



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

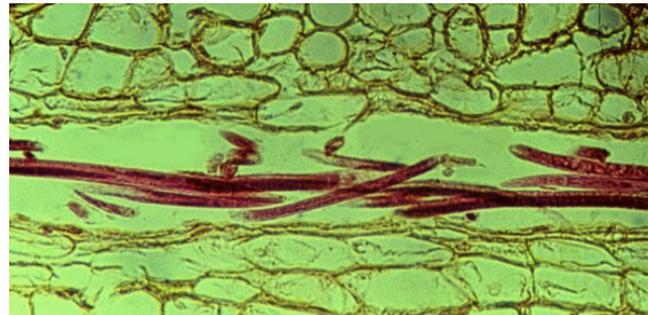
Bundesamt für Umwelt BAFU
Bundesamt für Landwirtschaft BLW

Eidgenössischer Pflanzenschutzdienst EPD

Risk-based Sampling

Bursaphelenchus xylophilus

EPPO WORKSHOP
04-26/28 Bern





Content

- Introduction
- Biology and symptoms
- Distribution map
- Transmission/ ways of dissemination
- Three possible cases of imports
 - 1 Case: Firewood import from Canada
 - 2 Case: Import of wooden piles from Bosnia and Herzegovina
 - 3 Case: Import of natural stone slabs from China with wooden pallets
- Categorization of goods
- Risk-based sampling in case 1 and 3



Introduction

- Common names: Pine wood nematode (English), nématode du pin (French) Kiefernholznematode (German)
- Occurrence in the EU: The pest has established in Portugal, a single incursion in Spain has been reported
- Host plants: Pine wood nematode (PWN) prefers *Pinus* species, but is also able to attack other Conifer trees like: *Abies*, *Picea*, *Larix*, *Cedrus* and *Pseudotsuga*. These genus are considered as PWN host plants
- The PWN is believed to be native in North America and has been spread to Asia (Japan, China, Taiwan, Korea) and Portugal (Europe)
- In Portugal since the detection of PWN several 100.000 dying pine trees have been cut after a infestation



