

**National Phytosanitary Standard on:
Integrated measures for plants for planting
2013**

**This standard is approved by (NPPO and) the Quarantine Committee of Nepal on 1st
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1. Introduction

1.1 Scope

This standard outlines criteria for identification/application of integrated measures for production and trade of plants for planting. It provides guidance to identify and manage pest risks. This standard provides guidelines for the development and implementation of integrated measures to manage the pest risks associated with the production and international movement of plants for planting (excluding seeds). It outlines factors relevant for the determination of the risk level associated with particular plants for planting and places of production, as well as risk-based application of measures and the responsibilities of the national plant protection organizations (NPPOs) of the importing and exporting countries. NSPM preparation based on guidelines and recommendations developed within the framework of the IPPC. This standard also adopted the principles, recommendations and format of ISPM to achieve international harmonization of phytosanitary measures with the aim to facilitate trade.

1.2 References

ISPM 2. 2007. *Framework for pest risk analysis*. Rome, IPPC, FAO.

ISPM 5. *Glossary of phytosanitary terms*. Rome, IPPC, FAO.

ISPM 11. 2004. *Pest risk analysis for quarantine pests including analysis of environmental risks and living modified organisms*. Rome, IPPC, FAO.

ISPM 12. 2011. *Phytosanitary certificates*. Rome, IPPC, FAO.

ISPM 13. 2001. *Guidelines for the notification of non-compliance and emergency action*. Rome.

IPPC, FAO.

ISPM 17. 2002. *Pest reporting*. Rome, IPPC, FAO.

ISPM 20. 2004. *Guidelines for a phytosanitary import regulatory system*. Rome, IPPC, FAO.

ISPM 21. 2004. *Pest risk analysis for regulated non-quarantine pests*. Rome, IPPC, FAO.

ISPM 24. 2005. *Guidelines for the determination and recognition of equivalence of phytosanitary*

measures. Rome, IPPC, FAO.

ISPM 32. 2009. *Categorization of commodities according to their pest risk.* Rome, IPPC, FAO.

ISPM 36. 2012. *Integrated measures for plants for planting*

1.3 Definitions

Plants for planting are defined in the International Standard for Phytosanitary Measures No. 5 (Glossary of phytosanitary terms) (ISPM 5, 2010) as ‘Plants intended to remain planted, to be planted or replanted’.

1.4 Outline of requirements

This standard provides guidance for the use of integrated measures to manage the pest risks that plants for planting (excluding seeds) pose as a pathway for regulated pests and to meet the phytosanitary requirements of the importing NPPO. The use of integrated measures /approaches requires the involvement of the NPPOs of both the importing and exporting countries, as well as producers, and relies on pest risk management measures applied throughout the production and distribution processes. Plants for planting are generally considered as presenting a higher risk of pest introduction than other commodities, especially as:

- the pests can survive, and possibly reproduce, on their living hosts or in the soil during transport of the commodity;
- once at destination, the plants will remain planted or be replanted. The pest may survive on the plant it was introduced on and might transfer

Integrated measures may be developed and implemented by the NPPO of the exporting country. General integrated measures may include requirements such as keeping a plan of the place of production, examination of plants, keeping records, treating pests and sanitation. Where justified, additional elements such as a place of production manual including a pest management programme, appropriate training for personnel, specific packing and transportation requirements, and internal and external audits may be required.

The NPPO of Nepal should approve and oversee places of production using integrated measures, as well as issue phytosanitary certificates that attest to the consignment as meeting the phytosanitary requirements of the importing country.

2. Background

Integrated measures may be used to manage the risk of pests, especially those that are difficult to detect. This requires participation of the NPPO and producers. This standard on the risk of imports of Plants for Planting covers all plants for planting, except true seeds. Plants for planting include categories such as bare root plants, rooted plants, bulbs and tubers, cuttings, budwood and graftwood and meristem tissue culture. Such materials are generally considered to pose a higher pest risk of pest introduction than other regulated articles and commodities. This standard provides guidance to help identify & manage pest risks associated with plants for planting as a pathway. Firstly the pests can survive, and possibly reproduce, on their living hosts or in the soil during transport of the commodity. Secondly, once at destination, the plants will remain planted or be replanted, facilitating survival and transfer of the pest to a suitable host.

