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Comments on Draft ISPM- International movement of seeds

Submitted on behalf of the Canadian Seed Trade Association (CSTA)

Document : ***2009-003: Draft ISPM - International movement of seeds***

Block	Type	Language	Content
7	Editorial	English	This standard provides guidance to assist national plant protection organizations (NPPOs) to identify, assess and manage the pest risk associated with the international movement of seeds.
9	Technical	English	This standard applies to seed in the botanical sense. In addition to seeds for planting, t~~T~~he standard covers seeds for laboratory testing or destructive analysis, and seeds for planting under restrictive conditions. This standard does not apply to grain.
17	Technical	English	**ISPM 13.** 2001. *Guidelines for the notification of non-compliance and emergency action.* Rome, IPPC, FAO. ISPM 14. 2001. The use of integrated measures in a systems approach for pest risk management. Rome, IPPC, FAO.
20	Technical	English	**ISPM 23.** 2005. *Guidelines for inspection.* Rome, IPPC, FAO. ISPM 24. 2011. Guidelines for the determination and recognition of equivalence of phytosanitary measures. Rome, IPPC, FAO.
30	Technical	English	Under the IPPC definition, "seeds" is a commodity class used for planting, not for consumption or processing for food, feed, biofuel and other uses. Like plants for planting, seeds may present a serious risk of introducing quarantine pests as seed-transmitted pests ~~will~~ may be introduced to an environment for further growth where it may have a high likelihood of establishing and spreading (see ISPM 32:2009).
31	Technical	English	As well as movement for commercial trade, seeds are also regularly moved internationally for research purposes. When

			assessing the pest risk and determining appropriate phytosanitary measures, NPPOs should therefore consider whether the material is maintained ~~treated~~ in quarantine conditions or ~~and~~ whether it is intended ~~not~~ for release for planting in the importing country.
32	Editorial	English	A pest risk analysis (PRA) should determine if the seed is a pathway for the introduction and spread of regulated pests and may lead to establishment of regulated pests in the PRA area. The PRA should consider the relationship between the intended use of the seeds (e.g. planting, research, testing) and the potential for pests to become established.
34	Technical	English	NPPOs may establish specific requirements for the importation of small seed lots either through the use of special import permits or other explicit documentation.
36	Technical	English	Many seeds (including treated, pelleted and coated seeds) are moved internationally to be planted, primarily for food and ornamental plant production but also for a number of other purposes (e.g. production of biofuels and fibre, forestation, pharmacological uses, pre-commercial uses (research, seed multiplication ~~increase~~)).
37	Technical	English	Seed companies commonly have breeding and multiplication programmes in many countries, and distribute these seeds to many more countries. The international movement of seeds may involve small ~~quantities (e.g. for breeding and selection)~~ or large quantities ~~(after multiplication)~~.
40	Technical	English	- contradictory phytosanitary measures, ~~unnecessary~~ measures that are technically unjustified and measures that cannot be fulfilled retrospectively (e.g. field inspections).
41	Editorial	English	This standard should help minimize the risk of the global spread of pests, including ~~those~~ plants that can be considered ~~plants~~ as pests, and other organisms whose pest risk has not been identified yet.
53	Technical	English	Many studies have documented cases in which ~~transfer~~ transmission by seed of seed-borne pests occurs under ~~laboratory~~ artificial conditions but then such ~~transferral~~ transmission has never been observed under ~~field~~ natural conditions, adding to the uncertainty of PRA judgements on seeds as pathways.
56	Technical	English	The intended use of seeds (e.g. breeding, multiplication, testing, field planting, growing under NPPO control) moved internationally may impact the probability of establishment.

