

## SCIENTIFIC OPINION

### Statement on a heat treatment to control *Agrilus planipennis*<sup>1</sup>

#### EFSA Panel on Plant Health (PLH)<sup>2, 3</sup>

European Food Safety Authority (EFSA), Parma, Italy

#### ABSTRACT

In 2011, the EFSA Panel on Plant Health was asked by the European Commission to provide an opinion on a technical file submitted by the US Authorities to support a request to list a new heat treatment (60 °C/60 min) among the EU import requirements for wood of *Agrilus planipennis* host plants. After a thorough analysis of the documents provided the Panel concluded that, with a low uncertainty, *A. planipennis* is likely to survive the proposed heat treatment of 60 °C/60 min, and that, to ensure a control level of 99 % the temperature of the heat treatment of 60 min should be higher than 70 °C. Following the publication of this scientific opinion, the US Authorities submitted a new proposal to the European Commission, consisting in a new heat treatment (71.1 °C/60 min). The EFSA Panel on Plant Health was asked to consider whether this new proposal was within the scope of the published opinion and, if not, to clarify its conclusion and indicate what data would be needed to assess the effectiveness of the new treatment. The Panel concluded that the new proposal is not within the scope of the opinion as the data provided by the US Authorities cannot be used to evaluate the effectiveness of the new proposed heat treatment. An accurate assessment of the new proposed heat treatment (71.1 °C/60 min) would require an experiment including several temperatures higher than 70 °C (one corresponding to the proposed treatment). Regarding the data requirements for assessing the effectiveness of the new treatment, the Panel lists the information required in the checklist presented in the Panel's draft guidance document on methodology for evaluation of the effectiveness of options to reduce the risk of introduction and spread of organisms harmful to plant health in the EU territory, currently under public consultation on EFSA website.

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#### KEY WORDS

*Agrilus planipennis*, Emerald Ash Borer, EAB, heat treatment

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## SUMMARY

Following the request received in 2012 related to the scientific opinion (EFSA Panel on Plant Health (PLH), 2011) on a technical file submitted by the US Authorities to support a request to list a new option among the EU import requirements for wood of *Agrilus planipennis* host plants, the Panel provides the following conclusions:

As none of the heat treatments tested in the experiments provided by the US Authorities includes a temperature higher than 65 °C, the Panel concludes that these experiments were not designed to evaluate the effectiveness of the new proposed heat treatment 71.1 °C/60 min.

The sentence of EFSA Panel on Plant Health (PLH) (2011) “*To ensure a control level of 99 % the temperature of the heat treatment of 60 min should be higher than 70 °C*” was based on the re-analysis of survival rates to justify a heat treatment of 60 °C/60 min. An accurate assessment of the new proposed heat treatment (71.1 °C/60 min) would require an experiment including several temperatures higher than 70 °C (one of the tested heat schedules should correspond to the proposed heat treatment).

The acceptability of the 99% control level has not been evaluated by the Panel as this assessment falls outside EFSA’s remit by virtue of the separation between risk management and risk assessment as clearly explained in EFSA’s founding regulation 178/2002.

Regarding the data that would be needed to assess the effectiveness of the proposed 71.1 °C/60 min heat treatment of wood in eliminating *A. planipennis* from the wood of host plants, the Panel clarifies the information it needs for evaluating the evidence provided to justify requests for phytosanitary measures for consideration by the European Commission under Council Directive 2000/29/EC. This information, needed for ensuring that all necessary data are provided to EFSA, is listed in the Appendix of this scientific opinion and corresponds to the requirements listed in the checklist presented in the Plant Health Panel’s draft guidance document on methodology for evaluation of the effectiveness of options to reduce the risk of introduction and spread of organisms harmful to plant health in the EU territory, which is currently under public consultation on the EFSA website.

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## TERMS OF REFERENCES AS PROVIDED BY THE EUROPEAN COMMISSION

EFSA is requested, pursuant to Article 29(1) of Regulation (EC) No 178/2002, to provide a scientific opinion in connection with a recently published scientific opinion of EFSA in the plant health area evaluating the effectiveness of a heat treatment against the insect pest *Agrilus planipennis* (emerald ash borer) proposed by the USA (EFSA Journal 2011;9(7):2185). In this opinion EFSA concluded that *A. planipennis* is likely to survive, with a low uncertainty, the proposed heat treatment of wood of host plants for 60 minutes at 60 °C and that therefore this treatment does not guarantee the wood to be free of *A. planipennis*.

