



FASE 3: MANEJO DEL RIESGO

NURIA AVENDAÑO GARCÍA
JOSE MARIA GUITIAN CASTRILLON

EPPO EXPRES PRA

Etapa 3: Manejo del Riesgo

16. Medidas fitosanitarias

Stage 3. Pest risk management

16. Phytosanitary measures

Describe potential measures for relevant pathways and their expected effectiveness on preventing introduction (entry & establishment) and / or spread. If possible, specify prospects of eradication or containment in case of an outbreak. Indicate effectiveness and feasibility of the measures

As described in PM 5/3 possible options for phytosanitary measures include

Options at the place of production

Detection of the pest at the place of production by inspection or testing

Prevention of infestation of the commodity at the place of production (treatment, resistant cultivars, growing the crop in specified conditions, harvest at certain times of the year or growth stages, production in a certification scheme)

Establishment and maintenance of pest freedom of a crop, place of production or area

Options after harvest, at pre-clearance or during transport

Detection of the pest in consignments by inspection or testing

Removal of the pest from the consignment by treatment or other phytosanitary procedures (remove certain parts of the plant or plant product, handling and packing methods, specific conditions or treatments during transport)

Options that can be implemented after entry of consignments

Detection during post-entry quarantine

Consider whether consignments that may be infested be accepted without risk for certain end uses, limited distribution in the PRA area, or limited periods of entry, and can such limitations be applied in practice

Prohibition

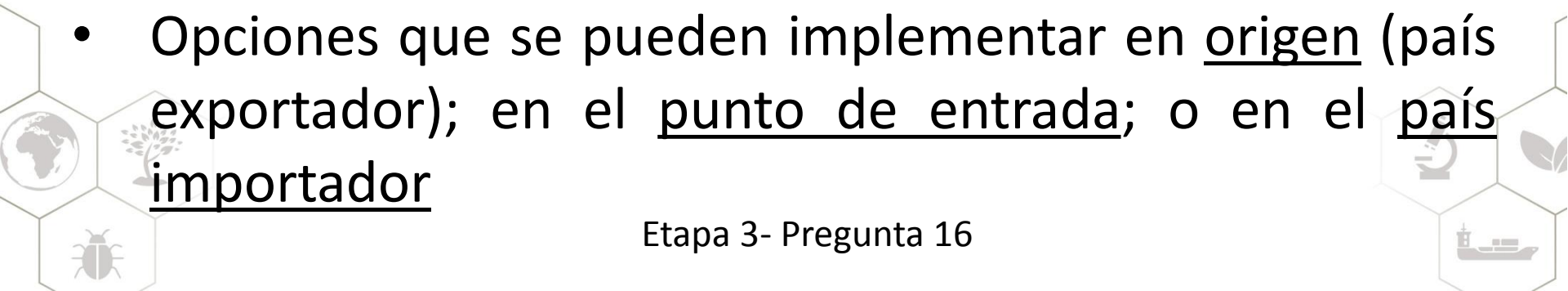
Surveillance, eradication, containment

Etapa 3- Pregunta 16



Notas a las medidas fitosanitarias:

- En esta sección se proporciona un análisis estructurado de las medidas que se pueden recomendar para minimizar el riesgo de la plaga en la vía de entrada
- Considerar medidas para evitar entrada, establecimiento o dispersión de la plaga
- Opciones que se pueden implementar en origen (país exportador); en el punto de entrada; o en el país importador



Notas a las medidas fitosanitarias:

MEDIDAS:

- EFICACES
 - FACTIBLES
 - REPRODUCIBLES
-
- Una vez identificadas valorar si son rentables y combinables con otras
 - Repetir el proceso para cada vía de entrada



Etapa 3: Manejo del Riesgo

16. Medidas fitosanitarias

Suggested subheadings

16.1 Measures on individual pathways to prevent entry

This section can include the suggested Table 7 (see below) summarizing the measures recommended to prevent entry. A comprehensive table detailing the main possible measures can be included in Annex of the PRA, see Table 8 below for an example.

16.2 Eradication and containment

Annex. Consideration of pest risk management options

Suggested table (to be included in the main text, section 16.1)

Measures to prevent entry can be summarized in a table:

Table 7. Summary of phytosanitary measures recommended to prevent entry

Possible pathway	Measures identified
<i>Pathways as named in section 8</i>	<i>Suggested measures</i>
Example:	Pest free area
Host plants for planting with roots	Or
	Pest-free production site or pest-free place of production (with all production sites pest-free), with detailed requirements as listed in Annex
	Or
	Growing under complete physical isolation (EPPO Standard PM5/8) (with requirements appropriate for <i>M. mali</i>)

16. Medidas fitosanitarias

Table 8. Evaluation of possible phytosanitary measures for the main identified pathways, using EPPO Standard PM 5/3

Option	Pathway 1
Existing measures in the PRA area	
Options at the place of production	
Visual inspection at place of production	
Testing at place of production	
Treatment of crop	
Resistant cultivars	
Growing under complete physical isolation	
Specified age of plant, growth stage or time of year of harvest	
Produced in a certification scheme	
Possibility for pest freedom of the crop, pest-free production site/place of production/area?	
Pest freedom of the crop	
Pest free production site and pest free place of production	
Pest-free area	
Options after harvest, at pre-clearance or during transport	
Visual inspection of consignment	
Testing of commodity	
Treatment of the consignment	
Pest only on certain parts of plant/plant product, which can be removed	
Prevention of infestation by packing/handling method	
Options that can be implemented after entry of consignments	
Post-entry quarantine	
Limited distribution of consignments in time and/or space or limited use	
Surveillance and eradication in the importing country	



Esquema EPPO PM 5/3

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7.01 Is the risk identified in the Pest Risk Assessment stage for all pest/pathway combinations an acceptable risk?

Esta es la primera decisión importante que se debe tomar
Sólo tiene sentido identificar medidas fitosanitarias para vías de entrada que realmente sean importantes por considerarse que su no regulación supone exponerse a riesgos inaceptables

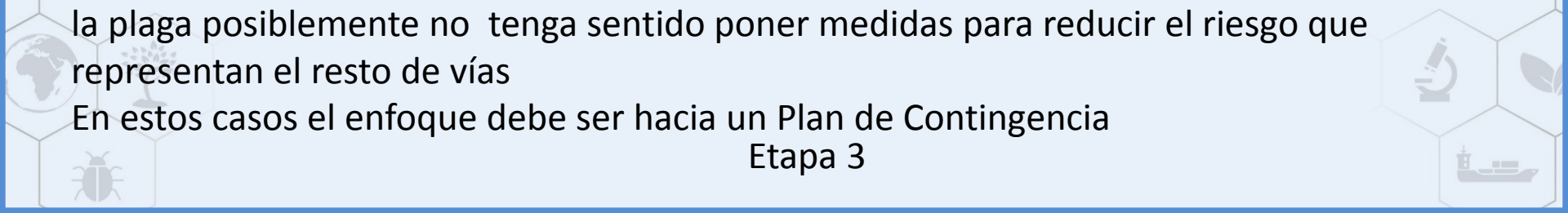
DIPERSION NATURAL

El primer paso del esquema es preguntar si la vía de entrada considerada es la dispersión natural.

Deben tenerse en cuenta que si la dispersión natural es la principal vía de entrada, se prevé que su entrada sea inminente y no es posible hacer nada en las zonas de origen de la plaga posiblemente no tenga sentido poner medidas para reducir el riesgo que representan el resto de vías

En estos casos el enfoque debe ser hacia un Plan de Contingencia

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Etapa 3: Manejo del Riesgo

DIPERSION NATURAL

7.02 Is natural spread one of the pathways (see answer to question 2.01)?

Note: Natural spread includes movement of the pest by flight (of an insect), wind or water dispersal, transport by vectors such as insects or birds, natural migration, rhizomial growth.

If yes

go to 7.03

If no

go to 7.06

7.03 Is the pest already entering the PRA area by natural spread or likely to enter in the immediate future? (see answer to question 2.01 & 4.01)

If yes

go to 7.04

If no

go to 7.38

7.04 Is natural spread the major pathway?

If yes

go to 7.29

If no

go to 7.05

7.05 Could entry by natural spread be reduced or eliminated by control measures applied in the area of origin?

Note: the uncertainty relates to the efficacy of the control measures in the country of origin

If yes

possible measures: control measures in the area of origin in collaboration with the NPPO concerned

Go to 7.30

If no

Go to 7.29

Level of uncertainty:

Low

**Etapa 3
Medium**

High

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IDENTIFICACIÓN DE OTRAS VIAS: MERCANCIA, PASAJEROS, MAQUINARIA, MEDIOS DE TRANSPORTE

Sólo en el caso de mercancías se debe seguir el esquema, para las otras vías, el esquema ya propone opciones de posibles medidas que sólo haría falta desarrollar

7.06 → Is the pathway that is being considered a commodity of plants and plant products?

If yes → Go to 7.09

If no → Go to 7.07



7.07 → Is the pathway that is being considered the entry with human travellers?

If yes → possible measures: inspection of human travellers, their luggage, publicity to enhance public awareness on pest risks, fines or incentives. Treatments may also be possible.

Go to 7.29

If no → Go to 7.08



7.08 → Is the pathway being considered contaminated machinery or means of transport?

If yes → possible measures: cleaning or disinfection of machinery/vehicles

Go to 7.29

If no → Go to 7.09



Etapa 3: Manejo del Riesgo

ANALISIS DE LAS MEDIDAS EXISTENTES

Antes de identificar las posibles medidas aplicables a una vía de entrada constituida por una determinada mercancía se debe tener perfectamente identificadas todas las medidas que ya se aplican a esa mercancía concreta.

Este paso, lógicamente, sólo tiene sentido cuando se trata de una mercancía para la que ya existe comercio (o al menos está abierto el mercado) y en el que, como consecuencia de una nueva plaga asociada a esa mercancía (ha cambiado el status del país de origen con respecto a esa plaga), es necesario reevaluar el riesgo.

Sólo en el caso de que las medidas existentes no son suficientes o cuando se piense que las actuales medidas se pueden revocar (eliminar) en un futuro cercano, tiene sentido seguir identificando posibles medidas fitosanitarias aplicables.