The current regulatory framework for entry of plants for planting into the country is broadly permissive. Known risks are regulated according to a continuum of strategies ranging from prohibition to visual inspection upon arrival. Unless specific restrictions apply, virtually any type of plant from anywhere in the world is enterable with reliance on visual inspection as the primary mitigation measure. Modern risk analyses have been performed only in limited cases. In short, current regulation of plants for planting is list dependent, reactive, and heavily based on old information.

It outlines integrated measures that can be carried out at the place of production including general measures such as: keeping plan of place of production, examination of plants, keeping records, treating pests, sanitation, etc. Such measures require participation of the NPPO of the exporting country and producers throughout all the stages of production of the plants for planting.

Several NSPMs and ISPMs provide general guidance on pest risk management (e.g. NSPM : Framework for pest risk analysis, NSPM: pest risk analysis for quarantine pests including analysis of environmental risks and living modified organisms, NSPM: Pest risk analysis for regulated non-quarantine pests, NSPM: Categorization of commodities according to their pest risk). The conclusions from pest risk analyses (PRAs) should be used to decide the phytosanitary measures to reduce the pest risk to an acceptable level for the importing country.

Plants for planting generally considered higher pest risk. Integrated measures may be used to manage the risk of pests, especially those that are difficult to detect. It requires participation of the NPPO and producers.

Integrated measures may be used at places of production to manage the risk of regulated pests, especially those that are difficult to detect during import or export inspections because:

- some pests do not cause distinct visual symptoms, particularly at low pest incidence
- symptoms of infestation may be latent or masked at the time of inspection (e.g. as a result of pesticide use, nutrient imbalances, dormancy of plants at time of dispatch, presence of other non-regulated pests or by removal of symptomatic leaves)
- small insects or eggs may be hidden under bark or scales of buds etc.
- the type of packaging, size and physical state of the consignment can influence the effectiveness of inspection
- detection methods for many pests, particularly pathogens, may not be available.

3. Requirements

3.1 Basis for regulating

Consignments of plants for planting must be free of regulated pests. If other pests of potential quarantine concern are found in a consignment, this consignment may be detained. Member countries should recognize that integrated phytosanitary measures including new and existing measures and practices should provide a more effective basis for preventing the entry and establishment of pests associated with the movement of plants for planting. This approach is based on technical justification (see NSPM: Framework for PRA, NSPM: PRA for quarantine pest, including analysis of environmental risk and LMOs and NSPM: PRA of RNQPs). **Annex 1** outlines factors to be taken into account when the NPPO of the importing country conducts a PRA for plants for planting.

The NPPO of the exporting country should develop and set up measures that meet the phytosanitary import requirements. Integrated measures may be developed and set up in two different cases as follows:

- The importing country, in its phytosanitary import requirements, specifies

integrated measures to be used in the exporting country.

- The importing country does not explicitly require integrated measures to be used, but the NPPO of the exporting country deems that using integrated measures would be a suitable and effective means of achieving the importing country's phytosanitary import requirements and, therefore, decides to specify integrated measures to be applied by producers wishing to export plants for planting to that particular importing country.

A producer wishing to participate in using integrated measures, in order to qualify to export plants for planting to particular countries, should seek approval from its NPPO. Subsequently, the NPPO of the exporting country may approve producers conforming to requirements for integrated measures set up by that NPPO.

3.2 Integrated measures

Two main levels of integrated measures:

- General integrated measures
- Additional measures for higher pest risk situations

3.2.1 General measures

Where individual measures alone are not sufficient to mitigate the pest risk, the NPPO of the exporting country may authorize a place of production that complies with general integrated measures that are applicable to all types of plants for planting. This describes a set of integrated measures that may be widely applicable to all plants for planting. The NPPO of the exporting country may approve a place of production that complies with requirements on general integrated measures described hereafter.

3.2.1.1 Conditions for approval

- ❖ Maintaining and updated place of production plan
- ❖ Records (when, where and how) plants produced
- ❖ Access to specialist
- ❖ Designating person with a well-established working knowledge of pest identification and control as a contact person for the NPPO of the exporting country
- ❖ Notifying their NPPO if any relevant pests are observed.