			Seeds may be moved for purposes other than planting (i.e. ~~trans-shipment~~ destructive analysis) or may be planted under special conditions. The risk level associated with the intended use should be considered when conducting the PRA and establishing phytosanitary measures (ISPM 32:2009).
68	Technical	English	These seeds are imported under post-entry quarantine conditions~~, with treatment as a phytosanitary measure,~~ and are ~~limited~~ restricted to being grown ~~growth~~ in protected environments (e.g. glasshouses, growth chambers) or with field isolation. Examples include seeds for evaluation and potential release, seeds imported for research, seeds imported for genetic resources/gene banks, and seeds as breeding material.
69	Technical	English	These seeds are planted under conditions that limit or prevent the introduction of regulated pests into the environment of the PRA area. The required conditions should be developed by the NPPO of the importing country. Seeds imported under post-entry quarantine conditions can be dealt with in two ways; a seed sample is planted and if the resulting plants are found to be disease free, the remainder of the shipment is allowed entry for general planting. Alternately, only the progeny of healthy plants can be used for general release.
74	Technical	English	Single ~~P~~phytosanitary measures or measures in combination in a systems approach (ISPM 14: 2001) should be used to prevent the introduction of quarantine pests identified during the PRA and in accordance with the requirements outlined in section 1 of this standard.
76	Editorial	English	Certain elements of a seed certification scheme may already include measures that may be recognized as phytosanitary measures, including purity testing ~~for the presence of weed seeds~~.
78	Technical	English	Modern breeding programmes result in plant varieties with multiple resistances to pests, which may include resistance to regulated pests. When confirmed resistance to a regulated pest exists, importing countries should consider this resistance as an alternative phytosanitary measure in the PRA for the importation of these seeds.
79	Technical	English	A plant variety's level of resistance to different regulated pests may vary depending on the resistance genes present. Resistance genes may be effective against all or some specific races or strains or biotypes or pathotypes of the targeted pest but the

			emergence of new races or biotypes may impact the level of resistance. Therefore, the use of pest resistance as a phytosanitary measure must be assessed on a case-by-case basis. Pest resistance may be a useful measure when used in combination with other phytosanitary measures in an integrated pest management approach.
84	Technical	English	Seed treatments include a variety of techniques that may involve, but are not limited to, heat, hot water, fungicides, insecticides, nematicides and chemical or biological treatments or disinfectants.
85	Editorial	English	~~Some~~ ~~s~~Seed treatments may be used as phytosanitary measures.
85	Substantive	English	Some seed treatments may be used as phytosanitary measures. If a chemical seed treatment is required as a (mandatory) phytosanitary measure and this treatment is not compliant with standards for organic seeds, an alternative that is compliant should be permitted.
85	Technical	English	Some seed treatments may be used as phytosanitary measures. As products and Active Ingredients may not be authorised for use in all countries of production, export and re-export, it is recommended that only the required type of treatment be specified in phytosanitary requirements. If a treatment rate is specified it should be the one recommended by the manufacturer.
86	Editorial	English	Appendix 2 of this standard provides an overview of available types of treatments for each pest category.
96	Editorial	English	• field selection ~~use of resistant or less susceptible varieties~~
96	Technical	English	• field selection use of resistant or less susceptible varieties • use of resistant varieties or rootstocks
97	Technical	English	• soil treatment • geographical or temporal isolation from potential pest sources • sanitation or disinfection of water used in protected production areas
99	Technical	English	• hygiene measures (e.g. disinfection of workers' hands or

			shoes, farm equipment and tools)
101	Editorial	English	• sanitation (e.g. ~~rogueing~~ roguing of infected or suspicious plants, weeds, plant debris)
101	Technical	English	• sanitation (e.g. rogueing of infected or suspicious plants, weeds, ~~plant debris~~)
104	Editorial	English	• protected ~~conditions~~ environments (e.g. glasshouses, growth chambers)
104	Technical	English	• protected conditions • sanitation or disinfection of water used in protected production areas
106	Technical	English	• hygiene measures (e.g. disinfection of workers' hands or shoes, farm equipment and tools)
108	Technical	English	• seed cleaning, conditioning and sorting
112	Technical	English	• sanitation (e.g. removing plant debris, soil ~~or rogueing of infected plants~~)
114	Editorial	English	• ~~P~~packaging (e.g. pest proof packaging material)
119	Technical	English	Isolation may be considered, for example, for importation of a large amount of high risk seeds (requiring post-entry quarantine) from an area with limited pest incidence. Regulated pests for which isolation may be appropriate include symptomatic viruses and viroids that are not known to be vectored by insects. Isolation may not be appropriate for symptomless pathogens or pathogens with insect vectors capable of spreading from the isolation area.
125	Technical	English	Equivalence of phytosanitary measures is particularly important for the international movement of seeds because of the global aspects of the seed trade with frequent re-export from the same

