

6th International Forestry Quarantine Research Group Meeting
Rome, Italy
September 15 – 19th 2008

Definitions and Abbreviations	
APPPC	Asia Pacific Plant Protection Commission
CPM	Commission on Phytosanitary Measures
CT	Concentration/Time
EPPO	European Plant Protection Organization
IFQRG	International Forestry Quarantine Research Group
IPPC	International Plant Protection Convention
ISPM	International Standard for Phytosanitary Measures
MBr	Methyl Bromide
NAPPO	North American Plant Protection Organization
NPPO	National Plant Protection Organization
PPPO	Pacific Plant Protection Organisation
PRA	Pest Risk Assessment
RPPO	Regional Plant Protection Organization
SC	Standards Committee of the IPPC
SF	Sulphuryl Flouride
TPFQ	Technical Panel on Forest Quarantine
TPPT	Technical Panel on Phytosanitary Treatments

1.	Opening
	Brent Larson opened the meeting, welcomed the participants and provided administrative information regarding FAO. Shane Sela indicated that Eric Allen the Chair was unable to attend and as result Mike Ormsby was asked by Allen to act as the Chair of the meeting. Allen would remain as Chair of IFQRG.

2.	IFQRG Introductions & Background
	A review of the role of IFQRG in science support to IPPC was provided by Shane Sela. Participants introduced themselves. A list of participants is provided in Appendix 3.
3.	Report of Commission on Phytosanitary Measures 03
	Stacie Johnston provided an overview of the forestry issues raised at the CPM (Document: IFQRG – 2008 – 04) including updates of IFQRG’s role in providing science support to quarantine issues, the revision of ISPM No. 15, specifications regarding new forest quarantine standards, etc. These were reviewed in detail later in the day.
4.	Report on the Revision of ISPM No. 15
	<p>Greg Wolf provided a presentation (2008-01-PPT) regarding the changes made to ISPM No. 15 (IFQRG – 2008 – 05). The issue of repair and remanufactured was discussed by participants in relation to whether a mandatory requirement for re-treatment of repaired wood packaging and removal of marks is necessary.</p> <p>The participants also suggested that technical justification is necessary if regulatory bodies intend on requiring measures in excess of those prescribed in the standard.</p> <p>A member raised the need for the standard to provide rationale for bark removal requirements included in the standard. Such text is unlikely to be included, given that standards generally only provide information related to the application of measures. It was agreed that much of the science supporting the conclusions on regulating bark has been published in some cases and will be published in various sources including IFQRG minutes/documents, IPPC reports, etc. Additionally wording with regards to the rationale for bark removal standards could be added to a proposed explanatory note that is to accompany the standard.</p> <p>The issue was raised that green bamboo or grasses could pose a risk as plant pests. The scope of the standard does not examine the risks of wood packaging posing a risk as plant pests. Additionally, members reported that bamboos and grasses require higher rates of MBr treatment to effectively control pests associated with these plants. Members agreed that further specifications regarding the treatment of bamboos and grasses for control of associated pests should be reviewed.</p> <p>A number of members raised the issue that there is no scientific rationale to determine the extent to which a particular commodity can be classified as an exempt article specified in the standard (i.e. “gift boxes” or spirit barrels). Other members suggested that the treatment process used for spirit barrels, heats some barrels to 176°C for 20 minutes, however others are not treated to that extent.</p>

It was suggested that the standard should contain a recommendation to ensure that bark pieces allowed in ISPM No. 15 are sufficiently separated from each other to prevent pests utilizing several individual bark patches that are closely associated to complete breeding and development. However it was agreed that there is insufficient information to define an effective minimum separation that is likely to prevent an insect completing its lifecycle. Participants agreed that the occurrence of 50 square cm bark pieces being sufficiently close together in such fashion as to permit breeding and completion of lifecycles is unlikely in commerce. Additionally, wood that has dried is unlikely to serve as a sufficient substrate to permit larvae to cross the bark free separation. As such, the participants concluded that for practical purposes wording such as “clearly distinct pieces of bark...” is appropriate to mitigate any risk of patches acting in association to support insect development.

The removal of the treatment mark may create difficulties in assessing the adequacy of particular treatments such as was undertaken in the bark assessment. It was also suggested that the inclusion of specific components to the mark (dates, treatment codes, etc.) adds substantial costs which is particularly problematic for developing countries. The question of readability of mark also becomes more problematic as additional information is added to the mark. The group concluded that in general the requirement for additional information (e.g. treatment codes, dates, etc.) is the responsibility of the exporting NPPOs (outside of the mark).

The issue of prescriptive requirements for the mark was also questioned. It was felt by members that the need to have borders around the mark created an unnecessary burden in some cases, as some wood packaging is too small to permit legibility when the border is added. Others felt that a more prescriptive requirement for marks will ensure that the integrity of the mark is maintained.

The issue of the risk of dry wood pests was also raised. Some participants suggested that the standard should address the concern raised by these pests. The issue of dry wood pests extends beyond the scope of ISPM No. 15 to commodities not specifically regulated by the standard. As such, regulations pertaining to dry wood pests should be established on technical justification.