Any failure of products or procedures to adhere to the requirements for authorization (non-compliance) should result in the suspension of authorization of the place of production until corrective actions have been successfully completed.

3.2.1.2 Requirements for place of production

- ❖ inspect plants and facilities according to specific protocols provided by the NPPO of the exporting country
- ❖ record keeping (pests found, corrective actions)
- ❖ establish and document sanitation/ hygiene
- ❖ complying with any phytosanitary measures required by the importing NPPO
- ❖ notification

Table 1 in Appendix 1 provides specific examples of pest management measures related to pest group characteristics that are applicable for most types of plants for planting at places of production.

Table 2 in Appendix 1 provides examples of possible pest management measures that NPPOs may require for different types of plants for planting and different types or groups of pests associated with them. The examples describe frequently used measures for important pest types of the relevant type of plants for planting.

3.2.2 Additional Measures

This describes additional elements designed to manage pest risks in higher pest risk situations.

3.2.2.1 Requirements for the place of production in higher pest risk situations

In higher pest risk situations, where general measures alone are not sufficient, NPPO of the exporting country may approve requirements for additional measures.

3.2.2.2 Place of production manual

The manual should describe all of the requirements, elements and processes that make up the integrated measures for risk management of the plants for planting. The manual should be developed, implemented and maintained by the place of production and approved by the NPPO of Nepal (exporting country). For exports of additional plants or exports to additional countries, the manual should be amended, and the affected sections reviewed and approved by the NPPO of the exporting country. The place of production manual may include the following elements:

3.2.2.3 Pest management program

-Sanitation and hygiene – contributing to preventing the introduction of pests to the place of

production and minimizing spread within a place of production, for example:

- ❖ regular removal of infested plants and plant debris
- ❖ disinfection of tools and equipment
- ❖ removal of weeds and non-crop plant material
- ❖ treatment of water

- ❖ management of surface water
 - ❖ personal hygiene (e.g. hand washing, foot baths, coveralls or aprons)
 - ❖ limited access
 - ❖ routines for use of packaging material and packaging facilities
- Pest control – products, procedures and measures (see Appendix 1) to prevent or treat pests such as:
- ❖ physical barriers (e.g. screens, double doors)
 - ❖ disinfection of growing media and containers used to grow plants
 - ❖ crop protection product applications (e.g. chemical, biological)
 - ❖ disposal of infested plants
 - ❖ mass trapping of both pests of concern and possible vectors
 - ❖ climate control
 - ❖ hot water or heat treatment
 - ❖ any other treatment proven to control the pest of concern
- Handling of incoming plant material – methods and documentation for managing pest risks associated with incoming plant material, with descriptions of:
- ❖ measures to ensure that all plants for planting entering the place of production are free of pests regulated by the importing countries, possible pest vectors and practically free of other pests
 - ❖ procedures to be followed if pests or possible vectors are detected
 - ❖ records to be kept, including the date, the name of the person carrying out the examination, any pests (including possible vectors), damage or symptoms found, and any corrective actions taken
- Examination of plant material and production sites – methods, frequency, and intensity used to examine all plant material in the place of production (e.g. by visual examination, sampling, testing and trapping), including details of any laboratories used to identify pests found and methods used,
- Examination of plants for planting prior to export – methods, frequency and intensity used to examine plants when exports are being prepared,
- Identification and management of infested plants, with descriptions of:
- ❖ how an infested plant will be identified and treated
 - ❖ measures to ensure that plants that do not meet importing countries' phytosanitary import requirements are not exported
- Disposal of removed plant material in a manner that prevents buildup and spread of pests keeping records of the application of crop protection products and other

pest management
measures.

3.2.2.4 Plant protection specialist

Places of production implementing comprehensive integrated measures for pest risk management should employ a specialist with a well-established working knowledge of pest identification and control. The specialist should ensure that sanitation, pest monitoring and pest control measures are implemented as described in the phytosanitary manual and pest management plan and that the NPPO of the exporting country (Nepal) is notified upon detection of relevant pests. This person should also serve as the contact person with diagnosticians who may be needed for pest identification.

3.2.2.5 Training of personnel

A training program must be established, documented and regularly conducted at the place of production. The training program must ensure that all those involved in the export program possess the specific knowledge related to the relevant components of the program and a general understanding of the requirements.

