

Integrated Pest Risk Management Measures (IPRMM) Framework

The basic framework for IPRMMs is outlined in 7 CFR 319.37-21. The regulation lays out the reasons to use IPRMMs and the responsibilities of parties involved in their implementation. The measures included in 7 CFR 319 37-21 are based on the NAPPO Regional Standard for Phytosanitary Measures (RSPM) No. 24 (NAPPO, 2013), and are consistent with the IPPC's International Standard for Phytosanitary Measures (ISPM) No. 36 (IPPC, 2016g).

Responsibilities of the Participants

Responsibilities of both APHIS and the NPPO of the exporting country

- APHIS and the NPPO of the exporting country together establish program requirements, including operational workplans and compliance agreements;
- APHIS and the NPPO of the exporting country jointly develop criteria for approving, suspending, removing, and reinstating approval for a particular program.

Responsibilities of APHIS

- APHIS reserves the right to set the appropriate level of protection and to control final approval or disapproval of risk management measures;
- APHIS will evaluate (e.g., documentation review, site visits, inspection and testing of plants) the IPRMM provided by the NPPO of the exporting country before approving the import program; and
- Following approval, APHIS or its designee will monitor and periodically audit the system.

Responsibilities of the NPPO of the exporting country

- Must provide sufficient information to APHIS to support the evaluation and acceptance of export programs (see 7 CFR 319.5 *Requirements for submitting requests to change the regulations in 7 CFR 319*);
- Establish and maintain compliance agreements with places of production;
- Provide oversight and enforcement of program provisions;
- Maintain appropriate records;
- Issue phytosanitary export certifications (e.g., a phytosanitary certificate);
- Make arrangements for monitoring and audits. Audits should verify that:
 - The places of production in the program are free of quarantine pests;
 - Program participants are complying with the specified standards; and
 - The integrated pest risk management measures continue to meet APHIS requirements.

Responsibilities of the place of production

Identify, develop, and implement procedures that meet the requirements of both the NPPO of the exporting country and APHIS including:

- Conduct internal audits and notify the NPPO of the exporting country of any deficiencies detected during those audits;
- Develop and implement an approved pest management program that contains ongoing pest monitoring and procedures for the exclusion and control of plant pests;
- Establish a training program approved by the NPPO of the exporting country and APHIS;
- Implement a tracking and tracing procedure, approved by APHIS and the NPPO of the exporting country, from propagation through harvest and sale. Depending on the specific commodity/origin requirements, the traceability requirements include:

- The origin and pest status of mother stock;
- The year of propagation and the place of production of all plant parts intended for export;
- Geographic location of the place of production;
- Location of plants for planting within the place of production;
- The plant taxon; and
- The purchaser's identity.
- Develop a manual approved by the NPPO of the exporting country and APHIS that guides the place of production's operation and that includes the following components:
 - Administrative procedures (including roles and responsibilities and training procedures);
 - Pest management plan;
 - Internal audit procedures;
 - Management of noncompliant product or procedures;
 - Traceability procedures; and
 - Recordkeeping systems.
- Maintain written and/or electronic records on its premises as specified by APHIS and the NPPO of the exporting country.

Responsibilities of plant brokers trading in plants for planting produced in accordance with IPRMM

A plant broker is defined as “An entity that purchases or takes possession of plants for planting from an approved place of production for the purpose of exporting those plants without further growing beyond maintaining the plants until export”. Responsibilities include:

- Ensure the traceability of export consignments to an approved place of production or production site;
- Maintain the phytosanitary status of the plants equivalent to an approved place of production from purchase, storage, and transportation to the export destination; and
- Provide documentation for these activities.

Designing IPRMMs

The design of the IPRMM model comprises a series of steps that may occur in sequence or in parallel:

- Identify hazards and risks. Simply put, a hazard is what could go wrong. In the case of an IPRMM for plants for planting, the hazard is a plant pest, usually a quarantine plant pest. The difference between a hazard and a risk is that risk includes not only what can go wrong (pest) but how likely is it, and what the consequences are. Hazards can be identified by developing a pest list, and risks can be identified by a pest risk analysis (PRA).
- Identify critical control points. Identify steps in the pathway that provide opportunities to introduce pests.
- Identify potential mitigation measures. Determine whether there are mitigation measures to reduce the risk of pest introduction into the production process and where in the process they can be applied. Efficacy for measures associated with critical control points should be documented. They may be derived from regulatory standards, guidelines, scientific literature, experimental studies or consultation with industry.
- Establish a system for monitoring and audit procedures. Verification procedures are established to track the system's operation, indicate when noncompliance has occurred and when corrective action must be taken. Clear guidance on how to deal with positive finds as well as other noncompliances that may be detected in monitoring/ audits must be established.
- Establish record-keeping and documentation requirements.

