|  |
| --- |
| International plant protection convention |
| Manual on Equivalence between pest risk management measures |
| Draft version 28 April 2012 |
|  |
| **Draft v20120428****M. Megan Quinlan****Research Fellow****Imperial College London** |
|  |

|  |
| --- |
|  |

Table of Contents

[Acronyms 4](#_Toc323132087)

[Glossary of Terms 5](#_Toc323132088)

[Executive Summary 8](#_Toc323132089)

[I. Introduction and definition of equivalence 9](#_Toc323132090)

[A. The importance of equivalence in the world trade 9](#_Toc323132091)

[B. IPPC definition of equivalence 10](#_Toc323132092)

[C. What equivalence does not mean 11](#_Toc323132093)

[D. Brief discussion of PRAs, ALOP and efficacy 11](#_Toc323132094)

[E. The drivers for seeking equivalence 11](#_Toc323132095)

[II. Historic context for Equivalence (up through the SPS) 11](#_Toc323132096)

[A. Agreement on alternative measures: commodity treatments and host status 11](#_Toc323132097)

[B. System wide equivalence: recognition of inspection systems, export certification, etc. 11](#_Toc323132098)

[C. European approach to requirements 11](#_Toc323132099)

[D. The advent of SPS and relevant principles 11](#_Toc323132100)

[III. The ISPM on equivalence and other relevant ISPMs 11](#_Toc323132101)

[A. Key principles 11](#_Toc323132102)

[B. Attempts to define ALOP and efficacy 11](#_Toc323132103)

[C. Other ISPMs including systems approach 11](#_Toc323132104)

[D. ISPM 15–a global example of equivalence 11](#_Toc323132105)

[E. The ISPM on equivalence 11](#_Toc323132106)

[F. Remaining needs for clarification or support 11](#_Toc323132107)

[IV. Common practice in plant health 11](#_Toc323132108)

[A. Case by case nature (end point rather than system equivalence) 11](#_Toc323132109)

[B. Technical or operational agreements 11](#_Toc323132110)

[C. Mutual recognition 11](#_Toc323132111)

[D. Formal equivalence and notified agreements 12](#_Toc323132112)

[E. ISPMs, regional agreements and other agreements that are equivalency agreements 12](#_Toc323132113)

[V. Emerging issues and developments 12](#_Toc323132114)

[A. Bilateral vs. regional or global negotiations 12](#_Toc323132115)

[B. PRAs carried out for similar conditions or pests/pathway, rather than individually 12](#_Toc323132116)

[C. (IPPC Technical Panels – if occurring there) 12](#_Toc323132117)

[D. Increased quantification and modelling 12](#_Toc323132118)

[E. (Upcoming changes in European legislation) 12](#_Toc323132119)

[F. Main challenges for NPPOs 12](#_Toc323132120)

[G. Perceived benefits of equivalence agreements 12](#_Toc323132121)

[VI. Conclusions and recommendations 12](#_Toc323132122)

[Bibliography and other resources 12](#_Toc323132123)

[(Annex on its use in other fields [especially OIE and Codex], although distinct) 17](#_Toc323132124)

[Text of most relevant agreements 17](#_Toc323132125)

Acronyms

|  |  |
| --- | --- |
| **ALOP** | Appropriate level of protection |
| **IPPC** | International Plant Protection Convention  |
| **NPPO** | National Plant Protection Organisation |
| **OIE** | World Organisation for Animal Health |
| **PRA**  | Pest Risk Analysis |
| **SPS** | Sanitary and Phytosanitary measures |
| **WTO** | World Trade Organisation |

Glossary of Terms

Not complete. I am considering that the first time each term is noted, to put \* in the text, or to put the word as bold, to show that it is in the glossary. (It may be better to put this as an annex.)