Personnel should be trained to detect pests, especially those regulated by the importing country, and to follow a formal reporting system to communicate information on pest findings. Training should also include methods to handle material to reduce pest risk.

3.2.2.6 Examination of plant material

All plant material produced in a place of production (including plants destined for domestic markets and other production sites) should be examined for the presence of pests on a regular schedule by designated personnel according to established methods and corrective action applied as necessary.

3.2.2.7 Packaging and transport

The following considerations apply to packaging and transport operations:

- ❖ Plant material should be packed in a manner to prevent infestation or reinfestation by regulated pests.
- ❖ Packaging material should meet the requirements of the importing country.
- ❖ Each unit of a consignment should be identified in a way that links it to the consignment and to the phytosanitary certificate or each lot in a consignment should be identified in a way that can be traced back to the place of production.
- ❖ Packaging material and boxes should be clean, unused, disinfested or decontaminated and meet the phytosanitary import requirements.
- ❖ Conveyances at the place of production should be examined and cleaned as necessary prior to loading.

3.2.2.8 Internal audits

Internal audits should be conducted to ensure that the producer is in compliance with its manual. Internal audits should focus on whether the manual and its implementation meet the requirements of the NPPOs of the exporting and importing countries. For example, the internal audit may evaluate the competency of personnel in identifying and controlling pests, carrying out duties and responsibilities, and whether the record-keeping is adequate to keep track of the origin of plant material, labels etc.

Internal audits should be carried out by personnel who are independent of the people directly responsible for the audited activity. The results of the audits and any non-compliance (Appendix 2) should be recorded and presented to the place of production management for review. The personnel responsible for the audited activity should promptly take corrective action regarding any non-compliance discovered during an audit and ensure that corrective actions are implemented effectively and are documented. If a place of production identifies any critical non-compliance, it should immediately notify its NPPO of the exporting country in writing and ensure that non-compliant plants for planting are not exported. Immediate corrective actions should be taken in cooperation with the NPPO of the exporting country.

3.2.2.9 Record keeping

Accurate and up-to-date records should be kept and should be able to be retrieved when required by the NPPO. The records should be maintained as determined by the NPPO of the exporting country. Records should include date, name and signature of the person who carried out the task and/or prepared the document. Examples of records that may be required include:

- ❖ invoices, phytosanitary certificates and other information that substantiate the origin and the phytosanitary status of all incoming plant material
- ❖ results of the inspection of incoming plant material
- ❖ results of internal audits and external audits
- ❖ records of examination during production including any pests, damage or symptoms detected and corrective actions taken
- ❖ records of examination of outgoing plant material, including type and quantity of material exported
- ❖ copies of phytosanitary certificates for plant material exported by the place of production

- ❖ records of pest management measures taken to prevent or control pests (including method of application, product applied, dosage and date of application and results of their application)
- ❖ records of non-compliances identified and the corrective or preventative actions taken
- ❖ records of training of staff and their qualifications

3.3 Non-conformity with requirements for the place of production

- Non-conformity
 - Critical non-conformity
 - Non-critical non –conformity
- Non-conformities detected during internal audits
- Non-conformities detected during NPPO audit

Places of production must meet the requirements of the pest management program agreed to by the importing and exporting NPPOs in order to qualify as an approved place of production. The importing NPPO should specify the consequences of non-compliance to the exporting NPPO. The exporting NPPO should specify the consequences of non-compliance to the participants in the program. Places of production that do not meet the conditions of the program must be suspended. Plants for planting must not be exported from a place of production that has failed to meet the program requirements. So Approval of a place of production may be suspended pending determination of the non-conformity and what corrective actions are necessary to reinstate the eligibility of the place of production. Non-conformity may be due to the presence of a regulated pest or to administrative reasons such as mistakes in documentation. Criteria for reinstatement of the eligibility of the exporting place of production, or country as the case may be, should be elaborated in a bilateral agreement and also included in the exporting country pest management program.

A list of examples of non-conformities can be found in Appendix 2.