			seed lot. As different phytosanitary measures could be equivalent NPPOs are encouraged to provide multiple options when defining phytosanitary measures, and if the need arises to use the procedures described in ISPM 24:2011 to determine the equivalence of an additional option to existing ones.
132	Editorial	English	Visual examination can be done manually or by using devices that automatically sort seeds based on visual physical characteristics. Visual examination should be combined with other testing methods if screening for asymptomatic or unreliably symptomatic regulated pests is required. Visual examination can be useful for small seed lots but may need to be combined with other methods for larger lots.
134	Technical	English	Inspection of coated or pelleted or treated seeds may not be appropriate because the coating or pelleting material or treatment may reduce ~~reduces~~ the ability to see the seed or symptoms of the pest on the seed.
135	Editorial	English	The NPPO of the importing country may request the NPPO of the exporting country to provide a sample of the seeds before coating~~,~~ or pelleting or treatment to assess the pest risk and in order to determine if import requirements will be necessary.
135	Technical	English	The NPPO of the importing country may request the NPPO of the exporting country to provide a sample of the seeds of a size proportional to the seed count before coating, to assess the pest risk and in order to determine if import requirements will be necessary.
137	Technical	English	Inspection of plants in the field may be a useful phytosanitary measure for quarantine pests known to produce visible symptoms. The use of this measure requires trained staff ~~trained~~ to recognize the pests of concern as well as ~~identify~~ know the appropriate time to monitor for the pests during crop growth. It should be noted that a pest observed in the field does not necessarily transmit to the seed or may be treated effectively. In case seed is harvested from a field with visual symptoms of a disease observed during field inspection, it should be tested if justified according to the PRA.
140	Technical	English	Guidance on sampling of consignments for inspection is given in

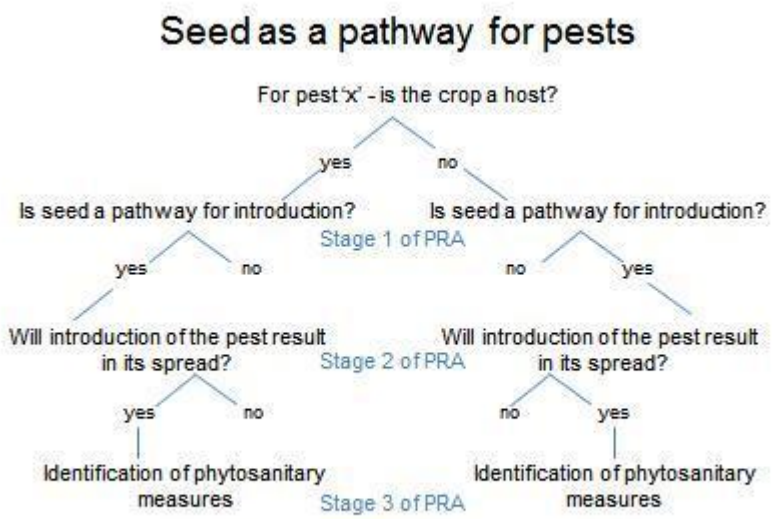
			ISPM 31:2008. Specific guidance on sampling of seed is given in ISTA's International Rules for Sampling.
143	Technical	English	1. fixed proportion samples (e.g. 10% or less of the seed lot)
144	Technical	English	1. reduced sample size, such as sample size maximized at the number of seeds sampled being ten times the number of mother plants from which the seeds have been harvested (e.g. 20,000 seeds have been harvested from 50 plants; the maximised sample size is 500 seeds).
145	Editorial	English	1. 3. testing plant material from mother plants (e.g. plant tissue).
145	Technical	English	1. testing plant material from mother plants (e.g. plant tissue). Plant tissue can include immature seeds prior to physical maturity and that are still attached to the plant.
149	Editorial	English	In certain cases, inspection may not be sufficient to determine if a pest is present and other forms of detection may be needed~~; for example,~~ (e.g. laboratory testing). Pests such as viruses, bacteria, fungi and some nematodes may not be detected by inspection of seeds. These pests may instead be detected by specific laboratory tests developed and validated for regulated pests in seeds.
149	Technical	English	In certain cases, inspection may not be sufficient to determine if a pest is present and other forms of detection may be needed; for example, laboratory testing. ~~Pests such as~~ Some viruses, viroids, bacteria, fungi and some nematodes may not be detected by inspection of seeds. These pests may instead be detected by specific laboratory tests developed and validated for regulated pests in seeds.
152	Technical	English	**4.3.1 Serological and molecular ~~diagnostic~~ detection protocols**
153	Technical	English	~~Serological and molecular diagnostic tests are considered indirect protocols. They detect specific pest components that may be present even when pests are no longer viable. Consequently, when testing seeds with these methods, results should be interpreted carefully. Because positive results can occur even when no viable pests are present, confirmatory direct~~