In reply to the concerns expressed by EFSA on the 60 °C/60 min heat treatment of wood of *A. planipennis* host plants, the US authorities have now submitted a new proposal consisting in a treatment at 71.1 °C/60 min. The US authorities have not provided additional experimental data on the effectiveness of this treatment, since they consider that their request is in line with EFSA's scientific opinion, in particular since the opinion indicates that "*To ensure a control level of 99 % the temperature of the heat treatment of 60 min should be higher than 70 °C*".

Therefore EFSA is requested to provide its advice as to whether the new heat treatment proposed by the US authorities, which includes a temperature higher than 70 °C/60 min, falls indeed within the scope of the present scientific opinion and it would provide a control level of at least 99 %. If EFSA would consider that the new US heat treatment proposal is not within the scope of the present scientific opinion, EFSA is requested to provide a clarification on the above-mentioned statement included in the opinion on the control level of 99 % at temperatures higher than 70 °C/60 min, and to indicate what data would be needed to assess the effectiveness of the proposed 71.1 °C/60 min heat treatment of wood in eliminating *A. planipennis* from the wood of host plants.

## EVALUATION

### 1. Introduction

Following a request from the European Commission in 2010, the Panel on Plant Health was requested to provide a scientific opinion on a technical file submitted by the US Authorities to support a request to list a new option among the EU import requirements for wood (except in the form of dunnage, spacers, pallets or packing material) of *Agrius planipennis* host plants. The request was supported by:

- a peer reviewed scientific publication (Myers et al., 2009);
- the raw data provided by the US Authorities used by Myers et al. (2009) to perform their analyses.

Based on the results of the analyses it performed, the Panel concluded with a low uncertainty that *A. planipennis* is likely to survive the proposed heat treatment of 60 °C/60 min, and that the alternative option proposed in the technical file submitted by the US Authorities does not guarantee the wood to be free of *A. planipennis*.

The results of the analyses were presented in a scientific opinion of the EFSA Panel on Plant Health (EFSA Panel on Plant Health (PLH), 2011).

Following the new request received in 2012, the Panel provides in this opinion:

- advice as to whether a new heat treatment proposed by the US Authorities (71.1 °C/60 min) falls indeed within the scope of the scientific opinion EFSA Panel on Plant Health (PLH) (2011) and would provide a control level of at least 99 %;
- clarification on the following sentence of the above mentioned scientific opinion of the EFSA Panel on Plant Health (EFSA Panel on Plant Health (PLH) 2011, page .....): “*To ensure a control level of 99 % the temperature of the heat treatment of 60 min should be higher than 70 °C*”;
- indications about the data that would be needed to assess the effectiveness of the proposed 71.1 °C/60 min heat treatment of wood in eliminating *A. planipennis* from the wood of host plants.

Regarding the information provided by the US Authorities (Boone and Simpson, 2001), the Panel considers that it relates to industrial procedures for drying timber, with no direct relevance regarding the effectiveness of insect control.

### 2. New heat treatment proposed by the US Authorities (71.1 °C/60 min)

In its previous scientific opinion (EFSA Panel on Plant Health (PLH), 2011), the Panel scrutinised the technical file submitted by the US Authorities to support a request to list a new option among the EU import requirements for wood of *A. planipennis* host plants. The option under consideration was a heat treatment at 60 °C for 60 min to eliminate possible infestations of the wood by the emerald ash borer.

The three experiments supporting both the initial and the new US Authorities proposals were described in a scientific peer reviewed publication, Myers et al. (2009). Various heat treatments were tested in these experiments:

- For experiment 1: heat treatments with temperatures ranging from 50 °C to 65 °C and a duration equal to 30 min.
- For experiment 2: heat treatments with temperature equal to 50 °C or 55 °C and a duration equal to 30 min or 60 min.
- For experiment 3: heat treatments with temperatures ranging from 45 °C to 65 °C and a duration equal to 30 min or 60 min.

The Panel did not find any other study testing the proposed treatment schedule of 60°C/60 min, besides Myers et al. (2009), to further support the feasibility of the requested option, even though an extensive literature search was performed (EFSA Panel on Plant Health (PLH), 2011). As none of the tested heat treatments includes a temperature higher than 65 °C, the Panel concludes that these experiments were not designed to evaluate the effectiveness of heat treatments including temperature higher than 65 °C. The Panel considers that a new experiment including temperatures higher than those tested in Myers et al. (2009) and equal or superior to 71.1 °C should be conducted in order to test the effectiveness of the proposed treatment of 71.1 °C/60 min.