4. Exporting NPPO responsibilities

The NPPO of the exporting country should provide sufficient information to the NPPO of the importing country to support the evaluation and acceptance of export programs. This may include:

- ❖ Communicate import country requirements to producers
- ❖ Develop and set up integrated measures

- ❖ Approve places of production
- ❖ Oversee approved places of production
- ❖ Ensure exported plants meet import requirements
- ❖ Carry out export inspections/ issue phytosanitary certificates
- ❖ Provide information on integrated measures upon request
- ❖ Facilitate visits and audits
- ❖ Provide adequate information on relevant pest outbreaks

A phytosanitary certificate or an equivalent official document should be issued by the exporting country when consignments meet the requirements of the NPPO of the importing country. An import permit may also be required.

4.1 Auditing by the Exporting NPPO

The NPPO should arrange for audits of the exporting system. Audits should verify:

- ❖ that the integrated pest management measures continue to meet the requirements of the importing country and/or bilateral arrangements

5. Importing NPPO responsibilities

The importing NPPO is responsible for setting technically justified import requirements and providing specific information and program requirements, including:

- ❖ Set /communicate technically justified import requirements
- ❖ Notify the NPPO of the exporting country of non-compliances
- ❖ Review approval system and measures

The importing NPPO is also responsible for the implementation of any agreed measures in its country.

5.1 Technically justified measures based on:

- Pest Risk Analysis
- Reliable published information
- Rapid pest identification method
- Up-to-date survey and pest lists
- Effective pest mitigation treatments
- Surveillance for new pests

- Good agricultural practice

5.2 Importing NPPO Audits

The importing NPPO should evaluate the integrated pest management measures of the exporting NPPO before acceptance. This could consist of documentation review, site visits, and inspection and testing of plants produced under the system. Following approval, the importing NPPO should monitor and periodically audit the system to ensure that it continues to meet the stated objectives. Audits should include inspection of imported plants for planting, site visits and review of the integrated measures of the exporting NPPO and internal audit processes. This may include:

- ❖ The importing NPPO may request audit reports.
- ❖ The importing NPPO may also audit the integrated measures set up by the exporting NPPO including site visits.
- ❖ Timely notification.
- ❖ This audit may include visits to sites where there is specific justification, for example in cases of non-compliance

Annex 1: Factors affecting pest risk of plants for planting

The factors should be considered by the importing NPPO when conducting a PRA to identify the appropriate combination of measures to meet its phytosanitary requirements. These factors should also be considered by the exporting NPPO when establishing measures to be taken at places of production participating in an integrated measures approach to ensure plants for planting meet the importing country's phytosanitary requirements.

Plants for planting are generally considered as presenting a higher risk of pest introduction than other commodities, especially as:

- the pests can survive, and possibly reproduce, on their living hosts or in the soil during transport of the commodity;
- once at destination, the plants will remain planted or be replanted. The pest may survive on the plant it was introduced on and might transfer to a suitable host if the conditions are suitable, especially if the plants for planting are grown outdoors.

Plant-related factors that affect pest risk

The categories of plants for planting covered include:

- bare root plants (soil free)
- plants rooted in pots
- bulbs, tubers, corms, rhizomes
- rooted cuttings (rooted or not)
- budwood/graftwood
- meristem tissue culture/in vitro culture.

Other factors

Large plants

Risk also increases with size because larger plants have a larger surface area exposed to pests and may also be more difficult to inspect and treat. The size of the plants has an impact on the ability of the pests to infest the plant, feed on it and hide on it and on the difficulties to inspect the plants. Large plants are also more likely to have larger quantities of soil or growing medium attached to roots

Age of plants/exposure time

In addition, risk increases with age, as older plants have had longer exposure to potential pests. Older plants are exposed to pests for longer than young plants in the country of origin and are also more likely to be infested (at higher levels) by pests. Young plants produced in glasshouses might present a lesser risk.

Production-related factors that affect pest risk

How plants for planting are produced can influence the level of pest risk. Some factors include:

- (1) growing media
- (2) irrigation method and water source
- (3) growing conditions
- (4) mixing of different plant species.

The presence of growing medium, especially soil, may lead to the transport of many types of pests, including nematodes, fungi, insects and invasive plants. In general, use of soil as a growing medium is likely to pose a greater risk than a soil-free medium because soil may carry soil-borne pathogens, insects or nematodes. Sterilization or pasteurization of the growing medium prior to planting may manage some risk.

