North American Plant Protection Organization (NAPPO) Discussion Paper –

International Movement of Grain - August 12, 2016

Executive Summary

The North American Plant Protection Organization's grain working group prepared this discussion paper to assist the Expert Working Group in developing Specification 60, International Movement of Grain into an International Standard for Phytosanitary Measures. By paralleling the organization and content of Specification 60, a detailed discussion for each of the identified tasks is included. Practical considerations and limitations of phytosanitary measures and industry guidelines and practices which contribute to reducing phytosanitary risk are examined.

In accordance with Specification 60, a focus on grain as a commodity class including cereals, oilseeds and pulses intended for processing or consumption moved internationally is incorporated. Also in accordance with Specification 60, this paper makes it clear that the ISPM should recognize grain as a low risk pathway, not apply to seeds for planting and not specifically address issues related to living modified organisms (LMOs), food safety, climate change, and quality.

The NAPPO working group acknowledges the absence of international consensus on the need for minimum requirements for the international movement of grain, and is not aware of any technical justification for such requirements. The working group also emphasizes the need to respect the sovereign right of each country to establish its own technically justified import requirements. Consequently, this discussion paper supports the development of a guidance document that is not prescriptive. Importantly, imposition of minimum requirements on a global scale is not considered practical or necessary and is NOT supported; BUT guidance on how requirements may be developed by individual national plant protection organizations IS STRONGLY supported. Specific guidance and examples to assist NPPOs in identifying, assessing and working with industry to manage the pest risks associated with the international movement of grain in a least trade distortive manner are identified. Existing IPPC guidance and standards as well as sound industry practice are incorporated to provide for identifying and describing specific phytosanitary measures and industry practices as parts of an extensive set of options that could be used to reduce pest risk before export, during transport, on arrival, and during handling and processing in the importing country.

The primacy of intended end use when evaluating risk and developing import requirements for grain is emphasized. Furthermore, this paper recognizes the imperative of a sustainable, economic, reliable and responsive supply of grain that relies on the substitutability and commingling of lots as grain moves from farm to export and makes it clear that tracing export cargos back to the farm level is not a reasonable effective measure.

Ultimately the NAPPO Working Group encourages the harmonization of measures that provide NPPOs with practical, technically justified tools to enhance management of plant health risks related to grain movement that are commensurate with the level of risk, not more restrictive to trade than required.

Introduction

There is no adopted International Standard for Phytosanitary Measures (ISPM) that focuses specifically on phytosanitary measures for the international movement of grain. However, there are many existing ISPMs of relevancy, and other guidelines, specifications, including grading standards and commercial contract specifications, and industry practices and protocols which may be considered when assessing phytosanitary risk relating to grain in international movement. The ISPM is intended to facilitate harmonization of measures, and to ensure measures are technically justified, commensurate with the level of risk, and not more restrictive to trade than required.

Outline of Requirements

This standard describes the following basic principles under the IPPC as they pertain to grain: necessity, managed risk, minimal impact, transparency, harmonization, non-discrimination, technical justification, and equivalence of phytosanitary measures and modification. This standard also addresses the operational principles as they pertain to grain: pest risk analysis, pest listing, recognition of pest free areas and areas of low pest prevalence, official control for regulated pests, systems approach, surveillance, pest reporting, phytosanitary certification, phytosanitary integrity and security of consignments, prompt action, and emergency measures.

Background

Grain to be used for human consumption, animal feed or further processing (e.g. milling, oilseed crushing, biofuel production) has been traded in large volumes for centuries and has been considered a commodity of inherently low risk, as it is primarily infested by storage pests that are cosmopolitan. Presently, the international grain trade is well developed and highly globalized, and it uses sophisticated, high throughput infrastructure. Phytosanitary measures applied before export, during transport, on arrival, and during handling and processing in the importing country help reduce the risk of introduction and spread of quarantine pests into new geographical areas and thereby help to improve food security and the conservation and sustainable use of biodiversity, but international guidance is needed to ensure such measures are technically justified, commensurate with the level of risk, and not more restrictive to trade than required.

Discussion

NAPPO recommends that the following points be taken into consideration:

- Each country has a sovereign right to establish import requirements for the entry of grain into its territory in order to avoid introduction and spread of regulated pests, however, the required phytosanitary measures must be consistent with guidance provided in ISPM 1; they should be:
    - made necessary by phytosanitary considerations
    - technically justified and consistent with the pest risk involved as supported by pest risk analysis and
    - represent the least restrictive measures available, and result in the minimum impediment of the international movement of people, commodities and conveyances.

- Grain is a low risk product; there is insufficient historical basis for consideration of grain as a product with high risk necessitating revision of import requirements. Once the intended use of grain, i.e. consumption and processing, is taken into consideration, only insect pests potentially pose more than a negligible risk due to their mobility, and they are effectively mitigated by commonly used fumigation. Grain is predominantly imported for consumption or for processing, which is considered a low risk end-use, particularly when compared to seed for sowing. An increasing trend is being observed in the international trade of grains, where importing countries are revising existing phytosanitary import requirements and implementing more restrictive requirements. The revision and implementation of new phytosanitary requirements do not seem to consider the history of decades of importing of the commodity. Also not considered is the lack of evidence of new pest detection(s) in the country of origin, of any heightened risk of pest association with the commodity, or of pest introduction(s) through the commodity import pathway. The revision and implementation of new restrictive phytosanitary import requirements contravenes the IPPC principle of modification. According to the IPPC principle of modification, phytosanitary measures should be determined on the basis of a new or updated pest risk analysis or relevant scientific information. Contracting parties should not arbitrarily modify phytosanitary measures.

Main concerns identified by NAPPO are:

- Phytosanitary measures often lack technical justification - action is often not supported by pest risk analysis (PRA) including:
    - Action is often based on the possibility of entry, not on the probability of introduction and spread as indicated in ISPM 1 and ISPM 5.
    - Intended use is often overlooked, instead the focus is sometimes disproportionately placed on instances of diversion from intended use, including spillage and planting in household gardens. Although diversion from intended use lacks specific harmonized guidance, if diversion is a concern, the associated risk should be considered separately in a PRA in proportion to the portion reasonably estimated to be actually diverted, taking into consideration the circumstances of that estimated diversion.
    - Quarantine and non-quarantine pests are often not adequately distinguished, and measures are increasingly being taken in the absence of adequate consideration of or surveillance for the targeted pests, already present in those countries, regulating those pests. This leads to misapplication of measures, particularly as related to official control.

- Phytosanitary measures are often restrictive or impractical:
    - Traceability is not practical for most internationally traded grain due to the high degree of commingling as it makes its way from farm to export location. Additionally, there is no IPPC approved guidance on traceability. Traceability is not a recognized phytosanitary measure, but rather a phytosanitary tool available in the form of trace-forward and trace-back activities in response to a phytosanitary incident, often in reaction to an indication of a new pest or a suspect shortcoming in phytosanitary treatments.
    - Registration of exporters or exporting facilities is increasingly being made a condition of import, without clear identification of the risk to be mitigated or how such action mitigates the risk. Given the dynamic nature of exporting enterprises, and the diverse and extensive number of participants and facilities, the maintenance of an all-inclusive registry is an enormous challenge, the need for which must be justified.
    - Alternative measures, such as systems approaches, particularly involving pest management plans, are often overlooked when import measures are developed.

- Other non-phytosanitary measures are required of exporting countries- including measures pertaining to quality (i.e. foreign material limits), food safety, GMO, etc.).

- Misuse of Noncompliance Measures:
  - There is often an inadequate basis for action; such as action for a non-quarantine pest, inconsistent with ISPM 5, Supplement 1 - Official Control Guidance.
  - Emergency measures are often enacted without sufficient consideration of ISPM 13, particularly as concerns communication of pest information, and evaluation of action as soon as possible to ensure that its continuance is justified.
  - Lack of sufficient notice to the exporting country's National Plant Protection Organization (NPPO) and to commercial agents.
  - Inadequate consideration of alternative postharvest measures such as fumigation, sieving, and the denaturing of pests via industrial processing, which may be formalized by compliance agreements.

Specific Tasks Identified in *Specification 60*

Task 1. Identify and analyze existing international guidance such as standards or industry guidelines and practices (including commercial contract specifications) dealing with the international movement of grain and consider the extent to which these address phytosanitary issues and are relevant to the development and application of phytosanitary measures under the provisions of the IPPC. The frequency of interceptions and types of pests that have been introduced via the grain trade and which may be of quarantine concern should be considered.

a. INTERNATIONAL STANDARDS FOR PHYTOSANITARY MEASURES

The Preamble of the International Plant Protection Convention (IPPC) sets out the objectives for phytosanitary measures. It states that the phytosanitary measures should be technically justified and transparent and should not be applied in such a way as to constitute either a means of arbitrary or unjustified discrimination or a disguised restriction, particularly on international trade.

In order to minimize interference with international trade, the IPPC emphasizes that Contracting Parties (CPs) shall institute only phytosanitary measures that are technically justified, consistent with the pest risk, involved and represent the least restrictive measures available, and result in the minimum impediment to the international movement of people, commodities and conveyances.

The IPPC provides a framework for the development and application of harmonized phytosanitary measures, and the elaboration of international standards.

ISPM 1 - Phytosanitary principles for the protection of plants and the application of phytosanitary measures in international trade

This standard describes the following basic principles under the IPPC: sovereignty, necessity, managed risk, minimal impact, transparency, harmonization, non-discrimination, technical justification, cooperation, equivalence of phytosanitary measures and modification.

This standard also describes the operational principles under the IPPC, which are related to the establishment, implementation and monitoring of phytosanitary measures, and to the administration of official phytosanitary systems.