|  |  |
| --- | --- |
| ***appropriate level of protection*** | *Appropriate level of sanitary or phytosanitary protection - The level of protection deemed appropriate by the Member establishing a sanitary or phytosanitary measure to protect human, animal or plant life or health within its territory. (WTO SPS Agreement)**NOTE: Many Members otherwise refer to this concept as the "acceptable level of risk".* |
| **audit** | Periodic official review to verify that a treatment or Systems Approach is being carried out according to the information stated in the DSS. This review is based on the treatment audit trail. |
| **audit trail** | The necessary and sufficient documentary evidence that a measure is being carried out in accordance with the information stated in the DSS. |
| **control point** | A step in a system where specific procedures can be applied to achieve a defined effect and can be measured, monitored, controlled and corrected [ISPM No. 14, 2002] |
| **efficacy** (*treatment*) | A defined, measurable, and reproducible effect by a prescribed treatment [ISPM No. 18, 2003] |
| **entry** (*of a pest*) | Movement of a pest into an area where it is not yet present, or present but not widely distributed and being officially controlled [FAO, 1995] |
| **free from** (*of a consignment,**field or place of production*) | Without pests (or a specific pest) in numbers or quantities that can be detected by the application of phytosanitary procedures [FAO, 1990; revised FAO, 1995; CEPM, 1999] |
| **interception** (*of a pest*) | The detection of a pest during inspection or testing of an imported consignment [FAO, 1990; revised CEPM, 1996] |
| **monitoring of control point(s)** | A planned sequence of observations or measurements {official or not} at predetermined Control Points (CPs) to determine whether the Systems Approach plan has been followed. Therefore each CP monitoring consists of the verifications of the measures relevant to that CP. |
| **pathway** | Any means that allows the entry or spread of a pest [FAO, 1990; revised FAO, 1995] |
| **pest** | Any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products [FAO, 1990; revised FAO, 1995; IPPC, 1997] |
| **Pest Free Area** | An area in which a specific pest does not occur as demonstrated by scientific evidence and in which, where appropriate, this condition is being officially maintained [FAO, 1995] |
| **pest free place of production** | Place of production in which a specific pest does not occur as demonstrated by scientific evidence and in which, where appropriate, this condition is being officially maintained for a defined period [ISPM No. 10, 1999] |
| **pest free production site** | A defined portion of a place of production in which a specific pest does not occur as demonstrated by scientific evidence and in which, where appropriate, this condition is being officially maintained for a defined period and that is managed as a separate unit in the same way as a pest free place of production [ISPM No. 10, 1999] |
| **pest risk** (*for* ***quarantine*** *pests*) | The probability of introduction and spread of a pest and the magnitude of the associated potential economic consequences (see Glossary Supplement No. 2) [ISPM No. 2, 2007] |
| **pest risk** (*for* ***regulated non-quarantine*** *pests*) | The probability that a pest in plants for planting affects the intended use of those plants with an economically unacceptable impact (see Glossary Supplement No. 2) [ISPM No. 2, 2007] |
| **Pest Risk Analysis (*PRA*)** | The process of evaluating biological or other scientific and economic evidence to determine whether an organism is a pest, whether it should be regulated, and the strength of any phytosanitary measures to be taken against it [FAO, 1995; revised IPPC, 1997; ISPM No. 2, 2007] |
| **pest risk assessment** (*for* ***quarantine*** *pests*) | Evaluation of the probability of the introduction and spread of a pest and the magnitude of the associated potential economic consequences (see Glossary Supplement No. 2) [FAO, 1995; revised ISPM No. 11, 2001; ISPM No. 2, 2007] |
| **pest risk assessment** (*for* ***regulated non-quarantine*** *pests*) | Evaluation of the probability that a pest in plants for planting affects the intended use of those plants with an economically unacceptable impact (see Glossary Supplement No. 2) [ICPM, 2005] |
| **pest risk management** (*for* ***quarantine*** *pests*) | Evaluation and selection of options to reduce the risk of introduction and spread of a pest [FAO, 1995; revised ISPM No. 11, 2001] |
| **pest risk management** (*for* ***regulated non-quarantine*** *pests*) | Evaluation and selection of options to reduce the risk that a pest in plants for planting causes an economically unacceptable impact on the intended use of those plants (see Glossary Supplement No. 2) [I |
| **pest status** (in an area) | Presence or absence, at the present time, of a pest in an area, including where appropriate its distribution, as officially determined using expert judgement on the basis of current and historical pest records and other information [CEPM, 1997; revised ICPM, 1998] |
| **place of production** | Any premises or collection of fields operated as a single production or farming unit. This may include production sites which are separately managed for phytosanitary purposes [FAO, 1990; revised CEPM, 1999] |
| **point of entry** | Airport, seaport or land border point officially designated for the importation of consignments, and/or entrance of passengers [FAO, 1995] |
| **quarantine pest** | A pest of potential economic importance to the area endangered thereby and not yet present there, or present but not widely distributed and being officially controlled [FAO, 1990; revised FAO, 1995; IPPC 1997] |
| **required response** | A specified level of effect for a treatment [ISPM No. 18, 2003] |
| **systems approach**(es) | The integration of different risk management measures, at least two of which act independently, and which cumulatively achieve the appropriate level of protection against regulated pests [ISPM No. 14, 2002; revised ICPM, 2005] |
| **treatment** | Official procedure for the killing, inactivation or removal of pests, or for rendering pests infertile or for devitalization [FAO, 1990, revised FAO, 1995; ISPM No. 15, 2002; ISPM No. 18, 2003; ICPM, 2005] |
| **verification** | A procedure or measure to quantify the actual, or mathematically related proxy, effectiveness of a risk management measure. The purpose of verification is to assess how close the outcome is to the stated expected efficacy. |

Executive Summary

1. Introduction and definition of equivalence
2. The importance of equivalence in the world trade

The potential threat of plant and animal diseases and pests and food-borne human illnesses being moved around through trade is well established. Plant pests\* may be introduced not only through agricultural trade, but also through non-agricultural trade carrying susceptible materials (e.g. dunnage\*, handicrafts, household effects, etc) or simply “hitch hiking” pests (e.g. on military equipment, used cars and other goods, etc), through postal deliveries or the travelling public, or by natural means (e.g. wind and weather events, the pest’s own mobility, etc). Agricultural trade is the primary pathway\* for introduction\* of most exotic pests, however, so that regulating trade has a significant impact on the risk to a particular area from pests not yet established.

A competing objective globally is the demand for goods to flow among countries with less restriction from tariffs on imports or subsidies on exports. This demand has been demonstrated through decades of negotiation under the process of the General Agreement for Tariffs and Trade (GATT) and the current membership to the World Trade Organisation. The pursuit of “free trade” recognised that non-tariff restrictions could be valid but should be justified, or countries would simply impose non-tariff barriers to replace the tariffs. From the beginning, GATT noted the need for trade restrictions aimed at protecting human, animal and plant health. These restrictions are based on the estimated risk associated with specific trade.