The source and quality of irrigation water can affect pest risk. For certain pests spread by water, surface water may pose a greater pest risk than treated water. Likewise the method of irrigation may produce microclimates or conditions favourable for pest growth and spread.

Factors affecting pest risk

S.N.	Growing conditions	Remarks
1	Growth chamber/Phytotron	Ranked from lowest to highest pest risk(1→6)
2	Greenhouse	
3	Screen house	
4	Field grown in containers (Pots, tubs etc.)	
5	Field grown	
6	Plants collected from the wild	

Intended use factors

- Perennial/annual

A perennial or biennial plant will allow survival of the pest for a longer period, and improve chances for further multiplication and spread.

- indoor/outdoor

An annual plant which is not intended for propagation and will be grown indoors gives a smaller chance to a pest to establish.

Intended uses that affect risk

S.N.	Plants for planting	Remarks
1	Plants not intended for continuous growing (Annuals)	Ranked from lowest to highest risk (1→3)
2	Plants for continuous growing (Perennials)	
3	Plants for propagation.	

Appendix 1: Examples of pest management measures to reduce the pest risk of plants for planting at a place of production

Table 1. Categorized by pest group

S.N.	Pest group	Available measures
1	Pests causing latent infections and those that are likely to be transmitted by plants for planting without signs or symptoms	<ul style="list-style-type: none"> -Derivation from mother plants that have been tested and found free from the relevant pest -Isolation from sources of infestation (e.g. buffer zone or geographical distance from other host plants, physical isolation using a glasshouse or polytunnel, isolation in time (e.g. growing season) from a source of infestation (temporal isolation)) -Testing of samples of the plants for freedom from pests -Production within a specified certification scheme or clean stock programme that controls the relevant pests -Use of indicator plants -Production of tissue cultures (including meristem tip cultures) which may eliminate pathogens.
2	Pests having stages and symptoms that are visible during the growing season	<ul style="list-style-type: none"> -Growing season inspection for freedom from pests or symptoms (e.g. at timed intervals, for example monthly for the three months before export or at different growth stages) -Growing season inspection of the mother plants -Inspection after harvest to meet a specified tolerance level for a pest (e.g. tolerance for bulb rots by fungi/bacteria) -Pesticide applications -Ensuring appropriate conditions for symptom expression -Production within a specified certification scheme or clean stock programme that controls the relevant pests.
3	Pests spread by contact	<ul style="list-style-type: none"> -Prevention of contact with sources of infestation (e.g. other plants) -Hygiene measures for handling pruning tools

		<p>and equipment between different batches/lots</p> <ul style="list-style-type: none"> -Planning of activities in the place of production to work with plants of higher health first -Use of dedicated clothing and equipment in isolated places (e.g. screen houses) -Pesticide applications -Isolation from sources of infestation (e.g. buffer zone or geographical distance from other host plants, physical isolation using a glasshouse or polytunnel, temporal isolation).
4	Pests transmitted by vectors	<ul style="list-style-type: none"> -Isolation from sources of infestation (e.g. buffer zone or geographical distance from other host plants, physical isolation using a glasshouse or polytunnel, temporal isolation) -Pre-planting soil testing for freedom from or to meet a tolerance for soil-borne pests or their vectors -Pesticide treatments for control of insect vectors of pests (e.g.aphids)
5	Pests spread by wind	<ul style="list-style-type: none"> -Isolation from sources of infestation (e.g. buffer zone or geographical distance from other host plants, physical isolation using a glasshouse or polytunnel) -Pesticide applications
6	Pests spread by water	<ul style="list-style-type: none"> -Use of uncontaminated water sources, free of pests -Irrigation water to be disinfected or sterilized before use or reuse -Isolation from sources of infestation (e.g. buffer zone or geographical distance from other host plants, physical isolation using a glasshouse or polytunnel, temporal isolation).
7	Soil-borne pests able to colonize the plant	<ul style="list-style-type: none"> -Isolation from sources of infestation (e.g. buffer zone or geographical distance from other host plants, physical isolation using a glasshouse or polytunnel, growth of plants on raised benches, temporal isolation) -Derivation from mother plants that have been tested and found free from the relevant pest -Production within a specified certification

