Curbing Introductions of Forest Insects and Diseases on Nursery Stock

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Natural area pests introduced to North America on Plants for Planting

Phytophthora cinnamomi

Chestnut blight

White pine blister rust

Balsam woolly adelgid

Port-Orford-cedar root disease

Beech scale

European Viburnum leaf beetle

Hemlock woolly adelgid

Butternut canker

Dogwood anthracnose

Sudden oak death

Bromeliad weevil

Citrus longhorned beetle

Lobate lac scale

***Pisonia* scale**

Asian cycad scale

***Erythrina* gall wasp**

Cycad blue butterfly

Agreement: System not Working

- APHIS Whitepaper (December 2005): *Business as usual is not effectively addressing the risks.*
- NAPPO: “Current regulatory controls …have not prevented the entry and in some cases the establishment of many serious economic and environmental pests.”
- IUFRO: “Plants for planting have [transported] just as many introductions of previously unknown forest pests as WPM.”
- TNC: Imported plants, cuttings and seeds … have repeatedly served as the pathway that allows devastating pests to reach our country.

Agreement on the Reasons

Huge increase in volumes of imported plants & geographic range of suppliers, speed of transport allows more pests to survive transit – while phytosanitary safeguards have been relaxed rather than tightened

APHIS Compares Q-37
Original Intent v Current Practice

	Early Years	Now
Trading Partners	Europe	Worldwide
# of Items Allowed Import	Limited (< 100 items) germplasm of clonal material only	Unlimited
Fumigation	Mandatory on all Imported Stock	Only When Quarantine Pest Found
Likely Purpose of Importation	Nursery propagation program "starter" material **Slow distribution**	Direct field/homeowner planting **Immediate distribution**

Allowing many species of plants to be imported without requiring prior pest risk assessment

Currently rely on

- Inspection

- When become aware of a sufficient risk, conduct pest risk assessment of one or a few genera from a particular country

Problems with both

Problems with reliance on inspection

- APHIS, NAPPO, & IUFRO: Trade volume so large that overwhelms inspection capacity. (2 billion in 2005)
- NAPPO: difficulty in detecting pathogens, small pests, pests at low densities, pests living inside the plant; or if symptoms masked by application of pesticides;
- NAPPO: inspection intensity varies by port, type of packaging

Problems with Pest Risk Assessments

- Resource intensive, so huge backlog
  - APHIS: Insufficient funds to complete PRAs & amend regulations in timely way
- Limits on PRA efficacy – don't address unknowns:
  - NAPPO: PRAs based on lists of known quarantine pests do not address numerous uncertainties
    - Organisms not known to science
    - Increased risk when pest/pathogen hybridizes (Brasier)
  - IUFRO: system focused on addressing risks associated with known organisms, while most pests introduced on living plants are previously unknown or unpredictably aggressive.

Need to Address 2 Issues:

- Find way to prevent introductions of pests that are unknown or insufficiently appreciated

- What can be done *quickly* to curtail unacceptable rate of introductions?

Species Unknown to Science

NAPPO Concept Paper:

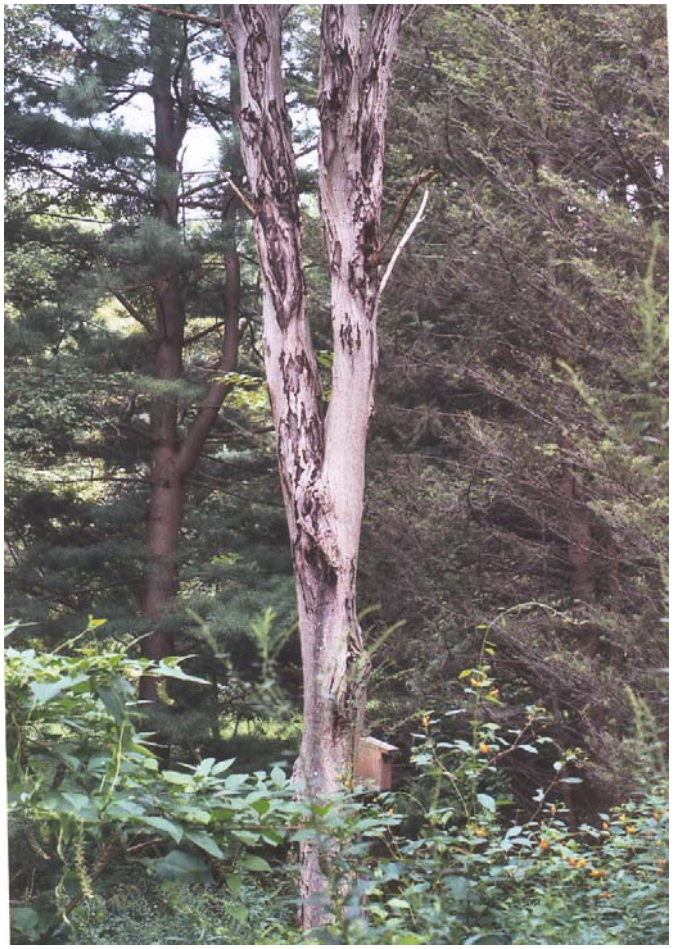
- Many potential quarantine pests are obscure or unknown – especially pathogens

IUFRO Concept Paper:

- Plants for planting have transported as many introductions of previously unknown or insignificant forest pests as WPM.
- Most pests introduced on imported plants are previously unknown or unpredictably aggressive.

