

7th International Forestry Quarantine Research Group Meeting
Rome, Italy
September 14 – 17th 2009
Meeting Report

Definitions and Abbreviations	
AGM	Asian Gypsy Moth
ALB	Asian Longhorned Beetle
CLB	Citrus Longhorned Beetle
CPM	Commission on Phytosanitary Measures
EAB	Emerald Ash Borer
EPPO	European Plant Protection Organization
FEFPEB	Federation Europeene des Fabricants de Palettes et Emballages en Bois
HWA	Hemlock Woolly Adelgid
IFQRG	International Forestry Quarantine Research Group
IOBC	International Organization for Biological Control
IPP	International Phytosanitary Portal
IPPC	International Plant Protection Convention
ISPM	International Standard for Phytosanitary Measures
IUFRO	International Union of Forest Research Organizations
LAMP	Loop-mediated Isothermal Amplification
MBr	Methyl Bromide
NAPPO	North American Plant Protection Organization
NPPO	National Plant Protection Organization
OECD	Organization for Economic Co-operation and Development
PRA	Pest Risk Assessment
PWN	Pine Wood Nematodes

RF	Radio Frequency
RPPO	Regional Plant Protection Organization
SC	Standards Committee of the IPPC
SPTA	Strategic Planning and Technical Assistance
TPDP	Technical Panel on Diagnostic Protocols
TPFQ	Technical Panel on Forest Quarantine
TPPT	Technical Panel on Phytosanitary Treatments

1.	Introductions
	<p>Brent Larson, IPPC Secretariat, opened the meeting. Larson and Eric Allen, IFQRG chair, welcomed the participants and provided logistic information concerning the meeting. The participants then introduced themselves (list of participants provided in Appendix I).</p> <p>Jan Heino, Director of FAO Forestry, welcomed the participants and provided an overview of the work of FAO Forestry, focusing on work that supports the development of standards for phytosanitary measures. He encouraged the participants to procure more funding to allow higher participation at the IFQRG meeting. Heino offered copies of the last published report “Global review of Forest Pests and Diseases” (No. 156) to the participants.</p>
2.	IFQRG updates
	<p>Allen provided an overview of the role of IFQRG as offering scientific support to IPPC standards development, the main functions and vision of the group and its connection to other phytosanitary bodies under IPPC. He encouraged all participants to use their critical thinking during this meeting and to stay in the realm of scientific experimentation and objective analysis, and emphasized the importance of publications.</p> <p>Allen announced the formation of a scientific steering committee (Members: Eric Allen, Cheryl Grgurinovic, Ron Mack, Adnan Uzunovic, Andrei Orlinski, Roddie Burgess, Maya Nehme) and encouraged participants to search for funding sources to allow scientists from developing countries to attend future meetings. He ended with logistic information for the meeting and an overview of the agenda (Document: 2009-IFQRG-01).</p> <p>Larson expressed a concern that the group does not include scientists from all global forest regions and developing countries and only few out</p>

	<p>of the 173 IPPC countries are represented in the meeting. The participants discussed funding sources to bring members from developing countries, especially that research projects conducted within the group already include collaboration with non-represented countries such as China. Suggestions for sources of funding included the Rockefeller foundation, the Ford Foundation, including travel expenses of scientists from developing countries on research grants, and sponsoring through governments and embassies.</p> <p>Members also suggested moving the meeting location to different developing countries to encourage people from host countries to attend. From a practical point of view, meeting in Rome has been the best option so far, but meeting in different countries is also a possibility.</p> <p>Participants also agreed on the need to improve publicity among the scientific community for the IFQRG meeting.</p>
3.	Action items from IFQRG-6
	<p>Allen reviewed the progress on Action Items produced at the IFQRG-6 meeting (Document: 2009-IFQRG-04).</p> <p>Adnan Uzunovic is taking responsibility for providing members with a better understanding on statistics and efficacy testing for new treatments.</p> <p>On finalizing guidelines on heat treatment application procedures, Shane Sela reported that TPFQ are in the process of finalizing these guidelines.</p> <p>On finalizing guidance document on criteria for evaluation of treatments based on decision tree that was begun by IFQRG, Hugh Evans reported that there was no progress on the document since the last IFQRG meeting.</p> <p>On developing guidelines for good application practices and guidance for NPPOs to oversee fumigation treatment, Ron Mack will be working with FAO staff on developing an FAO fumigation manual.</p>
4.	Report of the Commission on Phytosanitary Measures (CPM-4)
	<p>Tomoyuki Araki reported on the last CPM-4 meeting (Mar- Apr.09) (Document: 2009- IFQRG-08) during which CPM adopted the revision of ISPM No. 15 (2009) and agreed that material treated and marked under previously adopted ISPM-15 does not need to be re-treated or re-marked (2009-IFQRG-17)</p> <p>The ISPM-15 symbol has been registered nationally in 12 countries, regionally in 27 countries in EU and Internationally in 57 countries. The registration process has not been initiated in 70 countries for lack of</p>