The operational principles are: PRA, pest listing, recognition of pest free areas and areas of low pest prevalence, official control for regulated pests, systems approach, surveillance, pest reporting, phytosanitary certification, phytosanitary integrity and security of consignments, prompt action, emergency measures, avoidance of undue delays, notification of non-compliance, information exchange and technical assistance. The operational principles have high relevance to and impact the international movement of grain.

The basic IPPC principles, which are highly relevant to the international movement of grains are:

- phytosanitary measures may be applied only where such measures are necessary to prevent the introduction and/or spread of quarantine pests
- phytosanitary measures may be applied based on a policy of managed risk, recognizing that risk of introduction and spread of pests always exists when importing plants, plant products and other regulated articles
- phytosanitary measures should be applied with minimal impact
- cooperation should be provided in the development of harmonized standards for phytosanitary measures
- phytosanitary measures should also be applied without discrimination between comparable domestic and international phytosanitary situations
- phytosanitary measures should be technically justified
- alternative phytosanitary measures, proposed by exporting contracting parties as equivalent, should be recognized when those measures are demonstrated to achieve the appropriate level of protection determined by the importing contracting party
- phytosanitary measures should be determined on the basis of a new or updated PRA or relevant scientific information. Contracting parties should not arbitrarily modify phytosanitary measures.
- phytosanitary measures should not be applied in such a way as to constitute either a means of arbitrary or unjustified discrimination or a disguised restriction, particularly on international trade.

ISPM 14 - The use of integrated measures in a systems approach for pest risk management

This standard provides guidelines for the development and evaluation of integrated measures in a systems approach as an option for pest risk management under the relevant international standards for PRA designed to meet phytosanitary import requirements for plants, plant products and other regulated articles.

Systems approaches, which integrate measures for pest risk management in a defined manner, could provide an alternative to single measures to meet the appropriate level of phytosanitary protection of an importing country. They can also be developed in situations where no single measure is available. A systems approach requires the integration of two or more measures that are independent of each other, but with a cumulative effect; and may include any number of measures that are dependent on each other.

The application of critical control points system in a systems approach may be useful to identify and evaluate points in a pathway where specified pest risks can be monitored and reduced. Other systems based on a combination of measures that do not meet the requirements for a critical control point system

may be considered effective. However, the application of the critical control point concept may be generally useful for the development of other systems approaches. For example, non-phytosanitary certification programs may have elements that are also valuable for pest risk management and may be included in a systems approach provided the phytosanitary elements of the process are made mandatory and can be overseen and controlled by the NPPO.

The decision regarding the acceptability of a systems approach lies with the importing country, subject to consideration of technical justification, minimal impact, transparency, non-discrimination, equivalence, and operational feasibility. A systems approach is usually designed as an option that is equivalent to but less restrictive than other measures.

Systems approaches provide the opportunity to consider both pre- and post-harvest procedures that may contribute to the effective management of pest risk. It is important to consider systems approaches among pest risk management options because the integration of measures may be less trade restrictive than other options (particularly where the alternative is prohibition).

Cultural practices, crop treatments, post-harvest disinfestation, inspection and other procedures may be integrated in a systems approach. Risk management measures designed to prevent contamination or re-infestation are also generally included in a systems approach (e.g. maintaining lot integrity, requiring pest-proof packaging, screening packing areas, etc.), but are more commonly associated with fresh produce than with grain. Likewise, procedures such as pest surveillance, trapping and sampling can also be components of a systems approach, particularly as an alternative to export fumigation.

ISPM 24 - Guidelines for the determination and recognition of equivalence of phytosanitary measures

This standard describes the principles and requirements that apply for the determination and recognition of equivalence of phytosanitary measures. It also describes a procedure for equivalence determinations in international trade.

Assessments of equivalence should be risk-based, using an evaluation of available scientific information, either through PRA or by evaluation of the existing and the proposed measures. Equivalence generally applies to cases where phytosanitary measures already exist for a specific pest associated with trade in a commodity or commodity class.

Equivalence determinations are based on a specified pest risk and may apply to individual measures, a combination of measures, or integrated measures in a systems approach. Determination of equivalence requires assessing measures to determine their effectiveness in mitigating a specified pest risk. The determination of equivalence of measures may also include an evaluation of the exporting contracting party's phytosanitary systems or programs that support implementation of those measures.

Normally, determination of equivalence involves a sequential process of information exchange and evaluation, and is generally an agreed procedure between importing and exporting CPs. Information is provided in a form that allows the evaluation of existing and proposed measures for their ability to meet the importing contracting party's appropriate level of protection. The determination of equivalence depends on a number of factors, and these may include: the effect of the measure as demonstrated in laboratory or field conditions; the examination of relevant literature on the effect of the measure; the result of experience in the practical application of the measure; the factors affecting the implementation of the measure.

The principle of non-discrimination requires that when equivalence of phytosanitary measures is granted for one exporting CP, this should also apply to CPs where the status of the relevant pest is the same and where similar conditions for the same commodity or commodity class and/or pest exist.

ISPM 25 - Consignments in transit

This standard is based on the concepts of intended use of a commodity and the method and degree of its processing, and describes procedures to identify, assess and manage pest risks associated with consignments of regulated articles which pass through a country without being imported, in such a manner that any phytosanitary measures applied in the country of transit are technically justified and necessary to prevent the introduction into and/or spread of pests within that country.

When appropriate phytosanitary measures for consignments in transit are not available or are impossible to apply, the NPPO may require that such consignments be subjected to the same requirements as imports, which may include prohibition.

If consignments in transit are stored or repackaged in such a way that they present a pest risk, the NPPO may decide that these consignments should meet phytosanitary import requirements or be subject to other appropriate phytosanitary measures.

ISPM 32 - Categorization of commodities according to their pest risk

This standard provides criteria for National Plant Protection Organizations (NPPOs) of importing countries on how to categorize commodities according to their pest risk when considering import requirements. This categorization should help in identifying whether further pest risk analysis is required and phytosanitary certification is needed. The first stage of categorization is based on whether the commodity has been processed and, if so, the method and degree of processing to which it has been subjected before export. The second stage of categorization of commodities is based on their intended use after import.

The concept of categorization of commodities according to their pest risk takes into account whether the product has been processed, and if so, the method and degree of processing to which it has been subjected and the commodity's intended use and the consequent potential for the introduction and spread of regulated pests.

This allow pest risk associated with specific commodities to be assigned to categories. The objective of such categorization is to provide importing countries with criteria to better identify the need for a pathway-initiated PRA and to facilitate the decision-making process regarding the possible establishment of import requirements.

Intended use is defined as the declared purpose for which plants, plant products or other articles are imported, produced or used (ISPM 5). The intended use of a commodity may be for:

- planting
- consumption and other uses (e.g. crafts, decorative products, cut flowers) or
- processing.

The Intended use may affect a commodity's pest risk, as some may allow for the establishment or spread of regulated pests. Some uses (e.g. planting) are associated with a higher probability of a regulated pest establishing than others (e.g. processing). This may result in the application of different phytosanitary

measures for a commodity (e.g. soybean seed for sowing and soybean grain for human consumption). Any phytosanitary measures applied should be proportional to the pest risk identified.

In some cases, the processing method may not completely eliminate all quarantine pests. If it is determined that the method and degree of processing do not eliminate the pest risk of quarantine pests, consideration should then be given to the intended use of the commodity in order to evaluate the probability of establishment and spread of the quarantine pests. In this case, a PRA may be needed to determine this.

b. NATIONAL GUIDANCE ON PHYTOSANITARY MEASURES AND THEIR ROLE IN SYSTEMS APPROACHES

Canada: National Voluntary Farm-Level Biosecurity Standard for the Grains and Oilseeds Industry

The biosecurity voluntary standard provides a methodical approach for the farmer to evaluate areas where the farm may be at risk (from pests) and, a means to develop a farm-specific biosecurity plan, or the basis for developing management strategies to mitigate biosecurity risks. The standard is a "living" document that requires update and improvement as new science is available, as technology evolves, and as new biosecurity risks are identified, introduced, and understood.

http://www.inspection.gc.ca/plants/grains-and-field-crops/biosecurity/national-voluntary-farm-level-biosecurity-standard/eng/1354649087792/1355168633095

Canada: PI-001- Inspection Procedure: Inspecting Facilities that Export Grains and Field Crops

Certain Canadian facilities directly export grains and field crops. Grains and field crops for export may have to be certified free from regulated stored product pests, as per the requirements of plant health authorities in the importing countries. The Canadian Food Inspection Agency (CFIA) issues this certification by way of a Phytosanitary Certificate based on inspections of facilities, stored products, and transportation vehicles. The CFIA will certify products exported from facilities which meet the requirements of the CFIA. This PI-001 specifies the procedures that inspectors must follow to inspect facilities and their stored products.

http://www.inspection.gc.ca/plants/grains-and-field-crops/exports/pi-001/eng/1382121375928/1382121376834

Canada - PI-008: Inspecting Ships that Carry Grain and Grain Products for Export

Grain and grain products (including cereals, oilseeds, pulses and their processed products) exported from Canada are primarily shipped in the holds of ocean going ships. The CFIA's objective when inspecting ship holds is to verify their phytosanitary status prior to loading Canadian grain and to approve the ship for loading. This document specifies the procedures inspectors must follow to inspect ships or Lakers that load grain or grain products for export.

http://www.inspection.gc.ca/plants/grains-and-field-crops/exports/pi-008/eng/1328495612131/1328495722814

Canadian Grain Commission`s Guidance on Managing stored grain - Maintain quality and manage insect infestations

This information is an overview of grain storage issues. The information includes various prevention, monitoring, control, and remedial strategies that are appropriate for keeping stored grain at peak condition and therefore reducing the potential of insect infestations.

Guidance material, from a phytosanitary perspective, includes:

- identify insects
- control grain insect pests
- manage storage to prevent infestations and
- guides (protection of farm-stored grains, oilseeds and pulses from insects, mites and molds).

https://www.grainscanada.gc.ca/storage-entrepose/mqsgm-mggge-eng.htm

United States: United States Department of Agriculture – Grain Inspection, Packers and Stockyards Administration (GIPSA)

GIPSA provides stowage examinations that ensure that carriers and containers that hold grain, rice, pulses, and related products are clean, dry, and fit for loading.