These steps are outlined in **Figure 1 below**.

Factors That Affect Plant Pest Risk

Annex 1 of ISPM 36 (IPPC, 2016g) provides a summary of various factors that contribute to the relative risk of plants for planting including factors related to the type of plant material, factors related to how the plants are produced, factors related to growing conditions and factors related to intended use of the plants. These are factors to consider in developing IPRMMs.

Plant-related factors that affect risk

The initial plant-related risk factor considered is the commodity/origin combination— what is the plant taxon and where is it being produced and exported. A range of relative risk is associated with the type of plant material imported (loosely arranged from lowest to highest risk):

- Meristem tissue cultures;
- *In vitro* cultures;
- Budwood;
- Unrooted cuttings;
- Rooted cuttings;
- Root fragments, root cuttings, rootlets or rhizomes;
- Bulbs and tubers;
- Bare root plants;
- Rooted plants in pots.

Pest risk may increase with plant age, as older plants have had longer exposure to potential pests.

Production-related factors that affect risk

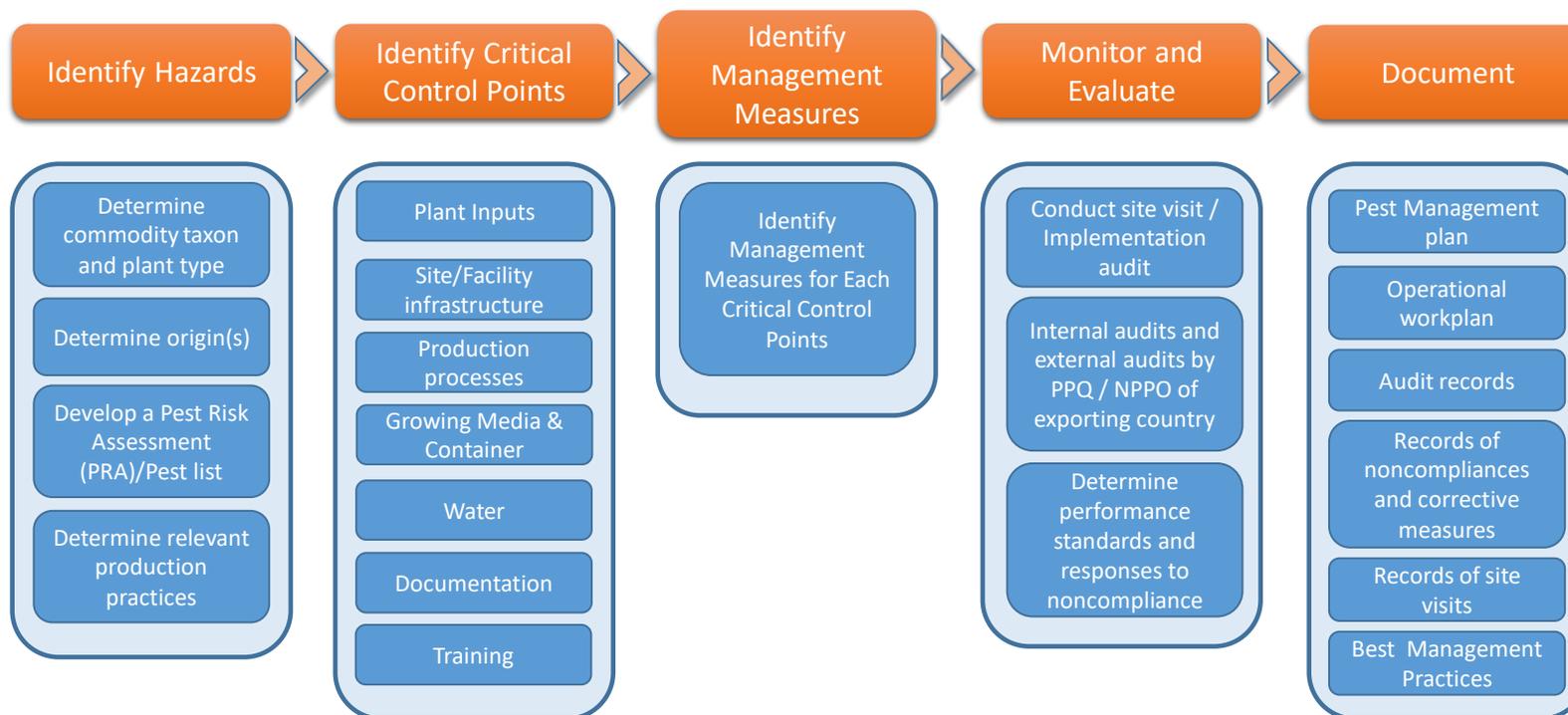
How plants for planting are produced may influence the level of pest risk. Factors to consider including:

