Invasive Alien Species - A Global Perspective

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Today's talk:

Global increases in pest issues affect forests and trade of forest products

- Recent major problems
- Import and export considerations
- Mitigation opportunities

Alien Invasive Species in Forests….

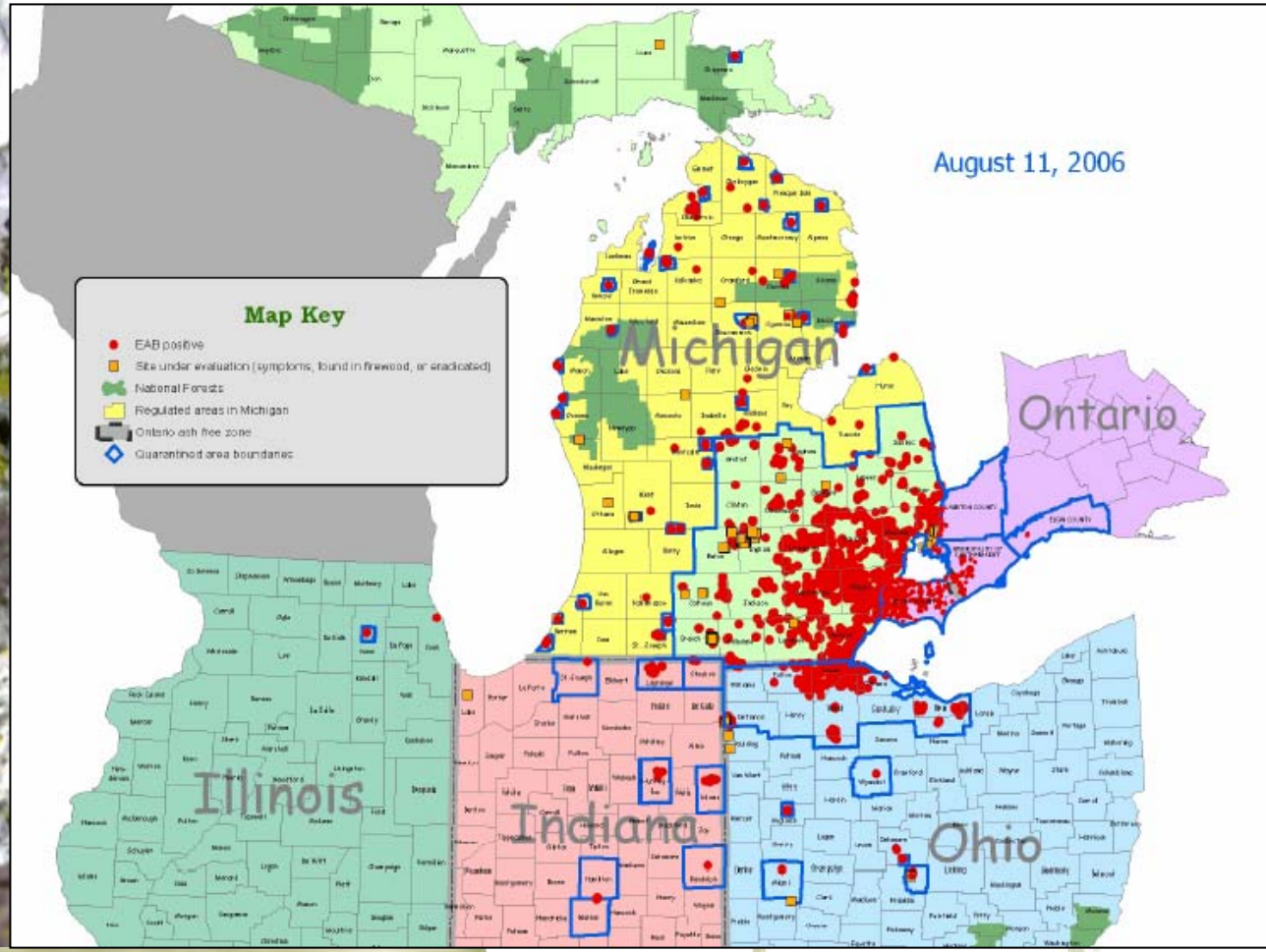
Alien Species Introductions to Canadian Forests