A stowage examination is a service performed by official personnel or licensed cooperators who visually inspect an identified carrier or container and determine if the stowage areas are clean; dry, free of infestation, rodents, toxic substances, and foreign odor, and are suitable to store or carry bulk or sacked grain, rice, beans, peas, lentils, or processed commodities.

https://www.gipsa.usda.gov/laws/directives/9180-48.pdf

Mexico: Mexican Official Standard NOM-081-FITO-2001, Handling and disposal of outbreaks of pes infestation, through the establishment or reorganization of planting dates, crop and waste destruction.

This Official Standard is to establish phytosanitary measures to be performed for the prevention detection, handling, disposal and/or destruction of outbreaks of pest infestation representing risk for agriculture. This Mexican Official Standard shall apply to the following: products and agricultural products; areas of production: commercial orchards, backyard gardens, agricultural land for commercial production and/or research, livestock feedlots, greenhouses, nurseries; raw materials, waste and agroindustry processes; collection centers, storage and/or marketing of agricultural products; areas with different agricultural use; communication paths; drains, access and water bodies; other processes or facilities that the NPPO determines its participation in generating foci of pest infestation.

http://senasica.gob.mx/?id=962

Commission on Phytosanitary Measures (CPM) Recommendation on Sea Containers

Surveys carried out in some countries have indicated that sea containers (also known as Cargo Transport Units (CTUs)) to a varying degree may carry contamination in the form of interior and exterior presence of seeds, snails, slugs, soil, spiders and other biosecurity risk items that may pose a pest risk.

The packing of sea containers with cargo is the most likely stage in the supply chain at which contamination can occur. Operators' procedures for cleanliness and cleaning of sea containers and for handling containers and cargo need to take into account the risk of contamination at the packing stage.

To that end, the International Maritime Organization (IMO), the International Labor Organization (ILO) and United Nations Economic Commission for Europe (UNECE), with the support from the IPPC Expert Working Group on Sea Containers, have revised their joint Code of Practice for Packing of Cargo Transport Units to incorporate several elements of phytosanitary importance such as the references to sea container cleaning in Chapter 8, Annex 5 and, in particular, Annex 6, Minimizing the risk of recontamination. This was recognized and appreciated by CPM-9 (2014).

The CPM encourages NPPOs to support the implementation of the relevant parts of the Code of Practice for Packing of Cargo Transport Units 1 (International Maritime Organization (IMO), International Labor Organization (ILO) and United Nations Economic Commission for Europe (UNECE)).

c. INDUSTRY GUIDELINES AND PRACTICES

i. Industry Guidelines

Hazard Analysis and Critical Control Points (HACCP)

The major grain handling companies are HACCP certified. HACCP is the acronym for hazard analysis and critical control points. HACCP is a food production, storage, and distribution monitoring system for identification and control of associated health hazards. The program is developed for the prevention of contamination.

The seven underlying principles of a HACCP program are:

- identify the potential consumer health hazards
- identify the control points where the identified hazards may occur
- establish critical limits for the potential hazards and safety measures
- establish monitoring routines to ensure safety measures are working
- establish appropriate responses if monitoring indicates a problem
- establish an accurate and detailed record keeping system that documents problems and the remedial steps to be taken and
- establish a verification system that ensures the above steps are being followed.

The First Common European Code of Good Trading Practice (GTP)

The GTP aims at helping food and feed business operators in:

- complying with good hygiene practices relating to operating sites, premises, equipment, transport, waste and staff.
- identifying and controlling potential risks for consumers' safety and establishing appropriate procedures based on the principles of the HACCP system.

The GTP is part of the assurance framework aimed at preventing a food and/or feed incident. The GTP Code mirrors the content and structure of the EU Guide to good hygiene practices for the collection, storage, trading and transport of cereals, protein crops, oilseeds which was developed by COCERAL and COGECA (agricultural cooperatives) and endorsed by the EU Commission in July 2010. Although similar, the EU Guide and the GTP Code should not be considered as a combination since they each respond to different needs and purposes.

The EU guide lays down principles and general objectives to guarantee food and feed safety and may be used as a reference tool by national authorities when they control relevant premises in the framework of official controls. The GTP code certifies companies against a standard which goes further than the guide by providing operators with detailed provisions, allowing them to place on the market safe food and feed products.

http://www.gtpcode.eu/upload/biblio/GTP_Brochure_2014.pdf

ii. Industry practices: Phytosanitary measures are available to reduce pest risk

Before export

Farmers - Following good farm management practices such as undertaking crop rotations to prevent disease, changing seed to latest genetics on regular basis, inspecting and maintaining equipment and storage facilities on a regular basis, using fumigants or cleaning when issues arise, undertaking good crop production practices.

Exporters - Following good grain handling practices such as inspecting facilities on a regular basis, taking actions when required to ensure grain meets importing country phytosanitary requirements, such as cleaning and/or fumigation. Inspecting and ensuring transportation carriers i.e., railcars, are clean and free from non-compliant materials or food safety hazards. Maintaining handling facilities and complying with licensing requirements.

Some pre-export practices include:

- crop monitoring and crop treatment
- lot selection based on quality
- good storage, temperature and moisture control, and avoiding comingling with other products
- store preparation – cleaning and treatment
- preventive and curative fumigation for stock
- dust reduction
- inspection
- sieving
- contact pesticides
- sampling by the Phytosanitary and Quarantine authorities at loading and pest control and
- grain protectant treatments (for control of stored grain insects).

Some practices during transport include:

- protection of goods from pests during loading, transport, delivery
- vehicle cleanliness and records
- previous loads checks and between goods where multi compartment bulk vehicle are used
- gas fumigant application in order to avoid contamination during handling
- for control of stored grain insects –
  - spraying, grain protectant treatments
  - fumigation, mainly with APH
- cargo fumigated at load port, sealing of holds
- fumigation is a possibility, in case for some reason spraying at loading port is not possible
- make sure fumigation is in strict accordance with the fumigation requirements
- assuming export grain is found to be non-compliant for insects, based on importing country phytosanitary requirements or through previous trade contract agreements, the imported cargo could be fumigated on route or at port or once the vessel arrives.

Some practices upon arrival include:

- inspection and sampling by the phytosanitary and quarantine authorities
- dust reduction
- control of temperature and moisture during storage
- processing can be used as acceptable mitigation: sieving, fumigation, and grain protectant treatments – for control of stored grain insects and
- re-fumigation at destination if required – when insect infestation is detected.

Some practices during processing include:

- sieving, cleaning and sanitizing, aeration, milling/crushing/heat treatment, fumigation, pest control (birds, mice, etc.)
- change of usage (food to feed as to fuel)
- curative treatments can be carried out in case of insect infestation during processing stage
- fumigation/milling/crushing/heat treatment/destructive cleaning/chemical denaturing (for example, hexane extraction of oil content).
- cleaning at processing with destruction of screenings at the processor or using other destructive technology such as processing of the grain and
- processed at plants approved facilities.

d. THE FREQUENCY OF INTERCEPTIONS AND TYPES OF PESTS THAT HAVE BEEN INTRODUCED VIA THE GRAIN TRADE AND WHICH MAY BE OF QUARANTINE CONCERN

Grain is a low risk product; there is insufficient historical basis for consideration of grain as a product with heightened risk requiring revision of import requirements. Once the intended use of grain, i.e. consumption and processing, is taken into consideration, only secondary insect pests potentially pose more than a negligible risk due to their mobility, and they are effectively mitigated by commonly used fumigation.

Examples of pests that have impacted grain trade:

- interceptions of khapra beetle (*Trogoderma granarium*) - frequent interceptions of khapra beetle in grain imports from countries, where the pest is present, led the United States to implement

phytosanitary import requirements to prevent its introduction. Previous U.S. detections of this tiny beetle have required massive, long-term and costly control and eradication efforts. In 1953, an extensive infestation was found in California. Subsequent surveys revealed its presence in Arizona, California, New Mexico and Texas. These infestations were all eradicated by 1996. During 1980-1997, several other infestations were discovered and eradicated in isolated grain bins, warehouses and kitchen pantries in California, Maryland, Michigan, New Jersey, New York, Pennsylvania and Texas. Canada is currently consulting on a phytosanitary grain import policy, which is aimed at the prevention of entry of khapra beetle from infested countries.

- detection of *Tilletia controversa* (Dwarf Bunt) -
    - the United States developed a quantitative risk model to obtain bilateral agreement on a tolerance for dwarf bunt spores in wheat exports to China. This tolerance was agreed upon as a compromise measure given the absence of technical bilateral agreement on the quarantine status of *Tilletia controversa*, the causal pathogen, in China.

- *Tilletia indica (*karnal bunt) is a minor pest of wheat, but a number of countries, often in the absence of PRAs, have prohibited import of wheat from countries that are infested with karnal bunt or imposed pest free area restrictions on those countries. Additionally, some countries require spore testing, which ignores potential implications of cross-contamination from conveyances and spore thresholds required for introduction. There has been no substantiation of introduction via the grain pathway, but rather transmission by seed for planting is often implicated.

- interceptions of miscellaneous weed seeds in grain imports have been associated by some importing countries with the introduction of quarantine plants along transportation corridors and around processing plants due to spillage. The evidence is circumstantial and limited in nature and has not generally been incorporated into peer-reviewed publications or other publicly available PRAs. Recently, a peer-reviewed publication entitled *Establishment of Lolium species resistant to acetolactate synthase-inhibiting herbicide in and around grain-importation ports in Japan*[1] associated imported grain with the limited introduction of *Lolium* at port unloading facilities. The *Lolium* was determined not to have spread from its initial site of introduction.