	sufficient funding.
5.	Report on the Revision and Implementation of ISPM-15
	<p>Shane Sela highlighted the ISPM-15 revisions (Document: 2009-IFQRG- 06).</p> <p>Questions were raised on the deletion of the list of pests from the standard. Sela explained that the reason behind removing the list is that countries were considering the list as the exclusive list of pests to be treated. A draft annex to the standard is being developed providing good treatment practices that could be used by researchers as guidance for new treatments. This annex will contain a list of pests to be included in testing for new treatments.</p> <p>The list of pests that will appear in the draft includes: Insects: bark beetles, termites, carpenter ants, Wood-boring beetles, wood-boring moth, wood wasps and wood flies; Fungi: rust fungi, wood decay fungi, canker fungi, deep penetrating blue stain fungi, Oomycetes and vascular wilt fungi; and PWN.</p>
6.	Report on TPFQ
	<p>Sela reported on the TPFQ meetings (Dec 08 in Puerto Veras, Chile & Jul 09 in Nanjing, China) (Document: 2009-IFQRG-09).</p> <p>TPFQ revised criteria for the evaluation of treatments submitted for inclusion in ISPM-15 and decided on a stepwise approach.</p> <p>Concerns were raised as to what criteria researchers should follow until the appearance of the new criteria in 2012. The answer from the Secretariat was that researchers should follow the existing criteria under ISPM-15 (2009) until the new criteria are approved.</p> <p>TPFQ continues to work on a draft standard on the international movement of wood, including general guidance on measures to reduce the movement of pests on wood commodity classes (e.g. chips, round wood, sawn wood, etc.). The draft is undergoing final review before submission to SC. The panel also started drafting a standard on international movement of forest tree seed.</p> <p>TPFQ reviewed guidance related to MBr treatment and proposed new topics such as the use of biological control for forest pests, contingency plans for the eradication/control of forest pests, and movement of bamboo.</p> <p>TPFQ identified a list of scientific issues (Document 2009-IFQRG-11) that would require consideration by IFQRG. The list was added to the meeting agenda for IFQRG-7.</p>

	<p>A clarification was requested on the difference between national, regional and international registration (57 countries).</p> <p>Greg Wolff also reported on the recent work of TPFQ, as well as related bodies including work by FAO Forestry on developing a “guide to good practices for forest health protection in support of international standards for phytosanitary measures”, and with TPPT on new treatments.</p> <p>Wolff also reported on the adoption of ISPM No. 15 at CPM-4.</p> <p>A concern raised by SC is the practicality of using Probit 9 as the level of efficacy for all wood pests. The participants discussed the possibility of using substitute species and the advantages and disadvantages of extrapolating from low test subject numbers, especially in cases where the most resistant species is one that is not too abundant in the wood. Members explained that extrapolation is not always consistent and varies largely with the model used. They also thought that it is not always practical to use extrapolation in testing.</p> <p>Two examples of possible substitute species were provided: <i>Bursaphelenchus mucronatus</i> for PWN and <i>Plectrodera scalator</i> for ALB.</p>
7.	Report on TPPT
	<p>Report on the TPPT meeting (Jan 2009) was given by Tomoyuki Araki (Document: 2009-IFQRG-10). TPPT is considering 6 new ISPM-15 treatments (Sulfuryl fluoride, Ecotwin fumigation, Hydrogen cyanide, Microwave irradiation, Phosphine treatment and Methyl iodide treatment) and had requested additional data for these 6 draft treatments. Deadlines for submission of addendums were set for Oct, 09.</p> <p>Next TPPT meeting will be in Tokyo July 2010.</p>
8.	Report on TPDP
	<p>Six diagnostic protocols for forest pests are being considered. Next TPDP meeting in Jul 2010.</p>
9.	Report on the Pine Wilt Symposium
	<p>Eric Allen provided an overview of the IUFRO Pine Wilt Symposium in Nanjing, China- Aug 2009. The agenda included impacts on international trade, systematics and diagnostics, interactions with other microbes, insect vectors, host physiology and resistance, etiology and epidemiology, disease management and control.</p> <p>Proceedings will be published by the Nanjing Forestry University; further information will be posted on the IUFRO website.</p>