Etapa 3: Manejo del Riesgo

ANÁLISIS DE LAS MEDIDAS EXISTENTES

Existing phytosanitary measures

7.09 → If the pest is a plant, is it the commodity itself?

If yes go to 7.30

If no (the pest is not a plant or the pest is a plant but is not the commodity itself) go to 7.10

Existing phytosanitary measures

7.10 → Are there any existing phytosanitary measures applied on the pathway that could prevent the introduction of the pest?

If yes if appropriate, list the measures and identify their efficacy against the pest of concern and go to 7.11

If no go to 7.13

Level of uncertainty: <input type="checkbox"/>	Low <input type="checkbox"/>	Medium <input type="checkbox"/>	High <input type="checkbox"/>
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7.11 → Are the measures likely to change in the foreseeable future?

Note that this question is particularly relevant in the framework of a pathway analysis when the country of origin of the pathway and the pathway itself are well defined and information from the exporting country is available.

If yes go to 7.13

If no or no judgement go to 7.12

Level of uncertainty: <input type="checkbox"/>	Low <input type="checkbox"/>	Medium <input type="checkbox"/>	High <input type="checkbox"/>
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7.12 → Do you conclude that other measures should be considered?

If yes go to 7.13

If no go to 7.30

Etapa 3: Manejo del Riesgo

IDENTIFICACIÓN DE MEDIDAS FITOSANITARIAS

A continuación se comienza a contestar a las preguntas que plantea el esquema



Etapa 3: Manejo del Riesgo

IDENTIFICACIÓN DE MEDIDAS FITOSANITARIAS: OPCIONES EN EL LUGAR DE PRODUCCIÓN

Options at the place of production

Detection of the pest at the place of production by inspection or testing

7.13 → Can the pest be reliably detected by visual inspection at the place of production?

Note: if the answer is yes specify the period and if possible appropriate frequency if only certain stages of the pest can be detected answer yes as the measure could be considered in combination with other measures in a Systems Approach

If yes or could be considered in a Systems Approach possible measure: visual inspection at the place of production

Level of uncertainty:	Low	Medium	High
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Go to next question

7.14 → Can the pest be reliably detected by testing at the place of production?

Note: if only certain stages of the pest can be detected by testing answer yes as the measure could be considered in combination with other measures in a Systems Approach

If yes or could be considered in a Systems Approach possible measure: specified testing at the place of production

Level of uncertainty:	Low	Medium	High
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Go to next question

IDENTIFICACIÓN DE MEDIDAS FITOSANITARIAS: OPCIONES EN EL LUGAR DE PRODUCCIÓN

Prevention of infestation of the commodity at the place of production (15-19)

Prevention of infestation of the commodity at the place of production

- 7.15 → Can infestation of the commodity be reliably prevented by treatment of the crop

If yes or could be considered in a Systems Approach: possible measure: specified treatment of the crop

Level of uncertainty: Low Medium High

Go to next question



- 7.16 → Can infestation of the commodity be reliably prevented by growing resistant cultivars? *(This question is not relevant for pest plants)*



If yes or could be considered in a Systems Approach: possible measure: consignment should be composed of specified cultivars

Level of uncertainty: Low Medium High

Go to next question



IDENTIFICACIÓN DE MEDIDAS FITOSANITARIAS: OPCIONES EN EL LUGAR DE PRODUCCIÓN

Prevention of infestation of the commodity at the place of production (15-19)

- 7.17 → Can infestation of the commodity be reliably prevented by growing the crop in specified conditions (e.g. protected conditions such as screened greenhouses, physical isolation, sterilized growing medium, exclusion of running water, etc.)?

If yes or could be considered in a Systems Approach possible measure: specified growing conditions of the crop

Level of uncertainty:	Low	Medium	High
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Go to next question

- 7.18 → Can infestation of the commodity be reliably prevented by harvesting only at certain times of the year, at specific crop ages or growth stages?

If yes or could be considered in a Systems Approach possible measure: specified age of plant, growth stage or time of year of harvest

Level of uncertainty:	Low	Medium	High
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Go to next question

IDENTIFICACIÓN DE MEDIDAS FITOSANITARIAS: OPCIONES EN EL LUGAR DE PRODUCCIÓN

Prevention of infestation of the commodity at the place of production (15-19)

- 7.19 → Can infestation of the commodity be reliably prevented by production in a certification scheme (i.e. official scheme for the production of healthy plants for planting)? ¶

If yes or could be considered in a Systems Approach possible measure: certification scheme ☐

Level of uncertainty: ☐ Low ☐ Medium ☐ High ☐

Go to next question ¶



IDENTIFICACIÓN DE MEDIDAS FITOSANITARIAS: OPCIONES EN EL LUGAR DE PRODUCCIÓN

Establishment and maintenance of pest freedom of a crop, place of production or area

- 7.20 → Based on your answer to question 4.01 select the possible measures based on the capacity for natural spread.

Very low rate of natural spread	pest freedom of the crop, or pest-free place of production or pest-free area
Low to moderate rate of natural spread	pest-free place of production or pest-free area
High to very high rate of natural spread	pest-free area

Level of uncertainty:	Low	Medium	High
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- 7.21 → Can pest freedom of the crop, place of production or an area be reliably guaranteed?

Note: In order to guarantee freedom of a crop, place of production, place of production and buffer zone, or area, it should be possible to fulfil the requirements outlined in ISPM No. 4 and ISPM No. 10. Consider in particular the degree to which unintentional movement of the pest by human assistance could be prevented (see answer to question 4.02).

If no Possible measure identified in question 7.20 would not be suitable.

Level of uncertainty:	Low	Medium	High
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Go to next question

IDENTIFICACIÓN DE MEDIDAS FITOSANITARIAS: OPCIONES DESPUES DE RECOLECCIÓN, AUTORIZACIÓN PREVIA O DURANTE TRANSPORTE

- ||
- Options after harvest, at pre-clearance or during transport
 - Detection of the pest in consignments by inspection or testing
 - 7.22 → Can the pest be reliably detected by a visual inspection of a consignment at the time of export, during transport/storage?
- Note: if only certain stages of the pest can be detected answer yes as the measure could be considered in combination with other measures in a Systems Approach)
- If yes or could be considered in a Systems Approach possible measure: visual inspection of the consignment
- | | | | |
|-----------------------|-----|--------|------|
| Level of uncertainty: | Low | Medium | High |
|-----------------------|-----|--------|------|
- Go to next question

- 7.23 → Can the pest be reliably detected by testing of the commodity (e.g. for pest plant, seeds in a consignment)?
- Note: if only certain stages of the pest can be detected by testing answer yes as the measure could be considered in combination with other measures in a Systems Approach
- If yes or could be considered in a Systems Approach possible measure: specified testing of the consignment
- | | | | |
|-----------------------|-----|--------|------|
| Level of uncertainty: | Low | Medium | High |
|-----------------------|-----|--------|------|
- Go to next question

IDENTIFICACIÓN DE MEDIDAS FITOSANITARIAS: OPCIONES DESPUES DE RECOLECCIÓN, AUTORIZACIÓN PREVIA O DURANTE TRANSPORTE

Removal of the pest from the consignment by treatment or other phytosanitary procedures

- 7.24 → Can the pest be effectively destroyed in the consignment by treatment (chemical, thermal, irradiation, physical)?

If yes or could be considered in a Systems Approach possible measure: specified treatment

→

□



Level of uncertainty: □	Low □	Medium □	High □
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Go to next question



- 7.25 → Does the pest occur only on certain parts of the plant or plant products (e.g. bark, flowers), which can be removed without reducing the value of the consignment? (This question is not relevant for pest plants)

If yes □ possible measure: removal of parts of plants from the consignment

Level of uncertainty: □	Low □	Medium □	High □
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Go to next question



- 7.26 → Can infestation of the consignment be reliably prevented by handling and packing methods?

If yes or could be considered in a Systems Approach □ Possible measure: specific handling/packing methods of the consignment

Level of uncertainty: □	Low □	Medium □	High □
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Go to next question

Etapa 3

IDENTIFICACIÓN DE MEDIDAS FITOSANITARIAS: OPCIONES DESPUES DE LA INTRODUCCIÓN

Options that can be implemented after entry of consignments

7.27 → Can the pest be reliably detected during post-entry quarantine?

Note: ISPM no. 5 "Glossary of Phytosanitary Terms" defines quarantine as "official confinement for observation and research or for further inspection, testing and/or treatment of a consignment after entry".

If yes

possible measure: import of the consignment under special licence/permit and post-entry quarantine

+	Level of uncertainty:	Low	Medium	High	Go to next question
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7.28 → Could consignments that may be infested be accepted without risk for certain end uses, limited distribution in the PRA area, or limited periods of entry, and can such limitations be applied in practice?

If yes

possible measure: import under special licence/permit and specified restrictions

+	Level of uncertainty:	Low	Medium	High	Go to next question
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IDENTIFICACIÓN DE MEDIDAS FITOSANITARIAS: OPCIONES DESPUES DE LA INTRODUCCIÓN

7.29 → Are there effective actions that could be taken in the importing country (surveillance, eradication, containment) to prevent establishment and/or economic or other impacts?

If yes

Possible measures: internal surveillance and/or eradication or containment campaign

Level of uncertainty: Low Medium High

Go to next question



Etapa 3: Manejo del Riesgo

EVALUACIÓN DE LAS OPCIONES

Se debe comenzar por listar las medidas identificadas y analizar cuales de ellas podría ser suficientes en el caso de ser aplicadas de forma individual

- ¶
 - Evaluation of risk management options¶

This section evaluates the risk management options selected and considers in particular their cost-effectiveness and potential impact on international trade.¶

¶
 - 7.30 → Have any measures been identified during the present analysis that will reduce the risk of introduction of the pest? List them.¶

If yes ◻ Go to next question ◻
If no ◻ Go to 7.37 ◻

¶ - 7.31 → Does each of the individual measures identified reduce the risk to an acceptable level?¶

If yes ◻ Go to 7.34 ◻
If no ◻ Go to next question ◻

¶

Level of uncertainty: ◻	Low ◻	Medium ◻	High ◻
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¶



En el caso de que las medidas individuales no sean suficientes se debe qué posibles combinaciones de medidas pudieran serlo

Del mismo modo si la única medida disponible no es suficiente, se debe identificar igualmente dado que posiblemente su aplicación redunde en una minoración del riesgo aunque no a un nivel aceptable. Posiblemente sea necesario aplicar medidas en origen

- 7.32 → For those measures that do not reduce the risk to an acceptable level, can two or more measures be combined to reduce the risk to an acceptable level?