Existence Unknown When Introduced

- ***Cryphonectria parasitica***
- ***Ophiostoma ulmi & O.novo-ulmi***
- ***Phytophthora lateralis***
- ***Discula destructiva***
- ***Phytophthora cinnamomi***
- ***Phytophthora ramorum***
- ***Sirococcus clavigignenti-juglandacearum***



Species' behavior in native range is poor indicator of behavior in introduced range

NAPPO Concept Paper:

- Pest impact in native environment is an unreliable indicator

IUFRO whitepaper:

Even known organisms present and not economically or environmentally important in one territory can be significant in another where environmental conditions or missing coevolution favour the pest over the host.

Evolution & Hybridization

NAPPO Concept Paper:

potential for genetic change or variability in pests or hosts

Examples:

- *Ophiostoma ulmi & O. novo-ulmi*
- *Phytopthora alni*
- *Melampsora*
- *Puccinia psidii*

Rossman, Brasier, Wingfield …

Bioscience
February 2001

International Trade Rules

- Can regulate only pests that have been evaluated by PRA
  - exception: provisional regulations
- PRAs must evaluate risks with great specificity - likelihood of establishment, impacts, & efficacy of proposed measures
- "pathway" PRAs must evaluate each pest using the pathway as to specific likelihood of entry, establishment or spread

Agreement on Elements of Long-Term Solution to First Issue:

Producer clean stock/BMP programs implemented by collaboration among governments & industry

- NAPPO & IUFRO: Expect will ensure freedom from QPs, but also significantly reduce risk from non-QPs

IUFRO: ISPM 15 as model

- Pathway PRA – identify several known quarantine pests for which mitigation measures can be determined.
- Assume that most unknown pests would also be eliminated by those same treatments.
- Certification system under which NPPOs assume responsibility to ensure application of the measures outlined in the international standard. Importing countries may return shipments that contain any plant-inhabiting pests even if they are not quarantine pests.

The rationale for this departure from previous blacklist norms is that the existence of such pests suggests the measures were not properly applied.

Drawbacks

- Not certain IPPC members will accept such a broad standard
- Resources required
  - APHIS expects to develop BMP programs for a few taxa initially, a couple dozen eventually – program at this scope will not protect our forests
- Time required to negotiate & implement standard
  - IPPC expert group told to revamp standard – probably 2 years before can be reviewed again

Need to Address 2 Issues:

- Find way to prevent introductions of pests that are unknown / insufficiently appreciated

- What can be done *quickly* to curtail unacceptable rate of introductions?

Rapid Increase in Introductions via living plants pathway

Half of the 18 serious pests associated with nursery stock entered North America in the past 35 years.

Half of the 10 detected since 2000.

- **dogwood anthracnose**
- **sudden oak death**
- **bromeliad weevil**
- **citrus longhorned beetle**
- **lobate lac scale**
- **Asian cycad scale**
- ***Erythrina* gall wasp**
- **cycad blue butterfly**
- ***Pulvinaria urbicola* scale (on *Pisonia* trees on Palmyra)**

Continental Dialogue on Non-Native Forest Insects & Diseases

- American Forest & Paper Association
- American Nursery & Landscape Association
- City of Chicago Bureau of Forestry
- International Paper
- Minnesota Department of Agriculture
- National Association of State Departments of Agriculture

Steering Committee – representatives from

- National Association of State Foresters
- National Plant Board
- Northeast Midwest Institute
- Purdue University
- The Nature Conservancy
- Society of American Florists
- Society of American Foresters
- Union of Concerned Scientists
- Department of Entomology, University of Georgia
- USDA APHIS PPQ liaison

www.continentalforestdialogue.org

Consensus Recommendations

- Developed by Working Group made up of:
- Faith Campbell, The Nature Conservancy (chair)
- Jerry Carlson, NY Dept. of Environmental Conservation
- Emily Davis, International Paper, Forest Resources
- Bob Fledderman, MeadWestvaco
- Deborah McCullough, Michigan State University
- Anand Persad, Davey Tree Company
- Gray Haun, TN Department of Agriculture *(Resource)*
- Craig Regelbrugge & Marc Teffeau, ANLA *(ex-officio)*

Consensus Recommendations

- **Goal: Virtually eliminate the introduction of forest pests via imported live plants by 2015.**
- **Long-Term Solutions: Reward best practices and improve inspection and quarantine.**
- **Immediate Action: Establish temporary prohibitions & expedite assessments.**

Consensus Recommendations

Situations Requiring Extra Risk Reduction Efforts

- When plants are being imported from new sources/origins;
- When plants are produced using unexpected horticultural methods that may pose additional risk;
- When new pests are reported or intercepted from a production area; and
- When scientific information, including but not limited to peer-reviewed publications, suggests that a host/origin combination poses a risk but a PRA has not yet been completed.

Consensus Recommendations for rapid risk reduction in such situations:

APHIS should pursue immediate reductions in risk reduction by, for example:

- Prohibiting imports temporarily– e.g. proposed NAPPRA category (Not Authorized for import Pending Plant Risk Analysis); and/or
- Increasing intensity of inspection; and/or
- Increasing and improving post-entry quarantine; and/or
- Relying on lower risk associated with some plant types – e.g., tissue culture & seeds; and/or
- Requiring disinfestation treatment of plants regardless of whether a pest was found by inspectors.

APHIS should publicly specify a timeline within which the agency & industry will act to reduce significantly the risk of introductions while more comprehensive programs are developed.

APHIS should analyze risks based on broad plant groups and geographic regions of origin.

Presented to

- APHIS PPQ leadership – Dunkle, Eggert, Green … summer 2007
- USDA Under Secretary Bruce Knight … late 2007
- National Plant Board August 2007

- “road show” spring – summer 2008

Available at/from

- **www.continentalforestdialogue.org**

  (click on “Workgroup Products”, then on 1. Prevent Introduction of New Pests and Diseases)

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Thank you!
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