- in addition, and with regard weed species of quarantine concern, detection of weed species of quarantine concern in grain imports occurs frequently in Canada and the United States. However, the end-use of the grain commodity is taken into consideration and the consignments are sometimes allowed entry subject to phytosanitary treatment or processing under supervision at destination in order to achieve compliance

[1] Establishment of *Lolium* species resistant to acetolactate synthase-inhibiting herbicide in and around grain-importation ports in Japan. Y SHIMONO*, A SHIMONO†, H OGUMA‡, A KONUMA§ & T TOMINAGA*
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Task 2. Provide guidance for NPPOs when performing PRA to determine if grain moving in international trade is a pathway for quarantine pests. The pest risk should be specified for the intended use and the pest group (e.g. distinguishing between risks from insects and from viruses and contamination by weed seeds). Guidance should also be provided on assessing the likelihood of establishment of quarantine pests.

ISPM 2 - Framework for pest risk analysis

This standard provides a framework for PRA within the scope of the IPPC. It introduces the **three stages** of PRA: initiation, pest risk assessment and pest risk management. ISPM 2 focuses on the initiation stage. Generic issues of information gathering, documentation, risk communication, uncertainty and consistency are also addressed.

The PRA process is initiated in **Stage 1** with the identification of a pest that may qualify as a quarantine pest or pathway that may be considered for pest risk assessment, or as part of the review of existing phytosanitary measures, in relation to a defined PRA area.

Pest risk analysis provides the rationale for phytosanitary measures for a specified PRA area. It evaluates scientific evidence to determine whether an organism is a pest. If so, the analysis evaluates the probability of introduction and spread of the pest and the magnitude of potential economic consequences in a defined area, using biological or other scientific and economic evidence. If the risk is deemed unacceptable, the analysis may continue by suggesting management options that can reduce the risk to an acceptable level. Subsequently, pest risk management options may be used to establish phytosanitary regulations.

The pest risks posed by the introduction of organisms associated with a particular pathway, such as a commodity, should also be considered in a PRA. The commodity itself may not pose a pest risk but may harbor organisms that are pests.

Initiation is the identification of organisms and pathways that may be considered for pest risk assessment in relation to the identified PRA area.

A PRA process may be triggered in the following situations (initiation points), subject to the previously mentioned IPPC principle of modification:

- a request is made to consider a new pathway that may require phytosanitary measures
- a new pest is identified that may justify phytosanitary measures
- a decision is made to review or revise national phytosanitary measures or policies and
- a request is made to determine whether an organism is a pest.

Initiation involves four steps:

- determination whether an organism is a pest
- defining the PRA area
- evaluating any previous PRA and
- conclusion.

When the PRA process has been triggered by a request to consider a new pathway or new information, the above steps are preceded by assembling a list of organisms of possible regulatory concern because they are likely to be associated with a pathway. Identification of a pathway is an initiation point for a PRA.

Review of phytosanitary policies. The need for a new or revised PRA may arise from situations such as when:

- a national review of phytosanitary regulations, requirements or operations is undertaken
- an official control program (e.g. a certification program encompassing phytosanitary elements) is developed to avoid unacceptable economic impact of specified regulated non-quarantine pests (RNQPs) in plants for planting
- an evaluation of a regulatory proposal of another country or international organization is undertaken
- a new system, process or procedure is introduced or new information made available that could influence a previous decision (e.g. results of monitoring; a new treatment or withdrawal of a treatment; new diagnostic methods)
- an international dispute on phytosanitary measures arises and/or
- the phytosanitary situation in a country changes or political boundaries change.

Determination of an organism as a pest. The following are examples of indicators to consider:

- previous history of successful establishment in new areas
- phytopathogenic characteristics
- phytophagous characteristics
- presence detected in connection with observations of injury to plants, beneficial organisms etc.
- before any clear causal link has been established
- belonging to taxa (family or genus) commonly containing known pests
- capability of acting as a vector for known pests and
- adverse effects on non-target organisms beneficial to plants (such as pollinators or predators of plant pests).

Stage 2 considers the pests individually. It examines, for each, whether the criteria for quarantine pest status are satisfied.

Stage 2, pest risk assessment, involves several steps:

- pest categorization (the determination of whether the pest has the characteristics of a quarantine pest or RNQP),
- assessment of introduction and spread:
    - candidates for quarantine pests: the identification of the endangered area and assessment of the probability of introduction and spread
    - candidates for RNQPs: assessment of whether the plants for planting are or will be the main source of pest infestation, in comparison to other sources of infestation of the area.
- assessment of economic impacts:
    - candidates for quarantine pests: assessment of economic impacts, including environmental impacts
    - candidates for RNQPs: assessment of potential economic impacts associated with the intended use of plants for planting in the PRA area (including analysis of infestation threshold and tolerance level)
- conclusion, summarizing the overall pest risk on the basis of assessment results regarding
- introduction, spread and potential economic impacts for quarantine pests, or
- economically unacceptable impacts for regulated non-quarantine pests.

The results of pest risk assessment are used to decide if pest risk management is required.

Stage 3 involves the identification of phytosanitary measures that (alone or in combination) reduce the risk to an acceptable level. Phytosanitary measures are not justified if the pest risk is considered acceptable or

if they are not feasible (e.g. as may be the case with natural spread). However, even in such cases contracting parties may decide to maintain a low level of monitoring or audit regarding the pest risk to ensure that future changes in that risk are identified.

The conclusion of the pest risk management stage will be whether or not appropriate phytosanitary measures adequate to reduce the pest risk to an acceptable level are available, cost-effective and feasible.

Risk communication: risk communication is generally recognized as an interactive process allowing exchange of information between the NPPO and stakeholders. It is not simply a one-way movement of information or about making stakeholders understand the risk situation, but is meant to reconcile the views of scientists, stakeholders, politicians etc. in order to:

- achieve a common understanding of the pest risks
- develop credible pest risk management options
- develop credible and consistent regulations and policies to deal with pest risks and
- promote awareness of the phytosanitary issues under consideration.

At the end of the PRA, evidence supporting the PRA, the proposed mitigations and uncertainties should preferably be communicated to stakeholders and other interested parties, including other contracting parties, RPPOs and NPPOs, as appropriate.

If, subsequent to the PRA, phytosanitary requirements, restrictions or prohibitions are adopted, the contracting party shall immediately publish and transmit those to contracting parties that it believes may be directly affected (according to IPPC Article VII.2(b)) and on request make the rationale available to any contracting party (according to IPPC Article VII.2(c)). If, subsequent to the PRA, phytosanitary requirements, restrictions or prohibitions are not adopted, contracting parties are encouraged to make this information available. NPPOs are encouraged to communicate evidence of hazards other than pest risks (such as to animals or human health) to the appropriate authorities.

Consistency in PRA: it is recommended that an NPPO strives for consistency in its conduct of PRAs. Consistency offers numerous benefits, including:

- facilitation of the principles of non-discrimination and transparency
- improved familiarity with the PRA process
- increased efficiency in completing PRAs and managing related data
- improved comparability between PRAs conducted on similar products or pests, which in turn
- aids in development and implementation of similar or equivalent management measures.

Consistency may be assured through, for example, the elaboration of generic decision criteria and procedural steps, training of individuals conducting PRA, and review of draft PRAs.

ISPM 11: Pest risk analysis for quarantine pests

ISPM 11 provides details for the conduct of PRA to determine if pests are quarantine pests. It describes the integrated processes to be used for risk assessment as well as the selection of risk management options.

The objectives of a PRA are, for a specified area, to identify pests and/or pathways of quarantine concern and evaluate their risk, to identify endangered areas, and, if appropriate, to identify risk management options. As indicated previously, PRA for quarantine pests follows a process defined by three stages:

- Stage 1 involves identifying the pest(s) and pathways that are of quarantine concern and should be considered for risk analysis in relation to the identified PRA area.
- Stage 2 begins with the categorization of individual pests to determine whether the criteria for a quarantine pest are satisfied. Risk assessment continues with an evaluation of the probability of pest entry, establishment, and spread, and of their potential economic consequences (including environmental consequences – Supplement 1).
- Stage 3 involves identifying management options for reducing the risks identified at Stage 2. These are evaluated for efficacy, feasibility and impact in order to select those that are appropriate.

Presence of the pest in the PRA: regulatory status of the pest in the PRA - if the pest is present but not widely distributed in the PRA area, it should be under official control or expected to be under official control in the near future.

Potential for establishment and spread in PRA area: evidence should be available to support the conclusion that the pest could become established of spread in the PRA area. The PRA area should have ecological/climatic conditions including those in protected conditions suitable for the establishment and spread of the pest and where relevant, host species (or near relatives), alternate hosts and vectors should be present in the PRA area. There should be clear indications that the pest is likely to have an unacceptable economic impact (including environmental impact) in the PRA area. Unacceptable economic impact is described in ISPM 5 Supplement 2.

Suitability of environment: factors in the environment (e.g. suitability of climate, soil, pest and host competition) that are critical to the development of the pest, its host and if applicable its vector, and to their ability to survive periods of climatic stress and complete their life cycles, should be identified. It should be noted that the environment is likely to have different effects on the pest, its host and its vector. This needs to be recognized in determining whether the interaction between these organisms in the area of origin is maintained in the PRA area to the benefit or detriment of the pest.

Economic consequences – indirect pest effects: effects on domestic and export markets, including in particular effects on export market access (the potential consequences for market access which may result if the pest becomes established, should be estimated. This involves considering the extent of any phytosanitary regulations imposed (or likely to be imposed) by trading partners).

In implementing the principle of managed risk (ISPM 1), countries should decide what level of risk is acceptable to them. The acceptable level of risk may be expressed in a number of ways, such as:

- reference to existing phytosanitary requirements
- indexed to estimated economic losses
- expressed on a scale of risk tolerance and/or
- compared with the level of risk accepted by other countries.