Note: The integration of different phytosanitary measures at least two of which act independently and which cumulatively achieve the Appropriate Level of Protection against regulated pests are known as Systems Approaches (see ISPM 14 *The use of integrated measures in a systems approach for Pest Risk Management*). It should be noted that Pest-free places of production identified as phytosanitary measures in questions 7.22 to 7.24 may correspond to a System Approach.

If yes

Go to 7.34

If no

Go to next question

Level of uncertainty:	Low	Medium	High
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- 7.33 → If the only measures available reduce the risk but not down to an acceptable level, such measures may still be applied, as they may at least delay the introduction or spread of the pest. In this case, a combination of phytosanitary measures at or before export and internal measures (see question 7.29) should be considered.

Go to next question

Las medidas o combinación de medidas no deben interferir innecesariamente con el comercio

Además, deben ser rentables y no tener consecuencias indeseables (medioambientales o sociales)

7.34 → Estimate to what extent the measures (or combination of measures) being considered interfere with international trade.

Note: If this analysis concerns a pest already established in the PRA area but under official control, measures that are applied for international trade should not be more stringent than those applied domestically/internally.

Level of uncertainty: Low Medium High

Go to next question

7.35 → Estimate to what extent the measures (or combination of measures) being considered are cost-effective, or have undesirable social or environmental consequences.

Level of uncertainty: Low Medium High

Go to next question

7.36 → Have measures (or combination of measures) been identified that reduce the risk for this pathway, and do not unduly interfere with international trade, are cost-effective and have no undesirable social or environmental consequences?

If yes

For pathway-initiated analysis, go to 7.39

For pest-initiated analysis, go to 7.38

If no

Etapa 3

Go to next question

La prohibición debe contemplarse como el último recurso

Revisar si realmente todas las vías de entrada han sido analizadas

En el caso de ARPs de mercancías contemplar si ha sido analizadas todas las plagas

▪ **7.37 → Envisage prohibiting the pathway.** ¶

Note: Prohibition should be viewed as a measure of last resort. If prohibition of the pathway is the only measure identified for a pathway-initiated analysis, there may be no need to analyze any other pests that may be carried on the pathway. If later information shows that prohibition is not the only measure for this pest, analysis of the other pests associated with the pathway will become necessary. ¶

□

For pathway-initiated analysis, go to 7.39 □

□

For pest-initiated analysis go to 7.38 □

¶

▪ **7.38 → Have all major pathways been analyzed (for a pest-initiated analysis)?** ¶

If yes □ Go to 7.41 □

If no □ Analyze the next major pathway □

Note: if natural spread is considered as the major pathway (see question 7.04) and possible measures have not been identified there is no need to consider further pathways. ¶

¶

▪ **7.39 → Have all the pests been analyzed (for a pathway-initiated analysis)?** ¶

If yes □ Go to 7.40 □

If no □ Go to 7.01 (to analyze next pest) □

▪

EVALUACIÓN DE LAS OPCIONES

En el caso de ARPs de mercancías se deben identificar todas las plagas de cuarentena e intentar elegir aquellas medidas que valgan para todas ellas

Se debe considerar la importancia de cada vía de entrada identificada. Deben aplicarse medidas similares sólo a vías con similar riesgo para actuar con coherencia

- 7.40 → For a pathway-initiated analysis, compare the measures appropriate for all the pests identified for the pathway that would qualify as quarantine pests, and select only those that provide phytosanitary security against all the pests. ¶

Note: the minimum effective measures against one particular pest may reduce the risk from other pests far more than necessary, but these measures would be the only ones appropriate for the pathway as a whole. ¶



Go to 7.42 ¶

- 7.41 → Consider the relative importance of the pathways identified in the conclusion to the entry section of the pest risk assessment. ¶

Note: the relative importance of the pathways is an important element to consider in formulating phytosanitary regulation. Regulation of pathways presenting similar risks should be consistent. ¶

Go to next question ¶



Se debe elegir la medida menos rigurosa

Algunas medidas pueden contrarrestar el efecto de otras (variedades resistentes

Algunas medidas pueden estar aplicándose para otras plagas, pero podrían revocarse

Lo mínima medida es su regulación, es decir es considerarla plaga de cuarentena

La medida tienen el efecto de proporcionar las bases para la regulación (tomar medidas fitosanitarias contra esa plaga.....)

- 7.42 → All the measures or combination of measures identified as being appropriate for each pathway or for the commodity can be considered for inclusion in phytosanitary regulations in order to offer a choice of different measures to trading partners. Data requirements for surveillance and monitoring to be provided by the exporting country should be specified.¶

Note: only the least stringent measure (or measures) capable of performing the task should be selected. Thus, if inspection is truly reliable, it should not be necessary to consider treatment or testing. Note also that some measures may counteract each other; for example the requirement for resistant cultivars may make detection more difficult. It may be that some or all of these measures are already being applied to protect against one or more other pests, in which case such measures need only be applied if the other pest(s) is/are later withdrawn from the legislation.¶

The minimum phytosanitary measure applied to any pest is the declaration in phytosanitary regulations that it is a quarantine pest. This declaration prohibits both the entry of the pest in an isolated state, and the import of consignments infested by the pest. If other phytosanitary measures are decided upon, they should accompany the declaration as a quarantine pest. Such declaration may occasionally be applied alone, especially: (1) when the pest concerned may be easily detected by phytosanitary inspection at import (see question 7.13), (2) where the risk of the pest's introduction is low because it occurs infrequently in international trade or its biological capacity for establishment is low, or (3) if it is not possible or desirable to regulate all trade on which the pest is likely to be found. The measure has the effect of providing the legal basis for the NPPO to take action on detection of the pest (or also for eradication and other internal measures), informing trading partners that the pest is not acceptable, alerting phytosanitary inspectors to its possible presence in imported consignments, and sometimes also of requiring farmers, horticulturists, foresters and the general public to report any outbreaks.¶

- 7.43 → In addition to the measure(s) selected to be applied by the exporting country, a phytosanitary certificate (PC) may be required for certain commodities. The PC is an attestation by the exporting country that the requirements of the importing country have been fulfilled. In certain circumstances, an additional declaration on the PC may be needed (see EPPO Standard PM 1/1(2) *Use of phytosanitary certificates*). ¶

Go to next question ¶

- 7.44 → If there are no measures that reduce the risk for a pathway, or if the only effective measures unduly interfere with international trade (e.g. prohibition), are not cost-effective or have undesirable social or environmental consequences, the conclusion of the pest risk management stage may be that introduction cannot be prevented. In the case of pest with a high natural spread capacity, regional communication and collaboration is important. ¶

¶

PC o Prohibición

Etapa 3



Bactrocera dorsalis



Stage 3: Pest Risk Management

3.1 Is the risk identified in the Pest Risk Assessment stage for all pest/pathway combinations an acceptable risk?

NO

3.2a Pathway :Fruits of major and minor hosts from countries where the pest occurs

3.2 Is the pathway that is being considered a commodity of plants and plant products?

YES



3.12 Are there any existing phytosanitary measures applied on the pathway that could prevent the introduction of the pest? (if yes, specify the measures in the box notes)

Yes, partially (**ver.....**) EU takes a common set of measures against non-European Tephritidae

3.13 Can the pest be reliably detected by a visual inspection of a consignment at the time of export, during transport/storage or at import?

Visual inspection does not give enough guaranties against Tephritidae, and that opinion is shared by NPPOs belonging to countries where fruit flies are considered a risk (eg. China, Australia, Japan, South Korea, etc.)

yes in combination possible measure in combination: visual inspection



3.14 Can the pest be reliably detected by testing (e.g. for pest plant, seeds in a consignment)?

Cutting fruits and putting them into saline may be a suitable test method for larvae, although this may need further investigation .

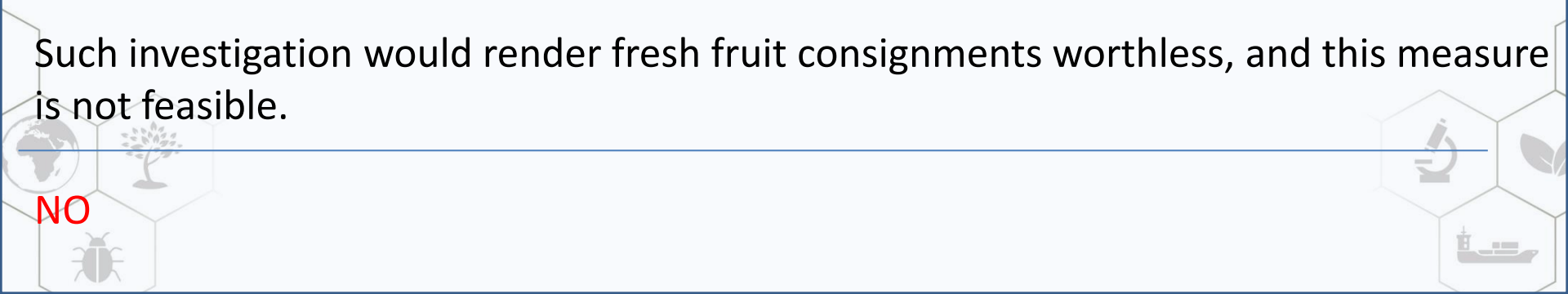
Current status of tephritid taxonomy relies almost exclusively on adult characters and, in general, it is not possible to identify *Bactrocera* spp. with certainty from larval characteristics

NO

3.15 Can the pest be reliably detected during post-entry quarantine?

Such investigation would render fresh fruit consignments worthless, and this measure is not feasible.