Invasive Alien Species	Year	Pathway
Beech bark disease	1890	live plant
Chestnut blight	1904	live plant
Balsam woolly adelgid	1908 E, 1950 W	live plant
White pine blister rust	1910	live plant
Gypsy moth	1924	escape/adventive
Dutch elm disease	1944	logs/packaging
Butternut canker	1991	live plant
Pine shoot beetle	1992	wood packaging
Brown spruce longhorned beetle	1999	wood packaging
Emerald ash borer	2002	wood packaging
Asian longhorned beetle	2004	wood packaging
Sirex noctilio	2005	wood packaging

Emerald Ash Borer

Detroit, Windsor 2002

Emerald Ash Borer in North America, 2006



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A Global Problem

Global Examples of Alien Species Introductions

Dutch Elm Disease – global

Bursaphelenchus xylophilus – Japan, China, Portugal

Anoplophora glabripennis – North America, Europe

Dendroctonus valens – China

Sirex noctilio – Africa, South/North America, Australia

Megaplatypus mutatus – Italy

Cameraria ohridella - Europe

Orgyia thyellina – New Zealand

Ips grandicollis – Australia

Conifer aphids - Africa

Megaplatypus mutatus

- Native to South America

- many hardwood hosts:

Acer, *Citrus*, *Eucalyptus*, *Fraxinus*, *Laurus nobilis*, *Magnolia grandiflora*, *Malus domestica*, *Platanus*, *Populus*, *Prunus persica*, *Persea americana*, *Pyrus communis*, *Quercus*, *Robinia pseudacacia*, *Salix*, *Tilia*, *Ulmus*

- introduced to Italy in 2000, affecting Poplar and fruitwood

Pinewood Nematode

- Native to North America
- Introduced to Japan; 1905
- Also in China, Korea, Portugal
- 1992: EU bans green wood products from NA