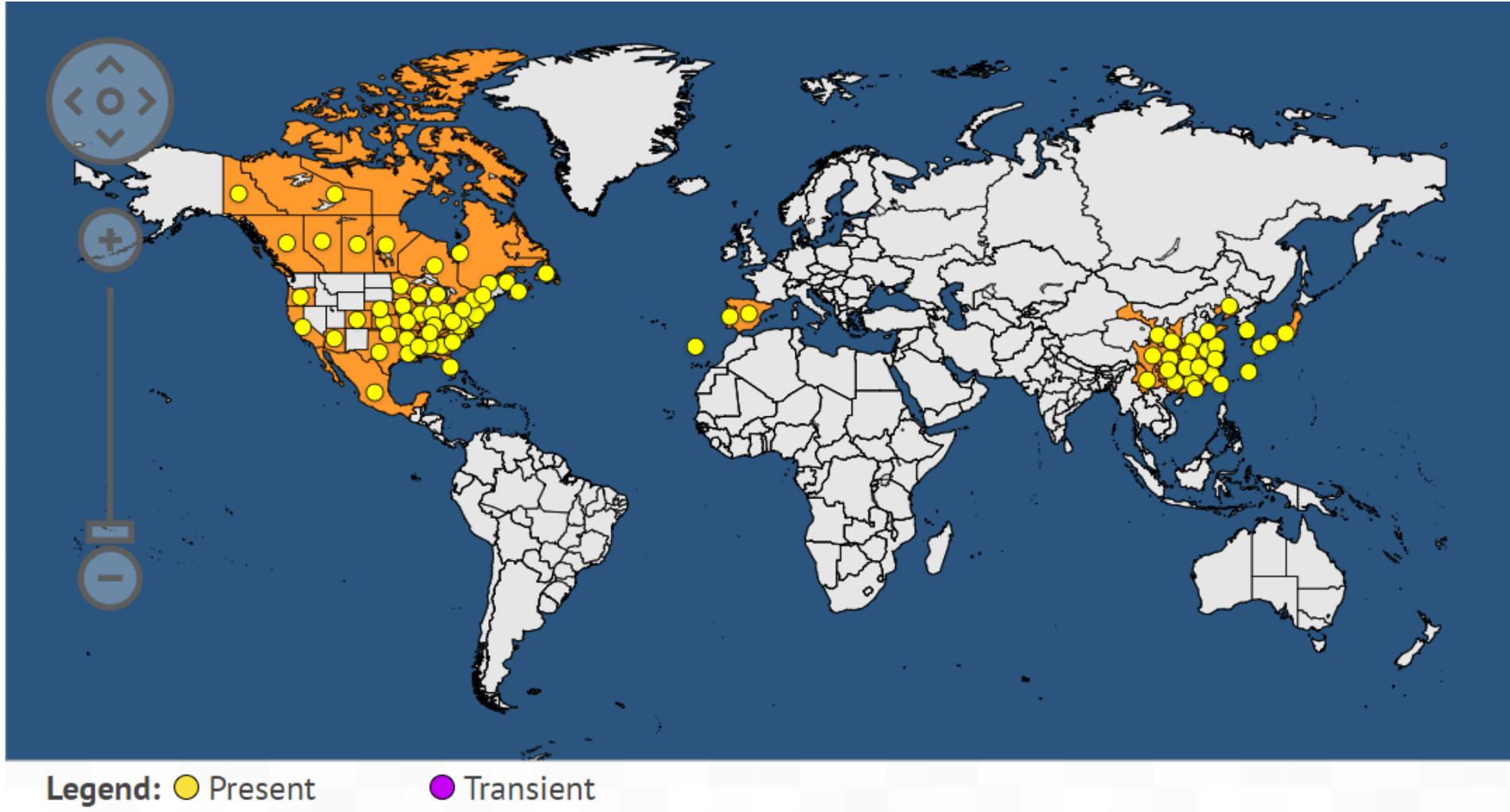
Biology and symptoms

- The PWN is a nematode about 1 mm long. The nematodes live and reproduce in the conduit system of pine wood. In living trees they feed by sucking on plant cells.
- In deadwood, they suck on hyphae of blue stain fungi. Hyphae are thread-like cells of fungi that serve to absorb nutrients and water.
- At an average daily temperature of 20°C over several weeks, the first signs of wilting appear on the needles of the affected pines, individual branches die, until finally the whole tree dies after a few months.