NO



3.16 Can the pest be effectively destroyed in the consignment by treatment (chemical, thermal, irradiation, physical)?

The treatments approved by the USDA/APHIS for other *Bactrocera* species, (i.e. *B. cucurbitae*, *B. dorsalis*, *B. philippinensis*, *B. tryoni* and *Bactrocera* spp.) depending on the commodity and the country of origin, are:

- Irradiation
- Vapor heat treatment (T103-b-1; T103-d; T103-e; T106-b-1; T106-b-2; T106-b-3; T106-b-4; T106-b-5; T106-b-7; T106-b-8; T106-c; T106-d; T106-d-1)
- Cold treatment (T107-d; T107-h; T107-j)
- Hot water immersion (T102-d; T102-d-1)
- High temperature forced air (T103-b-1)
- Fumigation (MB) at NAP—tarpaulin or chamber (T101-c-1; T103-b-1)
- Fumigation plus Cold treatment (T108-a; T108-a-1; T108-a-2; T108-a-3; T108-b; T109-d-1)

yes in combination

possible measure in combination: specified treatment.

3.17 Does the pest occur only on certain parts of the plant or plant products (e.g. bark, flowers), which can be removed without reducing the value of the consignment? (This question is not relevant for pest plants)

3.18 Can infestation of the consignment be reliably prevented by handling and packing methods?

After harvest, inspection of fruits before packing and sorting can reduce the infested mangoes in consignment (USDA, 2006b), but this does not provide any guaranty of absence of quarantine pests.

yes in combination

possible measure in combination: specific handling/packing methods



3.19 Could consignments that may be infested be accepted without risk for certain end uses, limited distribution in the PRA area, or limited periods of entry, and can such limitations be applied in practice?

The unsuitable islands or regions within suitable islands could accept consignments without risk. Note that because there is free movement of consignments within the countries, there are no guaranties that the infested fruits would not be sent to the endangered area.

No (very dangerous if cannot be controlled)



3.20 Can infestation of the commodity be reliably prevented by treatment of the crop?

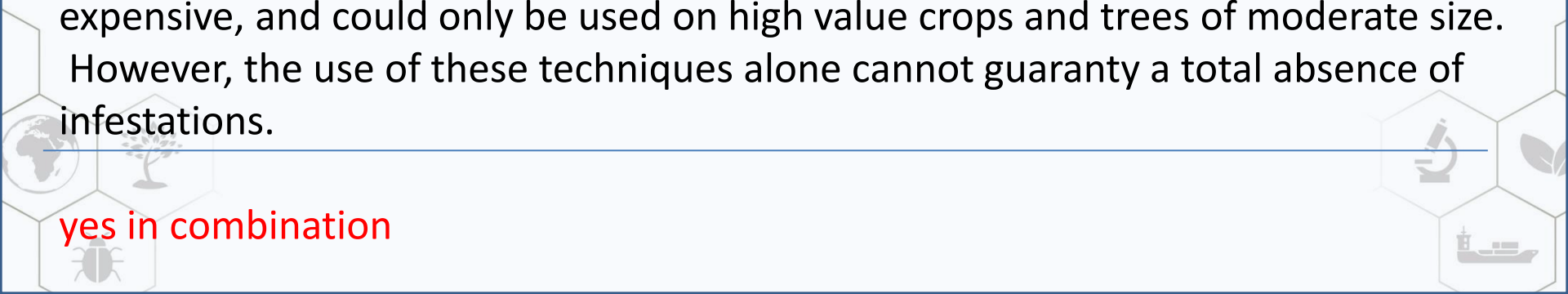
A whole Integrated Pest Management has been developed in various African countries: see Ekesi and Billah, 2009 and Vayssières *et al.*, 2008 & 2009, which comprises:

- fruit fly monitoring around the production site
- sanitation
- male annihilation techniques
- biocontrol (3 different agents)
- ploughing
- agronomic practices
- cultural practices, removal of reservoir hosts
- bait station

Bagging is not applicable in most cases for the moment as it is time consuming and expensive, and could only be used on high value crops and trees of moderate size.

However, the use of these techniques alone cannot guaranty a total absence of infestations.

yes in combination



3.21 Can infestation of the commodity be reliably prevented by growing resistant cultivars? (This question is not relevant for pest plants)

No resistant varieties are known up to date.

Some mango varieties might be less susceptible to infestations, but further research is needed to confirm this statement. Even if these varieties are less susceptible, they are not resistant.

NO



3.22 Can infestation of the commodity be reliably prevented by growing the crop in specified conditions (e.g. protected conditions such as screened greenhouses, physical isolation, sterilized growing medium, exclusion of running water, etc.)?

The fruit could be grown in a pest exclusionary structure but it is not an affordable measure

NO?



3.23 Can infestation of the commodity be reliably prevented by harvesting only at certain times of the year, at specific crop ages or growth stages?

Certain crops are recognized not to be attacked in unripen stages (Hass advocat, banana, etc.). Côte d'Ivoire, Senegal, Mali, Burkina Faso, Togo, and Benin some producers harvest mangoes at an early stage in order to avoid massive infestation linked to a more advanced maturity stage of the fruit (C Guichard, pers. com., 2009).

In these countries, the exporting season for mango stops when the rainy season starts because outbreaks of *B. dorsalis* occur during the rainy season.

yes in combination

possible measure in combination: specified age of plant, growth stage or time of year of harvest



3.24 Can infestation of the commodity be reliably prevented by production in a certification scheme (i.e. official scheme for the production of healthy plants for planting)?

Not relevant for fruit flies



3.25 Has the pest a very low capacity for natural spread?

3.26 Has the pest a low to medium capacity for natural spread?

3.27 The pest has a medium to high capacity for natural spread

Bactrocera species can be attracted to Methyl Eugenol up to 0.8 km away from likely hosts (White and Elson-Harris, 1994) which suggests that *B. invadens* would be able to fly at least between adjacent fruit crops. *B. zonata* is able to fly distances around 40 km (Qureshi *et al.*, 1975). The possibility of flying of *B. invadens* is supposed to be higher than the ones of *Ceratitis cosyra* and *C. capitata* in Africa (JF Vayssières , pers. com., 2009).

yes

Possible measure: pest-free area.



3.28 Can pest freedom of the crop, place of production or an area be reliably guaranteed?

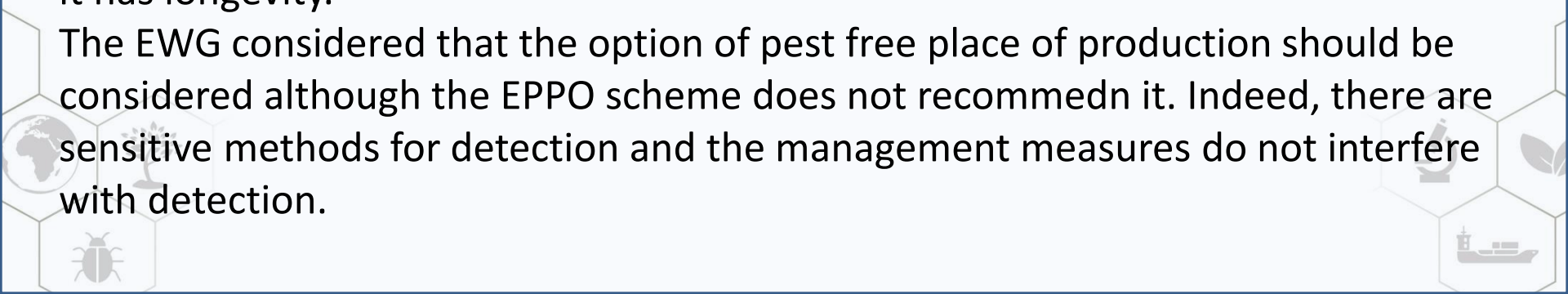
Pest freedom of an area and pest free place of production with a buffer zone are considered feasible. Distinction should be made between 2 situations in which *B. invadens* is or not recorded in the larger area.

Requirements for a pest free area for fruit flies are described in ISPM n°26.

Pest free place of production

According to ISPM n°10, point 2.2.1, the characteristics of *B. invadens* are not totally suitable to ensure an adequate degree of security for the establishment of a free place of production as it can spread over long distances either naturally or through human assistance, it is polyphagous, it has a high rate of reproduction, and it has longevity.

The EWG considered that the option of pest free place of production should be considered although the EPPO scheme does not recommend it. Indeed, there are sensitive methods for detection and the management measures do not interfere with detection.



3.28 Can pest freedom of the crop, place of production or an area be reliably guaranteed?

The measures required to determine a free place of production are:

- absence of any detection in ME traps in places of production and the vicinity during a period to be determined:
(*OPTION a*) since the beginning of the last complete cycle of vegetation/
(*OPTION b*) ME traps could be restricted the to seasons when susceptible hosts are present in the place of production and its vicinity.
- possibility to consider a buffer zone: the size should be adapted to the flying ability of the pest, the potential existence of natural barriers, and the presence of hosts. Such situations could occur in the sub Saharan area, even in Mali. Otherwise, the setting of a buffer zone is not considered feasible due to the flying ability of the pest over long distances, and its polyphagy.
- monitoring of traps should be done on a weekly basis to be done under the authority of the NPPO.
- sanitation with the removal of fallen fruits should be mandatory.
- in addition, examination of no sign of the pest is observed on the fruits before harvest at the place of production should take place under the authority of the NPPO.

3.28 Can pest freedom of the crop, place of production or an area be reliably guaranteed?

Places of low prevalence

In this case, the same requirements apply, but rather than having a total absence of the pest, a threshold of captures of the pest in traps need to be established and a system approach may be required.



3.29 Are there effective measures that could be taken in the importing country (surveillance, eradication) to prevent establishment and/or economic or other impacts?

Trapping is a particularly important method for the early detection of outbreaks and should be used as a component of the early warning systems within the PRA area.

ME traps could be used for monitoring the presence of this invasive pest. Many countries that are free of *Bactrocera* spp., e.g. certain states of the USA and New Zealand, maintain a grid of ME traps, at least in ports and airports (CABI, 2007).

In case of any detection, attempts at eradication should be immediately implemented.