High Risk Pathways

Forest Products

- Wood packaging
- Logs
- Lumber
- Chips
- Live plant material

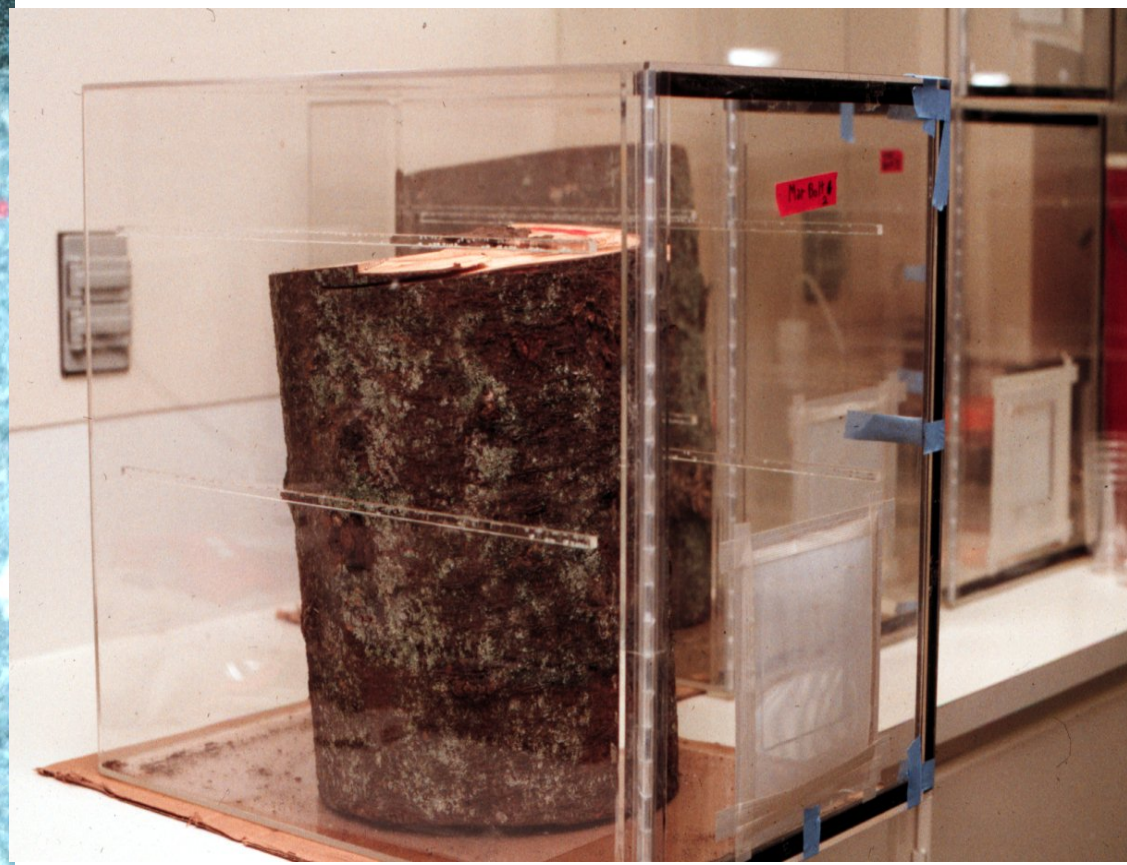
Mitigation Options

- Heat treatment
- Fumigation
- CPI
- Microwave
- Submersion

Wood packaging material

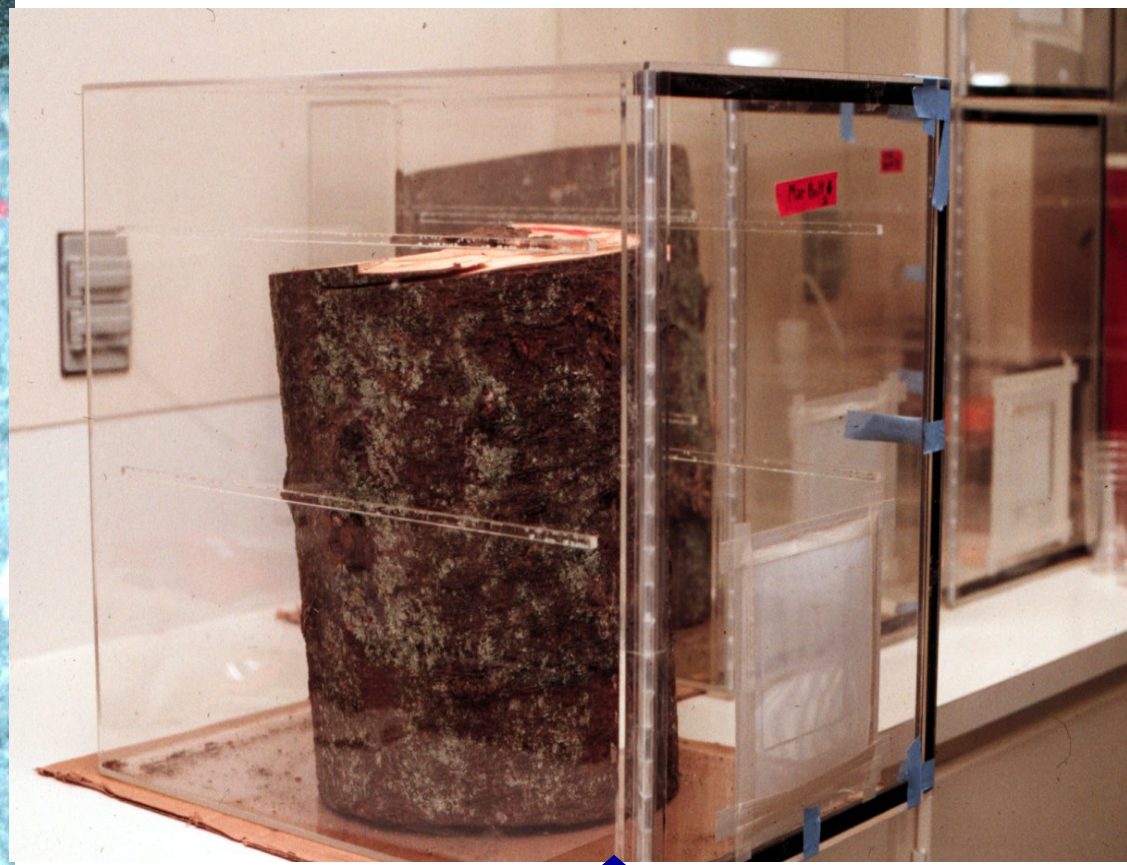
Wood packaging material

Norway spruce bolt bracing granite



Quarantine rearing of spruce bolts

Norway spruce bolt bracing granite



Quarantine rearing of spruce bolts

Fungi, nematodes,

1532 insects of > 20 species,

IPPC Wood Packing Standard, ISPM 15 adopted April 2002

International standard to “clean-up” the phytosanitary quality of wood packing material through treatment to kill pests

GUIDELINES FOR REGULATING WOOD PACKING MATERIAL

USED IN THE TRANSPORT OF COMMODITIES

Secretariat of the International Plant Protection Convention
Food and Agriculture Organization
of the United Nations
Rome, 2002

Goal of ISPM 15

The standard describes measures designed to "practically eliminate the risk for most quarantine pests and significantly reduce the risk from a number of other pests".