Box 1. Article 4 of the SPS Agreement: Equivalence

1. Members shall accept the sanitary or phytosanitary measures of other Members as equivalent, even if these measures differ from their own or from those used by other Members trading in the same product, if the exporting Member objectively demonstrates to the importing Member that its measures achieve the importing Member's appropriate level of sanitary or phytosanitary protection. For this purpose, reasonable access shall be given, upon request, to the importing Member for inspection, testing and other relevant procedures.

2. Members shall, upon request, enter into consultations with the aim of achieving bilateral and multilateral agreements on recognition of the equivalence of specified sanitary or phytosanitary measures.

In the international movement of agricultural trade, there are alternative ways to achieve a level of risk accepted by a national governmental authority – the National Plant Protection Organisation (NPPO) (WTO SPS, 2000). “Equivalence” is an important principle underlying both free trade and national sovereignty in protection of domestic plant resources. While countries retain the sovereign right to protect domestic plant resources under the International Plant Protection Convention (IPPC), which is the intergovernmental treaty on plant health, there are many options for reducing the phytosanitary risk posed by trade. If risk can be managed, the objective of protection of resources can be met, at the same time there is facilitation of more open markets. In general terms, exporting countries can employ risk management measures which are alternative to those required by importing countries, as long as equivalency in the outcome can be demonstrated. Equivalence is one of the basic principles for plant health (IPPC, 2006 – ISPM 1).

The demand for “safe” free trade culminated in the World Trade Organisation’s (WTO) Agreement on the Application of Sanitary and Phytosanitary Measures (referred to as the SPS Agreement). However, the thrust of the agreement is to prevent the misuse of rights. It states that: “Members shall ensure that any sanitary or phytosanitary measure is applied only to the extent necessary” (Article 2, paragraph 2). Prohibition of trade is employed – and indeed tolerated – much less than in the past, because of international commitment to free trade.

It is impossible to calculate the volume or value of horticultural or other regulated agricultural trade currently undergone using pest risk management measures which are equivalent to previously applied, possibly more restrictive measures. The historic review below gives a sense of the widespread application of the general concept, however, prior even to international agreement and guidance. A discussion of drivers gives a sense of the growing importance equivalence will have for future trade.

1. IPPC definition of equivalence

An early definition of equivalence was of measures that are “not identical but have the same effect” (FAO, 1995). So that the outcome or impact of the measures in terms of the pest risk would need to be the same, while the measures themselves differed. The use of the word “effect” was more appropriate for a commodity treatment than other forms of phytosanitary measures (e.g. surveillance, Pest Free Areas, certification, inspection, etc). The definition was revised to address ambiguities and cover the range of situations. (Although the ISPM 24 on equivalence was not yet updated at the time of this report.)

Over some years, the definition of “equivalence (of phytosanitary measures)” evolved to be [comments added]: “the situation where, for a specified pest risk [therefore limiting the pest species, area, possibly period of time, etc], different phytosanitary measures achieve a contracting party’s appropriate level of protection [this replaces the wording of “effect” to tie in more closely to the WTO SPS concept of meeting a country’s defined tolerance to risk] (FAO, 1995; revised CEPM, 1999; based on the World Trade Organization Agreement on the Application of Sanitary and Phytosanitary Measures; revised ISPM No. 24, 2005).

This current definition captures much of the history of development of the concept, as laid out in this report.

1. What equivalence does not mean

[Equivalence *of phytosanitary measures*

the situation where, for a specified pest risk, different phytosanitary measures achieve a contracting party’s appropriate level of protection [FAO, 1995; revised CEPM, 1999; based on the World Trade Organization Agreement on the Application of Sanitary and Phytosanitary Measures; revised ISPM No. 24, 2005]. ]

There are cases in which a combination of measures or a new measure or technology has allowed movement of plant products when previously there was a prohibition of trade. Clearly, the alternative phytosanitary measure(s) cannot meet the same effect as prohibition, which would essentially be zero risk. This is a key reason for considering an importing NPPO’s ALOP rather than a set effect, as was suggested in the original definition.

The requirement for similar end-point pest mortality levels came about in early cases of commodity treatments developed for replacement of ethylene dibromide (EDB), methyl bromide (MB) or other broad spectrum fumigants. This led to wide use of prohibit 9 statistics as the basis for acceptance of new treatments. This criterion has been widely debated.

Another point of controversy over the years has been the presence of a live pest that is not viable or is sterile. If there is documentation of a treatment with that as the target effect, many argue that the presence of this organism does not indicate non-compliance. This issue continues to be contentious in some trade situations. The more recent endorsement of ISPMs on irradiation as a treatment shows a deepening of understanding of the threat of introduction of a pest, versus simply entry at the point of entry to a country, without perhaps movement beyond that point.

Equivalence also does not mean that all countries may be allowed to use the same alternative measures; at least not without additional safeguards. The ISPM no. 24 on equivalence (IPPC, 2005) clearly states that the capacity of the exporting country’s NPPO to apply the measure or measures may also be evaluated as an important component of the likelihood of meeting the importing NPPO’s appropriate level of protection. On a related issue, developing countries have raised a complaint to the WTO General Council regarding the difficulty in demonstrating equivalence to the generally more developed market countries NPPOs as an implementation constraint (WTO SPS, 2000).

1. Brief discussion of PRAs, ALOP and efficacy

The probability that a pest will enter, establish in and possibly spread to an area where it is not yet present can be estimated based on, among other things, the biology of the pest of concern and the conditions of the importing country or region. The consequences of such an introduction vary according to the conditions of the importing country or region, including: presence of the host of the pest, economic or environmental importance of the host plants, availability of control measures or means to eradicate a new introduction, social impact of carrying out the control measures and so forth. The risk posed by an exotic pest associated with trade (whether actually present or not) is the probability of an introduction times the consequences of it. This risk is estimated using a Pest Risk Assessment methodology described below; with the addition of possible risk reducing or pest risk management\* measures, the Pest Risk Analysis (PRA)\* is the foundation of decision making regarding trade between countries or regions.