		<p>scheme or clean stock programme</p> <ul style="list-style-type: none"> -Testing of samples of the plants for freedom from pests -Pre-planting soil treatment or testing for freedom from pests such as fungi, nematodes, viruses transmissible by nematodes -Use of soil-less growing media.
8	Soil-borne pests in growing medium attached to plants	<ul style="list-style-type: none"> -Growing medium to be sterilized before use -Use of inert growing media -Use of soil-less growing media -Isolation from sources of infestation, maintenance of plants in such a way that contact with soil is prevented (e.g. on raised benches) -Pesticide treatment (e.g. drench or fumigation) prior to export -Roots washed free from growing medium (and repotted in sterile growing medium in a sterile container).
9	Soil-borne pests in soil attached to plants	<ul style="list-style-type: none"> -Isolation from sources of infestation (e.g. buffer zone or geographical distance from other host plants, temporal isolation) -Pre-planting soil treatment or testing for freedom from pests (especially nematodes, fungi) -Pesticide treatment (e.g. drench or fumigation) prior to export -Roots washed free from soil (and repotted in sterile growing medium in a sterile container).

Table 2. Based on the type of plant materials

S. N.	Type of plant broadly ranked according to pests risk	Examples of pest types	Available measures
1	Meristem culture and <i>in vitro</i> culture	Viruses and virus-like diseases, bacteria, fungi, stem nematodes,	-Derivation from mother plants that have been tested and found

		mites and insects	free from the relevant pest -Cultivation in sterile medium under sealed aseptic conditions -Testing of samples of the plants for freedom from pests.
2	Budwood/graftwood	Bacteria and viruses, fungi, insects and other pests	See groups 1 to 7 in Table 1
3	Unrooted cuttings	Insects, viruses, bacteria, fungi and other pests	See groups 1 to 7 in Table 1 -Hot water treatment.
4	Rooted cuttings	Nematodes, insects, viruses and bacteria and other pests	Measures depend <i>inter alia</i> on the pest risk of the growing medium used. See groups 1 to 7 in Table 1
5	Bulbs and tubers, root fragments, root cuttings, rootlets or rhizomes	Nematodes, viruses, bacteria, fungi, insects and other pests	See groups 1 to 7 Table 1 Hot water dipping to control nematodes
6	Bare root plants	Nematodes and all other pests of the aerial plant part	See groups 1 to 7 in Table 1
7	Plants in growing media excluding soil	Nematodes and all other pests of the aerial plant part	See groups 1 to 8 in Table 1
8	Plants in soil	Nematodes and all other pests of the aerial plant part	See groups 1 to 9 in Table 1

Appendix 2: Examples of non-conformity

Examples of non-conformity may include the following:

- (1) detection of quarantine pests or regulated non-quarantine pests (above set tolerance levels) of concern to the importing country on plants in or from the place of production
- (2) failure to undertake required laboratory tests or analyses or correctly follow procedures to identify pests
- (3) failure to carry out control measures at the place of production for regulated pests
- (4) failure to notify the NPPO of the exporting country of the presence of regulated pests at the place of production
- (5) export of ineligible plant taxa, plants from non-authorized origins, or plants not meeting phytosanitary import requirements
- (6) failure to correctly list the botanical names of all the plants on documents accompanying consignments
- (7) failure to keep consistent pest management records as required in the place of production manual and pest management programme
- (8) failure to keep consistent records of country of origin of plant material
- (9) failure to undertake ordered corrective actions within the specified time period
- (10) failure to perform internal audits as required
- (11) operating without adequately trained personnel, designated responsible person or plant protection specialist
- (12) significant modification of the place of production manual or pest management practices without prior approval from the NPPO of the exporting country
- (13) failure to examine incoming or outgoing plant material
- (14) failure to keep plants for planting that have been examined for export separate from other plant material that has not been examined
- (15) failure to maintain an effective pest management programme

- (16) failure to maintain sanitation management practices at the place of production
- (17) failure to periodically provide personnel with relevant training
- (18) failure to maintain an up-to-date list and training records of all personnel involved in implementing the place of production manual
- (19) failure to consistently sign and date reports or records
- (20) failure to record relevant changes to the lists of plant taxa produced, their location in the place of production and the plant material to be exported
- (21) failure to detect and record low-level populations of pests
- (22) failure to inform the NPPO of the exporting country of any changes to management practices outlined in the place of production manual.