- wide range of pests (insects, nematodes, fungi)
- all species of wood (hardwoods, softwoods)
- all sizes of wood
- wood of different moisture contents

Approved Measures

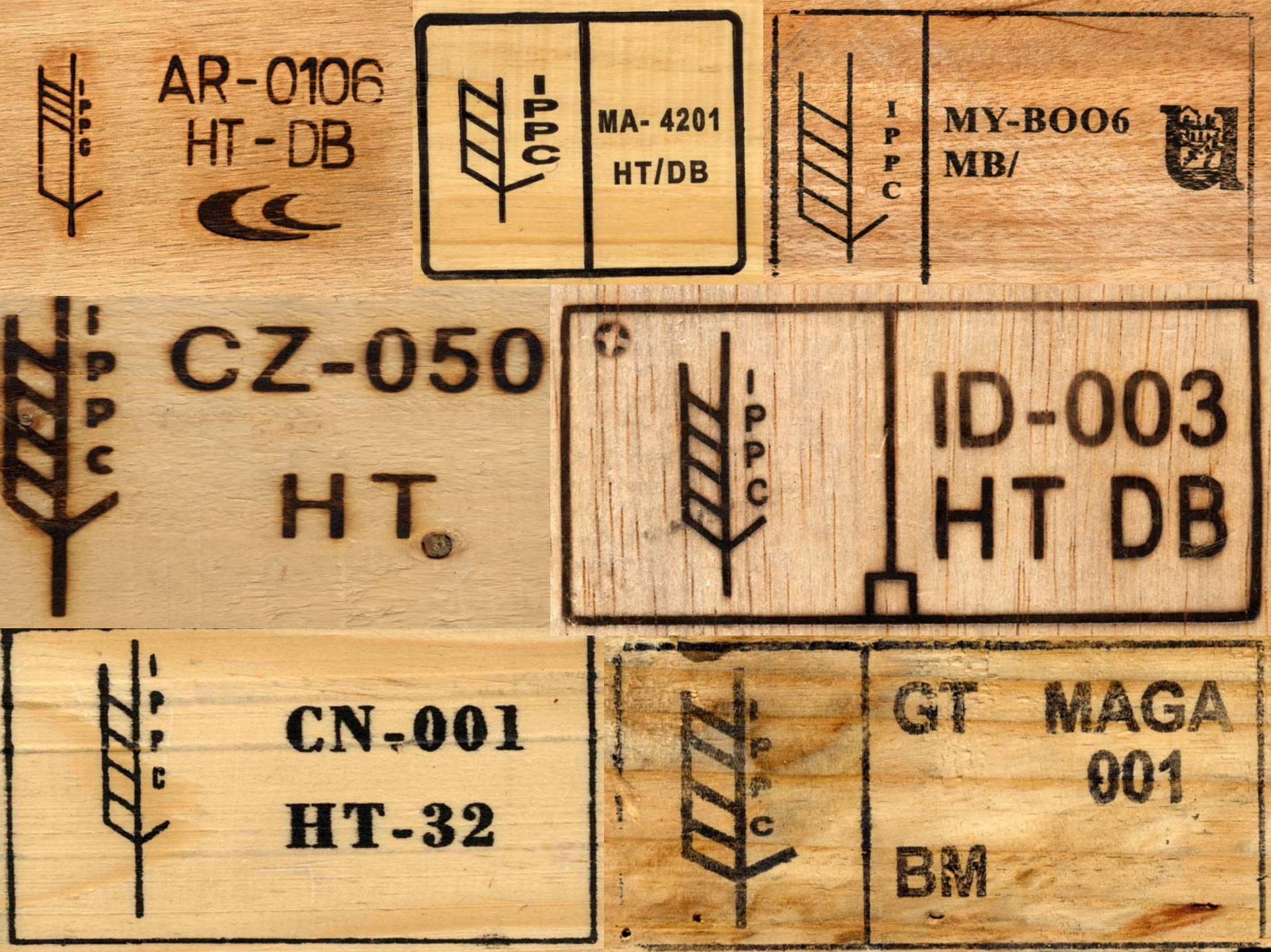
Treatments should be:
"significantly effective against most pests"