The use of labels or tags in marking is recognized by the proposed standard, however a mechanism to ensure acceptance of the label's admissibility is not clear. It was concluded that the issue should be raised to the bodies of the IPPC for consideration. Ultimately importing countries retain the right to determine admissibility to import requirements.

ISPM No. 15 fumigation rate was questioned by a commenter, who provided a comment to the Canadian NPPO. The commenter suggested that the rates contained in the example provided were insufficient to address the targeted

	<p>CT level. Members suggested that the CT table is the standard and that only one example schedule is provided. Other examples could be included, to ensure that targeted CT values are obtained. Additionally, the commenter indicated that the treatment standards prescribed were established for probit 9 levels of security which the commenter felt were unnecessary for wood pests.</p>
5.	Other Standards Being Developed by the IPPC
	<p>Brent Larson reported that a number of other standards are being proposed for adoption. These are in country consultation and include standards for post entry quarantine, classification of commodities, potatoes, surveillance for fruit flies, revision of glossary terms and an appendix to the glossary.</p>
6.	Report on TPFQ
	<p>Greg Wolf provided an overview of the work conducted by the TPFQ. Most of the work being undertaken by TPFQ will be moving away from standards pertaining to wood packaging. The revision of ISPM No. 15 is now mostly complete barring country consultation resulting in the SC returning the standard to the panel. The TPFQ will be focussing its attention on establishing standards for the movement of wood products, and draft specifications on forest surveys and tree seeds. Identifying the risks associated with the movement of wood commodities is a critical science question relevant to IFQRG support of the work of TPFQ. Further information is available in IFQRG – 2008 – 07, IFQRG – 2008 – 09, IFQRG – 2008 – 10 & IFQRG – 2008 – 11</p> <p>Brent Larson indicated that the TPFQ meeting was suspended until December, 2008 as a result of funding issues.</p>
7.	Report on the TPPT
	<p>Mike Ormsby reported that the TPPT met in Chang Mai, China. Ormsby indicated that the TPPT reviewed the efficacy data provided by submitters of new treatments for ISPM No. 15. Further information is available in IFQRG – 2008 - 08</p> <p>The SC had indicated to the TPPT the critical need in developing and approving treatments for ISPM No. 15. The TPPT reviewed the data provided by submitters (microwave and SF) but found the data was lacking sufficient information for approval. As such a letter providing details of the shortcomings of the submissions was provided by the TPPT to the submitters.</p> <p>Some members argued that the information provided by the TPPT fails to provide sufficient clarity regarding the data necessary to achieve approval for a product.</p>
8.	Report on the TPDP

	Brent Larson reported that the TPDP is working on a number of protocols for the identification of several forest pests. A number of expert authors are collaborating with the panel.
9.	Report on the IUFRO Alien Invasive Species Group
	Hugh Evans provided a presentation (2008-02-PPT) summarizing developments of the IUFRO in relation to the determination of risks associated with bark on treated wood packaging and developing scientific information on the risks of the movement of plants for planting.
10.	Other meetings
	Several international meetings on forestry and invasive species are planned for 2009.
11.	Regional Updates
	<p><u>EPPO</u></p> <ul style="list-style-type: none"> – Andrei Orlinski in a presentation (2008-05-PPT) provided information on new standards. He also reported that there are 50 members within EPPO. 19 new forest pests were added to EPPO list. A new mealybug (<i>Marshallina ellenica</i>) was identified on <i>Pinus</i> (EPPO Alert List)
	<p><u>APPPC and the PPPO</u></p> <ul style="list-style-type: none"> – Mike Ormsby indicated that the APPPC and the PPPO reviewed the proposed ISPM No. 15 The APPPC and the PPPO has given its basic support with a few comments on specific issues:
	<p><u>NAPPO</u></p> <ul style="list-style-type: none"> – Shane Sela provided a presentation (2008-03-PPT) on developments by the NAPPO Forestry Panel.
	<p><u>European Pallet Federation</u></p> <ul style="list-style-type: none"> – Members in attendance indicated that the association is interested in moving away from reliance on methyl bromide. The association does not support the current text within the revised ISPM No. 15 regarding repair. The association supports requirements for removal of all marks upon carrying out repairs and acceptance of responsibility of repair by the facility carrying out the repair by applying its own mark. – The Federation reported that 200 million pallets are repaired annually. In the UK over 25 million pallets are repaired annually. – The Federation also supports minimal variation in the mark.
	<p><u>Canadian Pallet Association</u></p> <ul style="list-style-type: none"> – Gordon Hughes provided a presentation (2008 – 06-PPT) related to dunnage placed within a container and the requirement for marking