Each country has the right to set the level of protection to be achieved, either due to low inherent risk or by using risk management measures against introduction of injurious pests that could cause economic or environmental impact, which are not already present. If this Appropriate Level of Protection (ALOP) cannot be reached through the addition of management measures, then the country can prohibit the trade.

The ALOP is a key component of the IPPC definition of equivalence, as noted above, but has not been well defined. There may be various ways to set the ALOP, varying from a defined economic threshold of potential impact to a more nebulous sense of matching the post-management measures risk level was has been accepted over years of trade historically. The underlying problem with this concept in plant health is that there is not an agreed, common framework for comparing widely varying technical information on the range of phytosanitary measures in terms of impact (Bigsby, 2001, and others), so that even with historic precedence, it is not always clear what is the ALOP to be reached. At this stage, there is little documentation from national governments on how the NPPO decides that measures are “enough” to meet this ALOP. It is not realistic to expect this to be transparent in the immediate future. (Although exceptions are emerging.)

In 2005, at the Interim Commission on Phytosanitary Measures (ICPM-7), the decision was taken to produce an ISPM or supplement to describe the use of the term appropriate level of protection (IPPC, 2005 – specification 36). A draft IPSM on ALOP was prepared and discussed by the IPPC Standards Committee. Eventually in the November 2008 meeting (IPPC, 2008) the decision was made to table the draft for the time being. The topic proved to be challenging and “it remained the remit of the SPS Committee to define ALOP”, as it arose from the SPS rather than the IPPC (IPPC, 2008).

 **PHYTOSANITARY PRINCIPLES FOR THE PROTECTION OF PLANTS AND THE APPLICATION OF PHYTOSANITARY MEASURES IN INTERNATIONAL TRADE**

**(IPPC 2006 – ISPM 1)**

**1.10 Equivalence of phytosanitary measures**

Importing contracting parties should recognize alternative phytosanitary measures proposed by exporting contracting parties as equivalent when those measures are demonstrated to achieve the appropriate level of protection determined by the importing contracting party.

The impact of measures relates to the efficacy of the measures, as well as to the level of the threat. “Efficacy (treatment)” appears in the official IPPC glossary as “a defined, measureable and reproducible effect by a prescribed treatment [from ISPM no. 18, 2003]; the term “efficacy” is not defined for other types of phytosanitary measures at this time.

Expert working groups under the IPPC were convened for the development of an ISPM on efficacy. This process has been stalled, but the reports reveal the complexity of the issues, as discussed further, below.

1. The drivers for seeking equivalence

Drivers for seeking equivalence have been identified from various sources, including survey results and interviews. The most commonly cited driver has been the loss of a chemical treatment such as a pesticide or postharvest fumigant, Methyl Bromide being an obvious example. The environmental impact of an existing option is also mentioned, even if still available.

Another driver noted has been continued non-compliance with existing measures due to some challenge in the application of those measures. Frequently, this has led to a Systems Approach, considered equivalent to the existing option, in order to maintain trade. A correlating driver is the issues of pesticide residues being found as the pest problem rises, and application of pesticides increase in response. Detentions due to pesticide residues are not directly related to the IPPC, but may lead a sector to ask the NPPO to look for better options.

Sometimes the existing option has negative impacts on quality of the product and an equivalent alternative, often a Systems Approach, is sought for market reasons.

At times, constraints in resources are the driver. This may be due to funding, capacity and work load of the NPPO employees, infrastructure or to limited volume of particular trade, which cannot justify the existing option. If the existing option requires financing of importing NPPO inspection on site, for example at a treatment facility, this may lead to petition for alternatives that may be carried out in transit or upon arrival to the port of entry, so as to avoid that administrative cost.

Political sensitivities were mentioned. A driver, which may have been even more common in the past is seeking equivalent measures when previously trade was prohibited. Various interviewees have commented that there are situations in which the existing measures are not justified, or there are new or additional requirements (i.e. due to the change in a pest status). These may be treated to some degree as equivalence negotiations, but in actual fact these are political negotiations.

Similar drivers were identified in a study on the application of Systems Approach (Quinlan & Ikin, 2009). Examples of equivalence that are not Systems Approach are included below, however, as there is no requirement for combined measures to be used to meet the equivalent ALOP.

1. Historic context for Equivalence (up through the SPS)
2. Agreement on alternative measures: commodity treatments and host status

[historic examples]

1. System wide equivalence: recognition of inspection systems, export certification, etc.

While generally in plant health, equivalence is agreed bilaterally for particular pest risk/commodity/source of trade, one can observe similar processes in the past for entire systems, well before the ISPM 24 was written. These agreements were primarily ad hoc, based on years of experience with trade and the building of mutual trust. For this reason, there may not have been transparency in the criteria for the recognition. Furthermore, examples are not well documented, because of the political ramifications of granting recognition to possibly one exporting NPPO and not others.

In contrast to these examples, the evolution of the MERCOSUR mutual recognition has been a more deliberate and transparent process.

Some shared vision for pest risk and plant health has led to no less fundamental, even though much less comprehensive, agreements between Australia and New Zealand.

