosanitary Regulations who have assessed the status of pests as candidates for the EPPO A1 and A2 quarantine lists, and who have analysed the criteria used for this purpose. They conform with ISPM no. 2 (Guidelines for pest risk analysis) and use the terms of ISPM no. 5 (Glossary of phytosanitary terms).

Guidelines on Pest Risk Analysis

CHECK-LIST OF INFORMATION REQUIRED FOR PEST RISK ANALYSIS (PRA)

Specific scope

This standard provides a check-list of information which should be considered during PRA.

Specific approval and amendment

First approved in September 1992.
Edited as an EPPO Standard in 1998.

This check-list contains all the information that should be considered before deciding that a particular organism qualifies to be declared a quarantine pest. The list is intended to be used in conjunction with a stepwise decision-making scheme on pest risk assessment; schemes of this type are being developed, at different levels of complexity, by EPPO and FAO.

References should be noted for all items of information. If no information is found under a heading (which will often be the case), indicate this.

Section 1. The organism

1. Name and taxonomic position (including any taxonomic subdivisions, difficulties or confusion: subspecies, pathotypes, *formae speciales*, overlapping species, synonymy).
2. Relationship with known quarantine pests.
3. Methods for identification for inspection purposes.
4. Methods for detection.

Section 2. Biological characteristics of the pest

1. Life cycle:
 - (a) *for invertebrates*
 - rate of development (typical times, or degree days, for successive life-cycle stages; reproduction rate);
 - number of generations per year (univoltine, multivoltine, how voltinism is controlled);
 - obligate alternation between hosts;
 - parthenogenetic multiplication;
 - typical timing of the life cycle in the growing season, and relation to that of the host plant;
 - (b) *for pathogens*
 - rate of development, possible number of infection cycles per growing season;
 - obligate alternation between hosts;
 - (for fungi) anamorphic spore stages;
 - (for fungi) occurrence of teleomorph (regular, irregular, rare, unknown);
 - typical timing of the life cycle in the growing season and relation to that of host plants.
2. Dissemination and dispersal:
 - natural means, speed and range of dissemination;
 - agricultural, horticultural or forestry practices affecting rate of natural spread or causing spread directly;
 - vectors: occurrence of known natural vectors or related species with vector potential in PRA area*.
3. Survival in adverse conditions:
 - (a) *for invertebrates*

* The PRA area could, in principle, be a supranational region (like the EPPO region), a country, an area within a country or even a protected zone in the sense of the European Community (cutting across national borders).

capability for winter or summer diapause and relevant climatic cues; physiological adaptations for survival of low temperatures, desiccation etc. in or out of diapause;

(b) for pathogens

formation of special long-lived survival stages (e.g. sclerotia);

possibilities for survival: in soil, on cultivated hosts, on wild hosts, on obligate alternate hosts, on seeds, on contaminated surfaces, machinery etc. (including longevity and survival time of dormant stages).

4. Adaptability:

records of changes in the behaviour of the pest (extension of geographical range; extension of host range; extension to glasshouse hosts);

records of special forms or strains of the pest (adapted to different geographical areas; adapted to different hosts; with different damage potential);

related species known to be adaptable pests.

Section 3. Geographical distribution of the pest

1. Present occurrence in PRA area.

2. World distribution (map if possible), by countries and areas within countries or by region or continent (e.g. West Africa) depending on information available, with indication if possible on status of each record (confirmed or not, old or new, pest established or not).

3. Area of origin and history of any spread from area of origin.

4. Overlap of world distribution of the pest with that of major hosts.

Section 4. Host plants of the pest

1. Host plants reported in areas where the pest now occurs, with indication for each whether:

a major or minor host;

naturally affected or only under artificial conditions;

cultivated or wild.

For a polyphagous pest, select some important cases.

2. Host plants from the above list growing in PRA area (or related plants likely to be affected); with indication for each whether:

grown in open, under protection or both;

important in whole area, several parts of area, small part of area, not important;

economic crop, amenity plant (gardens or public spaces), important wild plant in environment, not important.

3. Nature of the host range (e.g. polyphagous, mainly on one plant family, specific to one plant species, etc.).

Section 5. Potential of the pest for establishment in PRA area

1. Ecoclimatic zones of the pest's distribution comparable with those found outdoors in PRA area by reference to an EPPO-recommended ecoclimatic map.

2. Records of the pest in protected cultivation, with indication whether in areas where the pest also occurs outdoors.

3. Climatic conditions (e.g. temperature, rainfall, RH, day length) which have been shown to be conducive or suppressive to survival, development, reproduction and dispersal of the pest (where such conditions are not explicitly known, infer as far as possible what elements in the pest's geographical distribution gives clues of these conditions).

4. Data on climatic conditions in PRA area for host plants outdoors and in protected cultivation as appropriate.

Section 6. Control of the pest

1. Control measures in regular use in any part of the pest's geographical range, particularly in areas where the climate is comparable to that of PRA area:

current control measures using plant protection products, together with an estimate of their efficacy;

evidence of resistance to plant protection products;

biological control agents and their effects (natural; employed for control; occurring in PRA area);

cultural or other control measures not using plant protection products;
special control problems and cultural (or storage) practices that favour or suppress the pest;
possibilities for production of certified or classified pest-free material;
possibilities for treatment of consignments against the pest.

2. Records of eradication (successful or attempted):
methods used;
features of the biology of the pest which make it amenable to eradication.

Section 7. Transport of the pest

1. Method of natural spread elsewhere in the world (cf. 2.2).
2. Pattern of international trade in the major host plants of the pest:
main exporting countries;
main importing countries;
form of transport;
state in which transported (plant in full growth, dormant plant, micropropagated plant, etc.).
3. Records of interceptions of the pest (or related species) on host plants in international trade.
4. Records of the movement of the pest (or related species) between countries other than on host plants:
with travellers;
on non-plant products;
on non-host plants;
on vehicles;
on aircraft, etc.
5. Specific pathways for the pest from infested host plants in its country of origin to susceptible host plants in PRA area. Records of actual movement along such pathways.

Section 8. Economic impact of the pest*

1. Type of damage:
whole plant, part of plant or plant product;
recorded damage thresholds;
capacity to vector other pests.
2. Recorded economic impact on each major host plant (including, if possible, variation in different areas and years):
major pest, minor pest or insignificant.
3. Estimated effect of the presence of the pest on exported commodities on:
countries to which they can no longer be exported;
conditions under which they can be exported;
market value.
4. Effect of control measures used against the pest on the control of other pests (particularly interaction with existing biological or integrated control measures).
5. Any undesirable side-effects (e.g. on environment) of use of plant protection products to control the pest.
6. Costs of control, with comparison if possible between the costs arising if pest becomes established and the estimated costs of exclusion (i.e. cost-effectiveness analysis).

* Economic impact may be considered very broadly, to include social and environmental aspects.