PRA for Quarantine Pests

Supplement

Analysis of environmental risks

FIRST DRAFT (08/2001)

Scope

This supplement to ISPM no 11 provides details regarding the analysis of environmental risks of plant pests, including those affecting uncultivated/unmanaged plant species, habitats and ecosystems contained in the PRA area. This supplement does not include consideration of vertebrates and of marine environments, because these are primarily covered by international agreements other than the IPPC. Biological control agents are separately covered, under the IPPC, by ISPM no. 3.

Purpose

The first purpose of this supplement is to provide more detailed guidance on the environmental consequences of the introduction of quarantine pests, as part of the assessment of potential economic consequences in ISPM no. 11 Pest Risk Analysis for Quarantine Pests.

The second purpose is to provide additional information, so as to allow ISPM no. 11 to be used for the full range of pests covered by the IPPC.

The scope of the IPPC extends beyond pests directly affecting cultivated plants. According to recommendation C34/1 of ICPM3, "the coverage of the IPPC definition of plant pests includes weeds and other species that have indirect effects on plants", and "the Convention applies to the protection of wild flora". Thus, the IPPC also covers (Figure 1) organisms which are pests because they:

- *directly affect uncultivated/unmanaged plants*

Because introduction of these pests has few commercial consequences, they have been less likely to be evaluated , and also less likely to be regulated and/or placed under official control.

- *affect plants indirectly (weeds)*

In addition to pests which directly attack host plants, there are those, like weeds, which affect plants primarily by other processes, such as competition. Weeds include invasive plants which compete with plants in natural or semi-natural environments.

- *affect plants indirectly through effects on other organisms*

Specific guidance is needed on pests that primarily affect other organis ms, but thereby cause deleterious effects on plants or plant health in ecosystems.

It is important to ensure that analysis of environmental risks is included in PRA, so that the environment, ecosystems and wild flora can be protected without creating disguised barriers to trade.

This supplement should only be used in conjunction with ISPM no 11. It is not a stand-alone document. The processes it describes are relevant to any PRA for quarantine pests. The supplement does not describe an independent PRA process.

1 Stage 1: Initiation

1.1 Initiation points

The initiation points defined in ISPM no 11 frequently refer to "pests". The IPPC defines a pest as "any species, strain or biotype of plant, animal, or pathogenic agent, injurious to plants or plant products". In applying these initiation points to plants as pests, it is important to stress that the plants concerned should satisfy this definition. In particular, specific evidence is required of invasiveness or other pest characteristics as regards the PRA area. Similarly, for pests affecting plants through effects on other organisms, it is important that there should be specific evidence of deleterious effects on plants or plant communities.

Consideration of plants as pests extends the application of ISPM no. 11 to plant species or cultivars intentionally imported for planting. It is particularly important in that case to establish clearly documented, consistently applied and transparent criteria for considering that a plant is a potential quarantine pest, subject to PRA.

1.3 Information

The variety of sources of information will be wider for environmental hazards than traditionally used by NPPOs. Broader inputs may be required. These sources may include "environmental impact assessments" for the same areas or ecosystems, but it should be recognized that such assessments do not have the same purpose as PRA and cannot substitute for PRA.

2. Stage 2: Pest Risk Assessment

2.1.1.3 Regulatory status

It should be noted that official control of pests presenting an environmental hazard may involve agencies other than the NPPO (cf. Glossary Supplement no. 1)

2.2 Assessment of the probability of introduction and spread

Throughout Section 2.2, wherever a reference is made to a host, this should be understood to extend also to a suitable habitat.

It should be noted that, in the case of intentionally imported plants, the terms entry, establishment and spread refer mainly to the unintended habitat.

2.2.1 Probability of entry of a pest

In the case of intentio nally imported plants, the destination includes the unintended habitat.

2.2.2 Probability of establishment

For intentionally imported plants, "establishment" concerns movement from the intended habitat to an unintended habitat. The "probability of establishment" concerns establishment in

an unintended habitat. The fact that an intentionally imported plant will be maintained in its intended habitat, probably in substantial numbers and for an indeterminate period, increases the probability of establishment in an unintended habitat. Critical environmental factors (disturbance, receptiveness of ecosystem) may change over time and may increase the probability of establishment.

2.2.3 Probability of spread after establishment

In the case of intentionally imported plants, spread concerns the unintended habitat.

Certain introduced pests may not immediately manifest significant effects, and in particular may not immediately spread. In assessing the probability of spread, this possibility should be considered, base on evidence of such behaviour.