	<p>each piece. The association supports a requirement that only a few units be marked along with documents verifying certification moving with the export consignment. Brent Larson suggested that a standard being developed for the movement of containers could be an opportunity to allow for deviations from ISPM No. 15.</p>
12.	IFQRG Representation From Developing Regions
	<p>Brent Larson indicated that there are funds available to support two people attending the 2008 IFQRG meeting. These funds were not used. Members commented that they were not aware that these funds were available and questioned whether these would be available next year. Larson encouraged members to find researchers from developing countries to attend.</p>
13.	Plants for Planting
	<p>Brent Larson indicated that SC 7 has reviewed a draft standard and considered further work was required. This now must go to the full SC in November for review and recommendations. However, the standard will be returned to the working group and new members will be sought. The draft is not available for review. The draft recommended an accreditation system however the SC considers this inappropriate for an international standard at this time.</p>
14.	Action Items from IFQRG 2007
	<p>Participants reviewed the progress on action items identified in the 2007 report.</p> <p>Participants agreed that the production of a summary of the rate of drying of bark had been generally completed and information is generally available in published and unpublished work. However the participants indicated that it would be useful for the TPFQ to consider developing guidance on bark removal and debarking (the panel should consider the draft standard that was present by the EWG on Debarking and Bark Removal)</p> <p>The list of <i>lps</i> information and relevant experts had been provided to the IPPC. The diagnostic information on <i>lps</i> is being drafted.</p> <p>A summary of pest information developed in relation to testing for treatments was completed by Mike Ormsby. The summary was provided to the TPFQ and reviewed. Further work in refining the criteria necessary for evaluating treatments is needed to define how treatments can be adopted into ISPM No. 15</p> <p>A comparison document between heat treatment, methyl bromide, sulphuryl fluoride and microwave treatment was not completed due to the complexity in evaluating the work done by researchers for each treatment.</p> <p>Shane Sela has drafted a guidance document (IFQRG – 2008 – 14) related</p>

	<p>to the application of heat for treatment of wood. The document requires further refinement before being forwarded to TPFQ.</p> <p>A summary of the process used in adopting treatments is still being developed by IFQRG members</p> <p>Greg Wolff reported that clarity regarding the term “efficacy” is provided in Section 3.2 of ISPM No. 28.</p> <p>Sela reported that an ISPM No. 15 adoption protocol that was suggested for the IPPC website was not possible in the IPPC process.</p>
15.	IFQRG Support for Technical Panels
	<p>Mike Ormsby introduced a paper (IFQRG - 2008 -13) summarizing the main issues facing TPFQ and TPPT that IFQRG participants can review and develop technical recommendations in support of these panels.</p>
16.	Risks Associated with the Movement of Wood
	<p>Brian Zak provided a presentation (2008-04-PPT) into the types of commodities moving internationally and a review of pest concerns that may be associated with these. He accentuated the need for new treatments and questioned the practicality of requiring Probit 9 levels for treatment approval.</p>
	<p>The IFQRG participants were divided into small sub-groups to identify the commodity pathways, pests and mitigation strategies associated with international movement of wood products. A summary of the sub-groups’ work is provided in column 1 of Appendix 2. They suggested that the least processed materials were subject to greater pest loads and as a result were riskier items requiring broader potential measures to prevent pest movement. One of sub-groups suggested that the level of processing of utility poles was significantly more effective in mitigating pests at the bark-cambial layer resulting in reduced pest loads as compared with logs or debarked logs. Additionally, the sub-group observed that fungi associated with certain processed products are not generally regarded as a phytosanitary concern. A discussion among all participants suggested that firewood poses a substantial risk for the movement of pests/expansion of pest infestations particularly over short distances. One sub-group proposed that effective mitigation can be achieved by appropriate systems approaches applied in the commodity pathways including grading, debarking, sawing, etc.</p>
	<p>Adnan Uzunovic provided a summary of a Canadian review paper <i>Phytosanitary risks associated with the global movement of forest products: a commodity based approach</i>. This paper categorizes pest risks associated with certain wood commodities. In this effort the authors are trying to define the types of pests removed from round wood, squared wood and processed wood products by applying treatment approaches including debarking, heat, fumigants, chemical treatments, etc. The participants reviewed the summary table (IFQRG – 2008 - 21) regarding pests associated with various</p>

	<p>commodities and treatments. One participant indicated that scales are not significantly important on wood products. A number of other participants agreed that scales on wood are becoming more problematic. Additionally, the members suggested that regulators should consider all homopterans rather than just adelgids that could be on wood. The efficacy of heat treatment should include a consideration that there are some thermo-tolerant wood borers including emerald ash borer. A number of participants felt that the efficacy of MBr should support the removal of risks of <i>Sirex</i>, adelgids, etc. on round woods.</p>
	<p>The participants were divided again and reviewed several commodity groupings (e.g. logs, fuel wood, utility poles, rough wood, round wood, firewood, various classes of sawn wood, etc.) in relation to the pests associated with these. The sub-groups considered: the pests, the measures necessary to reducing the likelihood of movement and the strength of the measures needed in managing these pests. A summary of the discussion is provided in columns 2 & 3 of Appendix 2. The participants agreed that the process undertaken identified only the basic risks associated with these commodities. Confounding this evaluation are the factors of origin, species of the commodity, destination of the product, the existence of pest free areas, etc. which may reduce or increase the specific risks associated with a specific movement.</p>
	<p>The participants then reviewed the potential options available in managing the risk level identified. The participants looked at each commodity class, the pests associated with the class and the type and severity of mitigation measure necessary to preclude pest movement. Some of the broad discussion is provided below:</p> <p><u>For commodity class of round wood:</u></p> <ul style="list-style-type: none"> – Generally the participants agreed that to manage surface insect pests on logs the use of bark removal, heat treatment or MBr fumigation is effective. For deep wood borers heat treatment and methyl bromide are the primary measures. For fungal pests, methyl bromide treatment, heat treatment and end-use processing can limit movement of the organism. – The participants debated the significance of a few of the organisms identified as quarantine risks. This was particularly true of the fungi, where some members indicated that fungi could be economic risks as an occurrence. While other individuals indicated that the significance of some of these fungi are not likely to be transported or to establish in new areas. Participants indicated that a number of identified fungal groupings are not usually quarantine pest risks (for example decay organisms are generally not considered quarantine pests; however heart rots could be considered to present risks). – The participants considered visual inspection as an option for removing some fungal pests. Some participants felt that visual inspection is not sufficient to identify incipient decay.