- Growing media
 - Type- soil as a growing medium is likely to pose a greater pest risk than a soil-free medium;
 - Sterilization, pasteurization or other effective methods for treating the growing medium;
 - Whether the growing media is new or reused;
 - The origin of the growing media; and
 - Degree of processing and any treatments applied.
- Irrigation method and water source
- Growing conditions
 - Growth chamber grown;
 - Greenhouse grown;
 - Screenhouse grown;
 - Field grown in containers (pots, tubs etc.);
 - Field grown; and,
 - Plants collected from the wild;
- Mixing of different plant species.

Intended uses that affect pest risk

Different intended uses that affect the pest risk may include whether plants are grown as annuals or perennials, whether they are grown indoors or outdoors, and whether they are grown in urban areas, field or nursery etc.

Figure 1. Design Flow for Developing an IPRMM



Pest Risk Management Measures

These include measures:

- To ensure the area or place of production is free from pests;
- Applied to prevent or reduce original infestation in the exported plant material;
- Applied to the consignment;
- Applied in the PRA area (e.g., restricted distribution, intended use of the plant material).

Inspection

The IPPC defines inspection as, “Official visual examination of plants, plant products or other regulated articles to determine if pests are present and/or to determine compliance with phytosanitary regulations” (IPPC, 2016f). Inspection can occur at various points in a commodity pathway such as at the port-of-entry into the importing country and in the exporting country. As a risk management option, inspection may be used at various stages before, during, and after the harvest of plants. Inspection as a risk management measure is most appropriate in situations where the target pest(s) are easily detected, produce characteristic signs or symptoms, and present a low risk of introduction. Conversely, inspection may not be suitable when pests are difficult to detect, or are likely to survive in the commodity and mobile enough to leave and find suitable hosts and mate. Guidance on the requirements and factors considered in implementing phytosanitary inspections are given in ISPM 23 (IPPC, 2016b). A critical factor to consider when implementing an inspection protocol is sampling. The rate of sampling can be determined by operational factors (i.e., number of inspectors, time constraints, size of lots or consignments, etc.), or it may be determined statistically (i.e., biometric sampling, fixed percentage sampling). Guidance on sampling of consignments for inspection is given in ISPM 31 (IPPC, 2016d).

Certification

Various measures may be considered ‘certification’ procedures when developing IPRMM protocols. These may include export certifications like phytosanitary certificates and additional declarations, oversight by the NPPO of the importing country, registered or approved production facilities, compliance agreements or operational work plans.

Treatments

Types of treatments include chemical (e.g., fumigants, aerosols, mists, fogs, dusts, dips, granules and sprays), thermal (e.g., hot water dip), controlled atmospheres, and physical methods such as roguing and grading. Treatments may be applied for desired effects including killing, inactivating or removing pests and may be applied in the country of origin or upon import at the point of entry or destination. Guidance on phytosanitary treatments is given in ISPM 28 (IPPC, 2016c).

Surveillance and monitoring

Surveillance and monitoring, for example by trapping insects, may be required during production to detect pest populations, or to determine if specified pest populations levels trigger additional control measures. Surveillance and monitoring are also important components of pest risk management for measures such as pest freedom or areas of low pest prevalence.