10.	Guide to good practices for forest health protection in support of international standards for phytosanitary measures
	<p>Gillian Allard reported on the progress of the guide. The group had its first meeting on the 13-15th of May 2009. The guide is still being written and the group met again in Sep. 2009 to work on the draft. Once a penultimate draft is available, copies will be sent to all participants for feedback.</p> <p>Adnan Uzunovic emphasized the need to make the language of the guide easy to understand for non-native English speakers and gave an overview of the content and use of the guide.</p> <p>Andrei Orlinski conveyed the support of all EPPO members to the development of this guide, and the interest of both Forest sectors and NPPOs in it. Shane Sela also informed the participants that the guide was well received by a number of countries.</p> <p>A presentation of the guide will be made at the World Forestry Congress in Buenos Aires, Argentina. The guide will then be tested for language and suitability in different countries.</p>
11.	Updates on phytosanitary issues in EPPO
	<p>Andrei Orlinski gave the updates on the EPPO activities.</p> <ul style="list-style-type: none"> - PWN has been a recent priority in EPPO. - Commodity standards for Conifera will be put forward for approval by EPPO this year. - The EPPO Panel for Quarantine Pests for Forestry developed the first draft of measures for EAB. - Orlinski also reported that EPPO created in 1998 an EPPO Panel on Safe Use of Biological Control.
12.	Report on IUFRO- International Forestry Biosecurity Conference
	<p>Hugh Evans reported on the successful IUFRO - International Forestry Biosecurity Conference, which included a workshop by OECD. The theme of the Conference was the need to move away from dependence on lists of organisms into more generic pathways that are used by pests to move across the world.</p>
13.	Report on IUFRO- Invasive Alien Species in International Trade
	<p>Hugh Evans reported that the group had two meetings to date, one in Poland and the other in the U.S. The next meeting will be in 2011.</p>
14.	Updates on Phytosanitary Issues in NAPPO
	<p>Eric Allen reported that the Forestry Panel of NAPPO completed developing regional standards for managing the risks of AGM. The</p>

	<p>standard was approved by NAPPO Executive in August 2009.</p> <p>Other issues include the data related to pest risks associated with handicraft imports and issues related to wood packaging and non-compliant shipments, most likely related to failed treatments (2009-IFQRG-15).</p>
15.	Updates from participants
	<p>Robert Haack shared with the participants the upcoming publication of a detailed analysis of economic impact of four invasive species (EAB, HWA, AGM and Sudden oak death) and a report on how change in trade policy will affect the arrival rate of new invasive species.</p> <p>Christer Magnusson distributed to the participants a new version of a technical protocol for testing PWN.</p> <p>John McDaniel reported that the wood industry in the US is dealing smoothly with the changes in ISPM-15.</p>
16.	International Phytosanitary Portal
	<p>Melanie Bateman provided an overview of the new IP portal that is being prepared to replace the current one.</p>
17.	TPFQ Standards Development
	<p>Greg Wolff provided information on two new draft standards TPFQ is in the process of developing and requested IFQRG's assistance in providing research support and filling information gaps.</p> <p>Wolff provided an outline of the draft Standard on Management of Phytosanitary Risks in the International Movement of Wood. The Standard addresses wood used as a commodity, with and without bark, including round, sawn and mechanically processed woods such as chips and sawdust (2009-IFQRG-16).</p> <p>Wolff indicated that the draft standard would emphasize the difference between wood packaging material and wood as a commodity and included options for phytosanitary measures.</p> <p>Participants pointed out the lack of mention of plywood and other manufactured panel products as a commodity in the draft. Wolff agreed to present to TPFQ the need to include plywood to the draft standard.</p> <p>Concern was raised about the mention that unmanaged environments might require more stringent phytosanitary measures than native plantations. Clarification was given that the statement was based on the assumption that unmanaged environments have greater biodiversity which could increase the likelihood of having an insect/pathogen in</p>