Identification and selection of appropriate risk management options - appropriate measures should be chosen based on their effectiveness in reducing the probability of introduction of the pest. The choice should be based on the following considerations, which include several of the phytosanitary principles of ISPM 1:

- phytosanitary measures shown to be cost-effective and feasible. The benefit from the use of phytosanitary measures is that the pest will not be introduced and the PRA area will, consequently, not be subjected to the potential economic consequences. The cost-benefit analysis for each of the minimum measures found to provide acceptable security may be estimated. Those measures with an acceptable benefit-to-cost ratio should be considered.

- principle of “minimal impact”. Measures should not be more trade restrictive than necessary. Measures should be applied to the minimum area necessary for the effective protection of the endangered area.
- reassessment of previous requirements. No additional measures should be imposed if existing measures are effective.
- principle of “equivalence”. If different phytosanitary measures with the same effect are identified, they should be accepted as alternatives.
- principle of “non-discrimination”. If the pest under consideration is established in the PRA area but of limited distribution and under official control, the phytosanitary measures in relation to import should not be more stringent than those applied within the PRA area. Likewise, phytosanitary measures should not discriminate between exporting countries where the status of the relevant pest is the same.

ISPM 19 - Guidelines on lists of regulated pests

ISPM 19 describes the procedures to prepare, maintain and make available lists of regulated pests. Lists of regulated pests are established by an importing contracting party to specify all currently regulated pests for which phytosanitary measures may be taken. Specific lists of regulated pests by commodity are a subset of these lists. Specific lists are provided on request to the NPPOs of exporting contracting parties as the means to specify the regulated pests for the certification of particular commodities. Quarantine pests, including those subjectes to provisional or emergency measures, and regulated non-quarantine pests should be listed.

The justification for regulating pests corresponds to the provisions of the IPPC requiring that:

- pests meet the defining criteria for quarantine or regulated non-quarantine pests to be regulated (Article II.1, “regulated pest”)
- only regulated pests are eligible for phytosanitary measures, (Article VI.2)
- phytosanitary measures are technically justified (Article VI.1(b)) and
- PRA provides the basis for technical justification (Article II.1, “technically justified”).

Many countries include pests on their regulated pest list that are present in their country and not under official control and thus do not meet the criteria for quarantine pest. It is problematic when these countries attempt to impose measures for a pest that is on a regulated pest list but does not meet the criteria for quarantine pest. Phytosanitary measures are imposed to prevent the entry and establishment of pests. If a pest has already entered and established, then there is no justification for imposing phytosanitary measures whether it is on the regulated pest list or not. Some work needs to be done to clarify the purpose and uses of a regulated pest list for contracting parties.

PRA and the Grain Industry. In most cases, the grain industry is not directly involved in the development of PRAs. When phytosanitary import requirements are being developed based on PRAs, it is advisable to share the summary of the PRA and the risk management options with the grain industry and to consult with them as part of the Risk Management Discussion process. In cases, specific to NAPPO member countries, where market access is requested for a grain commodity, the grain industry provides support to the NPPO by providing information on the grain production, storage and handling practices. This information is added to the technical package, which the NPPO of the exporting country shares with the NPPO of the importing country in order to facilitate completion of a PRA. The PRA conducted by the NPPO of the importing country will determine the phytosanitary import requirements for the commodity.

Task 3. Identify phytosanitary import requirements most commonly used by NPPOs in relation to imported grain

Each country has a sovereign right to establish import requirements for plant products into its territory in order to avoid the introduction of regulated pests provided they are made necessary by phytosanitary considerations, are technically justified, are consistent with the pest risk involved and represent the least restrictive measures available, and result in the minimum impediment to the international movement of people, commodities and conveyances (ISPM 1, ISPM 20). As such, import requirements for grain differ between Canada, the United States and Mexico, but generally include pest free areas, areas of low pest prevalence, border inspection, sampling, export certification, treatment, safeguarding consignments from pest infestation, systems approaches (often involving compliance agreements). North American import requirements coincide in the following aspects:

Commodity information - information about the commodity to be moved is the first and most important requirement, as it allows inferences concerning the probability of associated pests being present, as well as the potential need for phytosanitary action. In general, the following information should be provided or otherwise considered: scientific name, common name, variety, type of commodity, phytosanitary treatment, intended use, and country of origin or other provenance.

Inspection and sampling - in order to detect the presence of regulated pests, sampling is utilized to isolate diagnostic parts of insects, weed seeds, nematodes (ex. galls), pathogens (ex. bunted kernels) or mollusks for identification to the most specific level possible using widely recognized identification keys. Only if the results are negative or within a tolerance established by the importing country are plant products or by-products to be provided export certification or be allowed entry without further mitigation. Representative sampling will enhance inspection credibility when verifying that the commodity is reasonably free from contaminants such as fungal structures and nematode galls, and regulated debris, such as soil, straw, husks and other plant parts. Additionally, targeted sampling is also a legitimate phytosanitary mitigation, but generally offers less statistically significant results than representative sampling when action thresholds for regulated materials are being enforced.

Phytosanitary certification - one of the most common import phytosanitary measures is to request export phytosanitary certification, which states that the commodity meets the phytosanitary standards of the importing country. In general, this is certified in the Official Phytosanitary Certificate of the country of origin, which states that the commodity has been inspected according to official procedures and is considered to meet the phytosanitary requirements of the importing country, based on a specified level of detection, and may also certify that specific phytosanitary treatments have been undertaken. In this regard, the list of regulated pests established by each country should be consulted by the exporting country NPPO and any required treatment should be certified (ISPM 7, ISPM 12, ISPM 19, ISPM 23). Limits are commonly placed on the duration between inspection and certification. At times, importing countries place limits on the duration between inspection and export. However, North America is vast and product inspected in the interior where a conveyance is loaded and sealed may take a couple of weeks before it may be transported and loaded on an ocean going vessel. This necessitates a reasonable amount of time be provided by the importing country between inspection and export, normally exceeding two weeks.

Treatments - in order to avoid entry and spread of regulated pests, phytosanitary treatments may be applied anywhere in the safeguarding continuum where they are most practical and effective as agreed between the importing and exporting countries. Perhaps the most ubiquitous treatment utilized by national plant protection organizations is fumigation. Fumigation, is done with products with demonstrated biological effectiveness to control the pests; phosphine is most common, however, other

treatments may be used. Official certification on the phytosanitary certificate is commonly required for pre-export or in-transit treatments. It is important to use only approved pesticides, respect the official label instructions and consider their allowed limits in the importing country. Additionally, the necessary treatment conditions, such as minimum established temperatures for fumigation, may not be prevalent in the exporting country, so it is sometimes necessary for the importing country to allow for treatment upon entry in order to meet its import requirements. Phosphine fumigation of grain is detailed in NAPPO Treatment Protocol Number 3. The chemical is used when a visual examination of the product for phytosanitary purposes reveals the presence of regulated insects, or to prevent development of latent infestation. The usual application takes place in existing facilities (e.g. ship holds, storage facilities, etc.). The chemical has a long history of commercial feasibility. The United States Department of Agriculture (USDA) developed procedures for in-transit ships fumigation of grain with phosphine over 30 years ago. NAPPO recognizes the use of phosphine gas as an effective phytosanitary treatment for infestations in grain and grain-related products. Application techniques are widely known and fairly routine. Phosphine is highly versatile. It can be used to treat a wide range of grain and agricultural products stored in a variety of containers/conveyances. [2]

Systems approaches - as previously discussed under Task 1. A. *International Standards for Phytosanitary Measures*, integration of more than one risk mitigation measure could prove to be equivalent to single measures to meet the appropriate level of phytosanitary protection of an importing country. In grain, such integration may include industry best practices and audited control processes (such as provided under Task 1. B. Industry Guidelines and Practices, i.e. HACCP, GTP, etc.) which augment pest management in exports. Also, in the case of imported grain, compliance agreements consisting of measures such as safeguarding during transport, destructive processing and supervision of waste disposal may serve as equivalent alternatives to more traditional treatments, such as fumigation, when pests are detected. Similarly, bilateral work plans offer a formal mechanism for recognizing industry actions which minimize pest risk.

Surveillance - in accordance with IPPC *Article VII, Requirements in relation to imports, Section 2.,* and in order to support categorization of pests, contracting parties shall, to the best of their ability, conduct surveillance for pests and develop and maintain adequate information on pest status, and for the development of appropriate phytosanitary measures. This information shall be made available to contracting parties, on request.

Pest Free Areas - Pest Free Areas generally have limited usefulness for massively commercialized cereal grain for consumption, which is most often originated from an expansive region of production. However, pest free areas may be applicable when an exporting country:

- has geographically distinct production regions, separated by some biologically significant barrier, such as a desert region or high mountain range
- maintains pest quarantines, such as the Karnal bunt quarantine area in the U.S. Southwest, or
- when certain specialty grains are originated from smaller, more spatially discrete areas where the targeted pest is demonstrably absent and the harvest, handling and transportation takes place under pest exclusionary conditions. This is most appropriate for those products commercialized in small volumes, often in containers, such as certain high value pulses and rice.

Regulation of Packaging, Conveyances and Soil - grain packaging materials are often required by importing countries to be new and be labelled indicating: country or area of origin, common and scientific name of species and sometimes variety, identifying mark of lot or shipper, and date of packing. However, unlike horticultural products, grain is customarily subject to commingling which precludes the use of a name or

[2] NAPPO Treatment Protocols: TP No. 03 Phosphine Fumigation of Grain or Grain Products for Control of Stored Product Pests.

identification code of the grower or packing house. Wood packing material, dunnage or pallets are often regulated by importing countries which require that these items be free of bark and insect damage. Wood packing should comply with ISPM-15 which requires that wood packing material be heat treated or chemically treated (fumigation). Conveyances are often required by importing countries to be officially inspected by officials in exporting countries prior to loading to ensure they are clean, pest free and not subject to moisture or pest incursion. Additionally, export phytosanitary certificates are often required to note some identifying mark for the conveyance. Containers are sometimes required by the importing country to be officially sealed by the certifying authority to prevent contamination with pests.