Sanitation and hygiene

Some examples of sanitation and hygiene measures includes:

- Pest exclusionary structures/containment facilities;

- 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 to production facilities; and
- Safeguarding of packaging material and packaging facilities.

Pest-free concepts

Pest-free concepts employ a combination of factors including pest risk management measures, cultural practices, climate, pest biology, physical geography, etc. to exclude pests. Pest free concepts include both spatial and temporal pest exclusion. Some examples of the variety of pest-free concepts include:

- Pest-free areas (PFA);
- Pest-free places of production or pest-free production sites;
- Pest-free growing periods; and
- Harvest and shipping windows.

Guidance on the establishment and maintenance of various pest-free concepts can be found in ISPM 10 (IPPC, 2016e).

Postentry measures

Some examples of postentry measures include:

- Postentry quarantine;
- Limits on the end use of the commodity; and
- Limited distribution.

Choosing Risk Management Measures

The obvious consideration in choosing what risk management measures to incorporate into an IPRMM is the efficacy of any measure. In addition, certain plants for planting programs codify specific risk management measures in their relevant regulations. Areas to be considered can be informed by the following questions:

- Is/are the chosen measures feasible? Factors include the availability of technology, cost, practicality and tolerance of the commodity (e.g., the effect of treatments on “shelf life” of commodities or toxicity).
- What are the impacts of the potential measures? For example, efficacy against other quarantine pests, impact on existing regulations, commercial impact, social impact, and environmental impact.
- Are the proposed measures commensurate with the pest risk?

Appendix 1 provides suggestions for pest risk management measures grouped by pest type (**Table 1**) and by the type of plant material (**Table 2**).

Other considerations in choosing measures

ISPM 1 (IPPC, 2016a) describes several principles regarding the selection of risk management measures. One is ensuring the rational relationship of measures selected for pest risk management which means that the selected measure actually has an effect on mitigating pest risk, and the strength of measures is proportional to the pest risk posed by the proposed importation. Another basic principle contained in ISPM 1 is equivalence of phytosanitary measures. Multiple measures may exist that are equally effective at managing a given pest risk. Finally, selected measures must be considered in terms of consistency and the principle of non-discrimination. Pest risk management measures should be consistent among countries with the same phytosanitary status and comparable domestic phytosanitary requirements.

IPRMM Checklist

To assist in designing an IPRMM, APHIS has developed a checklist to guide applicants through documentation of a proposed IPRMM. The checklist is provided in **Appendix 2**.

Appendix 1: Examples of measures categorized by pest and plant type

Table 1. Examples of measures to reduce the pest risk categorized by pest group.
Reproduced from ISPM 36 (IPPC, 2016g).

Pest group	Potential measures
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 greenhouse or poly tunnel, isolation in time (e.g. growing season) from a source of infestation, i.e., temporal isolation) - Testing plants for freedom from pests - Production within a specified certification scheme or clean stock program that controls relevant pests - Use of indicator plants - Production of tissue cultures (including meristem tip cultures) which may eliminate pathogens
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 program that controls the relevant pests.
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 and equipment between different batches/lots - 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., screenhouses) - Pesticide applications - Isolation from sources of infestation (e.g., buffer zone or geographical distance from other host plants, physical isolation using a greenhouse or polytunnel, temporal isolation)
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 greenhouse, screenhouse 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).
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.

**Table 1 (continued). Examples of measures to reduce the pest risk categorized by pest group.
Reproduced from ISPM 36 (IPPC, 2016g)**

Pest group	Potential measures
Pests spread by water	<ul style="list-style-type: none"> - Use of uncontaminated water sources, free of pests (e.g. well water) - 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 greenhouse or polytunnel, temporal isolation).
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 scheme or clean stock program - 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.
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).
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. Examples of measures to reduce the pest risk of plants for planting based on the type of plant material imported.

Reproduced from ISPM 36 (IPPC, 2016g).