	<p>natural forest trees that could become a pest when introduced to a new area. Participants were concerned that such assumption might not be supported by scientific data. The need for such data was discussed and participants were encouraged to find methods to quantify the difference between pest occurrence in unmanaged forests and native plantations. Until such research is conducted, the participants recommended that this section be reworded as needed.</p> <p>Wolff highlighted the following information gaps which had arisen after TPFQ discussion:</p> <ul style="list-style-type: none"> - Efficacy of processing actions as measures for managing wood pests. - Information on chipping: sizes of chips moved in international trade, pests generally controlled, size of chips that reduces risk, risks associated with chips transferring PWN to living trees without vector. - Treatments: heat (thermo-tolerance), modified atmosphere, water spraying. - Testing - Bark: impact on post-treatment infestation and re-infestation. <p>New Standard on International movement of seeds of forest tree species: Wolff reported that at the last TPFQ meeting the outline, scope and broad approach of this new standard were developed. The scope of the standard will extend to seeds for all tree species excluding fruit tree seeds and species primarily propagated vegetatively. To support this approach, a list of tree species will be presented as an example. The current approach is to consider different climate zones.</p> <p>Wolff also reported that TPFQ is proposing a standard on Biological Control for Forest Pests if approved on the IPPC Work Program. Wolff shared the themes and goals of the standard as perceived by TPFQ. No draft is yet available.</p>
18.	Discussion of Treatment Criteria
	<p>Greg Wolff explained the background behind treatment criteria (Document: 2009-IFQRG-14), and suggested that IFQRG may have some expertise with regard to the issue of efficacy testing.</p> <p>Adnan Uzunovic gave a presentation explaining the statistics underlying efficacy testing and Probit 9 analysis, highlighting the difficulties in achieving Probit 9 for many forest pests. The participants concluded that there are issues of statistical reliability based on examples of tests conducted by researchers working on new treatments. Extrapolation through modelling may produce overestimation of lethal dose at Probit 9 levels as compared to brute force experiments (2009-IFQRG-32).</p> <p>A team composed of Kelli Hoover, Adnan Uzunovic, Robert Haack , Maya Nehme, Hugh Evans, Christer Magnusson, and Ron Mack took</p>

	<p>the responsibility of developing a paper that defines the characteristics of wood pests and the risks associated with them, how these characteristics affect treatment efficacy and what levels of efficacy will then be needed for each group of pests. The participants put together a list of biological characteristics that could be used to justify efficacy levels appropriate for testing, as Probit 9 might not be appropriate for all wood pests. The list includes characteristics such as: fecundity, longevity, voltinism, parthenogenesis, prevalence in wood, dispersal ability, vector relationship, host range, founder population dynamics, sporulation characteristics (asexual and sexual reproduction), resting stages and sub-lethal effects.</p> <p>The group addressed the specific issues submitted by TPFQ for consideration by IFQRG (Document: 2009-IFQRG-11). Answers to most of these issues are reported in the Action Items section below.</p> <p>Issue 2. Suggestions for publishing scientific and technical documents included publication in the EPPO bulletin (Orlinski indicated EPPO support of this concept), peer-reviewed journals or peer-review by fellow scientists in IFQRG in cases where a faster and effective approach is needed.</p> <p>Issue 3. Participants felt that, if a temperature increase for heat treatment were required, a cost-benefit analysis might be hard to achieve and is highly dependent on the species of wood and pest, variation in kiln characteristics, and country's capacities. Concerns were also raised on the effect of increasing the temperature on the quality of the products, especially for species that are sensitive to heat and higher-grade material.</p> <p>Issue 4. Hugh Evans reported that the EU is addressing the issue regarding wood chips and that he's involved with a project proposal that, if approved for funding, would begin Oct/Nov 2010, and would involve collaboration between different countries.</p> <p>Issue 5. Roddie Burgess reported that the EU working group on biofuel was considering alternatives to the current heat treatment requirements for wood chips. Andrei Orlinski shared the EPPO standards that require a max of 3cm-size chips, which could be used directly for energy, or otherwise kept in site or fumigated prior to movement.</p>
19.	Member presentations
	<ol style="list-style-type: none"> 1. Jacques Gagnon gave a presentation on "Phytosanitary Measure and Forest Pest Risk Management: perspective from Influenza Pandemic Risk Management". (2009-IFQRG-18) 2. Eric Allen gave a presentation on behalf of Isabel Leal covering a new method using mRNA to determine whether PWN in samples was alive or dead (2009-IFQRG-07, 2009-IFQRG-19).