**3. Clarification on the sentence “to ensure a control level of 99 % the temperature of the heat treatment of 60 min should be higher than 70 °C”**

The Panel stated in the scientific opinion (EFSA Panel on Plant Health (PLH), 2011, section 4.4.2.1 page 20) that “to ensure a control level of 99 % the temperature of the 60 min heat treatment should be higher than 70 °C”. The Panel formulated this sentence in the specific context of the re-analysis of the different data extractions (individual vs. aggregated measurements, original vs. corrected measurements) out of the experimental results provided by the US Authorities using a Probit regression model (EFSA Panel on Plant Health (PLH), 2011, section 4.4), estimating the survival rate of the proposed heat treatment of 60 °C/60 min (see Table 1 below).

Based on its statistical analysis, the Panel showed that the temperature range used by Myers et al. (2009) in the experiments was not sufficient to reach the 99 % control level threshold (Table 1). Based on an extrapolation derived from the fitted Probit regression models (see Figures 2 and 3 in the scientific opinion of EFSA Panel on Plant Health (PLH), 2011), the Panel showed that the temperature of the 60 min heat treatment should be higher than 70 °C to ensure a control level of 99 %. As this sentence was based on the result of a statistical model and as no temperature higher than 65 °C was included in the experiment presented by Myers et al. (2009), an accurate assessment of the new proposed heat treatment (71.1 °C/60min) would require an experiment including several temperatures higher than 70 °C (one of the tested heat schedules should correspond to the proposed heat treatment).

The acceptability of the 99% control level has not been evaluated by the Panel as this assessment is outside EFSA’s remit by virtue of the separation between risk management and risk assessment as clearly explained in EFSA’s founding regulation 178/2002<sup>4</sup>.

The Panel concludes that the US Authorities interpretation of its sentence is not appropriate as the specific sentence was taken out of the context of the data re-analysis to test the 60 °C/60 min treatment.

The purpose of the previous scientific opinion (EFSA Panel on Plant Health (PLH), 2011) was to evaluate a given proposal (Myers et al., 2009) and not to justify a new proposal.

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<sup>4</sup> Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety (OJ L 31, 1.2.2002, p. 1)

**Table 1:** Necessary lethal temperatures and confidence intervals for a heat treatment of 60 min to reach a given control level estimated from the four datasets (extracted from the data provided by the US Authorities). (Source: EFSA Panel on Plant Health (PLH), 2011, Table 3, page 19)

<i>Dataset</i>	<i>Control level, %</i>	<i>Estimated temperature, °C</i>	<i>90 % confidence interval, °C</i>		<i>95 % confidence interval, °C</i>	
<b>Results of Myers et al. (2009)</b>	99.0	56.2	54.3	59.9	– <sup>a</sup>	–
	99.9	58.5	–	–	–	–
<b>Dataset 0</b> (Aggregated data as reported in Myers et al. (2009) from the individual data provided in the corrected dataset)	99.0	55.8	53.5	61.7	53.2	64.2
	99.9	57.8	54.9	65.4	54.5	68.8
<b>Dataset 1</b> Aggregated data from the original measurements	99.0	57.5	54.8	62.7	54.5	64.4
	99.9	60.6	57.2	67.5	56.8	69.8
<b>Dataset 2</b> Individual data from the corrected dataset	99.0	59.8	56.5	66.7	56.1	69.0
	99.9	63.8	59.5	73.1	59.0	76.4
<b>Dataset 3</b> Individual data from the original measurements	99.0	59.1	56.0	65.3	55.6	67.4
	99.9	63.3	59.1	71.9	58.6	74.8

<sup>a</sup> Not provided in Myers et al. (2009)

#### 4. Data requirements for assessing the effectiveness of 71.1 °C/60 min heat treatment

The Panel is developing a guidance document to be used for the assessment of risk reduction options, currently under public consultation on EFSA website (EFSA Panel on Plant Health (PLH), 2012), which is expected to be adopted in June 2012. This guidance document on risk reduction options is intended to complement, and not replace, the guidance on a harmonised framework for risk assessment (EFSA Panel on Plant Health (PLH), 2010) and the guidance on the evaluation of pest risk assessments and risk management options prepared to justify requests for phytosanitary measures under Council Directive 2000/29/EC (EFSA Panel on Plant Health (PLH), 2009).