- Proven efficacy (scientifically valid experiments)
- Wide range of pests (insects, fungi nematodes)
- Technical feasibility

ISPM 15 Approved Measures

Heat Treatment
- 56° C for 30 min

Methyl Bromide fumigation
- lethal concentration 24 h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~71 countries have implemented ISPM No.15

Sept 2006

Argentina	Australia	Austria	Belgium
Bolivia	Brazil	Bulgaria	Canada
Chile	China	Colombia	Costa Rica
Cyprus	Czech Republic	Denmark	Dominican Republic
Ecuador	Egypt	Estonia	European Union
Fiji	France	Germany	Greece
Guatemala	Honduras	Hong Kong	Hungary
Iceland	India	Indonesia	Ireland
Israel	Italy	Jamaica	Japan
Jordan	Korea	Lebanon	Lithuania
Malaysia	Mexico	Netherlands	New Zealand
Nicaragua	Nigeria	Norway	Oman
Panama	Paraguay	Peru	Philippines
Poland	Romania	Saudi Arabia	Seychelles
Slovakia	South Africa	Spain	Sri Lanka
Switzerland	Syrian Arab Republic	Taiwan	Trinidad and Tobago
Turkey	Ukraine	United Kingdom	United States
Uruguay	Venezuela	Vietnam	

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ISPM 15 Compliance at Canadian Ports