1. European approach to requirements

From the period of the creation of the European Common Market, the plant health legislation covering members of the European Union (and some non-members that have chosen to match that legislation) has offered alternative measures against the same pest risk. The principal legislation is the Plant Health Directive (2000/29). It is suggested that Annex 4 on emergency actions is based on the principle of equivalence (personal communication) from its beginnings. Some derogations, which are based on the principles of a Systems Approach, have been adopted over changed requirements over time (e.g. Decisions 2003/63, 2002/887, 2002/499, 2005/51, 2004/4, 2003/249, 93/423). This occurs generally when pest detections have been unacceptably high, frequent or on going from particular sources. The objective is to avoid prohibition, in the spirit of the WTO SPS.

In a sense, the European approach has always been to have prohibition as one option, based on the pest list provided in this legislation with technical justification and transparency. (A country with this pest is prohibited from trade of host material, but then other options are offered.) Pest free areas or pest free places of production are commonly offered as one of the options for trade from countries with the target pest already present. Beyond this, there are examples of single or combined measures which must be considered “equivalent” in so far as they are accepted as providing ALOP for the entire EU.

In the past decade, since its formation, when exporting country NPPOs propose alternative measures to those in the legislation, most often Systems Approach, this is referred to the European Food Safety Authority (EFSA) Plant Health Committee for technical review.

[add the examples documented]

1. The advent of SPS and relevant principles

The 1951 version of the IPPC text has an objective to “secure common and effective action to prevent the spread and introduction of pests (including weeds) of plants (including wild flora) and plant products, and to promote appropriate measures for their control.” This original convention language did not cover harmonisation and equivalence (Van der Graaff, 1999).

Before the formation of a Secretariat for the IPPC (established in 1992 and operational in 1993), the Plant Production and Protection Division of FAO coordinated activities of the convention. Van der Graaff & Ikin (1993) describe how the parties in the GATT approached the FAO to seek stronger coordination of the objectives of the IPPC and to add specific, trade-related objectives which emerged from the GATT negotiations. In this way, the use of risk analysis was promulgated as a way to enhance transparency of national regulatory decisions, use of proportionality (“necessity”) in imposing measures and the scientific justification of any measures that would deviate from the existing and future ISPMs. Principles of non-discrimination and the formalised use of the term “equivalence” appear to arise during this period of transition to the 1997 version of the convention text.

Equivalence was considered an added support to countries that might not have the same technologies and infrastructure available for treating commodities, for example (Thiermann, 1999). The 1980s and early 1990s was indeed a period of rapid development of commodity treatments (Hallman & Quinlan, 1996); some of which were not readily available to developing countries.

The IPPC text included equivalence as a general principle of the convention (FAO, 1995). The membership body of the IPPC, the Commission on Phytosanitary Measures (CPM), eventually endorsed an International Standard on Phytosanitary Measures (ISPM) providing guidelines for the determination and recognition of equivalence of phytosanitary measures (IPPC, 2005) in 2005.

The concept of equivalence was made explicit in the WTO SPS Agreement (Article 4). This reference reminds us the fundamental objective of equivalence is to open and maintain trade that otherwise might be restricted by prohibition or lack of options for risk management. The right of countries to protect their own plant resources is acknowledged, but this is not the primary objective under the trade-oriented framework of this reference.

1. The ISPM on equivalence and other relevant ISPMs
2. Key principles
3. Attempts to define ALOP and efficacy

(more details on the IPPC process, or just leave it as above – that it did not get agreed??)

1. Other ISPMs including systems approach
2. ISPM 15–a global example of equivalence
3. The ISPM on equivalence
4. Remaining needs for clarification or support

Some of the issues requiring more clarification were identified by respondents to the global survey or individual interviews. These include:

* generally more guidance on how to negotiate equivalence
* less complicated, time consuming and onerous methods for agreeing to equivalence (such as a common framework for evaluation)
* increased capacity to carry out Systems Approach
* assistance with understanding the data required or how to determine efficacy
* more transparency in the review of information submitted
* guidance on how to remove measures when no longer justified (when less would meet the ALOP)
* ways to avoid the long process of negotiation when in the end the industry will not comply or attempt to use the equivalent measures negotiated
* improved coordination within countries, so that the NPPO has authority to complete equivalence negotiations and, once concluded, the inspectors, Customs etc are informed
* the failure of Doha – some question if there is any hope for multilateral solutions through WTO
* how to proceed when equivalence negotiations are held back by what appear to be political and protectionist delays
* the continued use of the IPPC to reach agreement on equivalent measures through ISPMs (e.g. the variety of approved treatments for ISPM 15 treatment of dunnage)

1. Common practice in plant health
2. Case by case nature (end point rather than system equivalence)

Information regarding the application of equivalence and perspectives and experiences is collected from various sources. As noted below, official notification of equivalence agreements has been virtually non-existent and thus does not provide data. Discussion of the concept at the SPS Committee has put a few perspectives in to the record. Comments from countries on the draft of ISPM 24, during country consultation, provide a useful view of concerns and understanding, even though much of these did not make the final edit. A survey of NPPOs in 2011 and 2012 allowed for documentation of common practice. Although only a dozen countries responded, each of the FAO Regions (Africa, Near East, Europe, Asia, Pacific, Latin America and Caribbean, and North America) was represented by this response. The survey may not be representational in other ways (e.g. of the greatest volume of trade or of the range of experiences). Finally, individual interviews of government officials were conducted and are cited, where permitted.