For the commodity class of sawn wood:

- Squared timber, without bark is not likely to contain surface pests. Slight quantities of bark could occur on treated wood because of the transport of the timber from origin to destination. Methyl bromide treatment would not be affected by bark on the round edge. Heat treatment would be effective for both deep wood and surface insect pests.
- For fungal organisms the measures proposed for logs also applies to sawn wood. Additionally, squared wood is less likely to contain canker fungi. Moisture reduction would reduce the risk of blue-stains and some wilt organisms.

For the commodity class of manufactured wood products (handicrafts, indoor and outdoor furniture, etc.):

- The articles included in this class are complex and their risk is dependant on the origin of the wood (e.g. round wood with bark vs. squared wood, the species, the source of the commodity), the intended use, the degree of finishing, etc. As such the participants did not delve into defining the risks. Although they agreed that outdoor rustic garden furniture presents the greatest risk.

For the commodity class of wood chips:

- Provided the chips are less than 3cm in 2 dimensions, most insect pests are unlikely to be present. For chips larger than 3 cm in 2 dimensions, heat treatment or methyl bromide fumigation is sufficient to mitigate insect risks.
- With the exception of rust fungi which are unlikely to occur on chips. Other fungi and nematodes can be effectively managed by end-use controls, heat treatment, moisture reduction of the chips and fumigation treatment with methyl bromide and phosphine.

For the commodity class of processed wood products:

- Inherently these products are only susceptible to termites and dry wood borers. These pests occur on a wide array of commodities and can be carried as hitchhikers on a number of conveyances. Inspection could be used to determine infestations.

For the commodity class of bamboo and rattan and the commodity class of branches and Christmas trees

- These classes were considered as outside the scope of wood products and are likely considered plant parts.

Mike Ormsby presented several papers (IFQRG - 2008 – 23) indicating that some additional measures including moisture reduction and timing of log movements are effective in managing the risk of movement of *Sirex* and may also be applicable to other pests on wood. He also presented a paper that suggested that chipping may not be sufficient to remove all risks of forest pests and that there may be some evidence that rusts may be more important on wood products.

17.	Criteria for Treatments for Managing the Risks on Wood Products
	<p>The participants began looking at the criteria necessary to approve treatments associated with the wood commodity classes. The Chair suggested that the participants should evaluate the criteria for each pest group. Several other scientists suggested that the participants should evaluate the pests as a whole, determining which pests are important for each treatment approach. The participants agreed to begin by determining what pests to test first. The participants agreed that initially the criteria should determine if there is variation in each pest group (i.e. bark beetles) and use this evaluation to determine how many of each species in each pest group should be tested. Several members advocated that surrogates can be used providing that some evidence of equivalency to the pests of concerns is provided. Adnan Uzunovic suggested that testing one species of bark beetle should be sufficient to indicate the response of all bark beetles. Others suggested that a number of representatives from each pest group should be initially tested (perhaps not broadly) to determine which organism that is the most resistant. Then perhaps the most resistant organism in a pest group could be more broadly tested. Uzunovic and others argued that the determination of a resistant organism step is both expensive and will not yield the assurance that one has selected the most resistant organism in a group, unless testing is done on all organisms in a pest group. Regulators participating at the meeting indicated that viewed such an approach with varying degrees of acceptability. Some members indicated that if such minimal testing was undertaken, they would evaluate the testing data or undertake monitoring of imports to determine if their own level of protection was achieved. Other regulators indicated that they would support a minimal approach (i.e. general evidence that most pest groups have been demonstrated to be killed) provided there is sufficient ability to adjust the international standard should evidence indicate that a particular pest could escape treatment.</p> <p>The participants proposed that rather than looking at treatment criteria as a single approach for testing all pest(s), the approach of looking at each treatment through a decision tree may be more effective in identifying the components necessary to evaluate the success of a treatment in achieving sufficient pest mitigation for a commodity class or trading environment. The participants were divided into groups and developed the concept of a tree. These were then harmonized by a small group. The outcome of the smaller group and discussion amongst participants is provided as Appendix 1. The efficacy of treatment was discussed by the group given that the decision tree suggests that final testing should be tested at Probit 9. The group agreed that testing at this level involves having infestations at too high a level. Rather the group agreed that testing at a level that estimates an outcome of Probit 9 testing would be sufficient. The importing country would be responsible for determining the level of confidence sufficient to support the measure. The group then reviewed the document "<i>Treatments and pest lists</i>" (IFQRG – 2008 – 13) which provided additional guidance on testing pests. The information included in this document was agreed to be included within the</p>