Meristem culture and <i>in vitro</i> culture	Viruses and virus-like diseases, bacteria, fungi, stem nematodes, mites and insects	<ul style="list-style-type: none"> - Derivation from mother plants that have been tested and found free from the relevant pest - Cultivation in sterile medium under sealed aseptic conditions - Testing of samples of the plants for freedom from pests
Budwood/graftwood	Bacteria and viruses, fungi, insects and other pests	<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 greenhouse, screenhouse or polytunnel, isolation in time (e.g. growing season) from a source of infestation, i.e., temporal isolation) - Testing plants for freedom from pests - Production within a specified certification scheme or clean stock program that controls relevant pests - Use of indicator plants - 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) - Ensuring appropriate conditions for symptom expression - Prevention of contact with sources of infestation (e.g., other plants) - Hygiene measures for handling pruning tools and equipment between different batches/lots - 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., screenhouses) - Production of tissue cultures (including meristem tip cultures) which may eliminate pathogens - Pesticide treatments for control of pests and arthropod vectors of pests (e.g., aphids) - Use of uncontaminated water sources, free of pests - Irrigation water to be disinfected or sterilized before use or reuse - Pre-planting soil treatment or testing for freedom from pests such as fungi, nematodes, viruses and nematodes or to meet a tolerance for soil-borne pests or their vectors - Use of soil-less growing media
Unrooted cuttings	Insects, viruses, bacteria, fungi and other pests	<ul style="list-style-type: none"> - Measures listed above for Budwood/graftwood - Hot water treatment

**Table 2 (continued). Examples of measures to reduce the pest risk of plants for planting based on the type of plant material imported.
Reproduced from ISPM 36 (IPPC, 2016g).**

Rooted cuttings	Nematodes, insects, viruses and bacteria and other pests	Measures depend, among other factors, on the pest risk of the growing medium used. - Measures listed above for Budwood/graftwood
Bulbs and tubers, root fragments, root cuttings, rootlets or rhizomes	Nematodes, viruses, bacteria, fungi, insects and other pests	- Measures listed above for Budwood/graftwood - Hot water dipping to control nematodes
Bare root plants	Nematodes and all other pests of the aerial plant part	- Measures listed above for Budwood/graftwood
Plants in growing media excluding soil	Nematodes and all other pests of the aerial plant part	- Measures listed above for Budwood/graftwood - 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).
Plants in soil	Nematodes and all other pests of the aerial plant part	- Measures listed above for Budwood/graftwood - Measures listed above for Plants in growing media excluding soil - Pre-planting soil treatment or testing for freedom from pests such as fungi, nematodes, viruses and nematodes or to meet a tolerance for soil-borne pests or their vectors

Appendix 2: IPRMM Checklist

To assist in designing an IPRMM, APHIS has developed a checklist to guide applicants through documentation of a proposed IPRMM. The checklist is provided below. The mitigation measures listed are examples and are not meant to be all inclusive or all mandatory

INITIATING EVENT			
Initiating Event	Requestor:	Date of request:	Salesforce Project No.:
	Market access request? Choose yes or no.	NAPPRA removal? Choose yes or no.	
	Other? Choose yes or no. Describe:		
	Risk Manager:	Reg. Policy Spec.:	
Commodity	Scientific name:	Country(ies) of origin?	
	Type of plant material: <input type="checkbox"/> Meristem tissue cultures <input type="checkbox"/> <i>In vitro</i> cultures <input type="checkbox"/> Budwood <input type="checkbox"/> Unrooted cuttings; <input type="checkbox"/> Rooted cuttings	<input type="checkbox"/> Root fragments, root cuttings rootlets or rhizomes <input type="checkbox"/> Bulbs and tubers <input type="checkbox"/> Bare root plants <input type="checkbox"/> Rooted plants in growing media	
Previous Documentation	Does a PRA exist? If Yes, what pests of concern were identified:	Does a pest list exist? If Yes, what pests of concern were identified:	
	Are there any pests of this commodity that can only be managed through certification and testing beyond visual inspection (e.g., viruses, viroids, phytoplasmas)?		
Cooperators	Not all projects will have/require all participants.		
	PERAL Analyst(s): PIM Trade Director: U.S. Industry:	POP Staff: Exporting country(ies) NPPO: Exporting country(ies) Industry:	