>70%

High Risk Pathways

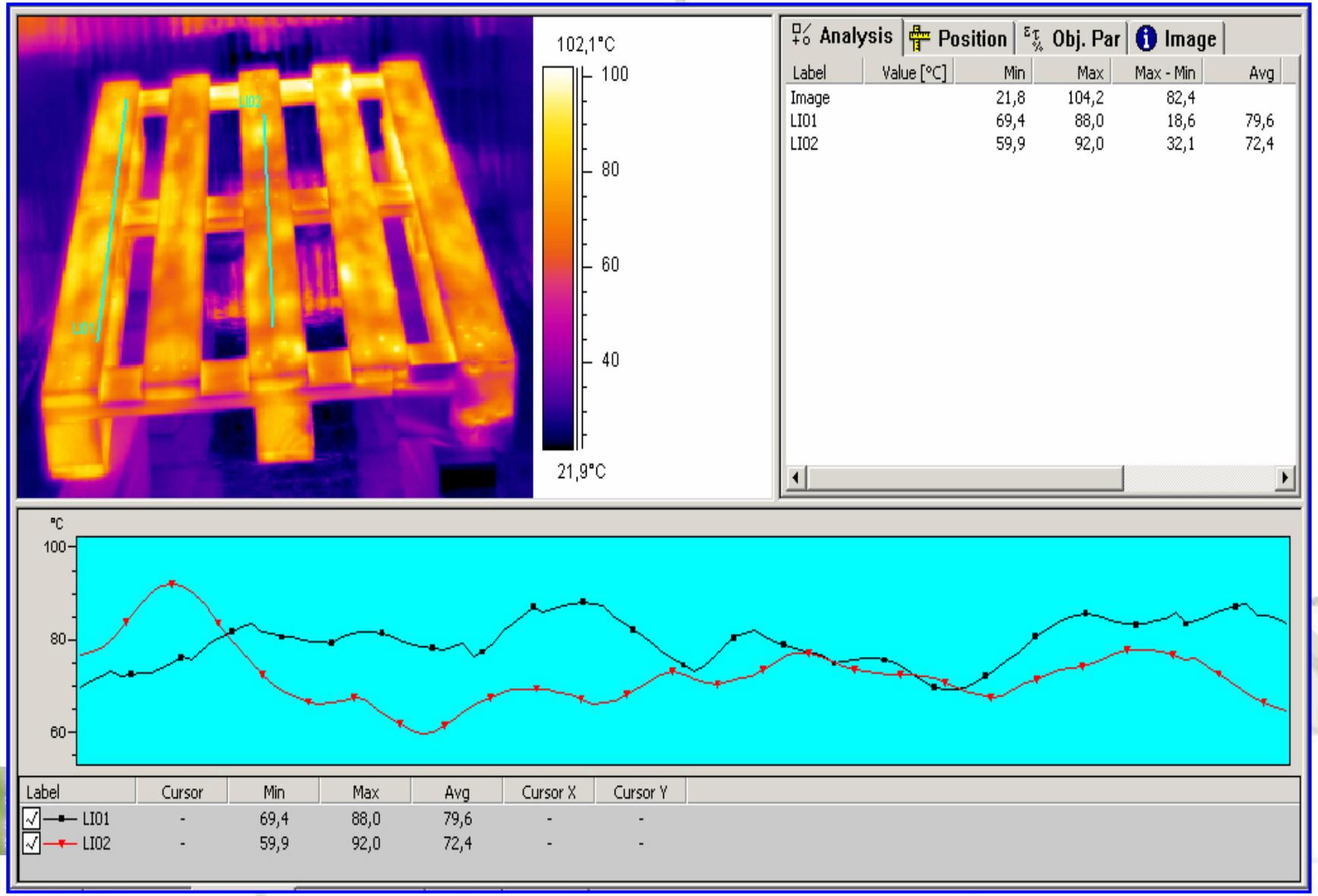
Forest Products

- Wood packaging
- Logs
- Green lumber
- Live plant material

Mitigation Options

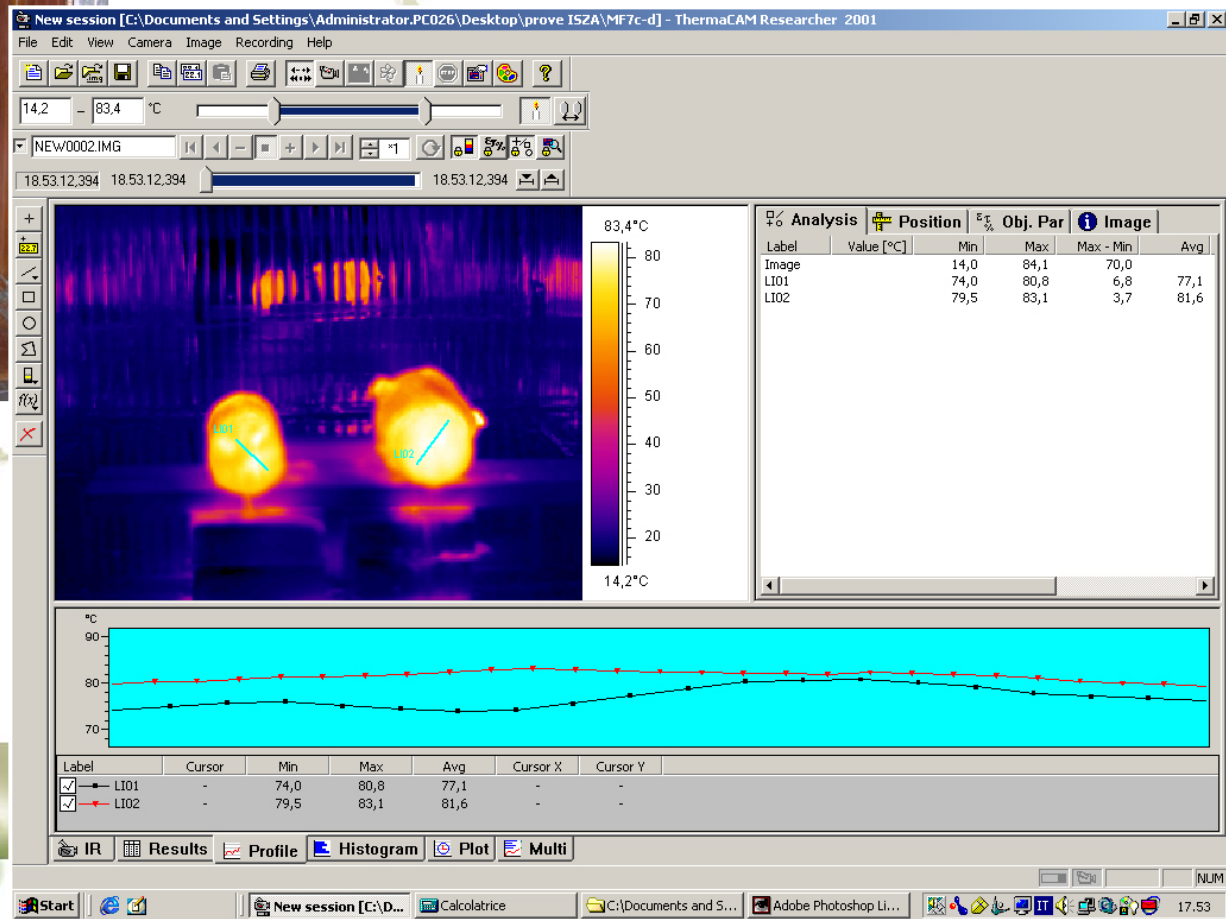
- Heat treatment
- Fumigation
- CPI
- Microwave
- Submersion