2.3 Assessment of potential economic consequences

2.3.1 Pest effects

The basic method for estimating the potential economic importance of pests, given in section 2.3.1, applies also to pests affecting uncultivated/unmanaged plants, weeds, and pests affecting plants through effects on other organisms. In particular, specific evidence is needed of direct and indirect environmental effects.

The indirect environmental consequences considered should result from effects on plants. These consequences may, however, be more significant than effects on plants, or may concern organisms or systems other than plants.

Section 2.3.1.1 Direct pest effects

The examples of direct consequences on pest effects on plants should also include:

- reduction of keystone species, species that are major components of ecosystems, and endangered species (including effects at subspecies level where there is evidence of such effects being significant)
- elimination of native plant species
- significant effects on designated environmentally sensitive areas

The estimation of the area potentially endangered should also relate to these effects.

2.3.1.2 Indirect pest effects

The examples of indirect consequences on pest effects on plants should also include:

- significant change in the structure, stability or processes of an ecosystem (including further effects of plant species)
- effect's on man's use (clean water, tourism, grazing, hunting, fishing etc.)
- costs of environmental restoration
- effects on human and animal health (toxicity, allergenicity)[1].

2.3.2 Analysis of economic consequences

[1] This will require involvement of other agencies/authorities.

Section 2.3.2.4 already stresses that some effects may concern "some type of value, but not have an existing market which can be easily identified" and that "these impacts could be approximated with an appropriate non-market valuation method", or that "qualitative information about the consequences may be provided". Section 2.3.3 allows, besides assessment in terms of monetary value, that "economic consequences can also be expressed qualitatively or using quantitative measures without monetary terms".

Application of ISPM no. 11 to environmental hazards requires clear categorization of environmental values and how they can be assessed. The environment can be valued economically in terms of its "use" and "non-use" values. "Use" values are those which arise from consumption of an element of the environment, such as accessing clean water, or fishing in a lake, and also those which are non-consumptive, such as use of forests for leisure activities. "Non-use" values may be subdivided into "option values" (value for use at a later date), "existence value" (knowledge that an element of the environment exists), "bequest value" (knowledge that an element of the environment is available for future generations).

Whether the element of the environment is being assessed in terms of use or non-use values, methods exist for their valuation, such as market-based approaches, surrogate markets, simulated markets, benefit transfer. Such methods should be used in consultation with experts in economics. Each has advantages, disadvantages and situations where it is particularly useful.

As noted above, the assessment of consequences may be either quantitative or qualitative. In many cases, it will be sufficient to use qualitative data. It may be obvious that a quantitative method is not required (e.g. catastrophic effects on a keystone species), or a quantitative analysis may not be possible (no methods available). Useful qualitative analyses can be based on, for example, non-monetary data (number of species affected, water quality), or expert judgement, provided that they follow documented, consistent and transparent procedures.

2.4 Degree of uncertainty

Assessment of the probability and consequences of environmental hazards often involves greater uncertainty than for pests of cultivated or managed plants, due to lack of information and to the additional complexity associated with ecosystems. Uncertainty also arises from variability associated with pests, hosts or habitats.

Stage 3: Pest Risk Management

In relation to the opening paragraph of Stage 3, it should be stressed that the purpose of phytosanitary measures is to reduce the future probability and consequences of phytosanitary hazards. All these measures are thus precautionary in nature and are designed in proportion to the risk. Lack of certainty is not a reason not to address risk management.

3.4 Identification and selection of appropriate risk management options

It is stressed that the principle of non-discrimination applies to: pests affecting uncultivated/unmanaged plants; weeds; pests affecting plants through effects on other organisms. If these are established in the PRA area, official control should be applied within the PRA area, and the phytosanitary measures at import should not be more stringent than the official control measures.

3.4.1 Options for consignments

Consignments of pests may be considered to include the intentional import of exotic plants considered to be pests. The composition of these consignments may be restricted to varieties posing less risk.

3.4.5 Options within the importing country

Where there is a high level of uncertainty regarding pest risk from intentionally imported plants, it may be decided not to take phytosanitary measures at import, but to apply surveillance after entry (cf. Art IV of the IPPC).

3.6 Conclusion of pest risk management

Phytosanitary measures taken in relation to environmental hazards could usefully be integrated into national biodiversity policies, strategies and action plans.

It is noted that the communication of risks associated with environmental hazards is of particular importance to promote awareness.