In the above mentioned draft guidance on risk reduction options, the Panel clarifies the type of information it requires when evaluating the evidence provided to justify requests for phytosanitary measures for consideration by the European Commission under Council Directive 2000/29/EC<sup>5</sup>.

This draft guidance provides a checklist (see Appendix) for evaluating a proposed risk reduction option. This checklist will be used by the Panel to make a preliminary assessment of documents and data submitted to EFSA in support of a risk reduction option (e.g., a temperature treatment of plant material). More specifically, it is designed to quickly describe the information provided to EFSA to support a proposed risk reduction option, and to identify major gaps in the documents and data submitted to EFSA. This checklist could also be used by the author of a submitted dossier to verify whether all the requested data are provided.

The checklist includes five parts:

- a) Description of the proposed risk reduction option.
- b) Experimental assessment of the effectiveness of the presented option in reduction of pest infestation in plant material/or product under laboratory/or controlled conditions.

<sup>5</sup> Council Directive 2000/29/EC of 8 May 2000 on protective measures against the introduction into the community of organisms harmful to plants or plant products and against their spread within the community (OJ L 169, 10.7.2000, p.1)

- c) Experimental assessment of the effectiveness of the presented option in reduction of pest infestation in plant material/product under operational conditions.
- d) Analysis of the applicability and feasibility of the proposed risk reduction option reduction.
- e) Assessment of the effectiveness of proposed option in reducing the risk of pest entry from the infested area to a pest free area.

In particular, part b) of EFSA's checklist could be applied to specify the information necessary for assessing the effectiveness of a 71.1 °C/60 min heat treatment, namely.

- Plant material information: type of plant material/product used in the experiment; plant identity (e.g. botanical name, variety); conditions under which plant materials/products are managed; conditions of the plant commodity (e.g. degree of ripeness, presence of bark, etc.).
- Pest information: species; conditions under which the pests are cultured, reared or grown; method of infestation; level of infestation; stage of the pest that is most resistant to the treatment (was the most resistant stage used in the experiment?); potential development of resistance to the option.
- Experiment(s) description and analysis: variables used to measure effectiveness and target values (e.g. mortality rate, count); factors influencing effectiveness which were or were not taken into account in the experiment (e.g. wood humidity); description of facilities and equipment; description of treatment (e.g. temperature/duration, chemicals, concentration); methodology followed for monitoring critical parameters (e.g. number and placement of temperature sensors); description of experimental design (e.g. randomisation, blocks, number of replicates); description of the statistical analysis (e.g. anova, regression, test); conclusions of the experiment.

For a complete evaluation of a risk reduction option, the Panel considers that all the information described in the above mentioned checklist is required.

In addition, for its evaluation, the Panel needs to be provided with all the raw experimental data used to conclude on the effectiveness of a 71.1 °C/60 min heat treatment.

## CONCLUSIONS

Following the request received in 2012 related to the scientific opinion (EFSA Panel on Plant Health (PLH), 2011) on a technical file submitted by the US Authorities to support a request to list a new option among the EU import requirements for wood of *Agrilus planipennis* host plants, the Panel provides the following conclusions:

As none of the heat treatments tested in the experiments provided by the US Authorities includes a temperature higher than 65 °C, the Panel concludes that these experiments were not designed to evaluate the effectiveness of the new proposed heat treatment 71.1 °C/60 min.

The sentence of EFSA Panel on Plant Health (PLH) (2011) “*To ensure a control level of 99 % the temperature of the heat treatment of 60 min should be higher than 70 °C*” was based on the re-analysis of survival rates to justify a heat treatment of 60 °C/60min. An accurate assessment of the new proposed heat treatment (71.1 °C/60 min) would require an experiment including several temperatures higher than 70 °C (one of the tested heat schedules should correspond to the proposed heat treatment).

The acceptability of the 99% control level has not been evaluated by the Panel as this assessment falls outside EFSA's remit by virtue of the separation between risk management and risk assessment as clearly explained in EFSA's founding regulation 178/2002.



Regarding the data that would be needed to assess the effectiveness of the proposed 71.1 °C/60 min heat treatment of wood in eliminating *A. planipennis* from the wood of host plants, the Panel clarifies the information it needs for evaluating the evidence provided to justify requests for phytosanitary measures for consideration by the European Commission under Council Directive 2000/29/EC. This information, needed for ensuring that all necessary data are provided to EFSA, is listed in the Appendix of this scientific opinion and corresponds to the requirements listed in the checklist presented in the Plant Health Panel's draft guidance document on methodology for evaluation of the effectiveness of options to reduce the risk of introduction and spread of organisms harmful to plant health in the EU territory, which is currently under public consultation on the EFSA website.