	<p>decision tree to clarify the process involved in the approval of treatments. IFQRG participants agreed that rather than focussing on specific pests, number of test individuals, replicates, etc., the treatment providers should provide confidence that the tests used are sufficient for countries. The participants also concluded that in providing evidence that a test is sufficient, the treatment provider must provide a level of confidence that wood pests (important insects or surrogates of the pest groups listed in Table 1 of document IFQRG – 2008 – 13) have been tested, particularly the most resistant ones.</p> <p>The participants discussed how one could determine the treatment efficacy of new treatments for pests on logs. It was proposed that Probit 9 could be used as the basis of efficacy. Probit 9 levels may result in survivor numbers being significantly lower than the number of insects necessary to establish a founder population (i.e. many more beetles need to be transported). Accepting levels less than Probit 9 may not be possible given the potential for high numbers of organisms in large log shipments (for example a break bulk shipment may have ~25 000 – 30 000m²). It is recognized that testing could be done on the basis of testing reasonable numbers of individuals extrapolated to Probit 9. A number of experts suggested the following example of pest numbers in cases of heavy infestations:</p> <ul style="list-style-type: none"> – ~1000 bark beetles/square metre on logs – ~100-200 borers/5m log – ~300 wood wasps/ 5m log <p>The participants considered that logs in a shipment may stay together presenting a risk of greater numbers of surviving insects establishing a population than logs in different shipments that are not located together. As such shipments could be considered as discrete populations for some wood pests.</p>
18.	Presentations to IFQRG
	<p>John Janowiak provided a presentation (2008 – 07 – PPT) regarding microwave treatment.</p> <p>IFQRG discussed the relevance of the numbers of organisms necessary to provide sufficient confidence in a treatment. The cost of undertaking substantial replications of numerous organisms to carry out treatment tests and the regulatory requirements associated with obtaining quarantine pests prohibits treatment applicators from using significantly high numbers. The participants agreed that gaining a better understanding of the sufficiency of statistical approaches would benefit these discussions. An action item to obtain a simpler understanding of the relationship of statistics to sufficiency in killing pests would aid IFQRG’s recommendations on treatment criteria.</p>
	<p>Uzunovic presented a joint paper (IFQRG – 2008 – 25) on test methodology on sample preparation, inoculation and incubation of test wood with pinewood nematode and gave an update on trials with phosphine on naturally infested logs.</p>

	Brian Zak provided an update on testing of radio frequency treatments on several fungal organisms being conducted at the University of British Columbia.
	Ron Mack provided a presentation (2008 – 08 – PPT) on scotch pine treatments for <i>Sirex</i> . Mack also reported on EAB treatments with sulphuryl fluoride and technological advances in fumigation.
	Gillian Allard provided a presentation (2008 – 09 – PPT) on a proposed forestry guide for the implementation of phytosanitary standards (IFQRG-2008-26). The group commended the effort as improving phytosanitary implementation. One participant commented that RPPOs should be requested to support the effort.
19.	Guidelines for Proper Application of Treatments
	Shane Sela provided a short summary of the developments of a guideline for heat treatment. The participants indicated that guidelines are required for microwaves, sulphuryl fluoride and methyl bromide.
20.	Sulphuryl Fluoride and Microwave Treatment for Inclusion in ISPM No. 15
	<p>IFQRG reviewed the information regarding the submission of the two new proposed treatments (documents IFQRG – 2008 – 16 and IFQRG – 2008 – 17). Roddie Burgess suggested that IFQRG should recommend to IPPC bodies that these treatments be approved for inclusion in ISPM No. 15 based on the evidence provided to IFQRG over the past several years. Andrei Orlinski suggested that the two treatments proposed for inclusion in ISPM no. 15 should be viewed under the specifications in ISPM No. 24 regarding equivalency. He proposed that the treatments are equivalent to heat treatment and methyl bromide. The participants discussed these in detail and agreed to the following statement:</p> <div style="border: 1px solid black; background-color: yellow; padding: 10px; margin: 10px 0;"> <p>Microwave treatment as submitted to the TPPT in 2007 is described as dielectric heating at a frequency of 2.45 GHz to a minimum of 62 °C for 2 minutes applied to wood of a maximum thickness of 200mm. Based on information submitted to IFQRG over the past several years, the group is confident that this treatment is effective in practically eliminating the probability of introduction and spread of pests associated with wood packaging material at the time of treatment and as such should be recommended for adoption by CPM.</p> </div>
21.	Comments for Future Meetings

