Vector required: the case of the quarantine pine wilt nematode
*Bursaphelenchus xylophilus* and the *Monochamus* longhorn beetles in Belgium

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Aliens on the Horizon
The Pine Wilt Nematode (PWN) *Bursaphelenchus xylophilus* is native to North America.

In the late 1970’s the nematode was introduced into South-East Asia by timber consignments.

The nematode spread rapidly through many Asian countries (e.g. Japan, China, Taiwan, etc.) and caused the damaging Pine Wilt Disease (PWD).
The PWN was also introduced into Europe

- **Portugal**
  - First detected: 1999

- **Spain**
  - First detected: 2008
PWN is easily spread via (global) trade:
- Via a contaminated commodity (live plants, logs, sawn timber)
- Via wood packaging of trade goods

PWN is also spread via insect vectors, i.e. longhorn beetles of the genus *Monochamus*

**Source:** PHRAME
Phytosanitary measures:
- EPPO A2 list
- “Implementing decisions” by the European Commission
- Quarantine status in legislation of several countries
- NPPO inspections of trade goods
- ISPM No. 15 “Regulation of Wood Packaging Material in International Trade” (IPPC)
- National surveys
### Phytosanitary measures

**EPPO A1 and A2 list:** “To support members in assuring plant health in their countries. Pests are added after being evaluated through the European Plant Protection Organisation (EPPO) PRA process. This list distinguishes pests which are absent (A1) from the EPPO region from those which are present (A2).”

**EPPO Alert list:** “To alert NPPOs in the EPPO region of new potential phytosanitary risks. The list can also be used to select pests for which PRA should be conducted within the EPPO system.”

<table>
<thead>
<tr>
<th>Nematodes</th>
<th>ds</th>
<th>diag</th>
<th>pict</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aphelenchoides besseyi</td>
<td></td>
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<tr>
<td><strong>Bursaphelenchus xylophilus</strong></td>
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<tr>
<td>Ditylenchus dipsaci</td>
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<tr>
<td>Globodera pallida</td>
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<td>Globodera rostochiensis</td>
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<td>Heterodera glycines</td>
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</table>
Phytosanitary measures

European Commission: directive stating harmful organisms for EU

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

PART A

HARMFUL ORGANISMS WHOSE INTRODUCTION INTO, AND SPREAD WITHIN, ALL MEMBER STATES SHALL BE BANNED IF THEY ARE PRESENT ON CERTAIN PLANTS OR PLANT PRODUCTS

8. *Bursaphelenchus xylophilus* (Steiner and Buhere) Nickle et al.


If a harmful organism is found in the EU, the country concerned must:

• Notify the Commission and the other EU countries;
• Eradicate or prevent the spread of the harmful organism.
Phytosanitary measures

Quarantine status in Belgian legislation: KB 10/08/2005

ANNEXE II

Partie A. Organismes nuisibles dont l'introduction et la dissémination doivent être interdites dans tous les États membres s'ils se présentent sur certains végétaux ou produits végétaux

Chapitre I. Organismes inexistants dans la Communauté et importants pour toute la Communauté

(a) Insectes, acariens et nématodes à tous les stades de leur développement

<table>
<thead>
<tr>
<th>Espèce</th>
<th>Objet de la contamination</th>
</tr>
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<tbody>
<tr>
<td>1. Aculops fuchsiae Keifer</td>
<td>Végétaux de Fuchsia L., destinés à la plantation, à l'exception des semences</td>
</tr>
</tbody>
</table>
NPPO inspections of imported goods and national surveys

Results of phytosanitary controls and national surveys in Belgium for *Monochamus* spp. (packaging wood from import) and *Bursaphelenchus xylophilus*; n.d.: not determined