Microwave Treatment of Wood Packaging



Microwave Treatment of Wood Packaging

EMitech®



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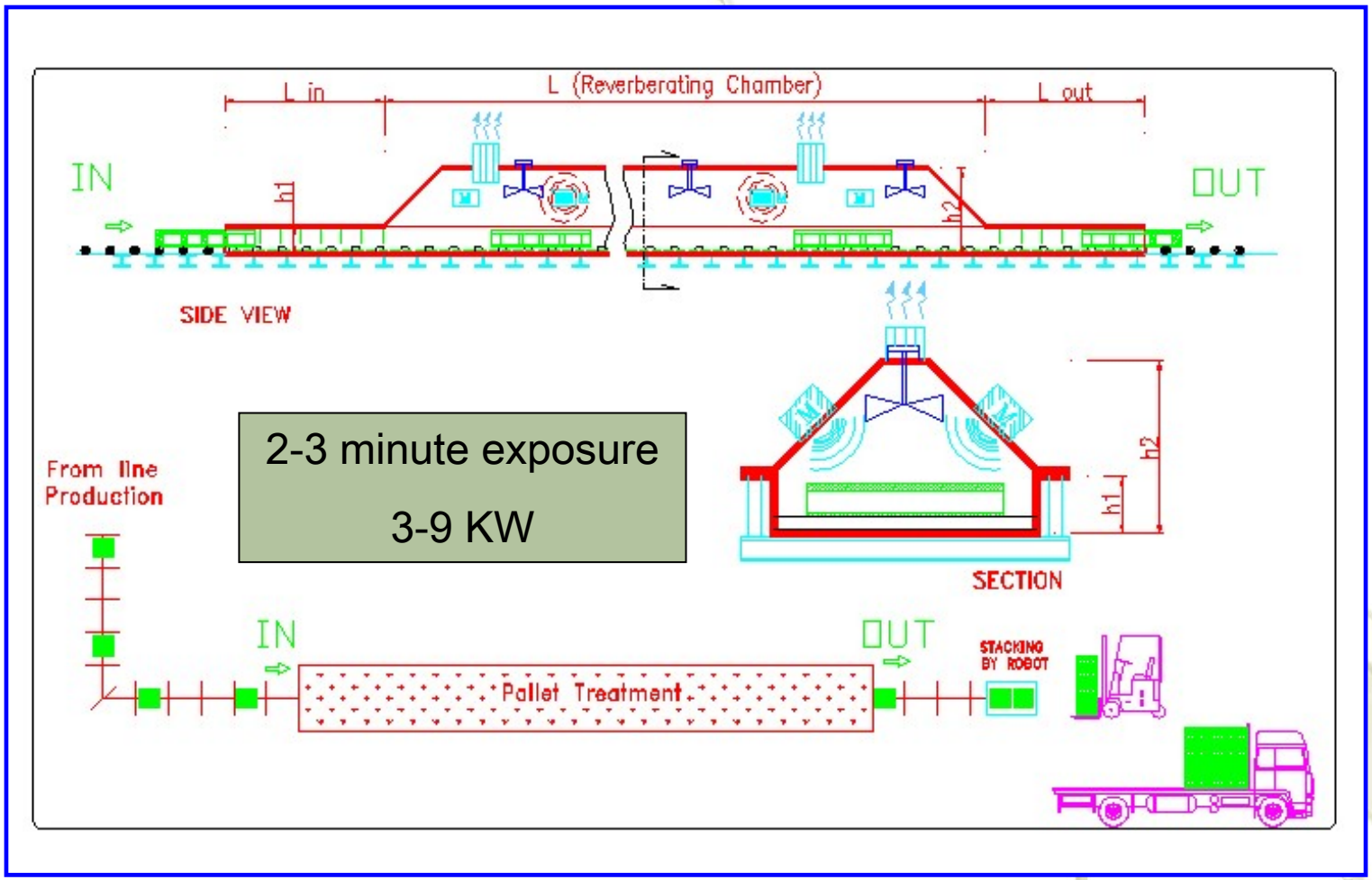
Microwave Treatment of Wood Packaging