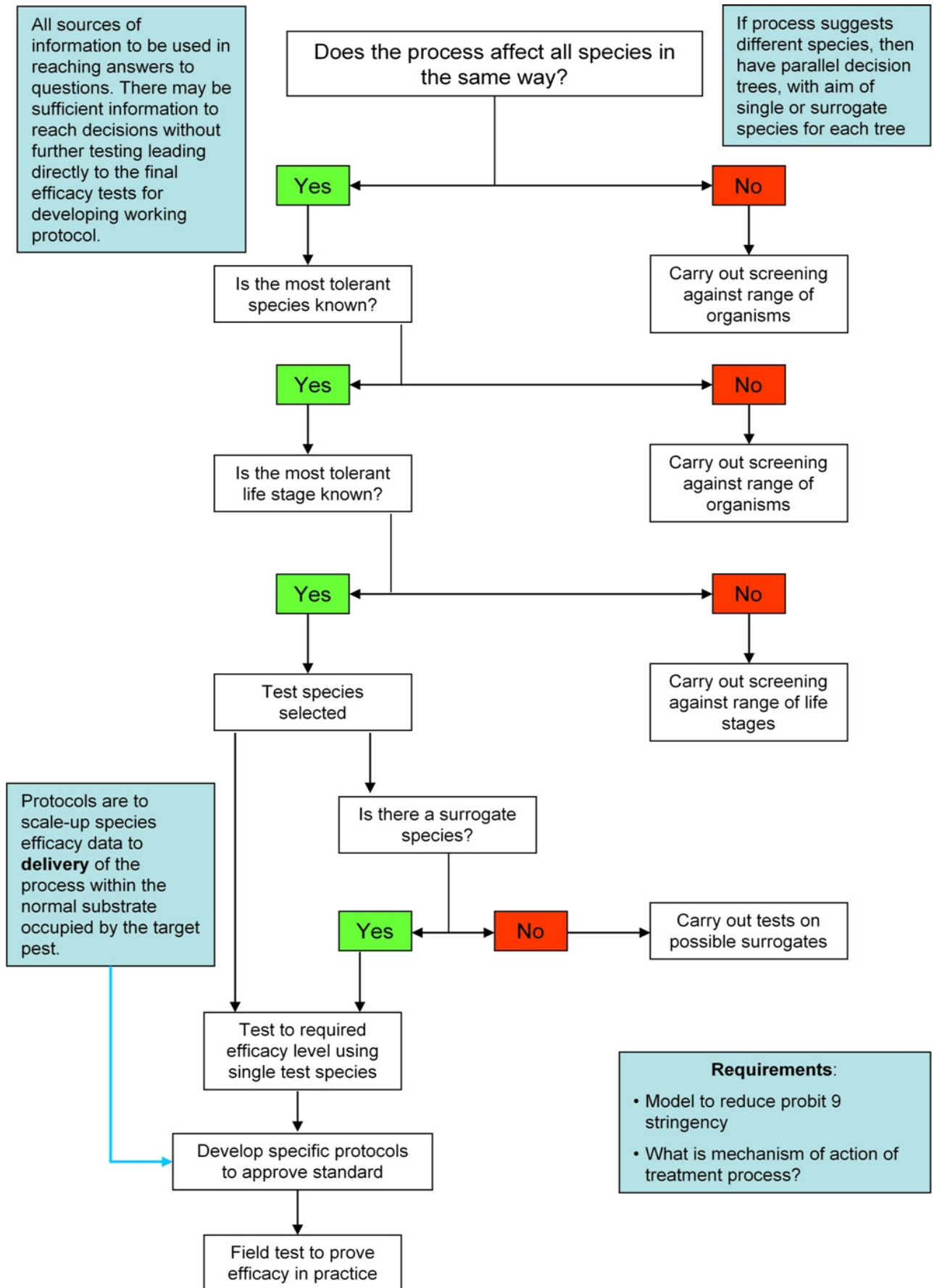
	<p>John McDaniel suggested that the agenda should have greater detail so that attendees are clear on the content to be discussed. He also suggested that documents should be posted in sufficient time for participants' review. Sela commented that documents and agenda items are provided by the membership. As such members need to provide information in a more timely fashion.</p> <p>Members also suggested holding the meeting in a developing country may influence greater participation</p>
21	Next Meeting
	September 2009, FAO Headquarters, Rome Italy

Action Items		
Responsible Person(s)	Action	Date of Completion
Allen	Request Jean Cook or other appropriate individual to participate in the next IFQRG meeting to provide members with a better understanding of the statistics of treatment approaches.	Next meeting
Sela Evans, Ormsby, Grgurinovic, Hughes, Shroeder, McDaniel, Burgess & Lee	Finalize guidelines on heat treatment application procedures.	November 30, 2008
Evans Ormsby, Burgess, Wilson, Grgurinovic, Uzunovic	Finalize guidance document on criteria for evaluation of treatments based on the decision tree begun by IFQRG.	November 15, 2008
Grgurinovic Burgess, Mack, Drinkall	Develop a guideline for good application practices and guidance for NPPOs to oversee sulphuryl fluoride treatment.	Next meeting
Mack Barak, Gurgurinovic	Finalize a guideline for good application practices and guidance for NPPOs to oversee methyl bromide treatment.	Next meeting
Ormsby	Encourage the publication of research that was	Next

	provided in support of recommendations made by IFQRG	Meeting
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Allard Larson	Get more scientists from a wider geographical range to attend, funding may be available.	Next meeting
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Appendix 1 – Treatment Testing Process



