Revision of the dielectric heating section of Annex 1 to ISPM 15 (2006-010B)

IPPC Member Consultation

1 July to 30 November

2015

ISPM 15: Regulation of Wood Packaging Material in Int'l Trade

Structure of ISPM 15:

-REQUIREMENTS:

1. Basis for Regulation
2. Regulated Wood Packaging Material
3. Phytosanitary Measures for Wood Packaging Material

3.1 Approved phytosanitary measures

3.2 **Approval of new or revised treatments**

[…]

4.2 Application and use of the mark

[…]

ANNEX 1: Approved treatments associated with wood packaging material

ANNEX 2: The mark and its application

ISPM 15: Regulation of Wood Packaging Material in Int'l Trade

Structure of ISPM 15:

3.2 Approval of new or revised treatments

- As new technical information becomes available:
  - existing treatments may be reviewed and modified
  - and new alternative treatments and/or treatment schedule(s) may be adopted by CPM

Requirements for Phytosanitary Treatments under ISPM 15

SC 2008 November :

Para. 105: SC agreed the following criteria should be used when considering treatment suitability for inclusion in ISPM 15:

- All treatments … for inclusion in ISPM 15 should be evaluated for **equivalence to the current ISPM 15 methyl bromide treatment** in the following manner:

- It must be demonstrated in compliance with ISPM 28 and to be at least 99.99683% effective against *Anoplophora glabripennis* (Asian longhorn beetle) and *Bursaphelenchus xylophilus* (Pinewood nematode) or appropriate surrogates.

Current PTs under ISPM 15

- **Heat treatment** using a conventional steam or dry kiln heat chamber
- **Heat treatment** using dielectric heating (DH)
- **Methyl bromide** treatment

Note: these are currently the only approved treatments under ISPM 15

Source: Factsheet on "Dielectric heating as a treatment for wood packaging material" (Phytosanitary Resources webpage: http://www.phytosanitary.info/information/factsheet-dielectric-heating-treatment-wood-packaging-material)

Treatment options for wood packaging material

Treatment options

- These options apply to units of wood packaging material or to pieces of wood that are to be made into wood packaging material.
- Regardless of the type of treatment, wood packaging material must be made of debarked wood.
- See ISPM 15 for all specific treatment details; this graphic is for information only.

Heat treatments

- Bark can be removed before or after treatment
- Temperature should be monitored at the location of the wood likely to be the coldest.
- Treatment schedules should be specified or approved by the NPPO.

Methyl bromide (MB)

- Bark must be removed before the treatment.
- Wood pieces must be smaller than 20 cm cross-section at smallest dimension.
- Note that CPM adopted a *Recommendation on replacement or reduction of the use of methyl bromide as a phytosanitary measure*.
- Contracting parties are encouraged to use other treatment options.

Conventional heat (HT)

- Conventional steam or dry kiln heat chamber.
- Core temperature is likely to be the coldest.

Dielectric heat (DH)

- Surface temperature is likely to be the coldest.
- Wood must not exceed 20 cm across the smallest dimension (including bark).

Microwaves

- In 2013, when DH treatment was adopted, only microwaves had been shown to be able to achieve the prescribed temperature within the required time.

Radio-frequency waves

- RF waves penetrate wood more deeply than microwaves but also more slowly. As of 2013 RF waves had not been demonstrated to achieve the prescribed temperature within the time prescribed by ISPM 15 Annex 1.
- If RF waves can operationally achieve the ISPM 15 requirements, they can be used as an approved treatment.

BACKGROUND

What is dielectric heating?

Dielectric heating is the process in which a high-frequency alternating electric field, or radio wave or microwave electromagnetic radiation heats a *dielectric material*.

Dielectric material: A dielectric material is an electrical insulator that can be polarized by an applied electric field.

BACKGROUND

New research on DH treatment of wood available in 2014**:

- Reviewed by IFQRG (*Int'l Forestry Quarantine Research Group*; liaison organisation with IPPC)
- Forwarded to TPFQ *(Technical Panel on Forest Quarantine)*
- Topic of amendments to ISPM 15 recommended by SC
- Added to IPPC work programme (LOT) by CPM-10
- Draft amendments to ISPM 15 approved by SC for member consultation in 2015 (1 July – 30 Nov.)

** *Described in the IFQRG 2014 meeting report:*

https://www.ippc.int/en/liason/organizations/internationalforestryquarantineresearchgroup/

Direct link to the study:

https://www.ippc.int/static/media/files/publications/en/2014/11/15/janoviak_et_al._-_rf_mw_comparison_ppt.pdf

General Considerations

- The proposed revision is part of work to adopt feasible treatments for WPM, to replace use of methyl bromide (MB)

- CPM-3 (2008): adopted IPPC recommendation on *Replacement or reduction of the use of MB as a phytosanitary measure*

General Considerations

Current requirements of dielectric heating treatment in Annex 1 to ISPM 15 :

- 20 cm size limit for the treated wood
- 30 min. time limit for the heat-up period
- Microwaves mentioned as the main source of dielectric heating

General Considerations

New scientific data shows that:

- Radio frequency (RF) is effective as DH treatment and should be listed alongside microwaves (MV) in ISPM 15
- Current restrictions of DH in Annex 1 to ISPM 15 can be removed:
  - size limit: RF can effectively penetrate beyond the 20 cm limit; also MW can penetrate to greater depth with more ramp-up time; wood of any size can be heated to prescribed temperature
  - heat-up period: prescription of 30-min. interval no longer adequate as ramp-up times may vary with increased wood thickness
  - emphasis on MW: RF heating is uniform, consistent and fast, especially for larger dimensions.

Drafting Issues

Changes in the draft include:

- Adding radio waves as a new option for DH treatment of wood packaging material
- Removing the current limitation for the maximum size of wood (20 cm in cross-section)
- Removing the current limitation for the heat-up time (30 minutes from the start of the treatment)

Drafting Issues

Changes in the draft include:

- Deleting the Footnote text referring to the maximum size of wood
- Deleting the Footnote text referring to the heat-up time

Other relevant information

The efficacy of the target temperature and exposure time of the dielectric heating treatment (60°C for 1 minute) is supported by research and has not changed

Thank you!