RISK MANAGEMENT

Applicable Existing Systems Approaches	<p>Does an applicable systems approach already exist?</p> <p><input type="checkbox"/> Plants in growing media (319.37-10)</p> <p><input type="checkbox"/> <i>Pelargonium</i> spp. from a Country or Area Where <i>Ralstonia solanacearum</i> R3B2 Is Known to Occur (Plants for Planting Manual)</p> <p><input type="checkbox"/> Other</p> <p>If an appropriate systems approach exists, use it as the basis for the IPRMM. If no appropriate systems approach exists continue with designing a new IPRMM.</p>
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Plant Inputs

Control Point/ Production Component	Hazard	Mitigation
Seed	<p>Example:</p> <p>Introduction of regulated pests on starting plant material</p>	<p>Examples:</p> <ul style="list-style-type: none"> • Use certified/tested source material from • Quarantine/isolate incoming source plants until tested/inspected • Grow out and inspect prior acceptance into inventory • Request pest free/testing documentation from supplier • Keep loading docks clean and free of plant debris • Propagate on site from healthy stock plants
Mother Stock		
Cuttings		
Bare root plants		
Tissue culture		

Production Inputs		
Control Point/ Production Component	Hazard	Mitigation
Media	<p>Examples:</p> <ul style="list-style-type: none"> • Used/contaminated growing media • Unapproved media/native soils • Infested field soil (for field-grown plants) 	<p>Examples:</p> <ul style="list-style-type: none"> • Use new or treated growing media • Avoid contact between growing media, separate growing media with native soils • Store media in clean area and avoid standing water in storage area • Use of soil-less growing media • Test fields for soilborne pests of concern; treat soil as necessary • Grow in field that was previously cropped with non-hosts
Water	<ul style="list-style-type: none"> • Contaminated irrigation water • Contaminated recycled or recaptured water 	<ul style="list-style-type: none"> • Source water from sealed deep well • Use municipal water source • Treat water (e.g., UV, chlorination, ozonation)
Tools/Equipment	<ul style="list-style-type: none"> • Contaminated tools 	<ul style="list-style-type: none"> • Regularly disinfect tools/equipment or use disposable tools (e.g., razor blades)
Containers	<ul style="list-style-type: none"> • Used/contaminated containers 	<ul style="list-style-type: none"> • Use new, unused containers • Sterilize containers between use

Production processes		
Control Point/ Production Component	Hazard	Mitigation
Propagation	<p>Examples:</p> <ul style="list-style-type: none"> • Introduction of regulated pests from infected mother stock • Introduction of contaminated tools/equipment 	<p>Examples:</p> <ul style="list-style-type: none"> • Ensure pest free status of mother plants through inspection and testing • Follow strict sanitation protocols in propagation/transplant facilities
Planting	<ul style="list-style-type: none"> • Introduction of contaminated tools/equipment 	<ul style="list-style-type: none"> • Regularly disinfect tools/equipment between fields/benches • Cultivation in sterile medium under sealed aseptic conditions • Schedule planting time to avoid pest populations
Pest management	<ul style="list-style-type: none"> • Failure to properly manage for pests during production of plants results in infection/infestation 	<ul style="list-style-type: none"> • Grow solely in a pest exclusionary structure • Isolate fields from potential sources of pests • Use field cages to exclude arthropod vectors • Develop a documented pest management plan • Regular scouting/inspection/ sampling and testing of plants during production cycle • Survey/ monitoring/trapping for arthropods • Pesticide treatments as necessary • Use cultural controls • Use resistant or less susceptible varieties • Train workers to identify/manage pests • Production in pest free area, pest free production sites

Production processes (continued)

Irrigation	<ul style="list-style-type: none"> • Improper/faulty irrigation equipment allows contamination with regulated pests • Improper irrigation creates favorable environment for disease development 	<ul style="list-style-type: none"> • Use drip irrigation to reduce splashing • Avoid emitters, hose ends contacting soil/floors • Avoid overhead irrigation • Avoid creating standing water pools • Periodic disinfection of irrigation systems
Harvest	<ul style="list-style-type: none"> • Plants are infested/reinfested during harvest 	<ul style="list-style-type: none"> • Disinfect harvest tools periodically • Disinfect harvest equipment between fields • Safeguard harvested plant material
Sanitation: <ul style="list-style-type: none"> • Facility • Equipment 	<ul style="list-style-type: none"> • Lack of proper sanitation results in pests introduced into the production system 	<ul style="list-style-type: none"> • Greenhouse floors and wall disinfected between crops • Fallow/crop-free periods • Soil fumigation • Tools and equipment properly disinfected • Use of dedicated clothing/footwear and equipment for each greenhouse/field/production site • Workers trained in sanitation/hygiene methods • Removal and proper disposal of any plant debris • Weed control
Hygiene	<ul style="list-style-type: none"> • Workers contaminate production site/plants via failure to practice proper hygiene 	<ul style="list-style-type: none"> • Workers trained in proper hygiene practices • Use of footbaths and wash stations • Prohibit food/eating in production areas
Packing	<ul style="list-style-type: none"> • Plants contaminated/infected/infested during packing 	<ul style="list-style-type: none"> • Plants safeguarded during packing • Packing area maintained free of weeds, pests • Plants inspected prior to export