Distribution map





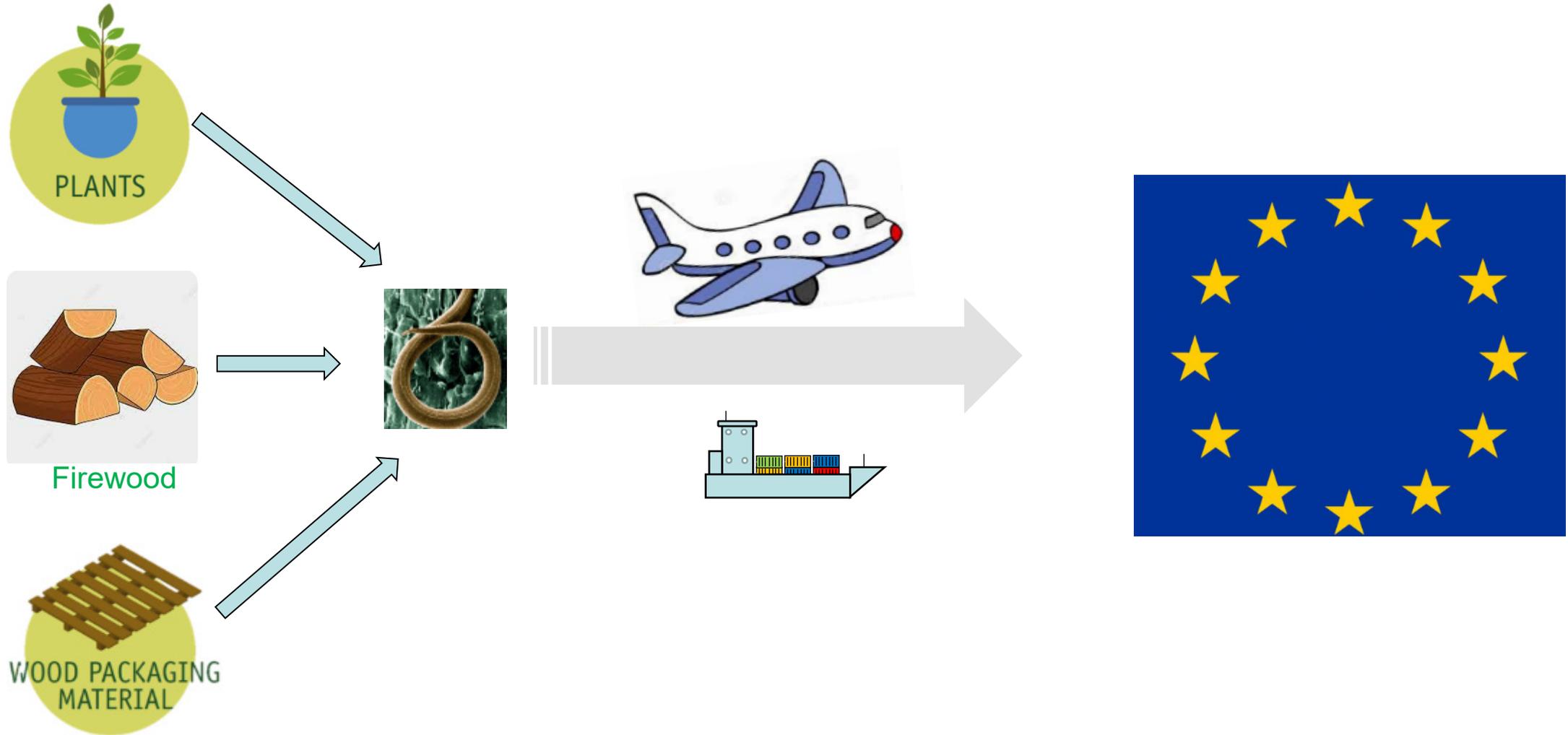
Transmission/ ways of dissemination

- Vector transmission is by far the most important way of spread. *B. xylophilus* can be moved with plants, wood etc. but without the vector insect there is only a theoretical and extremely low likelihood of transmission to new host trees. The only demonstrated means of transmission in the field conditions is by its vectors in the genus *Monochamus* spp.
- Possible ways to import infected material are:
 - 1) Plants for planting (except seeds) of host species (including bonsai plants)
 - 2) Cut branches (including Christmas trees) of host species
 - 3) Wood (except particle wood and waste wood) of host species (including any wood products made from raw untreated coniferous wood)
 - 4) Particle wood and waste wood of host species
 - 5) Coniferous wood packaging material
 - 6) Isolated bark of host species





Import





Case 1: Firewood import from Canada

- Due to high demand for firewood, a Swiss company has imported three containers of meter pieces (prefabricated firewood) from Canada. Each container contains 120 pine log pieces (one meter cuts) of *Pinus sylvestris* / approx. 60 cubic meters of wood in total.
- The staff of the phytosanitary service at the first point of entry in the EU must decide, after document control, whether this commodity poses a risk.
- The phytosanitary certificate complies with the regulations.



Import with
PC



Disinfestation and/or disinfection treatment	
12 Date	13 Treatment
14.06.2021	Kiln-Drying (KD)
14 Chemical (active ingredient)	

15 Duration and Temperature	16 Concentration
74°C for 120 Hours	*****
17 Additional information	



Case 2: Import of wooden piles from Bosnia and Herzegovina

- A Swiss fencing company would like to import 30 cubic meters of black pine (*Pinus nigra*) poles from Bosnia and Herzegovina. The poles are made of fresh wood, which has not been treated but machined
- Document control is not necessary, because imports of pine wood from Bosnia and Herzegovina are not subject to phytosanitary requirements.