However, these measure would not guaranty the prevention of establishment of the pest and given the enormous areas of orchards at risk would be prohibitively expensive of resources.

yes

Possible measures: internal surveillance and/or eradication campaign



3.31 Does each of the individual measures identified reduce the risk to an acceptable level

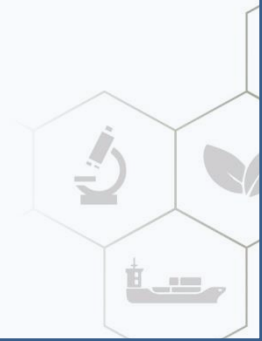
No all, only certain ones, Pest free area

3.32 For those measures that do not reduce the risk to an acceptable level, can two or more measures be combined to reduce the risk to an acceptable level?

The following measures reduce the risk to an acceptable on their own:

- pest free area
 - pest free place of production
-

YES



3.32b List the combination of measures

As described by USDA (2006b):

Systems Approach, ISPM no. 14. A systems approach requires two or more measures that are independent of each other, and may include any number of measures that are dependent from each other. Measures can be applied pre and post harvest wherever the NPPO can oversee and ensure compliance. Suggested measures against the fruit flies of concern are:

These measures are considered much more effective in a area wide approach of pest management

Pre-harvest:

Integrated Pest Management measures (see Q. 3.20)

Bagging of fruits when feasible

Harvest:

Harvest at earliest possible maturity level



3.32b List the combination of measures

Post-harvest:

Inspection of fruits before packing and sorting out injured fruits and proper disposal of waste

Adequate treatment of the commodity (see Q. 3.16)

Treatment

Cold treatment for *Citrus* spp. and pome fruits.

Surveillance in the importing country

Visual inspection at ports of entry

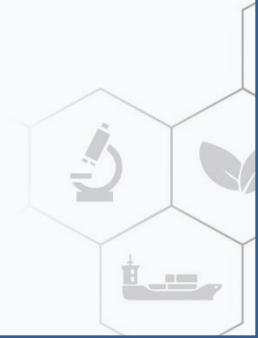
Trapping should be employed in the endangered area and attempts at eradication in case of detection.



3.34 Estimate to what extent the measures (or combination of measures) being considered interfere with international trade

The option “pest free areas” will have a large effect on international trade since this option prohibits trade from areas where the pest is present.

Pest free place of production and the system approach are less restrictive.



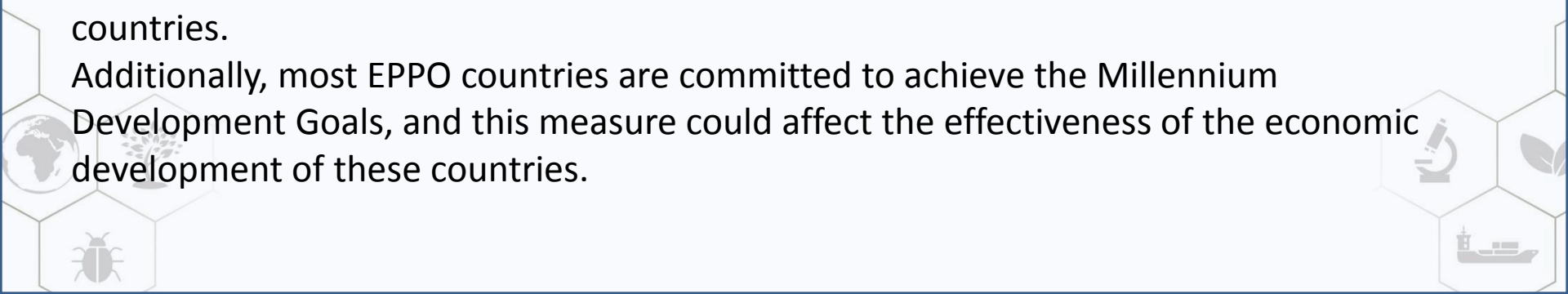
3.35 Estimate to what extent the measures (or combination of measures) being considered are cost-effective, or have undesirable social or environmental consequences.

Similar requirements are implemented in EPPO countries for exports to third countries because of *Ceratitis capitata*, and for imported fruits that might be attacked by *Bactrocera* spp. (eg Australian exportats to Reunion Island).

Pest free areas

This option would affect imports from areas where the pest occurs, particularly Africa. Major exporters for the major hosts are mainly situated in Latin America, and importers in the EPPO region could find alternative sources there to replace African exporters. Nevertheless, imports of fruits from other countries more distant than Africa could increase carbon emissions for transport, but considering the high costs of monitoring and management of fruit flies on a territory, this measure remains cost effective for the EPPO countries.

Additionally, most EPPO countries are committed to achieve the Millennium Development Goals, and this measure could affect the effectiveness of the economic development of these countries.



3.35 Estimate to what extent the measures (or combination of measures) being considered are cost-effective, or have undesirable social or environmental consequences.

Pest free place of production

The management and maintenance of a buffer zone might increase the price of the fruits.

There are few expected social or environmental consequences in EPPO countries, but it depends on the number of places of production that can be effectively implemented.

A few number of possible places of production would have similar consequences as a pest free area.

System approach

The management at the place of production and post harvest quarantine treatment might increase the price of the fruits.

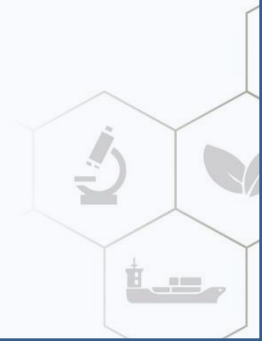


3.36 Have measures (or combination of measures) been identified that reduce the risk for this pathway, and do not unduly interfere with international trade, are cost-effective and have no undesirable social or environmental consequences?

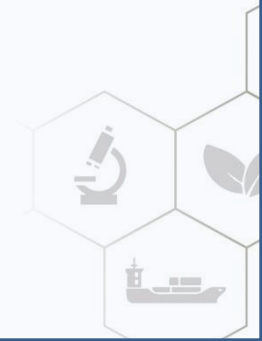
Pest free area (higher level of protection).

Pest free place of production (medium level of protection)

System approach (pre-harvest, harvest and post-harvest quarantine measures)
(lower level of protection)



3.2a Pathway :Plants for planting with growing medium attached (except seeds)



3.2 Is the pathway that is being considered a commodity of plants and plant products?

YES

3.12 Are there any existing phytosanitary measures applied on the pathway that could prevent the introduction of the pest? (if yes, specify the measures in the box notes)

NO

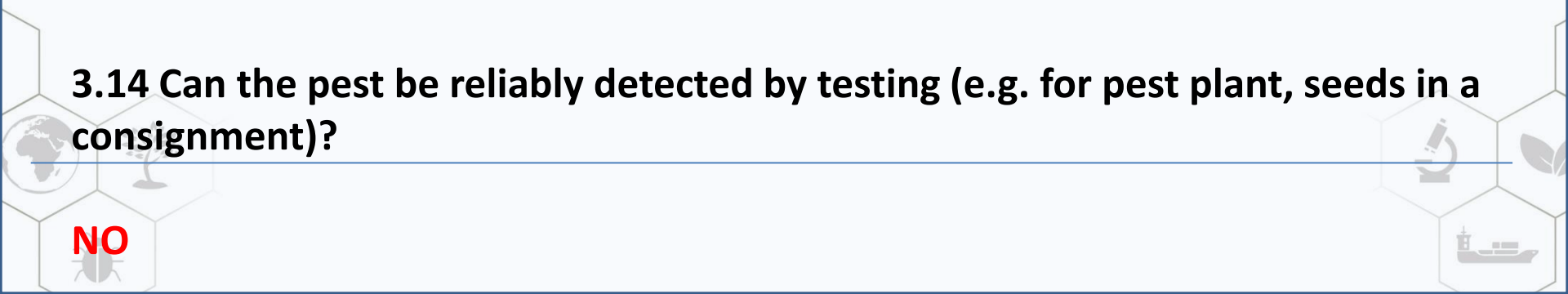
3.13 Can the pest be reliably detected by a visual inspection of a consignment at the time of export, during transport/storage or at import?

The pupae could be hidden in the growing media.

NO

3.14 Can the pest be reliably detected by testing (e.g. for pest plant, seeds in a consignment)?

NO



3.15 Can the pest be reliably detected during post-entry quarantine?

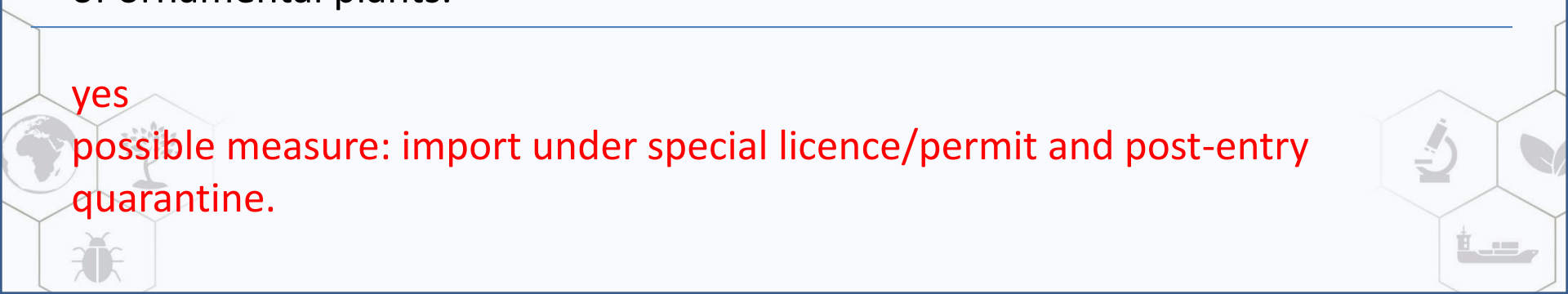
B. Dorsalis is attracted to the ME traps, and it is very likely that the pest would be trapped if present in the consignment.

On an artificial diet, Ekesi *et al.* (2006) report puparia-adult development of *B. invadens* takes 12.4 days at 28°C (+-1). Plants for planting with roots are shipped, they are rarely exported by air planes. They are assumed to be shipped at lower temperatures, but no information could be found on this point.

The quarantine period will depend upon the temperature during transport and in the quarantine area, but shall last at least 10 days.

There are no evidence for diapause or delayed emergence for *B. dorsalis*. Nevertheless, such measure might be considered as not practical for the trade of ornamental plants.

yes
possible measure: import under special licence/permit and post-entry quarantine.