1. Technical or operational agreements
2. Mutual recognition

The US equivalency agreement on irradiation is designed to ensure market access for irradiated products from the USA, if the US is opening its borders to irradiated products itself.

1. Formal equivalence and notified agreements

[Still researching if there are any formal notifications in plant health!]

1. ISPMs, regional agreements and other agreements that are equivalency agreements

[Repetitious of the section III?]

1. Emerging issues and developments
2. Bilateral vs. regional or global negotiations

A trend towards more requests for equivalent measures (whether called this or not) was observed by most parties. Certainly the pressure on the drivers for equivalence is rising.

While the opinion of best practice is overwhelmingly to negotiate bilaterally, there is a possible move towards more regional approaches and appreciation for the more specific technical ISPMs which take the burden off individual countries to negotiate.

1. PRAs carried out for similar conditions or pests/pathway, rather than individually
2. (IPPC Technical Panels – if occurring there)
3. Increased quantification and modelling
4. (Upcoming changes in European legislation)
5. Main challenges for NPPOs
* The time and resources required to negotiate the equivalence
* The delays and lack of transparency in evaluation process of the market country’s NPPO
* Lack of a common framework for considering the impact or efficacy of measures, and thus for comparing them
* The issue of capacity for application of measures – varying views of the need for assistance in capacity or favoured treatment versus the need of an importing country to ensure the ALOP
* Overall capacity to carry out new measures, especially Systems Approach
1. Perceived benefits of equivalence agreements

Potential benefits from equivalence agreements are widely agreed upon:

* Opening trade that would otherwise be prohibited
* Continuing trade when the exporting NPPO has run into some problems with compliance, but would be able to comply with other measures (e.g. Pest Free Area is not proving adequate for one country’s conditions and capacity, but could work as one component of a Systems Approach)
* Continuing trade when the existing measure is no longer available or is considered objectionable for other reasons (impact to the environment, quality impact on product, etc)
* Introducing a Systems Approach that then allows flexibility (adjusting effectiveness by adding or removing measures, targeting non-compliance without stopping all trade, etc)
* A means to open discussion of technical justification of existing measures (without going to a formal dispute)
1. Conclusions and recommendations

Bibliography and other resources I am aware that a lot of these do not yet appear, and others already in are not yet listed

**APHIS**. 2002. Proposed Rule: Irradiation Phytosanitary Treatment of Imported Fruits and Vegetables. Federal Register,67 (51), 22.08.11-11610-11614 (available at <http://www.federalregister.gov/articles/2002/03/15/02-6267/irradiation-phytosanitary-treatment-of-imported-fruits-and-vegetables>, accessed 22.08.11).

**AVPMA**. 2011. *National Response Plan - APVMA Reviews of Dimethoate and Fenthion* (available at <http://www.domesticquarantine.org.au/go/dqmawg/issues-and-decisions/apvma-reviews-of-dimethoate-and-fenthion>, accessed 21.08.11).

**Baker, A. C.** 1939. *The basis for treatment of products where fruitflies are involved as a conditions for entry in the United States.* Washington, DC. Department of Agriculture. Report number: Circular No 551.

**Biosecurity Australia**. 2008. *Provisional Final Import Risk Analysis Report for Fresh Mango Fruit from India*. Canberra, Biosecurity Australia.

**Birnie, P., Boyle, A. & Redgwell, C.** 2009. 14. International Trade and Environmental Protection. In: *International Law & the Environment.* Third edition. Oxford, UK, Oxford University Press. pp. 753.

**CFIA.** 2010.*Questions and answers - Canadian Nursery Certification Program (CNCP) and Canadian Greenhouse Certification Program (CGCP,* (available at <http://www.inspection.gc.ca/english/plaveg/hort/d-04-01qae.shtml>, accessed 26.08.11).

**Commission of the European Communities.** 2001. *Implementing policy for external trade in the fields of standards and conformity assessment: a tool box of instruments.* Commission Staff Working Paper, SEC (2001) 1570 edition. Commission of the European Communities, Brussels.

**Daly, Herman E.** 1994. Fostering environmentally sustainable development: four parting suggestions for the World Bank. *Ecological Economics,*10 (3), 183-187.

**Denscombe, M.** 2007. *The Good Research Guide for small-scale social research projects.* Third edition. Maidenhead, UK, Open University Press.

**Dudley, C.** 2012. *Implementation of Equivalence within the International Plant Protection Convention.* Imperial College of London, London. (MSc thesis).

**Elborgh-Woytek, K., Gregory, R.. & McDonald, B.** 2010. *Reaching the MDGs: an action plan for trade.* Report for the International Monetary Fund, Washington DC, IMF.

**EPPO.** 2004. *EPPO data sheets on quarantine pests: anoplophora glabripennis*, (available at <http://www.eppo.org/QUARANTINE/insects/Anoplophora_glabripennis/ANOLGL_ds.pdf>, accessed 01.08.11).

**EPPO.** 2008. *Working group on equivalence: Brugge, BE, 2003-09-01/05*, (available at <http://archives.eppo.org/WORLDWIDE/2003/wgequivalence_2003.htm>, accessed 06.08.11).

**EU.** 2001.*Commission staff working paper on implementing policy for external trade in the fields of standards and conformity assessment: a tool box of instruments.* SEC (2001) 1570 series. Commission of the European Communities, Brussels.

**EU.** 2010. *European Union strategy to reduce the use and emissions of Methyl Bromide for quarantine and pre-shipment purposes*. Ares (2010)315100 - 08/06/2010 series. Brussels, European Union.