#### DOCUMENTATION PROVIDED TO EFSA

1. Letter, 18 January 2012. Submitted by the European Commission, ref. SANCO E2/GC/ap(2011)1505056.
2. Letter, 8 December 2011. Submitted by the US Authorities to the European Commission
3. Boone and Simpson, 2001. Chapter 7, Kiln Schedules from the Dry Kiln Operator's Manual. USDA Agricultural Handbook AH-188: Dry Kiln Operator's Manual.

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- Boone and Simpson, 2001. Chapter 7, Kiln Schedules from the Dry Kiln Operator's Manual. USDA Agricultural Handbook AH-188: Dry Kiln Operator's Manual.
- EFSA Panel on Plant Health (PLH), 2009. Guidance of the Panel on Plant Health on the evaluation of pest risk assessments and risk management options prepared by third parties to justify requests for phytosanitary measures under Council Directive 2000/29/EC, *EFSA Journal*, 2654, 1–18.
- EFSA Panel on Plant Health (PLH), 2010. Guidance on a harmonised framework for pest risk assessment and the identification and evaluation of pest risk management options by EFSA. *EFSA Journal*, 8(2):1495, 66 pp.
- EFSA Panel on Plant Health (PLH), 2011. Scientific Opinion on a technical file submitted by the US Authorities to support a request to list a new option among the EU import requirements for wood of *Agrilus planipennis* host plants. *EFSA Journal*, 9(7):2185, 51 pp.
- EFSA Panel on Plant Health (PLH), 2012. Draft guidance of the Scientific Panel on Plant Health on methodology for evaluation of the effectiveness of options to reduce the risk of introduction and spread of organisms harmful to plant health in the EU territory. Document in public consultation from 01 March 2012 until 16 April 2012. Available at: <http://www.efsa.europa.eu/en/consultations/call/120301.htm>
- Myers SW, Fraser I and Mastro VC, 2009. Evaluation of heat treatment schedules for emerald ash borer (Coleoptera: Buprestidae). *Journal of Economic Entomology*, 102, 2048–2055.

## APPENDIX - CHECKLIST

The Panel is developing a guidance document on methodology for evaluation of the effectiveness of options to reduce the risk of introduction and spread of organisms harmful to plant health in the EU territory (EFSA Panel on Plant Health (PLH), 2012). This guidance document on risk reduction options complements and does not replace the guidance on a harmonised framework for risk assessment (EFSA Panel on Plant Health (PLH), 2010) and the guidance on the evaluation of pest risk assessments and risk management options prepared to justify requests for phytosanitary measures under Council Directive 2000/29/EC (EFSA Panel on Plant Health (PLH), 2009).

The checklist includes five parts as presented in the above mentioned guidance document :

- a) Description of the proposed risk reduction option.
- b) Experimental assessment of the effectiveness of the presented option in reduction of pest infestation in plant material/or product under laboratory/or controlled conditions.
- c) Experimental assessment of the effectiveness of the presented option in reduction of pest infestation in plant material/product under operational conditions.
- d) Analysis of the applicability and feasibility of the proposed risk reduction option.
- e) Assessment of the effectiveness of proposed option in reducing the risk of pest entry from the infested area to a pest free area.

### 1. Description of the proposed risk reduction option

Item	Description based on the submitted document(s)	Comments
Name		
Target pest	(e.g. species, strain)	
Target plant material/product	(e.g. species, cultivar)	
Origin of plant material/product		
Type of risk reduction option	(e.g. heat treatment, fumigation, combination of several treatments)	
Place of implementation		
<b>Other relevant information</b>		

**2. Experimental assessment of the option effectiveness to reduce pest infestation in plant material/product under laboratory/controlled conditions**

Source (indicate the reference of the supporting documents and data and their confidentiality status if applicable):