Appendix 2 – IFQRG Review of Wood Products and Pest Associations

Commodity Class: Round Wood

Wood not sawn longitudinally, carrying its natural rounded surface, with or without bark [FAO, 1990]

Significant pests of concern	Measures should be effective against And why?	Measures should be... (strong/medium/week) And why?	Mitigation Strategies
Borers, bark beetles, fungi (bluestain, heart rots), nematodes, termites, ants	Measure should be appropriate to both the tree species and the associated pests. Risk of pests will vary with the nature of the commodity, starting with logs+bark as the highest risk category. End use affects the measures that should be applied.	Strong to maximise reduction in wide range of pests. Categorisation of pests: Bark beetles - strong Borers - strong Fungi; strong when high phytosanitary concern; – some vectored - some could disperse naturally Nematodes – vector associated, measures strong against vector Termites Ants	<p>Bark Beetles: Bark removal – zero tolerance “bark free”; 56/30 HT; MeBr 10°C 900 C/T 24hrs 32 g/m³ min; Chemical insecticide.</p> <p>Borers: 56/30 HT; MeBr 10°C 900 C/T 24hrs 32 g/m³ min with debarking (A4 size tolerance) and 200mm max thickness/Diameter.</p> <p>Scales/Sap suckers: if required see bark beetles.</p> <p>Wood-inhabiting moths: see borers.</p> <p>Bark-inhabiting moths: see bark beetles.</p> <p>Wood wasps/bees: see borers.</p> <p>Nematodes: see borers (against vector only).</p> <p>Termites/Ants: see borers.</p> <p>Rust Fungi: (not on pathway other than surface contamination)</p> <p>Decay Fungi: 56/30 HT; end use control (e.g. milling/processing); visual inspection and removal of infected parts.</p> <p>Canker fungi: 56/30 HT; MeBr 10°C 900 C/T 24hrs 32 g/m³ min; end use control (e.g. milling/processing); bark removal (bark free).</p> <p>Blue-stain fungi: 56/30 HT; end use control (e.g. milling/processing); M/C reduction to < 20%.</p> <p>Vascular wilt fungi: 56/30 HT; end use control (e.g. milling/processing);</p> <p>Oomycetes: 56/30 HT; MeBr 10°C 900 C/T 24hrs 32 g/m³ min.</p>

Commodity Class: Sawn Wood

Wood sawn longitudinally, with or without its natural rounded surface with or without bark [FAO, 1990]

Significant pests of concern	Measures should be effective against And why?	Measures should be... (strong/medium/weak) And why?	Mitigation Strategy
<p>Powder post beetles, borers, Bark beetles Long horn beetles, Siricidae Lepidoptera Nematodes Fungi, Bacteria</p> <p>General remark: Only organisms of phytosanitary concern were taken into account. Others, which may be new invasive alien species without being a quarantine pest, may be covered by other regulations, e.g. from the ecological/environmental sector</p>	<p>Fresh wood insects, because wide range of host species</p> <p>Fungi: Saprophytic and mould fungi, not a phytosanitary problem</p> <p>Pathogenic fungi, if vector present or able to sporulate on bark or wood surface</p> <p>Wood rots, decay fungi, questionable how they can infest trees in new areas</p> <p>Nematode, only PWN of concern under phytosanitary aspect: If vector is present If vector is not present</p> <p>If bark present, phloem feeders have to be taken into account</p>	<p>Strong</p> <p>Weak</p> <p>Strong</p> <p>Medium - weak</p> <p>Strong Weak Strong</p>	<p>Bark Beetles: Bark removal – zero tolerance “bark free”; 56/30 HT; MeBr 10°C 900 C/T 24hrs 32 g/m³ min; Chemical insecticide. Borers: 56/30 HT; MeBr 10°C 900 C/T 24hrs 32 g/m³ min and 200mm max thickness/Diameter. Scales/Sap suckers: if required see bark beetles. Wood-inhabiting moths: see borers. Bark-inhabiting moths: see bark beetles. Wood wasps/bees: see borers. Nematodes: see borers (against vector only). Termites/Ants: see borers.</p> <p>Rust Fungi: (not on pathway other than surface contamination) Decay Fungi: 56/30 HT; end use control (e.g. milling/processing); visual inspection and removal of infected parts. Canker fungi: 56/30 HT; MeBr 10°C 900 C/T 24hrs 32 g/m³ min; end use control (e.g. milling/processing); bark removal (bark free); Square sawing. Blue-stain fungi: 56/30 HT; end use control (e.g. milling/processing); M/C reduction to < 20%. Vascular wilt fungi: 56/30 HT; end use control (e.g. milling/processing); Square sawing. Oomycetes: 56/30 HT; MeBr 10°C 900 C/T 24hrs 32 g/m³ min.</p>

Commodity Class: Manufactured wood products (Handicrafts)