Place of production design/infrastructure		
Control Point/ Production Component	Hazard	Mitigation
Open Field	<p>Examples:</p> <ul style="list-style-type: none"> Field design fails to prevent pest incursions and infection/infestation 	<p>Examples:</p> <ul style="list-style-type: none"> Field isolated from potential pest hosts/surrounded by buffer to prevent pest entry Non-host cropping history Restricted entry into production fields
Screenhouse/ Greenhouse	<ul style="list-style-type: none"> Greenhouse/screenhouse design fails to prevent pest incursions and infection/infestation 	<ul style="list-style-type: none"> Covering with solid materials (glass, plastic) or screening with mesh size small enough to exclude arthropod pests/vectors Entry restricted to authorized personnel Automatic closing doors All entryways and other openings screened Use of flooring that can be easily cleaned/disinfected and covers native soil Use raised benches to prevent splashing /contact with floors/soil Production sites equipped with wash stations/footbaths
Other Containment	<ul style="list-style-type: none"> Field/greenhouse growing systems insufficient to mitigate pest threat 	<ul style="list-style-type: none"> Plants produced in containment: e.g., growth chamber, cages, etc.

Administration & Oversight

Agreements	<ul style="list-style-type: none"> • Written agreement between APHIS and NPPO of country origin agreeing to provisions of IPRMM exists? • Written agreement abide by IPRMM exists between NPPO of exporting country and producer? 		
Registered production sites	Participating producers are approved/registered with NPPO of exporting country?		
Site visit	APHIS reserves the right to conduct site visits prior to approval of an IPRMM or if repeated interceptions or other major noncompliances are detected.		
Audits	<ul style="list-style-type: none"> • A documented process for approval audits and periodic production cycle audits by APHIS, the NPPO of the exporting country or their designee exists? • A documented process for periodic production cycle internal audits by the place of production exists? 		
Tracking / tracing	<ul style="list-style-type: none"> • A system for tracking/tracing each consignment from the place of production to the retailer exists? • Every package in a consignment is labeled with tracking information? 		
Certification	<ul style="list-style-type: none"> • An export inspection is conducted by the NPPO of the exporting country no more than 30 days prior to export? • Every consignment is accompanied by a phytosanitary certificate and any required additional declarations issued by the NPPO of the exporting country? 		
Record keeping	<p>The place of production is required to maintain the following records for three years and make them available for inspection by APHIS and/or the NPPO of the exporting country:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"> <input type="checkbox"/> Source/origin of incoming plant material <input type="checkbox"/> Scouting/inspection records <input type="checkbox"/> Pest management plan <input type="checkbox"/> Pest management records </td> <td style="width: 50%; padding: 5px;"> <input type="checkbox"/> Sampling/testing records <input type="checkbox"/> Audit records <input type="checkbox"/> Export records </td> </tr> </table>	<input type="checkbox"/> Source/origin of incoming plant material <input type="checkbox"/> Scouting/inspection records <input type="checkbox"/> Pest management plan <input type="checkbox"/> Pest management records	<input type="checkbox"/> Sampling/testing records <input type="checkbox"/> Audit records <input type="checkbox"/> Export records
<input type="checkbox"/> Source/origin of incoming plant material <input type="checkbox"/> Scouting/inspection records <input type="checkbox"/> Pest management plan <input type="checkbox"/> Pest management records	<input type="checkbox"/> Sampling/testing records <input type="checkbox"/> Audit records <input type="checkbox"/> Export records		

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