<table>
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</thead>
<tbody>
<tr>
<td><strong>NEMATODES</strong></td>
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<td></td>
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<td></td>
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<tr>
<td>Total number of samples</td>
<td>106</td>
<td>90</td>
<td>123</td>
<td>239</td>
<td>251</td>
<td>213</td>
<td>200</td>
<td>178</td>
<td>143</td>
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<tr>
<td>Samples of imported materials:</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td>wood</td>
<td>25</td>
<td>55</td>
<td>51</td>
<td>96</td>
<td>96</td>
<td></td>
<td></td>
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<tr>
<td>bark</td>
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<td>5</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>packaging wood</td>
<td>7</td>
<td>6</td>
<td>4</td>
<td>15</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Samples with <em>B. xylophilus</em></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

| **INSECTS**        |      |      |      |      |      |      |      |      |      |
| Total number of samples (all import) | 13   | 2    | 9    | 1    | 11   | 4    | 7    | 6    | 8    |
| Samples with *Monochamus* spp. | 0    | 0    | 0    | 0    | 0    | 1    | 1    | 0    | 0    |
| Samples with other longhorn spp.   | 2    | 0    | 0    | 0    | 1    | 1    | 0    | 0    | 0    |
Phytosanitary measures

IPPC (FAO): an international agreement aiming to protect cultivated and wild plants by preventing the introduction and spread of pests. 181 countries are participating at the moment.

ISPM No. 15 “Regulation of Wood Packaging Material in International Trade” (IPPC (FAO)) from 2003 and onwards:

“All wood packaging material for international trade must be debarked, then heat treated or fumigated and finally be stamped or branded with a mark of compliance”
COMMISSION IMPLEMENTING DECISION
of 26 September 2012

on emergency measures to prevent the spread within the Union of Bursaphelenchus xylophilus
(Steiner et Buhrer) Nickle et al. (the pine wood nematode)

(notified under document C(2012) 6543)

(2012/535/EU)

Commission Decision 2006/133/EC (1) requires Member States temporarily to take additional measures against the dissemination of pine wood nematode (PWN) as regards areas in Portugal, other than those in which it is known not to occur. PWN outbreaks in Spain and repeated interceptions by other Member States of PWN-infested pine wood, wood packaging material and bark from Portugal show that the risk has increased that PWN might spread out of areas in Portugal, in which PWN is known to occur. The economic, social and environmental impact of PWN spread across the Union would be unacceptably large. It is therefore appropriate to extend the scope of the measures concerning PWN to all Member States.

With a view to prevent PWN introduction and spread, Member States should carry out annual surveys for the presence of PWN in areas where it is not known to occur and adopt contingency plans to be prepared for findings of the presence of PWN.
MONOCHAMUS FOD project: A study of the Monochamus spp. populations present in Belgium to assess their capacity to propagate the pine wood nematode, and to develop preventive control methods.

General objective:
Establish a sampling plan and emergency response plan for Belgium

--->
Identify and map the distribution of native and alien Monochamus spp. occurring in Belgium.
Establish a public awareness network:

- inform the public of the risk related to PWN and its vector *Monochamus*
- stimulate public to join in the search for *Monochamus* spp.
Establish a network of monitoring traps throughout Belgium

Based on advice and experience of research groups in other European countries (France, Portugal, Spain, Slovenia, ...)

- Teflon coated cross vane traps
- Galloprotectant Pack attractants (aggregation pheromone and kairomonal attractants)
MONOCHAMUS FOD project

87 traps set up in pine stands
- Wallonie: DEMNA (34)
- Brussels: ULB (4)
- Flanders: ILVO (39)
- Import locations: AFSCA-FAVV (10)

1 trap per pine stand
Checked every 3-4 weeks
6 adults were found during the monitoring:

- 1 *M. sartor*
  in Elsakker (Hoogstraten)

- 5 *M. galloprovincialis*
  in Elsakker (Hoogstraten), Kolisbos (Neerpelt), Kloosterbos (Wachtebeke), Bezoensbeek (Zuttendaal) en Bulskampveld (Beernem)
First conclusions: *M. galloprovincialis* seems to occur sparsely in northern parts of Belgium.
MONOCHAMUS FOD project

Future research related to a contingency plan:

• Confirm establishment of *M. galloprovincialis* in 2014 and 2015
• Assess local population densities occurring in pine stands
• Assess status of *M. sartor*: endemic or imported?
• Determine flight capacity in relation to their potential spread
• Pinpoint monitoring points having the highest likelihood in trapping PWN-transporting *Monochamus* longhorns
  -> rapid detection of future PWN introduced into Belgium
• Evaluate potential control measures
Thank you for your attention