**EU- Chile.** 2002. Council decision of 18 November 2002 on the signature and provisional application of certain provisions of an agreement establishing an association between the European Community and its Member States, of the one part, and the Republic of Chile, of the other part (2002/979/EC). EUR-Lex. 45 (L 352), (available at <http://eur-lex.europa.eu/JOIndex.do?year=2002&serie=L&textfield2=352&Submit=Search&ihmlang=en>, accessed 06.09.11).

**EUROPA.** 2007. *Summary of Treaty - Amendment to the Montreal protocol on substances that deplete the ozone layer* (available at <http://ec.europa.eu/world/agreements/prepareCreateTreatiesWorkspace/treatiesGeneralData.do?step=0&redirect=true&treatyId=534>, accessed 21.08.11).

**FAO.** 1997. *International Plant Protection Convention.* Revised text, November 1997. Rome, IPPC, FAO.

**FAO.** 2002. ISPM 15: *Regulation of Wood Packaging Material in International Trade*. Rome, IPPC, FAO.

**FAO.** 2003. ISPM 18: *Guidelines for the Use of Irradiation as a Phytosanitary Measure.* Rome, IPPC, FAO.

**FAO**. 2005. ISPM 24: *Guidelines for the Determination and Recognition of Equivalence of Phytosanitary Measures.* Rome, IPPC, FAO.

**FAO.** 2008. *Replacement or reduction of the use of methyl bromide as a phytosanitary measure*. CPM Recommendation, Rome, IPPC, FAO.

**FAO.** 2009.ISPM 15: *Regulation of Wood Packaging Material in International Trade*, Revised text. Rome, IPPC, FAO.

**FAO.** 2010.ISPM 5: *Glossary of phytosanitary terms*, Rome, IPPC, FAO.

**FAO.** (Unknown)*ISPM #15 Questions and Answers from* *ISPM-15-L@mailserv.fao.org**,* (available at <https://www.ippc.int/file_uploaded/1110538735517_Chapter_01_IFQRG_ISPM_15_Q_As_E.doc>, accessed 06.09.11).

**Federal Register.** 2011. *Electronic code of Federal Regulations,* (available at <http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&rgn=div5&view=text&node=7:5.1.1.1.6&idno=7#7:5.1.1.1.6.12.40.20>, accessed 06.09.11).

**Ferrier, Peyton**. 2010. Irradiation as a quarantine treatment. *Food Policy,* 35 (6), 548-555.

**Follett, P. & Neven, L.** 2006. Current trends in quarantine entomology. *Annual Review Entomology USDA-ARS / UNL Faculty,* 51, 359.

**Garrett, K. A.** 1997. Use of Statistical Tests of Equivalence (Bioequivalence Tests) in Plant Pathology. *Phytopathology,* 87 (4), 372.

**Goebel, C., Bumgardner, M. S., Herms, D. A. & Sabula, A.** 2010. Failure to phytosanitize ash firewood infested with emerald ash borer in a small dry kiln using ISPM-15 standards. *Journal of Economic Entomology,* 103 (3), 597.

**Griffin, R.** 2011. *History of the development of the SPS agreement.* Multilateral trade negotiations on agriculture - A resource manual, WTO- Technical Cooperation Department.

**Hallman, Guy J.** 2011. Phytosanitary applications of irradiation. *Comprehensive reviews in food science and food safety*, 10 (2), 143-151.

**IANCAS.** 2011. *Radiation processing of mangoes for export*, (available at <http://www.iancas.org/rediation.asp>, accessed 06.09.11).

**IPPC.** 2004. *Compiled member comments on draft standards*. Follow links for comments from 2004, (available at <https://www.ippc.int/index.php?id=1110637&L=0>, accessed 07.07.11).

**Keiran, M. & Allen, E.** 2011. *Keeping pests from moving around the world*, (available at <http://www.fao.org/docrep/007/y5507e/y5507e09.htm>, accessed 01.08.11).

**Landolt, P. J., Chambers, D. L. & Chew, V.** 1984. Alternative to the use of probit 9 mortality as a criterion for quarantine treatments of fruit fly (Diptera: Tephritidae)-Infested fruit. *Journal of Economic Entomology,* 77 (2), 286.

**Linder, B. & McLeod, P.** 2008. *A Review and Impact Assessment of ACIAR's Fruit-Fly Research Partnerships, 1984-2007.* Canberra, Australia, Australian Centre for International Agricultural Research. Report number: Impact Assessment Series Report, No 56.

**Mehta, R. & George, J.** 2004. SPS measures and non-tariff barriers: perspectives of small holder livestock producers in developing countries. *Livestock and Livelihoods (FAO),* (available at <http://www.fao.org/ag/againfo/programmes/en/pplpi/docarc/LL24.pdf>, accessed 06.09.11).

**Merriam, S. B.** 1985. The case study in educational research: a review of selected literature. *Journal of Educational Thought,* 19 (3), 204.

**Mumford, J.** 2010. *Lecture on 'Risk' for the MSc environmental technology core course.* CEP, London, Imperial College of London.

**NAPPO.** 2005. *Integrated pest risk management measures for the importation of plants for planting into NAPPO member countries (RSPM 24).* Ontario, Canada, NAPPO Secretariat.

**National Mango Board**. 2008. *Irradiation plants in mango producing countries* (available at <http://www.mango.org/media/46334/irradiation%20plants%20in%20mango%20producing%20countries%20eng.pdf> , accessed 22.08.11).