Task 4. Phytosanitary Measures – Technical Justification and Limitations

General Discussion

As previously mentioned, technical justification and consideration of practical limitations, including trade impact, must be adequately developed and notified before new phytosanitary measures may be implemented. Emergency or provisional measures are not disallowed, but must take place under the disciplines outlined in Article 7 of the IPPC 1997, as amended 2007;

- the action may be justified based on the detection of a pest posing a potential threat to its territories or the report of such a detection.
- any such action shall be evaluated as soon as possible to ensure that its continuance is justified.
- the action taken shall be immediately reported to contracting parties concerned, the Secretary, and any regional plant protection organization of which the contracting party is a member.

Furthermore, there is insufficient historical basis to consider grain as a high risk product. According to ISPM 32, if the intended use is consumption or processing, commodities should only be regulated based on a PRA for quarantine pests that survive the intended use. Quite commonly, once the intended use of grain (consumption or processing), is taken into consideration, only insect pests potentially pose more than a negligible risk due to their mobility in transport. These pests are effectively mitigated by commonly used fumigation. Weed seeds may be present, but unless a substantive risk has been associated with the intended use, there is rarely cause for further mitigation. Spillage in transportation or viability of seeds after feed processing and animal digestion are possible causes for concern, but must be supported by specific pest risk analysis, and once again, historic precedent indicative of heightened risk is lacking.

The grain pathway offers relatively little opportunity for introduction of quarantine pests into the environment. According to ISPM 5, grain is defined as: “a commodity class for seeds intended for processing or consumption and not for planting.” Grain is defined by its end use, which is to say, not for planting, but for further processing ranging from simple boiling to grinding to distillation, which generally denatures both the grain and most pests which may be present.

Grain handling is most often characterized by massive volumes, often being transported hundreds of kilometers, being blended and consolidated with grain of similar quality characteristics to meet specific contract requirements for delivery of a specific quantity and quality at a specified time and place. Export grain handling and inspection is characterized by commingling of similar quality grain often from a wide geographic area, rapid throughput and high efficiency. Grain is transported from inland elevators in response to contracted export purchases, with supplies often being drawn from multiple locations. The grain arrives at export elevators, often just in time to be loaded onto export carriers. Export inspection

usually takes place just before the grain is loaded onto an ocean vessel to ensure the validity and representativeness of the sampling process. The hourly load rates vary, but are often in thousands of tons. Grain sampling and analysis in major trading countries has developed over time to match such load rates.

Pests may be present unless fumigation or some other treatment is applied, but grains' relatively dry condition (averaging less than 13% moisture), commonly tough and abrasive outer shell and hard endosperm make it inhospitable to most insect pests. In fact, grain storage insects are the primary pests of concern since other pests, such as weed seeds, have more limited mobility and are generally isolated from the environment. Storage insects possess specialized adaptations for feeding and reproducing in grain, such as protective, hard, waxy exoskeletons, hard mouth parts, tunneling behavior, and specialized oviposition. Many of these storage pests are cosmopolitan in distribution. Cereals, oilseeds, and pulses have been heavily traded, both as a grain and as seed for planting, between continents for well over a century with little pest mitigation. Many of these storage pests which are readily distributed, introduced and established, have already done so and are considered cosmopolitan in distribution.[3]

Minimizing interference with international trade as per *Article VII of the IPPC (1997, updated 2007)*:

- *Contracting parties shall not, under their phytosanitary legislation, take any of the measures unless such measures are made necessary by phytosanitary considerations and are technically justified.*
- *Contracting parties shall, on request, make available to any contracting party the rationale for phytosanitary requirements, restrictions and prohibitions.*
- *Any inspection or other phytosanitary procedure required by the plant protection organization of a contracting party for a consignment of plants, plant products or other regulated articles offered for importation, shall take place as promptly as possible with due regard to their perishability.*
- *Contracting parties shall institute only phytosanitary measures that are technically justified, consistent with the pest risk involved and represent the least restrictive measures available, and result in the minimum impediment to the international movement of people, commodities and conveyances.*
- *Contracting parties shall, to the best of their ability, conduct surveillance for pests and develop and maintain adequate information on pest status in order to support categorization of pests, and for the development of appropriate phytosanitary measures. This information shall be made available to contracting parties, on request.*[4]

Phytosanitary measures - Practical considerations and limitations

Climatic factors - because of different climatic and environmental conditions, pest risk and associated mitigations vary between countries. Pest risk assessment is required to take into consideration varying conditions and varying necessary levels of protection. For example, insect nuisances and weediness of plants in a tropical climate are often not agricultural pests in northern climates. Additionally, varying seasonal conditions may not only have an impact on the probability of certain pests being present in cargos, but may also have an impact on the efficacy of recommended treatments, such as temperature on fumigation efficacy.

[3] International Plant Protection Convention 17_SC_2013_Nov. U.S. comments on the draft specification on the international movement of grain, Agenda item: 4.1

[4] International Plant Protection Convention (1997), updated 2011, ARTICLE VII, Requirements in relation to imports, Section 2.

Pest Free Areas (PFA) and Pest Free Places of Production (PFPP) - PFA and PFPP have limited usefulness for massively commercialized cereal grain for consumption, which is most often originated from an expansive region of production. However, pest free areas may be applicable when an exporting country maintains pest quarantines, when production areas are separated by biologically significant physical barriers or when certain specialty grains are originated from smaller, more spatially discrete areas and traded in small volumes, often in shipping containers, such as certain high value pulses and rice. Unlike PFA, PFPP is not an appropriate measure. ISPM 10 *Requirements for the establishment of PFPP and pest free production sites* specifies that a locale may be regarded as a PFPP only if a place of production is managed as a separate unit and can be maintained free from a specific pest or pests as demonstrated by scientific evidence and in which, where appropriate, this condition is being officially maintained for a defined period. Grain is not originated from a separate unit managed by a single entity (with the rare exception of specialty grains), and grain producers have not claimed to maintain specific pest exclusion measures and documentation to that effect. Certain importing countries have attempted to require that export grain elevators be regulated as PFPP, but as put through facilities, they simply cannot not meet the pest exclusion requirements.

Systems Approach - when one mitigation is not practical, such as fumigation due to low temperature conditions, a combination of measures, including implementation of integrated pest management or pest exclusionary packaging, may prove equivalent in providing the appropriate level of protection and should also be considered. Another example would be if quarantine weed seeds are detected upon entry inspection, and sieving is not available at the port to clean out the weed seeds, a compliance agreement may be established with the importer to achieve an adequate level of protection by safeguarding of grain transport to the point of processing and supervision of the customary processing.

Sampling Methods in relation to the pest of concern - sampling and testing must take into consideration the fact that export grain handling and inspection is characterized by rapid throughput and high efficiency. Grain is transported from inland elevators in response to contracted export purchases, with supplies often being drawn from multiple locations. The grain arrives at export elevators, often just in time to be loaded onto export carriers. Export inspection usually takes place just before the grain is loaded onto an ocean vessel to ensure the validity and representativeness of the sampling process. The hourly load rates vary, but are often in thousands of tons. U.S. grain sampling and analysis has developed over time to match such load rates to avoid demurrage charges often in the tens of thousands of US dollars daily. As previously discussed, the primary quarantine pests of concern should be insects, and potentially weed seeds, and export sampling is particularly well positioned to provide an adequate level of protection. Pathogens present more of a challenge, particularly due to the need for expert identification, which can often only be provided by a certified identifier in a suitably equipped laboratory. For a discussion of sampling and testing for pathogens, see Task 5. B. This identification challenge often applies to weed seeds as well, and is often a limiting factor in what is achievable through grain inspection.

Sampling plays an important role in the detection of pests of grain as it will determine the presence or absence of pests and the phytosanitary measures to be implemented. It is often advisable, but not necessary, to have sampling methodologies that allow representative samples to be obtained. However, the low level presence of regulated material represents a particular challenge for regulators. In grain, some regulated material, such as soil or adventitious kernels of prohibited grain commodities, may be present as a contaminant, and some tolerance should be considered. The concept of tolerance is explored in some detail in ISPMs 23 and 31 (Inspection and Sampling respectively). According to ISPM 31, an NPPO may determine to establish a tolerance level for a quarantine pest (or other regulated article) based on PRA (as described in ISPM 11) where an acceptable level of protection is established, and sampling rates and action thresholds can then reasonably be determined. For example, NPPOs may determine an action threshold

for a prohibited article at a level that is greater than zero because small numbers of that pest or article may be acceptable if the establishment potential of the pest is considered low or if the intended end use of the product (for example, (grain) imported for processing) limits the potential of entry of the pest into endangered areas.

Practices in Grain Production and Trade that may affect pest risk mitigation measures - please refer to Task 1. C. Industry Guidelines and Practices. Here again, compliance agreements between importing country NPPOs and importers may provide a mechanism for formalizing existing industry practices as officially recognized pest mitigations. In the case of action taking place in the exporting country or while in international movement, bilateral work plans offer another mechanism for such formal recognition of existing practices. However, compliance agreements and bilateral work plans must still be technically justified before consideration, and are most commonly applied as alternative options when more common mitigations, such as fumigation, are unavailable or otherwise impractical.

Secure storage, processing, packaging or confinement of grain before, during shipping and transfer - intermediary processing and pest exclusion are helpful in ensuring phytosanitary security of grain. However, as previously stated, related requirements must be technically justified and they are normally only used as alternative options, often under bilateral work plans or compliance agreements, when more common mitigations are impractical. Intermediary processing, such as the removal of rice hulls or grain cleaning through sieving and aspiration, contribute to lower pest risk. Effective pest management plans at processing and storage sites also helps reduce insect risk. The use of big bags (1 ton bags), sacks, and consumer packaging helps impede contamination with storage pests. However, the packing material should be suitable for fumigation or the importer runs the risk of losing the opportunity to treat in lieu of re-export or destruction.