			~~tests or additional indirect tests may be required, provided the performance criteria are equivalent.~~ Serological and molecular tests detect proteins or nucleic acids specific to the target pest that may be present even when the pest is no longer viable, thereby giving a false positive result. Consequently, when using these methods a positive result should be confirmed by testing seed from the same seed lot using a method that determines the viability of the target pest. If a method that determines the viability of the target pest is not available, a second test based on different biological principles should be used to confirm the result obtained.
157	Technical	English	- The treatment inactivates the pest but the detection method detects the viable and non-viable pests, which happens with ~~some indirect~~ serological or molecular tests or tests in which detection is based on morphological identification of pests or pest structures that may remain even after treatment (e.g. nematodes, spores). In such cases, determination of the efficacy of the treatment may be inconclusive.
158	Editorial	English	- The treatment adversely affects the detection method; for example, a method detects only pests present externally but the pest remains present internally after treatment and is not detected. In these situations, other detection methods that are able to detect internal infection should be used (e.g. *Xanthomonas campestris* pv. *campestris* after disinfection is not detected after seeds are soaked but may still be detected after seeds are ground).
158	Technical	English	- The treatment adversely affects the detection method; for example, a method detects only pests present externally but the pest remains present internally after treatment and is not detected. In these situations, other detection methods able to detect internal infection should be used (e.g. *Xanthomonas campestris* pv. *campestris* after disinfection is not detected after seeds are ~~soaked~~ washed but may still be detected after seeds are ground).
160	Editorial	English	- The treatment causes false positive, false negative or unreadable results ~~(~~in serological or molecular detection methods~~)~~. For false negative and unreadable results, detection methods should be applied to an untreated sample (where the treatment is not aimed at suppressing or inactivating the target pest), or spiked positive controls (i.e. a pure culture with the target pest added to the seed extract) should be tested by the

			detection method.
162	Technical	English	The NPPO of the importing country may establish specific procedures for the importation of small seed lots (e.g. individual packets of seed) taking into account the intended use, size of the lot, production history and origin of the seeds. In certain cases specific import authorizations e.g. in the form of a licence or permit, as described in ISPM 20:2004, could be applied.
165	Editorial	English	The global and temporal nature of the seed trade (i.e. long-term storage, re-export to many destinations) presents phytosanitary certification challenges distinct from those of the international movement of other ~~more~~ perishable commodities.
166	Editorial	English	Additional official phytosanitary information, which is not required by the first country of import, attesting to freedom from pests may be included on the phytosanitary certificate when requested by the exporter to facilitate future re-export to other countries. This information should be separated from the additional declaration(s) required by the first country of import, in accordance with ISPM 12:2011.
166	Technical	English	Additional official phytosanitary information, which is not required by the first country of import, attesting to freedom from pests may be included on the phytosanitary certificate when requested by the exporter to facilitate future re-export to other countries. This information should be separated from the additional declaration required by the first country of import, in accordance with ISPM 12:2011. For re-exports of seed, NPPOs should recognize the information provided in the additional declaration section as well as in the form of 'Additional Official Phytosanitary Information' (AOPI) (ISPM 12) and not require additional testing or inspection for pests covered in the AOPI except if documentation is absent or the requirements of the importing country are more stringent or the phytosanitary status of the consignment has changed. Minor variations in the wording of additional declarations may create obstacles to the international movement of seeds that are re-exported to multiple destinations. NPPOs are encouraged to use the standard wording provided in ISPM 12:2011. In cases where phytosanitary import requirements allow for several alternative measures, the NPPO should always include the actual text of the additional declarations required in addition to a reference to the applicable article in the phytosanitary

			legislation of the importing country.
168	Technical	English	"Origin" refers to the place(s) where the seeds were grown. If seeds are stored or moved, the pest risk may change over a period of time as a result of their new location. In such cases, the new location should be added to the place of origin in addition to the country of production, in accordance with ISPM 12:2011. If different lots within a consignment originate from different countries, all countries should be indicated. Only if the phytosanitary status of seeds has changed in its new location should this location (name of the country) be added to the description of the consignment.
171	Technical	English	- Mixing of seeds combines different species, varieties or cultivars ~~of seeds~~ into a single lot (e.g. grasses, ornamentals).
173	Editorial	English	Seeds from the same country of origin may be mixed and blended, as well as ~~may~~ seeds from various origins.
174	Editorial	English	Traceability for export and re-export of all original seed lots comprising the mixture or blend should comply with ~~be guaranteed to meet~~ the requirements of the importing country.
178	Technical	English	Because seeds may be stored for many years before being exported or re-exported, records on origin, phytosanitary procedures applied and international movements should be retained for ~~at least five~~ up to ten years and made available to the NPPO of the importing country upon request.
184	Editorial	English	Insects in the field are pests that feed in and on the seed ~~or within the seed~~ during the plant growth and seed development period, before harvest.
184	Technical	English	Insects in the field ~~are~~ can include pests that feed on the seed or within the seed during the plant growth and seed development period, before harvest.
187	Editorial	English	• Internal feeders causing seed abortion: insects that feed on internal parts of seeds ~~causing this damage~~ will cause seed to fall before maturity and harvest.
191	Technical	English	Stored product insects, while they are dependent on opportunistic storage conditions and are unlikely to be present, can infest seeds after harvest, particularly if the seeds are stored under poor conditions. Given the high value of seeds for planting, it is unlikely that ~~commercial~~ seeds would be stored in