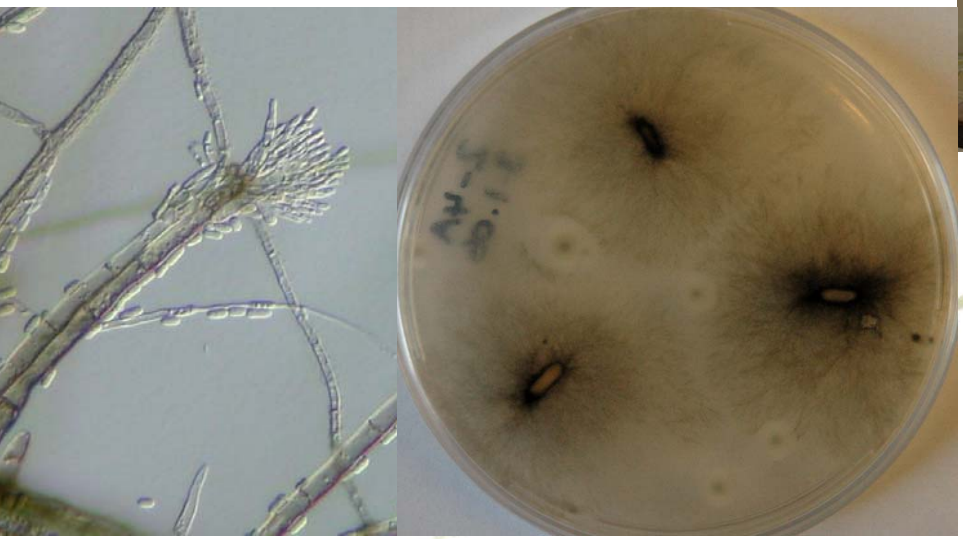


Log Submersion as a Phytosanitary Treatment

90 Days

- 30, 45 and 90 days
- Fresh water
- 6 degrees C

Bursaphelenchus xylophilus present



Ophiostomatoid fungi present

Insect activity

Evaluation of New Treatment Measures for International Standards

- New treatments recommended by the Technical Panel for Phytosanitary Treatments for CPM adoption
- Must demonstrate efficacy and meet other criteria outlined in the IPPC draft standard:

  "Phytosanitary Treatments for Regulated Pests"

  www.ippc.int
- Further research coordinated by International Forestry Quarantine Research Group (IFQRG)

Evaluation Criteria for new IPPC Treatments

- Pest information (life cycle and resistant stages)
- Commodity under consideration
- Experimental design, strains/isolates tested
- Efficacy data under lab and operational conditions
- Commercial feasibility and applicability
- Environmental and human health considerations

Who is working on the problem?

- International Plant Protection Convention
  - Technical Panel on Forest Quarantine
- IFQRG www.forestry-quarantine.org
- Academic institutions
- Government labs (CFS, Forintek, OTIS, CSIRO)

Technical Panel on Forestry Quarantine

Mandate:

- address technical aspects of forest quarantine issues.
- review relevant technical and scientific information to provide guidance to the IPPC Standards Committee as requested on development, amendment and revision of standards
- ISPM 15 revision
- work with other technical panels e.g. TPPT, TPDT

International Forestry Quarantine Research Group

- Advisory body to the IPPC providing scientific analysis and review of global phytosanitary issues and new information

- Identify and undertake collaborative scientific research aimed at high priority forestry quarantine questions

Rome October 2006

International Forestry Quarantine Research Group Membership

Argentina	Finland	Lithuania	South Africa
Australia	Germany	Mexico	Sudan
Canada	Iran	Morocco	Thailand
Chile	Italy	NAPPO	Uganda
China	Japan	New Zealand	United Kingdom
EPPO	Kazakhstan	Nigeria	United States
FAO - IPPC	Korea	Serbia & Montenegro	Venezuela

Opportunities

- National and international trade of forest products requires development of phytosanitary treatments
- Commodity- and pest-specific solutions
- Combination treatments

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