3.16 Can the pest be effectively destroyed in the consignment by treatment (chemical, thermal, irradiation, physical)?

Phytosanitary treatment on the growing media could kill the pupae, but no expertise was available on this point within the EWG.

NO

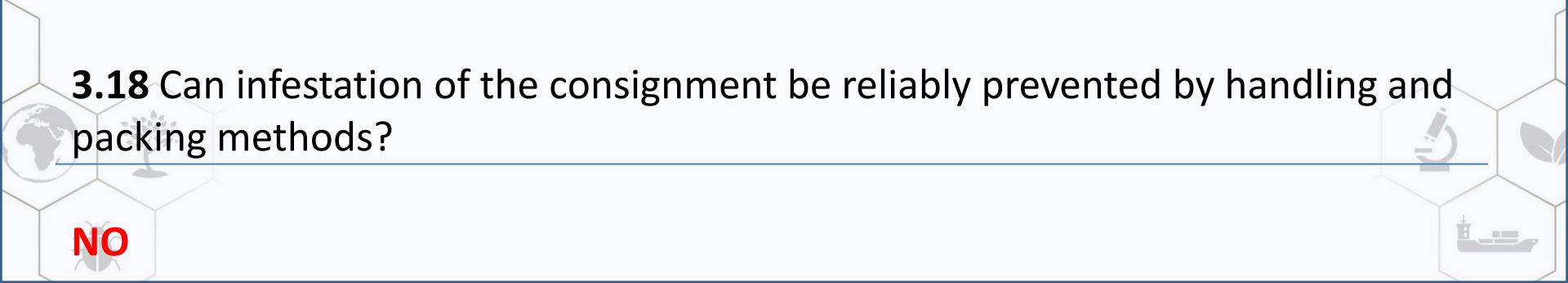
3.17 Does the pest occur only on certain parts of the plant or plant products (e.g. bark, flowers), which can be removed without reducing the value of the consignment? (This question is not relevant for pest plants)

Growing media without pupae and plants without fruits.

YES

3.18 Can infestation of the consignment be reliably prevented by handling and packing methods?

NO



3.19 Could consignments that may be infested be accepted without risk for certain end uses, limited distribution in the PRA area, or limited periods of entry, and can such limitations be applied in practice?

The Northern EPPO region could accept consignments without risk, especially in winter. Note that because there is free movement of consignments within the EU, there are no guaranties that the infested plants for planting would not be sent to the endangered area. That limitation does not apply to the Northern non EU countries.

NO

3.20 Can infestation of the commodity be reliably prevented by treatment of the crop?

For ornamental plant with fruits, a systemic insecticide could potentially be used to kill the eggs, larvae and pupae, but it is not considered reliable.

NO



3.21 Can infestation of the commodity be reliably prevented by growing resistant cultivars? (This question is not relevant for pest plants)

NO

3.22 Can infestation of the commodity be reliably prevented by growing the crop in specified conditions (e.g. protected conditions such as screened greenhouses, physical isolation, sterilized growing medium, exclusion of running water, etc.)?

Growing the plants for planting under protection is considered to provide a sufficient prevention.

When grown outdoors, even if the consignment is grown according to the EPPO phytosanitary procedure PM 3/54 "Growing plants in growing media prior to export" with inorganic growing media, or treated organic growing media, or inspection of the organic medium, the growing media could be contaminated with pupae from infested fruits.

YES

3.23 Can infestation of the commodity be reliably prevented by harvesting only at certain times of the year, at specific crop ages or growth stages?

If the plant for planting is too young to produce fruit, it does not present any risk of infested soil.

This needs to be attested with a certificate. If the plant for planting is exported outside its fruiting season, it does not present any risk of infested soil. This needs to be attested with a certificate.

The consignment must be free from fruits, and fruits should have been removed from the plant for planting 1 month before import, this is the time needed for the pupae-adult development.

Pupae would have therefore become adults and would have flown away. This needs to be attested with a certificate.

yes

possible measure: specified age of plant, growth stage or time of year of harvest

3.24 Can infestation of the commodity be reliably prevented by production in a certification scheme (i.e. official scheme for the production of healthy plants for planting)?

NO

3.25 Has the pest a very low capacity for natural spread?

NO

3.26 Has the pest a low to medium capacity for natural spread?

NO

3.27 The pest has a medium to high capacity for natural spread

yes

Possible measure: pest-free area.



3.28 Can pest freedom of the crop, place of production or an area be reliably guaranteed?

Pest freedom of an area and free place of production with a buffer zone are considered feasible. Distinction should be made between 2 situations in which *B. dorsalis* is or not recorded in the larger area.

Requirements for a pest free area for fruit flies are described in ISPM n°26.

Pest free place of production

According to ISPM n°10, point 2.2.1, the characteristics of *B. invadens* are not totally suitable to ensure an adequate degree of security for the establishment of a free place of production as it can spread over long distances either naturally or through human assistance, it is polyphagous, it has a high rate of reproduction, and it has longevity.

The EWG considered that the option of pest free place of production should be considered although the EPPO scheme does not recommend it. Indeed, there are sensitive methods for detection and the management measures do not interfere with detection.

Areas with climatic conditions which do not favor the reproduction of the fly would be preferable to set a pest free place of production.

3.28 Can pest freedom of the crop, place of production or an area be reliably guaranteed?

The measures required to determine a free place of production are:

- absence of any detection in ME traps in places of production and the vicinity during a period to be determined:

(OPTION a) since the beginning of the last complete cycle of vegetation/

(OPTION b) ME traps could be restricted to seasons when susceptible hosts are present in the place of production and its vicinity.

- possibility to consider a buffer zone: the size should be adapted to the flying ability of the pest, the potential existence of natural barriers, and the presence of hosts. Such situations could occur in the sub Saharan area, even in Mali.

Otherwise, the setting of a buffer zone is not considered feasible due to the flying ability of the pest over long distances, and its polyphagy.

- monitoring of traps should be done on a weekly basis to be done under the authority of the NPPO.

- sanitation with the removal of fallen fruits should be mandatory.

- in addition, examination of no sign of the pest is observed on the fruits before harvest at the place of production should take place under the authority of the NPPO.

3.28 Can pest freedom of the crop, place of production or an area be reliably guaranteed?

Places of low prevalence

In this case, the same requirements apply, but rather than having a total absence of the pest, a threshold of captures of the pest in traps need to be established and a system approach may be required.



3.29 Are there effective measures that could be taken in the importing country (surveillance, eradication) to prevent establishment and/or economic or other impacts?

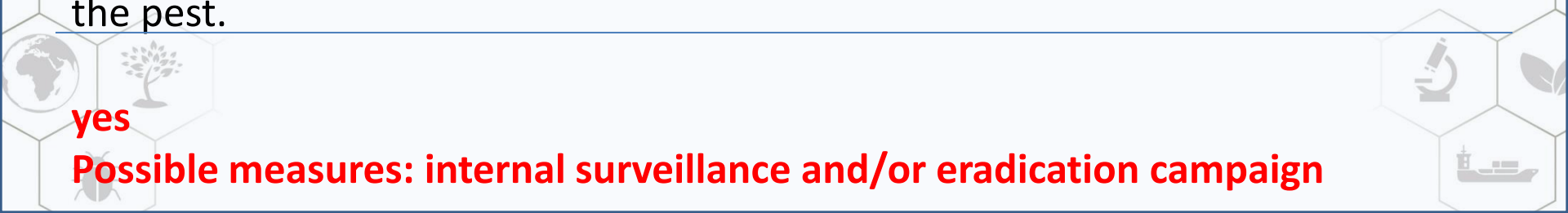
Trapping is a particularly important method for the early detection of outbreaks and should be used as a component of the early warning systems within the PRA area. ME traps could be used for monitoring the presence of this invasive pest. Many countries that are free of *Bactrocera* spp., e.g. certain states of the USA and New Zealand, maintain a grid of ME traps, at least in ports and airports (CABI, 2007).

In case of any detection, attempts at eradication should be immediately implemented.

However, these measure would not guaranty the prevention of establishment of the pest.

yes

Possible measures: internal surveillance and/or eradication campaign



3.31 Does each of the individual measures identified reduce the risk to an acceptable level?

- Import with post entry quarantine.
- Age of plants if it is too young to give fruits, if it is not a fruiting season, or if the fruits have been removed 1 month prior export, attested by a certificate.
- Removal of fruits before export
- Protected cultivation
- pest free area
- pest free place of production



3.34 Estimate to what extent the measures (or combination of measures) being considered interfere with international trade.

The option “pest free areas” will have a large effect on international trade since this option prohibits trade from areas where the pest is present.

Age of the plant and period of introduction as well as removal of fruits on the plant for planting to export may interfere with trade.



3.35 Estimate to what extent the measures (or combination of measures) being considered are cost-effective, or have undesirable social or environmental consequences.

Pest free areas

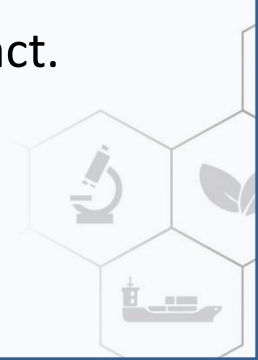
See answer Pathway 1.

Post entry quarantine

This option is the less cost effective for the importer as it implies that importing nurseries will have to invest in a quarantine area.

Age of the plant, period of introduction and removal of fruits on the plant for planting prior to export

This option is very cost effective and has no social or environmental impact.



3.36 Have measures (or combination of measures) been identified that reduce the risk for this pathway, and do not unduly interfere with international trade, are cost-effective and have no undesirable social or environmental consequences?