			a manner that would provide stored product insects with an opportunity to infest the seeds.
193	Editorial	English	• External feeders: insects that feed on external parts of seeds will destroy the seed and pose a risk ~~only~~ as contaminants. External feeders are not attached to the seed. Secondary pests (e.g. *Mycetophagus* spp., *Acarus* spp., *Liposcelis* spp.) may also be present if there is poor sanitation causing excessive extraneous matter.
195	Editorial	English	• Internal feeders: insects that feed on internal parts of seeds can infest seeds if ~~the seeds~~ they are left exposed for a period before packaging. Consideration should be given as to the likelihood of poor storage conditions, whether infested seeds would be detectable and whether the insect would survive the transport environment.
200	Technical	English	Fungal species can be associated with seeds both superficially and internally, though many are not considered to be pathogenic. However, there are species that can cause seed rot, necrosis, reduced germination and disease in resultant seedlings. Seed fungal pathogens can be grouped as field pathogens and storage pathogens. Fungi may be present on the surface of seeds or mixed with seeds as contaminants, and can be introduced and spread to the host crop or to other crops (e.g. by soil contamination). Fungi can also be present in the integuments or in the internal part of the seed and be introduced and spread to the host crop in this way.
210	Editorial	English	The majority of nematodes are known to be internal or external root parasites, though there are some species known to attack above-ground plant parts such as seeds (e.g. *Ditylenchus dipsaci* (Kuehn) Filipjevand *Anguina tritici* (Steinbuch) Chitwood). Nematode species identified as seed-~~transmissible~~ transmitted quarantine pests belong to species that are known to be endoparasites (internal feeders of above-ground plant parts). But other species are ectoparasites (e.g. *Aphelenchoides besseyi* Christie) and have dormant stages in the seed or on plant debris around seeds.

222	Technical	English	 PRA (see ISPM 2:2007, ISPM 11:2013 and ISPM 21:2004) provides a basis for determining the potential of seeds being a pest risk. The decision tree below illustrates the possible outcomes when evaluating if seed is a pathway and if phytosanitary measures are required.
233	Technical	English	~~**Richardson, M.J.** 1990. *An annotated list of seed-borne diseases*, 4th edn. Bassersdorf, Switzerland, International Seed Testing Association (ISTA). Available at http://www.seedtest.org/en/productdetail--0-0-0-32.html~~
234	Technical	English	~~Note: Update of the International Seed Testing Association (ISTA) "List of seed-borne diseases" is in progress as part of the TESTA project on the basis of a full literature review with expert analysis of scientific papers. It will take the form of a database on the ISTA website (http://services.prismanet.ch/SeedDiseasesDb).~~
236	Technical	English	~~Note: An International Seed Federation (ISF) pest list is available on the ISF website~~ **ISF** (International Seed Federation). *Pest List Database*. Nyon, Switzerland, ISF. Available at ~~(~~http://www.worldseed.org/isf/pest_lists.html~~).~~ (accessed April 2014).

244	Technical	English	**ISTA** (International Seed Testing Association). 2012. *International rules for seed testing. Seed health testing methods.* Bassersdorf, Switzerland, ISTA. Available at http://www.seedtest.org/en/download-ista-seed-health-testing-methods-_content---1--1132--746.html (accessed May 2014). ISTA (International Seed Testing Association) International rules for seed testing, 2014, Chapter 2: Sampling. Available at: http://www.seedtest.org/upload/cms/user/ISTA_Rules_2014_02_sampling1.pdf (accessed July 2014)
259	Technical	English	Dry heat, steam, hot water, irradiation, (ultraviolet) light, high pressure, deep-freezing and other physical treatments are used to control bacteria, viruses, fungi and nematodes. Seed cleaning, conditioning and sorting are used to remove soil, plant debris, infected or suspicious seeds, weed seeds and insects.