Phytosanitary Treatments for grain - various treatments are available for bulk grain, with fumigation, as discussed in Task 3. being the most common. Treatments available for grain are almost exclusively to mitigate quarantine insects. As previously discussed, insects are the main phytosanitary concern in grain when taking intended use into consideration. If a grain treatment is chosen, several factors must be taken into account, such as treatment methodology, products to be applied, compliance with regulation of the chosen products in the exporting and importing country, and climatic factors as these are important factors that have bearing on the effect and duration of the protective effect. Screening may also be an effective treatment when quarantine weed seeds are detected, if the target weed seed is sufficiently different in size or shape than the host grain. For grain shipped break-bulk, i.e. in smaller quantities, other treatments are available, such as steam treatment or controlled atmosphere (CO_2), but are rarely found necessary or utilized. Processing and consumption are destructive processes which act to significantly mitigate quarantine pest risk, and may be considered post entry treatments.

Situations at and after import such as the processing of grain at destination (e.g. milling, oilseed crushing, malting, biofuel production, pelleting, and cleaning and packaging/repackaging for retail sale) - pest mitigation upon arrival or at the place of processing should not be overlooked. Some exporters are shipping to well over 100 destinations, each with their own requirements. It may be more practical to implement pest management practices in the importing country, where end use can be more readily regulated, particularly since safeguarding transportation and handling and supervised processing are often effective mitigations but are outside the authority of exporting country national plant protection organizations. Only importing countries can determine whether a specific grain, given its intended use, might qualify for a lower degree of scrutiny, such as grain for processing versus grain for direct animal feeding. Grain exports to a processor located at a port of entry generally carry less risk than grain for direct distribution to

geographically disparate cattle feeders, depending on the pests of concern. Allowing that importer to import grain under specified conditions, such as under a compliance agreement (potentially including safeguarding of conveyances and secure disposal or treatment of screenings or residues), would enable a wider range of mitigation options without increased risk. Additionally, processing may be easily evaluated as a mitigation by assessing the physical manipulation of the commodity, the particle size of the processed product, the exposure to high temperature or a denaturing chemical (such as hexane), or other considerations.

Confinement and appropriate disposal or treatment of screenings and residues derived from cleaning the grain before processing, packaging or consumption - should import inspection detect a quarantine pest for which a mitigation is not available at the port of entry, instead of destroying or re-exporting the infested cargo, national plant protection organizations might consider alternative mitigations, such as the previously described processing compliance agreement. Grain is commonly screened to remove impurities prior to processing, and in cases where a pest risk analysis determines that such screenings have a significant probability of harboring quarantine pests and constitute a potential pathway, those screenings may be subjected to a separate mitigation, such as fumigation or further processing. Once again, compliance agreements may provide the least restrictive measure.

Conveyances - conveyances, such as shipping containers may serve as an effective means of pest exclusion. Conversely, they may serve as a pathway for pests if not inspected prior to loading for soil contamination, pest presence or damage enabling pest incursion. Conveyances should be inspected to ensure they are clean, pest free and not subject to moisture or pest incursion.

Task 5. Guidance on specific situations (e.g. sampling or inspection protocols) that could be included in annexes or appendixes to the ISPM

Sampling and Inspection Resources

- ISPM 31 Methodologies for sampling of consignments
- ISPM 23 Guidelines for Inspection
- ISPM 20 Guidelines for a phytosanitary import regulatory system.
- ISPM 12 Guidelines for phytosanitary certificates
- ISPM 7 Export Certification system
- ISO 24333:2009 (en) Cereals and cereal products — Sampling. *This International Standard specifies requirements for the dynamic or static sampling, by manual or mechanical means, of cereals and cereal products, for assessment of their quality and condition. It is applicable to sampling for the determination of heterogeneously distributed contaminants, undesirable substances, and parameters usually homogeneously distributed like those used to assess quality or compliance with specification. It can be used to determine insects in a grain lot.*
- INTERNATIONAL STANDARD ISO 6644 Flowing cereals and milled cereal products — Automatic sampling by mechanical means. Second edition 2002-12-01 Reference number ISO 6644:2002(E)
- INTERNATIONAL STANDARD ISO 6639/2 Cereals and pulses - Determination of hidden insect infestation - Part 2: Sampling, First edition - 1986-12-01
- COCERAL, Good Trade Practices, Grain and Oilseed Sampling (GAFTA, FOSFA): http://www.gtpcode.eu/ http://www.gtpcode.eu/upload/biblio/Annex%206%20-

%20Recognised%20standards%20and%20legislation%20for%20sampling%20and%20analysis_highlighted.pdf?PHPSESSID=73a15b8cfeffc7c21b067bf2a2b3ab11

- FGIS Grain Inspection Manual, Sampling: https://www.gipsa.usda.gov/fgis/public_handbooks.aspx
- Canadian Grain Commission (CGC) (https://www.grainscanada.gc.ca/guides-guides/ssh-mse/ssh-mse-1-eng.htm) *The Sampling Systems Handbook and Approval Guide (Sampling Handbook) outline the policies and procedures of the Canadian Grain Commission (CGC) for automatic mechanical sampling systems used for inward receipt, and outward discharge of grain at licensed grain handling facilities. It includes the requirements for the installation, examination, testing, approval, and ongoing monitoring and oversight of these systems.*
- HGCA/AHDB: https://cereals.ahdb.org.uk/media/248889/grain_sampling_guide_2013.pdf

Testing and Identification of Pests

Guidance on Sampling and Testing Methodologies for Pathogens - testing for pathogens in grain is significantly constrained by grain logistics, a lack of standardized methodologies, cross contamination of samples, debate over the requisite inoculum threshold sufficient to cause disease, growing understanding of the pathogenicity of increasingly specific taxonomic levels of similar pathogens, and a lack of harmonized procedures for sampling and testing.

Various testing methodologies are utilized to identify quarantine pathogens in grain, some address symptoms, such as bunted kernels, others spore morphology, and others molecular testing. None are routinely implemented at point of export because the necessary wait for results has not been adequately justified by the disease risk. Some methodologies require multiple testing procedures including both morphological and molecular processes, such as that described in RSPM 21 *A Harmonized Procedure for Morphologically Distinguishing Teliospores of Karnal Bunt from Ryegrass Bunt, Rice Smut and Similar Smuts*.

The validity of laboratory testing is severely limited because a methodology for representative sampling and testing for disease causing organisms in grain has never been adequately addressed in an international standard[5]. This challenge includes the following limitations:

- morphological similarities between species (ex. *Tilletia*)
- the difficulty of assessing the viability of identified pathogens
- lack of agreement on when isolated specimens of pathogens may reach the requisite inoculum threshold to cause disease, such as the case with dwarf bunt (*Tilletia controversa*)
- increasingly sensitive molecular level testing leading to infinitesimal levels of detection often in the absence of harmonized guidance on interpretation of associated risk
- lack of control against cross contamination of samples and incidental contamination of lots (e.g. fungal spores carrying over in conveyances)[6] and

[5] APHIS Export Program Manual: Chapter 2. Section 1. Article 8 Grain: Laboratory testing cannot be used as a basis for certification because a methodology for representative sampling and testing for disease causing organisms in grain has never been developed.

[6] RSPM21 states: The identifier must also understand the complexities that help form an opinion on the identification of an organism. In addition to morphological data, information on the presumed host and geographic origin is also very important. However, it cannot be automatically assumed that the product the spore is found on is also the host of origin. Spores in a grain lot may be derived from weeds or other contaminants or may be introduced as cross contaminants from another lot during shipping or processing. A comparison of the geographical origin of the shipment with the known geographical distribution range of each fungus may be very helpful in narrowing down the diagnostic options if the information on sample origin is reliable.

- difficulty of assessing the necessary degree of taxonomic identification (e.g. only a particular pathovar may cause disease, such as *Magnaporthe oryzae* (anamorph *Pyricularia oryzae*, *Triticum* pathotype) (Couch et al., 2005) which causes wheat blast).

Vessel and Conveyance Inspections

- IMO/ILO/UNECE Code of Practice for Packing of Cargo Transport Units (STU CODE): http://www.imo.org/en/OurWork/Safety/Cargoes/CargoSecuring/Documents/1497.pdf
- Australian Industry Code of Practice:
    - http://www.graintrade.org.au/sites/default/files/file/Codes/Grain%20Industry%20Code%20of%20Practice/Aust%20Grain%20Industry%20Code%20V2%20November%202015.pdf
    - http://www.graintrade.org.au/sites/default/files/file/Location%20Differentials/Grain%20Transport%20Code%20of%20Practice%201%20July%202014%20FINAL.pdf
- CFIA: *PI-008: Inspecting Ships that Carry Grain and Grain Products for Export*
    - http://www.inspection.gc.ca/plants/grains-and-field-crops/exports/pi-008/eng/1328495612131/1328495722814
- USDA, GIPSa, Federal Grain Inspection Service, *Directive 9180.48 4/08/09 STOWAGE EXAMINATION SERVICES*.
    - https://www.gipsa.usda.gov/laws/directives/9180-48.pdf