<b>Item</b>	<b>Description based on the submitted document(s) / data</b>	<b>Comments</b>
<b>Plant material information</b>		
Type of plant material/product used in the experiment		
Plant identity (e.g. botanical name, variety)		
Conditions under which plant materials/products are managed		
Conditions of the plant commodity (e.g. degree of ripeness, presence of bark, etc.)		
<b>Pest information</b>		
Identity (species- strains biotypes if applicable-)		
Conditions under which the pests are cultured, reared or grown		
Method of infestation		
Level of infestation		
Stage of the pest that is most resistant to the treatment		(refer to research data if relevant)
Was the most resistant stage used in the experiment?		
Potential development of resistance to the option		
<b>Experiment(s) description and analysis</b>		
Variables used to measure effectiveness and target values	(e.g. mortality rate, count)	
Factors influencing effectiveness which were taken into account in the experiment	(e.g. wood humidity)	
Factors influencing effectiveness which were <b>not</b> taken into account in the experiment	(e.g. wood humidity)	
Description of facilities and equipment		
Description of treatment	(e.g. temperature/duration, chemicals, concentration)	
Methodology followed for monitoring critical parameters	(e.g. number and placement of temperature sensors)	
Description of experimental design	(e.g. randomisation, blocks, number of replicates)	
Presentation of the data		
Description of the statistical analysis	(e.g. anova, regression, test)	
Conclusions of the experiment		
<b>Other relevant information</b>		

### 3. Experimental assessment of the option effectiveness to reduce pest infestation in plant material/product under operational conditions

Source (indicate the reference of the supporting documents and data and their confidentiality status if applicable):

Item	Description based on the submitted document(s) / data	Comments
<b>Plant material information</b>		
Type of plant material/product used in the experiment		
Plant identity (e.g. botanical name, variety)		
Conditions under which plant materials/products are managed		
Conditions of the plant commodity (e.g. degree of ripeness, presence of bark, etc.)		
<b>Pest information</b>		
Identity (species- strains biotypes if applicable-)		
Conditions under which the pests are cultured, reared or grown		
Method of infestation		
Level of infestation		
Stage of the pest that is most resistant to the treatment		(refer to research data if relevant)
Was the most resistant stage used in the experiment?		
Potential development of resistance to the option		
<b>Experiment(s) description and analysis</b>		
Variables used to measure effectiveness and target values	(e.g. mortality rate, count)	
Factors influencing effectiveness which were taken into account in the experiment	(e.g. wood humidity)	
Factors influencing effectiveness which were <b>not</b> taken into account in the experiment	(e.g. wood humidity)	
Description of facilities and equipment		
Description of treatment	(e.g. temperature/duration, chemicals, concentration)	
Methodology followed for monitoring critical parameters	(e.g. number and placement of temperature sensors)	
Description of experimental design	(e.g. randomisation, blocks, number of replicates)	
Presentation of the data		
Description of the statistical analysis	(e.g. anova, regression, test)	
Conclusions of the experiment		
<b>Other relevant information</b>		

#### 4. Analysis of the applicability of the risk reduction option

Source (indicate the reference of the supporting documents and data and their confidentiality status if applicable):

Item	Description based on the submitted document(s) / data	Comments
<b>Plan of implementation</b>		
Place of implementation		
Characteristics of the treated material	(e.g. maximum size of the lot)	
Description of the required facilities and equipments		
The degree to which the proposed option complements other phytosanitary measures	(e.g. potential for the treatment to be used as part of a systems approach for one pest or to complement treatments for other pests)	
Consideration of potential indirect effects	(e.g. impacts on the environment, impacts on non-target organisms, human and animal health)	
<b>Monitoring of the plan</b>		
Parameters that will be monitored	(e.g. wood temperature, presence of pest)	
Critical thresholds considered for these parameters	(e.g. minimum temperature value)	
Equipments used for the monitoring	(e.g. temperature probes, detection techniques)	
<b>Other relevant information</b>		

**5. Assessment of option effectiveness to reduce risk of pest entry from infested area to pest free area**

Source (indicate the reference of the supporting documents and data and their confidentiality status if applicable):

<b>Item</b>	<b>Description based on the submitted document(s) / data</b>	<b>Comments</b>
<b>Consignments</b>		
Origin		
Type of commodities		
Surveillance	(e.g. survey, commodity inspection, monitoring etc...)	
Level of infestation of plant material/product		
Quantity of commodities		
Means of transportation	(e.g. boats, planes, trains, tourisms)	
<b>Detection method of the pest in the plant material/product</b>		
Place(s) of implementation	(e.g. truck, harbour)	
Sampling technique	(e.g. size, unit, number of samples)	
Type of detection method	(e.g. visual inspection, laboratory test)	
Accuracy	(e.g. sensitivity, specificity)	
<b>Point(s) of entry</b>	(e.g. city)	
<b>Variable used to describe probability of pest entry</b>	(e.g. entry rate, probability, score)	
Conclusion of the assessment		
<b>Other relevant information</b>		