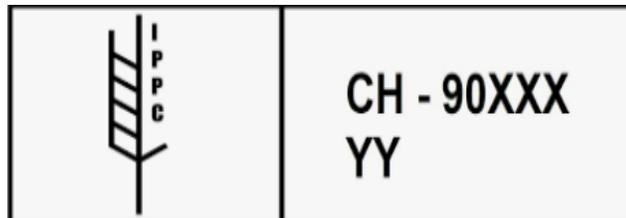
Phytosanitary certificate is not required





Case 3: Import of natural stone slabs with wooden pallets from China

- A natural stone importer, imports garden slabs from China. The goods were correctly pre-registered at the phytosanitary service. The load consists of ten wooden pallets
- During the inspection at the warehouse, the inspectors found that three of the ten pallets were missing an ISPM 15 marking and the pallets were also badly discolored. (possible fungal infestation)



Not present
on 3 pallets





Categorization of goods

CATEGORIZATION OF COMMODITIES ACCORDING TO THEIR PEST RISK ISPM 32

- Case 1: Firewood (*Pinus sylvestris*) import from Canada
 - The wood has remained in its natural form and has not been machined
 - The firewood may be stored for a longer period of time
 - The wood comes from a country where the PWN occurs
- Case 2: Import of wooden piles (*Pinus nigra*) from Bosnia and Herzegovina
 - The poles are machined and come from a country where the PWN does not occur
 - The import of wooden piles from Bosnia and Herzegovina is not subject to phytosanitary regulations
- Case 3: Import of natural stone slabs with wooden pallets from China
 - Three wooden pallets look bad (have discoloration)
 - The pallets are reused for transporting materials
 - They come from an area where PWN occurs



Risk-based sampling in case 1

- At a confidence level of 95%, it was necessary to sample 46 logs (meter piece) per container
- At a confidence level of 80%, for example, 27 logs (meter piece) had to be sampled per container
- Which confidence level do we choose and what can help us with the selection criteria?





Possible selection criteria

- Do we have any experience with such imports?
- Has the same wood (material) already been imported from the same country?
- Could we possibly by sampling the wood, reduce the value of the goods?





Risk-based sampling in case 3

- Since we are dealing with "only" three pallets here, we can control all three pallets with a small effort to reach a 99% confidence level
- Here we have the possibility to collect other information, for example, monitoring a pathway *ISPM31*
- optimize the probability of detecting specific regulated pests *ISPM31*

After sampling, the "non-compliant" pallets must be destroyed by incineration anyway





Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Bundesamt für Umwelt BAFU
Bundesamt für Landwirtschaft BLW

Eidgenössischer Pflanzenschutzdienst EPSD

Sampling guide

for field work





Tools for sampling

- Drill, drill screw 16 mm, axe or knife (removal of bark) Desinfection agent (for example 70 % alcohol), zip bags, waterproof pencil

Procedure

- *Step 1 Disinfection of the axe / knife:*
 - Disinfect the axe or knife with 70% alcohol, wait briefly until the tool has dried somewhat
- *Step 2 Removal of the bark at points to be sampled at the base of the trunk:*
 - Samples are taken from the base of the trunk up to a maximum of 1.2 m. The most important area is the zone directly above the ground up to a height of approx. 50 cm. The bark is removed in a spiral and the sapwood is exposed.
At least 3 sampling points
- *Step 3 Disinfection of the drill screw:*
 - Thorough disinfection with 70% alcohol from all sides. Then pause until the screw is somewhat dry
- *Step 4 zip bag labeling:*
 - Label zip bag with the following information: Date, location/coordinates, purpose of sampling (suspected organism), name sampler



- *Step 5 Drilling:*
 - zip bag with one hand to catch the wood pellets /sawdust that fall out. Drill does not need to be re-disinfected on the same tree before we drill each hole. At the end, close the zip bag and store it safely. The samples do not need to be cooled immediately. Only on hot days a cooling bag may be appropriate
- *Step 6 Disinfection of the drill bit:*
 - Thoroughly disinfect the drill screw on all sides with 70 % alcohol after the sampling
- *Step 7 Disinfection of hands and shoes:*
 - Disinfect hands and shoes with 70% alcohol after sampling is complete before walking away from the tree





Thanks for the attention