- Age of the plant and period of introduction attested through a certificate, and removal of fruits on the plant for planting attested through a certificate prior to export
- Removal of fruits before export
- Protected cultivation
- Post-entry quarantine with ME traps (see comment in Q 3.35)
- pest free place of production
- Pest free area



3.2a Pathway : Fruits carried with passengers



3.2 Is the pathway that is being considered a commodity of plants and plant products?

YES

3.3 Is the pathway that is being considered the natural spread of the pest?

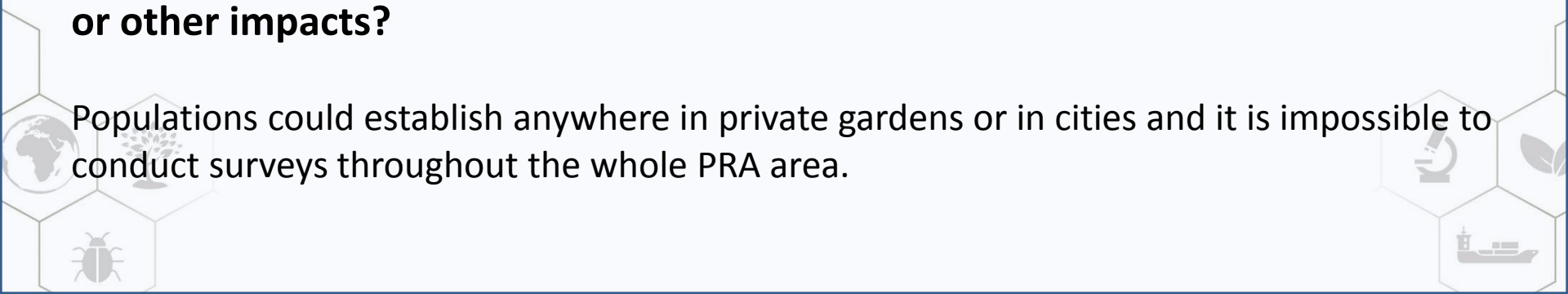
No

3.9 Is the pathway that is being considered the entry with human travellers?

YES

3.29 Are there effective measures that could be taken in the importing country (surveillance, eradication) to prevent establishment and/or economic or other impacts?

Populations could establish anywhere in private gardens or in cities and it is impossible to conduct surveys throughout the whole PRA area.



3.31 Does each of the individual measures identified reduce the risk to an acceptable level?

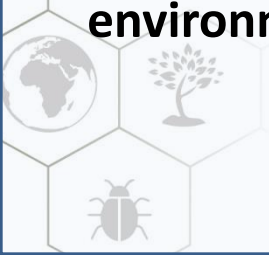
- Inspection of human travelers, their luggage
 - Publicity to enhance awareness
 - fines or incentives.
-

YES?

3.34 Estimate to what extent the measures (or combination of measures) being considered interfere with international trade.

The measures do not interfere with trade.

3.35 Estimate to what extent the measures (or combination of measures) being considered are cost-effective, or have undesirable social or environmental consequences.



3.35 Estimate to what extent the measures (or combination of measures) being considered are cost-effective, or have undesirable social or environmental consequences.

Inspection of luggage and requirement of a Phytosanitary certificate will imply more resources to be made available for inspection. This has a cost for importing countries. These measures are likely to be politically unacceptable. Nevertheless, these measures have beneficial effects in raising awareness on the dangers of bringing fruits from an area to another and to prevent the entry of other potential invasive species.



3.36 Have measures (or combination of measures) been identified that reduce the risk for this pathway, and do not unduly interfere with international trade, are cost-effective and have no undesirable social or environmental consequences?

Possible measures are:

- the requirement of a phytosanitary certificate for passengers traveling with fruits
- publicity to enhance public awareness on pest risks.
- finances and incentives



3.41 Consider the relative importance of the pathways identified in the conclusion to the entry section of the pest risk assessment

Fruits of major hosts : high risk, uncertainty is low

Fruits of minor hosts moderate risk, uncertainty is low

Passengers carrying fruits: moderate risk, uncertainty is medium

Plants for planting with growing media (except seeds) low risk, uncertainty is high



MEASURES CONSIDERED TO BE EFFECTIVE (EFSA, 2019)

- pest free area,
- place of production freedom,
- pest free consignment,
- treatment of consignment

are measures currently used to reduce likelihood of entry



OPTION	Bactrocera dorsalis		
	Fruits of major and minor hosts	Growing media attached	MEDIDAS
Existing measures in the PRA area			
Options at the place of production			
Visual inspection at place of production	Yes, in combination	Yes, in combination	INSPECCIÓN
Testing at place of production	No	No	
Treatment of crop	Yes, in combination	Yes, in combination	
Resistant cultivars	No	No	
Growing under complete physical isolation	No	Yes	
Specified age of plant, growth stage or time of year of harvest	Yes, in combination	Yes, in combination	Unripen fruits
Produced in a certification scheme	No	No	
Possibility for pest freedom of the crop, pest-free production site/place of production/area?	Yes	Yes	
Pest freedom of the crop	No	NO	
Pest free production site and pest free place of production	Yes, in combination		PFPP with specific measures
Pest-free area	Yes	Yes	PFA
Options after harvest, at pre-clearance or during transport			
Visual inspection of consignment	Yes, in combination	No	Visual inspection
Testing of commodity	No	No	
Treatment of the consignment	Yes, in combination	No	Specified treatment
Pest only on certain parts of plant/plant product, which can be removed	No	Yes	
Prevention of infestation by packing/handling method	Yes, in combination	No	Handling & packaging
Options that can be implemented after entry of consignments			
Post-entry quarantine	No	Yes	Post-entry quarantine
Limited distribution of consignments in time and/or space or limited use	No	No	
Surveillance and eradication in the importing country	Yes	Yes	Surveillance & eradication



OPTION	<i>Bactrocera dorsalis</i>		
	Fruits of major and minor hosts	Growing media attached	MEDIDAS
Existing measures in the PRA area			
Options at the place of production			
Visual inspection at place of production	Yes, in combination	Yes, in combination	INSPECCIÓN
Testing at place of production	No	No	
Treatment of crop	Yes, in combination	Yes, in combination	
Resistant cultivars	No	No	
Growing under complete physical isolation	No	Yes	
Specified age of plant, growth stage or time of year of harvest	Yes, in combination	Yes, in combination	Unripen fruits
Produced in a certification scheme	No	No	
Possibility for pest freedom of the crop, pest-free production site/place of production/area?	Yes	Yes	
Pest freedom of the crop	No	NO	
Pest free production site and pest free place of production	Yes, in combination		PFPP with specific measures
Pest-free area	Yes	Yes	PFA
Options after harvest, at pre-clearance or during transport			
Visual inspection of consignment	Yes, in combination	No	Visual inspection
Testing of commodity	No	No	
Treatment of the consignment	Yes, in combination	No	Specified treatment
Pest only on certain parts of plant/plant product, which can be removed	No	Yes	
Prevention of infestation by packing/handling method	Yes, in combination	No	Handling & packaging
Options that can be implemented after entry of consignments			
Post-entry quarantine	No	Yes	Post-entry quarantine
Limited distribution of consignments in time and/or space or limited use	No	No	
Surveillance and eradication in the importing country	Yes	Yes	Surveillance & eradication

ADDITIONAL MEASURES

Table 10: Selected control measures (a full list is available in EFSA PLH Panel, 2018) for establishment/spread/impact in relation to currently unregulated hosts and pathways. Control measures are measures that have a direct effect on pest abundance

Information sheet title (with hyperlink to information sheet if available)	Control measure summary	Risk component (entry/ establishment/ spread/impact)
Growing plants in isolation	Description of possible exclusion conditions that could be implemented to isolate the crop from pests and if applicable relevant vectors. E.g. a dedicated structure such as glass or plastic greenhouses. Generally, not suitable for very mobile pests. Nevertheless, we are aware of area-wide control programmes where some areas have been declared as Pest-Free Area (ex. Argentina), from where fruit can be exported to fruit fly-free markets. Could also be done for glasshouse/protected crops	Entry
Chemical treatments on consignments or during processing	Use of chemical compounds that may be applied to plants or to plant products after harvest, during process or packaging operations and storage The treatments included are: a) fumigation; b) spraying/dipping pesticides; c) surface disinfectants; d) process additives; e) protective compounds Treatments are an option already (see Section 3.3.2) but only for <i>Citrus</i> , <i>Poncirus</i> and <i>Fortunella</i> . Hence could extend to other hosts	Entry



Controlled atmosphere	Treatment of plants by storage in a modified atmosphere (including modified humidity, O ₂ , CO ₂ , temperature, pressure)	Entry
Heat and cold treatments	Controlled temperature treatments aimed to kill or inactivate pests without causing any unacceptable prejudice to the treated material itself. The measures included are: autoclaving; steam; hot water; hot air; cold treatment. Could expand existing measures to other hosts where appropriate	Entry
Conditions of transport	<p>Specific requirements for mode and timing of transport of commodities to prevent escape of the pest and/or contamination</p> <ul style="list-style-type: none"> a) physical protection of consignment b) timing of transport/trade <p>The physical protection of the consignment once treated is basic. Furthermore, export from temperate countries can be easier during the cold months, when fruit remains pest free (contrarily to what may happen in summer)</p>	Entry



Information sheet title (with hyperlink to information sheet if available)	Control measure summary	Risk component (entry/ establishment/ spread/impact)
Timing of planting and harvesting	<p>The objective is to produce phenological asynchrony in pest/crop interactions by acting on or benefiting from specific cropping factors such as cultivars, climatic conditions, timing of the sowing or planting and level of maturity/age of the plant seasonal timing of planting and harvesting</p> <p>For temperate countries, production during the winter months (e.g. citrus) is mostly pest free</p>	Entry
Chemical treatments on crops including reproductive material	<p>For exporting countries, some chemical treatments on susceptible cultivars may be necessary</p>	Entry
Biological control and behavioural manipulation	<p>Other pest control techniques</p> <ul style="list-style-type: none"> a) biological control b) sterile insect technique c) mating disruption d) mass trapping <p>Most often these measures are used in combination in area-wide control programmes</p>	Spread/ establishment



Table 11: Selected supporting measures (a full list is available in EFSA PLH Panel, 2018) in relation to currently unregulated hosts and pathways. Supporting measures are organisational measures or procedures supporting the choice of appropriate risk reduction options that do not directly affect pest abundance

Information sheet title (with hyperlink to information sheet if available)	Supporting measure summary	Risk component (entry/ establishment/spread/impact)
Phytosanitary certificate and plant passport	An official paper document or its official electronic equivalent, consistent with the model certificates of the IPPC, attesting that a consignment meets phytosanitary import requirements (ISPM 5) a) export certificate (import) b) plant passport (EU internal trade)	Entry (if phytosanitary certificate) Spread (if plant passport) Applied to wider range of hosts than is currently required by 2000/29 EC (EFSA PLH Panel recognises that Regulation 2016–2031 will change the current requirements in 2000/29 EC)
Surveillance	Probably already in place at entry points, but in case not appropriate traps should be in place to detect pest entry	Establishment/spread



Etapa 3: Manejo del Riesgo

16. Medidas fitosanitarias

Table 7. Summary of phytosanitary measures recommended to prevent entry

Possible pathway	Measures identified
<p><i>Pathways as named in section 8</i></p> <p>Example: Host plants for planting with roots</p>	<p><i>Suggested measures</i></p> <p>Pest free area</p> <p>Or</p> <p>Pest-free production site or pest-free place of production (with all production sites pest-free), with detailed requirements as listed in Annex</p> <p>Or</p> <p>Growing under complete physical isolation (EPPO Standard PM5/8) (with requirements appropriate for <i>M. mali</i>)</p>



Conclusion of Pest Risk Management.