Significant pests of concern	Measures should be effective against And why?	Measures should be ... (strong/medium/weak) And why?	Mitigation Strategy
<p>Borers Powder post beetles Fungi Nematodes Fresh wood insects</p>	<p>If products are made out of green round wood with bark - can have significant pests (fungal pathogens, insects, nematodes) same as round wood dunnage)</p> <p>If products are made of green squared wood with most bark removed risk is weak. These products can have some pest e.g. decay fungi, large wood borers, nematodes etc but that is rare event. Pathway is often not there to support their spread.</p> <p>Large storage of a commodity may bring critical numbers (mating pairs in proximity)</p> <p>If products are made of dried wood risk is low (no pathway present)</p> <p>Power post beetles should be regulated separately</p>	<p>Avoid green round wood with bark (do not use that wood or use appropriate treatments HT fumigation-strong need to regulate)</p> <p>Otherwise if other types of wood –squared wood green, limited bark (medium-low need to regulate)</p> <p>Dried wood (low risk)</p>	<p>Bark Beetles: Bark removal – zero tolerance “bark free”; 56/30 HT; MeBr 10°C 900 C/T 24hrs 32 g/m³ min; Chemical insecticide.</p> <p>Borers: 56/30 HT; MeBr 10°C 900 C/T 24hrs 32 g/m³ min with debarking (A4 size tolerance) and 200mm max thickness/Diameter.</p> <p>Scales/Sap suckers: if required see bark beetles.</p> <p>Wood-inhabiting moths: see borers.</p> <p>Bark-inhabiting moths: see bark beetles.</p> <p>Wood wasps/bees: see borers.</p> <p>Nematodes: see borers (against vector only).</p> <p>Termites/Ants: see borers.</p> <p>Rust Fungi: (not on pathway other than surface contamination)</p> <p>Decay Fungi: 56/30 HT; end use control (e.g. milling/processing); visual inspection and removal of infected parts.</p> <p>Canker fungi: 56/30 HT; MeBr 10°C 900 C/T 24hrs 32 g/m³ min; end use control (e.g. milling/processing); bark removal (bark free).</p> <p>Blue-stain fungi: 56/30 HT; end use control (e.g. milling/processing); M/C reduction to < 20%.</p> <p>Vascular wilt fungi: 56/30 HT; end use control (e.g. milling/processing);</p> <p>Oomycetes: 56/30 HT; MeBr 10°C 900 C/T 24hrs 32 g/m³ min.</p>

Commodity Class: Processed Wood Material

Products that are a composite of **wood** constructed using glue, heat and pressure, or any combination thereof [ISPM No. 15, 2002]

Significant pests of concern	Measures should be effective against And why?	Measures should be ... (strong/medium/week) And why?	Mitigation Strategy
Fungi Powder post beetle Termites Dry wood insects	Termite (if quarantine) – should be effective (but not much likely) Dry wood insects – should not be effective	Weak Weak	Bark Beetles: N/A. Borers: Visual inspection. Scales/Sap suckers: N/A Wood-inhabiting moths: N/A Bark-inhabiting moths: N/A Wood wasps/bees: N/A Nematodes: N/A Termites/Ants: Visual inspection. Rust Fungi: N/A Decay Fungi: N/A Canker fungi: N/A. Blue-stain fungi: N/A Vascular wilt fungi: N/A Oomycetes: N/A

Commodity Class: Wood Chips

Significant pests of concern	Measures should be effective against And why?	Measures should be... (strong/medium/weak) And why?	Mitigation Strategy
<p>Ants Wood borers Fungi Nematodes Bark beetle</p>	<p>Nematodes (will survive, high likelihood of presence in importing country) Depending on final purpose or use mulch around trees for landscape-high risk versus pulping or fuel chips-very low risk) Use measure depending on use</p> <p>Some insects (will survive in large chips with remnants of bark)</p> <p>The smaller size material-less risk, sawdust, shavings wool very low risk</p> <p>Fungi are not of interest as in most cases they will be molds or saprophytic fungi</p>	<p>Molluscs, snails (low risk)</p> <p>Strong measures for large size chips with bark and if used for mulch (nematodes and a few insects)</p> <p>Weak measures if large chips are used for pulping or fuel</p> <p>Weak measures for smaller size material e.g. sawdust, shavings, wood wool</p>	<p>Bark Beetles: 56/30 HT; MeBr 10°C 900 C/T 24hrs 32 g/m³ min; Chemical insecticide; Chipped to 3 cm in two dimensions. Borers: 56/30 HT; MeBr 10°C 900 C/T 24hrs 32 g/m³; Chipped to 3 cm in two dimensions. Scales/Sap suckers: N/A. Wood-inhabiting moths: see borers. Bark-inhabiting moths: see bark beetles. Wood wasps/bees: see borers. Nematodes: see borers (against vector only). Termites/Ants: N/A.</p> <p>Rust Fungi: (not on pathway other than surface contamination) Decay Fungi: 56/30 HT; end use control (e.g. milling/processing). Canker fungi: 56/30 HT; MeBr 10°C 900 C/T 24hrs 32 g/m³ min; end use control (e.g. milling/processing). Blue-stain fungi: 56/30 HT; end use control (e.g. milling/processing); M/C reduction to < 20%. Vascular wilt fungi: 56/30 HT; end use control (e.g. milling/processing). Oomycetes: 56/30 HT; MeBr 10°C 900 C/T 24hrs 32 g/m³ min; end use control (e.g. milling/processing).</p>

Appendix 3 – List of Participants

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