**Neumayer, E.** 2001. Chapter 7: Trade liberalization and the environment. *Greening Trade and Investment.* Uk and USA, Eatthscan Publications Ltd, pp. 103.

**Newcomer, K. & Derrik-Mills, T.** 2011. *Evaluation of the USDA/APHIS United States Nursery Certification Program (USNCP).* United States, Horticultural Research Institute.

**Pawson, S., Watson, M. & Brin, A.** 2010.*Relative attraction of arhopalus ferus to white light*. Scion.

**Peter Meadows Consulting. 2005. ISPM** *15 and quarantine fumigation.* Australia, Peter Meadows Consulting Pty Ltd.

**Quinlan, M. & Ikin, R.** 2009. *A review of the application of systems approach to risk management in plant health*. PRATIQUE.

**ReliaSoft**. 2008. Type I and type II errors and their applications. *Reliability HotWire,*(88), (available at <http://www.weibull.com/hotwire/issue88/relbasics88.htm>, accessed 20/08/2011).

**Schortemeyer, M., Thomas, K., Haack, R. A., Uzunovic, A., Hoover, K., Simpson, J. A. & Grgurinovic, C. A.** 2011. Appropriateness of probit-9 in the development of quarantine treatments for timber and timber commodities. *Journal of Economic Entomology,* 104 (3), 717.

**Sgrillo, R.** 2002. *Efficacy and equivalence of phytosanitary measures*. A discussion and reference paper prepared for the IPPC working group on the efficacy of phytosanitary measures, Wye, Imperial College of London, UK, 2-4 July 2002. 14pp.

**UNEP.** 2007. *Methyl Bromide: quarantine and preshipment use.* Nairobi, United Nations Office at Nairobi (UNON), Publishing Services Section. Report number: EP 2007-62976.

**USDA.** 1997. *Alternatives for quarantine security.* United States Department of Agriculture, Washington DC, (available at <http://www.ars.usda.gov/is/np/mba/jan97/secure.htm>, accessed 21.08.11).

**UN-OHRLLS.** 2009. *The least developed countries: things to KNOW, things to DO.* UN-OHRLLS.

**Vergano, P.** 2003. *Study on relevant WTO rules on equivalency and mutual recognition and existing bilateral agreements between WTO member countries of interest to Vietnam: MUTRAP II, Activity AGRI-3.* Ministry of Trade in partnership with the European Commission. Report number: ASIE/2003/005711.

**Vermeulen, T. & Kool, A.** 2006. *Phase out of Methyl Bromide as ISPM 15-treatment*. The Netherlands, CLM Research and Advice Plc. Report number: CLM 625.

**Villalaz, A.** 2010. *Food and agricultural import regulations and standards - narrative*. Unknown, Global Agricultural Information Network. Report number: PN10009.

**Whittle, P., Quinlan, M. & Bin Tahir, H.** 2010. *Beyond Compliance: Report on workshop for STDF Project Preparation Grant 328. Developing trade opportunities: an integrated systems approach for pest risk management*. Report of workshop held in Kuala Lumpur, 16-19 August, 2010.

**WTO.** 1994. *General agreement on tariffs and trade*. Geneva, World Trade Organisation.

**WTO.** 1995. *The WTO agreement on the application of sanitary and phytosanitary measures (SPS Agreement).* Geneva, WTO.

**WTO.** 1999. *Note by the Secretariat on the summary of the meeting held on 7-8 July 1999 (G/SPS/R/15).* Geneva, WTO.

**WTO.** 2000. Equivalence: consideration of Article 4 of the SPS Agreement (G/L/423). Geneva, WTO.

**WTO.** 2010. *Overview regarding the level of implementation of the transparency provisions of the SPS agreement (G/SPS/GEN/804/Rev.3)*. Geneva, WTO.

**WTO.** 2011a. *Jargon Buster.* Geneva, WTO, (available at <http://www.wto.org/english/news_e/news11_e/sps_30mar11_e.htm>, accessed 16.05.11).

**WTO**. 2011b. *SPS handbook training module: chapter 4 – Notification of equivalence,* (available at <http://www.wto.org/english/tratop_e/sps_e/sps_handbook_cbt_e/c4s1p1_e.htm>, accessed 16.08.11).

**WTO.** 2011c. *Millennium development goals – A global partnership*. Geneva, WTO, (available at <http://www.wto.org/english/thewto_e/coher_e/mdg_e/global_partnership_e.htm>, accessed 16.05.11).

**WTO Representative**. Correspondence on transparency. (Personal communication, 2011) *Email correspondence regarding transparency.*

**Yin, R. K.** 2003. *Case study research: design and methods.* Applied Social Research Methods, Third Edition edition. California, London, and New Delhi, SAGE Publications.

1. (Annex on its use in other fields [especially OIE and Codex], although distinct)
2. Text of most relevant agreements
* SPS agreement – relevant article
* ISPM no. 24
* Forms for notification of equivalence

***Article 4: Equivalence***

1. Members shall accept the sanitary or phytosanitary measures of other Members as equivalent,

even if these measures differ from their own or from those used by other Members trading in the same

product, if the exporting Member objectively demonstrates to the importing Member that its measures

achieve the importing Member's appropriate level of sanitary or phytosanitary protection. For this

purpose, reasonable access shall be given, upon request, to the importing Member for inspection, testing

and other relevant procedures.

2. Members shall, upon request, enter into consultations with the aim of achieving bilateral and

multilateral agreements on recognition of the equivalence of specified sanitary or phytosanitary

measures.