3. Luis Fonseca presented his work on Immunological techniques for the detection of PWN directly from wood sections and from its insect vector (2009-IFQRG-20).
4. Oudara Souvannavong (FAO Forestry Officer: Biological Diversity and Conservation) reported on the work of FAO concerning genetic resources. He emphasized the need to review some phytosanitary measures that are “irrelevant” for some species. Experts at the genetic resources workshop also agreed on the need to review phytosanitary regulations. Collaboration will be ongoing during the next months between the IFQRG panel and the experts to tackle the specifics of this issue.
5. Christer Magnusson gave a presentation entitled “Concerns about the PWN in wood free from *Monochamus* vectors”. Some participants felt that the experimental design in some of the studies reviewed were different from real-life situations. Discussion following the presentation tackled the issues of risks associated with nematodes living in chips and the presumed ability of the nematode to survive in pallets for up to 10 years. The conclusion was that more information is needed to clarify and quantify the relative risks of vectored and non-vectored pathways (2009-IFQRG-21).
6. Bob Haack presented a summary of the worldwide interceptions of ALB and CLB. Suggestions were made to use the information on interception to monitor for the efficacy of the ISPM-15 marking by looking at pre- and post-regulation numbers and comparing them (2009-IFQRG-22a, b).
7. Haack also reported on a new *Agilus* sp. found in North America (U.S. and Canada), commonly known as the European Oak Borer (EOB), *Agilus sulcicollis* (2009-IFQRG-23a,b).
8. Andrei Orlinski reported on a new fungal pathogen (*Chalara fraxinea*) killing ash trees in Europe. Roddie Burgess reported also on a new discovery of *Dothistroma pini* in Europe.
9. Adnan Uzunovic gave a presentation on PWN testing methodologies, including a protocol to simulate natural infestation of logs (2009-IFQRG-24).
10. Kelli Hoover reported on microwave irradiation of PWN-infested logs (2009-IFQRG-25).
11. Christer Magnusson presented the draft of a Technical Protocol for Testing Nematodes during Treatment Development (2009-IFQRG-13, 2009-IFQRG-26).
 - Participants discussed the presence of the J_{III} stage in live trees

	<p>versus dry wood and the resistance of J_{III}. A couple of studies had shown that J_{III} stages are present in wood throughout the year (Soma et al. 2003, Naves et al. 2009 – IUFRO PWN Symposium presentation). Participants questioned strongly the need to separately identify J_{III} in a given population considering that no survival of PWN has been demonstrated in the testing of treated material up to the present time.</p> <p>- More detailed information of procedure and specific description of material used need to be added to the protocol. Allen suggested including the molecular technique of Leal et al. (Document: 2009-IFQRG-07) to the protocol as a method of verifying nematode mortality.</p> <p>12. Robert Haack presented a North American Survey on the Incidence of live woodborers in firewood. Haack also reported on new studies conducted in the US to test survival of wood borers in heat-treated firewood (2009-IFQRG-27a, b).</p> <p>13. Eric Allen gave a presentation on the risks associated with fungi in wood moving internationally (2009-IFQRG-28).</p> <p>14. Giuseppe Fragnelli gave a presentation highlighting the research activities of Conlegno Consorzio Servizi Legno Sughero, Italy on heat treatment (2009-IFQRG-29).</p> <p>15. Adnan Uzunovic gave a presentation on testing fungi in the context of new phytosanitary treatments (2009-IFQRG-30).</p> <p>16. Adnan Uzunovic reported on studies that were done at FPInnovations Forintek, Canada testing phosphine as an alternative to MBr for fumigation (2009-IFQRG-31).</p>
20.	Items to be Added to IFQRG-8 Agenda
	<ul style="list-style-type: none"> - Risk information regarding international movement of bamboo - Risk information regarding on-line trading of plants and organisms - Determine risks associated with different groups of wood fungi
21.	Next Meeting
	TBD (location and date)

Action Items		
Responsible Person(s)	Action	Date of Completion
Mack	Update the FAO fumigation manual	Sep. 2010

Hoover Evans Haack Mack Magnusson Nehme Uzunovic	Paper that defines the characteristics of the pests included in ISPM-15 annex and the risks associated with them, how these characteristics affect treatment efficacy and what levels of efficacy will then be needed for each group of pests.	Jan.1 st , 2010
Hoover	Contact Chuck Ray: cost-benefit analysis of increasing the temperature required for heat treatment.	Sep. 2010
Zak	Industrial categorization of wood chips sizes.	Dec. 31, 2009
Haack Allen	Analysis on chip size and its relationship with pest risk.	Mar. 2010
Uzunovic Evans	Summary of scientific information on modified atmosphere (water storage; plastic wrapping logs) and water spraying as a measure to protect against pest infestation. Contacts from South Africa will be provided by Gillian Allard.	Apr. 2010
Allen	Information related to the volume of trade and species of forest tree seeds. Gillian Allard will provide the information present at FAO to Eric Allen.	Sep. 30, 2009
Mack Hoover	RF guidance manual	Sep. 2012
Hoover Haack Magnusson	List of criteria to choose a substitute species for testing purposes.	Oct. 18, 2009
Uzunovic	Summary of information on Chemical treatment of wood commodities as a measure to control pests.	June 2010

Appendix I- List of Participants

First Name	Last Name	E-mail	Organization	Street Address	City & Province/State	Country	Postal Code	Telephone	Fascimile
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