Good Storage and Handling Practices

- *Stored Product Protection*, David W. Hagstrum, Thomas W. Phillips, Gerrit Cuperus. Kansas State University. http://www.bookstore.ksre.ksu.edu/pubs/S156.pdf
- CFIA *National Voluntary Farm-Level Biosecurity Standard for the Grains and Oilseeds Industry* http://www.inspection.gc.ca/plants/grains-and-field-crops/biosecurity/national-voluntary-farm-level-biosecurity-standard/eng/1354649087792/1355168633095#a6
- CFIA *Producer Guide to the National Voluntary Farm-Level Biosecurity Standard for the Grains and Oilseeds Industry - A Guide for Implementing Proactive Biosecurity into Farm Management* http://www.inspection.gc.ca/plants/grains-and-field-crops/biosecurity/producer-guide/eng/1364086061680/1364086625349?chap=0#s6c3
- CGC *Manage stored grain: Maintain quality and manage insect infestations* https://www.grainscanada.gc.ca/storage-entrepose/mqsgm-mggge-eng.htm
- The AIB International Consolidated Standards for Inspection Grain Handling Facilities

Phytosanitary Treatment of Grain

- *NAPPO Treatment Protocol No. 03- Phosphine Fumigation of Grain or Grain Products for Control of Stored Product Pests*
    - The chemical has a long history of commercial feasibility. The USDA developed procedures for in-transit ships fumigation of grain with phosphine over 30 years ago. This practice has since been successfully used on U.S. grain export shipments to meet contract requirements

and in some cases address specific phytosanitary concerns. USDA records indicate that historically about 50% of U.S. grain shipments are fumigated in-transit with phosphine gas
    - United States, Canada and Mexico all recognize the use of phosphine gas as an effective phytosanitary treatment for infestations in grain and grain-related products
    - Application techniques are widely known and fairly routine. A wide range of commercial applicators are available to properly and effectively apply the chemical
    - Limitations pertain largely to minimum temperature requirements for application as has been previously discussed
- *Ecology and Management of Food Industry Pests*. J. Richard Gorham. U.S. Food and Drug Administration. FDA Technical Bulletin #4. Association of Analytical Chemists. Arlington, Virginia, 1991
- USDA, APHIS, PPQ Treatment Manual. https://www.aphis.usda.gov/import_export/plants/manuals/ports/downloads/treatment.pdf
- Grains Research & Development Corporation, Australian Government: http://storedgrain.com.au/category/information-hub/insect-control/
- Various fumigant manufacturer label indications, noted as conforming to regulatory requirements
- *ISPM28 Phytosanitary treatments for regulated pests*

Notice of Non Compliance and Emergency Action

General Comments - prompt notification of both the importer and the exporting country national plant protection organization of the non-complying conditions and the required remedy is essential. According to ISPM13 *Guidelines for the notification of non-compliance and emergency action,* the importing contracting party is required to notify the exporting contracting party as soon as possible regarding significant instances of non-compliance and emergency actions applied to imported consignments. The notification should identify the nature of non-compliance in such a way that the exporting contracting party may investigate and make the necessary corrections. Importing contracting parties may request a report of the results of such investigations.

When identifying pests, importing countries should:

- be able to describe, on request, the procedures used for diagnosis and sampling, including the identity of the diagnostician and/or laboratory,
- retain, for an appropriate period (one year following the notification or until necessary investigation has been carried out), evidence such as appropriate specimens or material to allow validation of potentially controversial determinations,
- indicate the life stage of the pest and its viability where appropriate,
- provide identification to species level where possible or to a taxonomic level that justifies the official actions taken.

Emergency actions should be justified by the importing country by means of an investigation of the new or unexpected non-complying conditions. Emergency action should be evaluated as soon as possible to ensure that its continuance is technically justified. If continuance of actions is justified, phytosanitary measures of the importing country should be adjusted, published and transmitted to the exporting country.

Support for a Technical Consultation in the Advent of Phytosanitary Action Stemming from Noncompliance - grain industry representatives support language contained in the negotiated Trans-Pacific Partnership (TPP)

document concerning instances where import checks determine that product does not comply with importing country requirements. Specifically, upon prohibition or restriction of the importation of a good due by the relevant import authority, that authority is to provide notification to the exporting government and either the importer's agent, the exporter, the manufacturer or the exporting party within seven days of the decision to prohibit or restrict the importation of the good. In addition, the applicable importing authority is required to inform these entities of the reason the shipment was detained, the legal basis for the action and information on the status of the affected good.

The TPP provides for all relevant parties to be informed about the status of a shipment subject to action and provides a timely understanding of reasons for the action resulting in a collaboration that provides for considerable improvements in regulatory coherence, trade flow and risk management. Following notification, the importing authority may be obligated by the exporting authority to agree to a technical consultation (Cooperative Technical Consultation) to provide for a review of the decision, consider additional information under their review and complete the review "within a reasonable period of time". If the Cooperative Technical Consultation is inconclusive, the exporting authority may oblige the importing authority to submit to a dispute resolution process.

Application of such a technical consultation for instances of non-compliance is consistent with existing IPPC Standards and will improve management of plant health risks, reduce the cost of supplies, and provide for substantial improvements in global food security. "

Task 6. Impact of the ISPM on biodiversity and the environment

This ISPM has negligible impact on the protection of biodiversity and the environment. Fumigants are recognized as justifiable, including the use of methyl bromide, and are considered as having a negligible impact if used in accordance with labeling requirements.

Task 7. Potential operational and technical implementation issues- such as, traceability, diversion from intended use, etc.

Traceability: Taken from U.S. Comments on DRAFT SPECIFICATION FOR THE DEVELOPMENT OF A STANDARD WITH A REDUCED SCOPE ON THE INTERNATIONAL MOVEMENT OF GRAIN (2008-007)

Traceability is not a phytosanitary measure, and is inappropriate to grain. Due to high volume, the speed of handling and the routine commingling in national grain handling systems, most NPPOs of grain exporting countries would not be able to provide oversight of traceability to the production area or farm.[7] We believe any attempt to implement a general requirement for traceability to a place of production would result in a dramatic change to existing international grain handling and transportation practices resulting in significant cost increases for industry and NPPOs, without addressing a phytosanitary issue. This would have a significant impact on the existing grain supply chain systems as most traceability systems have been developed to provide specific end use niche market quality requirements. Economic studies demonstrate

[7] AUSTRALIAN COMMENTS ON STRATEGIC ISSUES RELATED TO THE DRAFT SPECIFICATION FOR THE DEVELOPMENT OF A STANDARD WITH A REDUCED SCOPE ON THE INTERNATIONAL MOVEMENT OF GRAIN (2008-007), pg 1.

that such systems require significant market premiums which would translate into the importing country having to pay higher prices for grain.[8] Accordingly, concepts of pest free areas, areas of low pest prevalence, and pest free places of production in grain are challenging to use and (regulate) under current industry practices.[9]

The concept [of traceability] is well-developed and widely practiced in food safety but lacks the same level of sophistication in the IPPC as a starting point, it should be recognized that traceability is subject to the same disciplines as other phytosanitary concepts. It requires a technical justification, i.e., a pest risk basis for its use. It must also be practical to apply and have private sector support to be implemented. While there may be many situations with other commodities where these criteria argue for the possibility to use traceability, it is usually not a reasonable option for large volumes of bulk commodities such as grain simply because of the practical limitations that make it both extremely difficult and expensive to distinguish lots by origin.[10]

Diversion from Intended End Use: (Diversion from Intended Use, draft internal NAPPO Discussion Document, February 2016)

[2] Diversion from intended use occurs when regulated articles are used for other than their originally declared purpose after importation. Unintended uses of a commodity may result in a higher probability of pest establishment and spread than the declared intended use. For example, grain or seeds not for planting intended for industrial processing may be used as seed for planting

[17] Harmonized guidance on diversion from intended use is needed to prevent the imposition of phytosanitary measures for high risk uses on a lower risk intended use of a product. While intended use and diversion from intended use are mentioned in the IPPC and in several ISPMs (e.g. ISPM 11, ISPM 32), there is no conceptual guidance that explains to contracting parties how to assess risk, ensure rational relationship between risk and strength of measures, or manage risk in cases of diversion from intended use. Of particular concern is how to calibrate risk analysis based on expectations of the type and level of diversion.

[18] NAPPO is exploring whether it may be preferable to develop broad conceptual guidance on managing the risk of diversion from intended use, rather than commodity-by-commodity guidance, to ensure that guidance is comprehensive and consistently applied for different commodity types.

Regarding application of the concept to the international movement of grain, (t)he definition of intended use is deceivingly simple; however, the application of the concept in practice is not elaborated upon in the Convention or existing ISPMs except for a brief mention in ISPM 32 (Categorization of commodities according to their pest risk). The concept of intended use is not only critical for how commodities are defined but it is also important to other key concepts, such as PRA. At the same time, it is an unusual concept to discuss in the context of phytosanitary measures because it implies a shared responsibility for the application of measures due to its relationship with conditions in the importing country which are beyond the control of the exporting country.

[8] AUSTRALIAN COMMENTS ON STRATEGIC ISSUES RELATED TO THE DRAFT SPECIFICATION FOR THE DEVELOPMENT OF A STANDARD WITH A REDUCED SCOPE ON THE INTERNATIONAL MOVEMENT OF GRAIN (2008-007), pg 2

[9] DRAFT SPECIFICATION ON THE INTERNATIONAL MOVEMENT OF GRAIN (2008-007): COMMENTS SENT BY CONTRACTING PARTIES ON STRATEGIC ISSUES (SC_2013_May_29). 3. Canadian Comments on Strategic Issues Related to the Draft Specification for the Development of a Standard with a Reduced Scope on the International Movement of Grain, pg 3.

[10] International Plant Protection Convention, XX_SC_2013_Nov, Grain Strategic Experts Meeting Report, Agenda item: 4.1

The complexity and importance of this concept extend far beyond its application to the international movement of grain. It is rather a fundamental and cross-cutting concept which requires careful consideration and elaboration for a common understanding in a broader context. This may be done through a supplement to ISPM 32 or a separate concept standard.

Task 8. Recommend development of supplementary material to aid implementation

It is recommended that this NAPPO *Discussion Paper on the International Movement of Grain* be made available to IPPC contracting parties as supplementary material to aid implementation of The International Movement of Grain standard.