Summarize the conclusions of the Pest Risk Management stage. List all potential management options and indicate their effectiveness. Uncertainties should be identified.

Plants for planting with growing media (except seeds) low risk, uncertainty is high

Fruits of major hosts: high risk, uncertainty is low

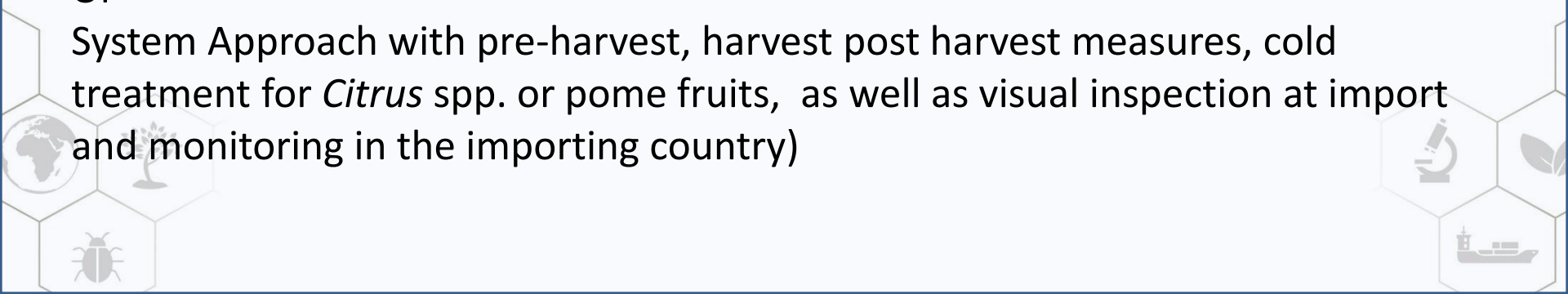
Pest free area

Or

Pest free place of production (including absence of detection in traps, possibility to include a buffer zone)

Or

System Approach with pre-harvest, harvest post harvest measures, cold treatment for *Citrus* spp. or pome fruits, as well as visual inspection at import and monitoring in the importing country)



Conclusion of Pest Risk Management.

Summarize the conclusions of the Pest Risk Management stage. List all potential management options and indicate their effectiveness. Uncertainties should be identified.

Plants for planting with growing media (except seeds) low risk, uncertainty is high

Fruits of minor host: moderate risk, uncertainty is low

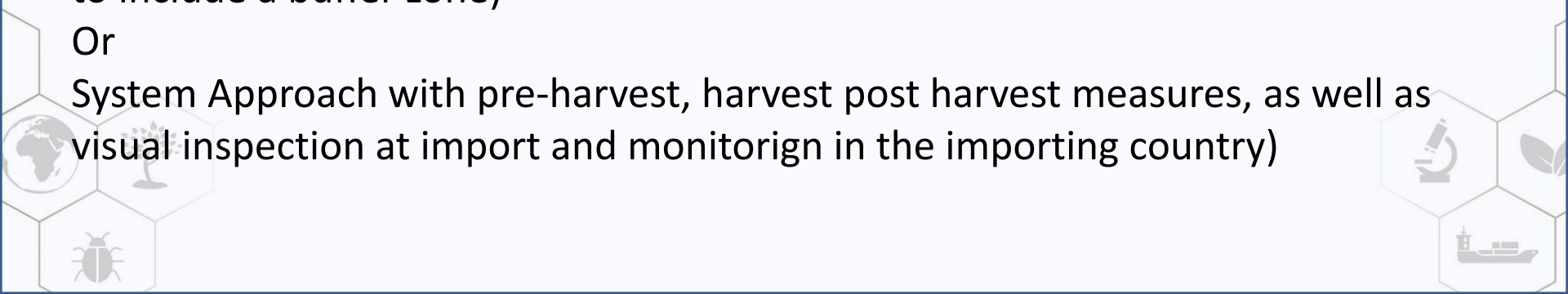
Pest free area

Or

Pest free place of production (including absence of detection in traps, possibility to include a buffer zone)

Or

System Approach with pre-harvest, harvest post harvest measures, as well as visual inspection at import and monitorign in the importing country)



Conclusion of Pest Risk Management.

Passengers carrying fruits: moderate risk, uncertainty is medium

The requirement of a phytosanitary certificate for passengers traveling with host plants

Or

Prohibition on the carriage of living host plants.

Or

Publicity to enhance public awareness on pest risks.

Or

Fines and incentives



Conclusion of Pest Risk Management.

Passengers carrying fruits: moderate risk, uncertainty is medium

The requirement of a phytosanitary certificate for passengers traveling with host plants

Or

Prohibition on the carriage of living host plants.

Or

Publicity to enhance public awareness on pest risks.

Or

Fines and incentives



Conclusion of Pest Risk Management.

Plants for planting with growing media (except seeds): low risk, uncertainty is high

Pest free area

Or

Pest free place of production (including absence of detection in traps, possibility to include a buffer zone)

Or

For any ornamental plant with fruits, a systemic insecticide could be used to kill the eggs, larvae and pupae in the fruits.

Or

Removal of fruits before export

Or

Protected cultivation

Or

Post-entry quarantine with ME traps (see comment in Q 3.35)

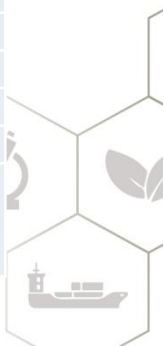
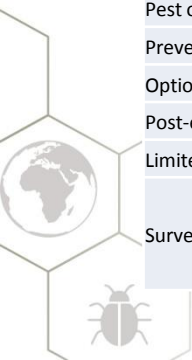
Or

Age of plants if it is too young to give fruits, if it is not a fruiting season, or if the fruits have been removed 1 month prior export, attested by a certificate

FUSARIUM OXYSPOURIUM F. SP. CUBENSE TR4



OPTION	TR4		
	Plants of banana	Plants of ornamentals	MEDIDAS
Existing measures in the PRA area			
Options at the place of production			
Visual inspection at place of production	Yes, in combination	Yes, in combination	INSPECCIÓN
Testing at place of production	Yes, in combination	Yes, in combination	
Treatment of crop	No	No	
Resistant cultivars	No	No	
Growing under complete physical isolation	No	No	
Specified age of plant, growth stage or time of year of harvest	No	No	
Produced in a certification scheme	Yes	Yes	Tested mother stock
Possibility for pest freedom of the crop, pest-free production site/place of production/area?	Yes	Yes	
Pest freedom of the crop	No	No	
Pest free production site and pest free place of production	Yes	Yes	PFPP
Pest-free area	Yes	Yes	PFA
Options after harvest, at pre-clearance or during transport			
Visual inspection of consignment	No	No	
Testing of commodity	Yes	Yes	Test
Treatment of the consignment	No	No	
Pest only on certain parts of plant/plant product, which can be removed	No	No	
Prevention of infestation by packing/handling method	No	No	
Options that can be implemented after entry of consignments			
Post-entry quarantine	No	No	
Limited distribution of consignments in time and/or space or limited use	No	No	
Surveillance and eradication in the importing country	Yes	Yes	Surveillance & eradication



OPTION	TR4		
	Plants of banana	Plants of ornamentals	MEDIDAS
Existing measures in the PRA area			
Options at the place of production			
Visual inspection at place of production	Yes, in combination	Yes, in combination	INSPECCIÓN
Testing at place of production	Yes, in combination	Yes, in combination	
Treatment of crop	No	No	
Resistant cultivars	No	No	
Growing under complete physical isolation	No	No	
Specified age of plant, growth stage or time of year of harvest	No	No	
Produced in a certification scheme	Yes	Yes	Tested mother stock
Possibility for pest freedom of the crop, pest-free production site/place of production/area?	Yes	Yes	
Pest freedom of the crop	No	No	
Pest free production site and pest free place of production	Yes	Yes	PFPP
Pest-free area	Yes	Yes	PFA
Options after harvest, at pre-clearance or during transport			
Visual inspection of consignment	No	No	
Testing of commodity	Yes	Yes	Test
Treatment of the consignment	No	No	
Pest only on certain parts of plant/plant product, which can be removed	No	No	
Prevention of infestation by packing/handling method	No	No	
Options that can be implemented after entry of consignments			
Post-entry quarantine	No	No	
Limited distribution of consignments in time and/or space or limited use	No	No	
Surveillance and eradication in the importing country	Yes	Yes	Surveillance & eradication

The conclusion of the pest risk management is that additional protective measures justified on grounds of the protection of the prosperous banana industry of the CC.II. should be given:

1. Based on the information provided in Stage 1 and 2 of the present document, *Foc* race T4 qualifies as a quarantine pest for the PRA area.
2. Consignments of plants or plant parts of *Musa* L., other than fruit or seeds, intended for planting (i.e. corms, suckers, rhizomes or rhizome pieces) from infested areas ought to be restricted. These must come from *in vitro* cultivation and have been hardened-off in pathogen-free nursery soil.
3. Passengers should be compelled to report in custom the ownership of *Musa* vitroplants and bear an Official Phytosanitary Certificate emitted by a relevant authority from the country of origin. The plant material must also be soil-free.



Muchas gracias

