Sunday, April 27

3:00 - 6:00 p.m.  Registration
6:00 – 8:00 p.m.  SPB Reception
8:00 – 11:00 p.m.  SPB Hospitality Room

Monday, April 28

8:00 – 5:00  Registration

8:00 – 8:30  Southern Plant Board Opening Session
   Call to Order – Mike Evans, GA
   Roll Call – Kenneth Calcote, MS
   General Meeting Announcements and Introductions – Phil Wilson, NCDA&CS
   Welcome to North Carolina – Dr. Richard Reich, Deputy Commissioner, NCDA&CS
   Opening Comments – Mike Evans, GA

8:30 – 10:00  Agency Reports
   APHIS Field Operations – Rebecca Bech, Associate Deputy Administrator, Field Operations, USDA, APHIS, PPQ
   National Plant Board – Geir Friisoe, NPB President
   Farm Bill Update – Rebecca Bech, Associate Deputy Administrator, Field Operations, USDA, APHIS, PPQ
   CBP Update – Kevin Harriger, Executive Director, APTL, DHS, CBP, OFO
   Cooperative Agreements Update - Rebecca Bech, Associate Deputy Administrator, Field Operations, USDA, APHIS, PPQ
   HISSC Update – Brad Cavin, Department of Plant Industry, Clemson University

10:00 – 10:30  (Break)

10:30 – 11:00  Agency Reports (continued)

11:00 – 11:50  State Reports – GA, LA, KY, MS, NC, OK,

11:50 – 1:15  Lunch

1:15 – 5:00  CAPS Breakout Session

1:15 – 1:35  US Canada Greenhouse Program Update - Laney Campbell, USDA, APHIS, PPQ

1:35 – 1:55  PCIT Update – Christian Dellis, USDA, APHIS, PPQ
1:55 – 2:30  State Reports – PR, SC, TN, TX, VA

2:30 – 2:50  Internet Sale of Nursery Stock – Corey Marker, USDA, APHIS, PPQ

2:50 – 3:15  (Break)

3:15 – 4:00  Regulating Sale of Nursery Stock at “Box Stores” (State/Industry Panel)
Gray Haun, Tennessee Department of Agriculture
Mike Duvall, The Home Depot

4:00 – 5:00  Technology for Nursery Inspection (State Panel)
   o USA Plants, Dana Rhodes, Pennsylvania Dept. of Agriculture
   o Kelly Solutions, Christel Harden, Department of Plant Industry, Clemson University
   o iPads for Survey, Dr. Alonso Suazo, NC Department of Agriculture and Consumer Services

Tuesday, April 29

8:00 – 12:00  Registration

8:00 – 8:20  FRMSP Update
Diane Schuble, USDA, APHIS, PPQ

8:20 – 8:40  State Preparation for ALB or the next plant pest infestation
Billy Newton, USDA, APHIS, PPQ

8:40 – 9:00  Use of Canines for pest detection
Rebecca Bech, Associate Deputy Administrator, Field Operations, USDA, APHIS, PPQ

9:00 – 9:15  North Carolina Welcome
NC Commissioner of Agriculture Steve Troxler

9:15 – 9:45  Sweet Potato Regulatory Program Update
Richard Miller, Louisiana Dept. of Agriculture & Forestry
Phil Wilson, NC Department of Agriculture and Consumer Services

9:45 – 10:00  P. ramorum – Changes to CFR
Christel Harden, Department of Plant Industry, Clemson University

10:00 – 10:30  (Break)

10:30 – 10:45  South Carolina Youth Outreach Program
Sarah Morrison, Department of Plant Industry, Clemson University

10:45 – 11:10  Boxwood Blight
   - NC Experience in Dealing with Boxwood Blight, Leah Roberts, NCD&A&CS
   - Spread of Boxwood Blight in Virginia, Norman Dart, VDACS
11:10 – 11:30  Current Use of Molecular Diagnosis and development of new Molecular Methodologies  
   *Dr. Philip Berger, Executive Director, CPHST*

11:30 – 12:00  Update on Honey Bee Declines  
   *Dr. David Tarpy, North Carolina State University*

12:00 – 1:15  Lunch

1:30 – 5:00  Field Trip – Bayer Bee Care Center

5:30  Depart for Dinner at NC State Arboretum

**Wednesday, April 30**

APHIS PPQ Session (PPQ Only)

8:30 – 9:00  PPQ Meeting

9:00 – 10:15  PPQ Meeting with Kevin Shea

10:15 – 10:45  Break

10:45 – 12:00  PPQ Meeting

Southern Plant Board Session

8:00 – 8:15  APHIS Overview  
   *Kevin Shea, Administrator, USDA Animal and Plant Health Inspection Services*

8:15 – 8:30  CAPS Report  
   *Sherry Aultman, Department of Plant Industry, Clemson University*

8:35 – 8:55  Ginseng Protection Program in North Carolina – Jim Corbin, NCDA&CS

8:55 – 9:15  P. ramorum – Sand Filtration System in South Carolina  
   *Sherry Aultman, Department of Plant Industry, Clemson University*

9:15 – 9:45  Update - Giant African Land Snails  
   *Tyson Emery, Florida Dept. of Agriculture & Consumer Services*

9:45 – 10:15  Southern Plant Board Business Meeting(SPB Member States Only)

10:15 – 10:45  Break

10:45 – 12:00  Southern Plant Board Business Meeting(continued)
PPQ Field Operations

Rebecca Bech
Associate Deputy Administrator
Field Operations
USDA APHIS
Plant Protection and Quarantine
Southern Plant Board
Raleigh, North Carolina
April 28, 2014

Goals for Field Operations

• PPQ Modernization Efforts
  – Flexibility
  – Consistency
  – Collaboration
  – Efficiency
  – Risk Focus

Initiatives for Export Program

• Business Process Improvement in 2012

• Key areas under analysis:
  – Auditing functions
  – Accreditation and compliance
  – Customer service
  – Efficiency

Budget

• Funding has been allocated to PPQ.
• Citrus Greening Multi-Agency Coordination
  Mandatory Program funded at $25,000,000 per year (for five years).
• An additional $300,000 is allocated for the Plum Pox Virus program in support of the PPV eradication program.

Agriculture Quarantine Inspection

• Risk Based Sampling
• Plant Inspection Stations
• Identification Facilitation Project
• AQI Summit

Risk Based Sampling in 2013

• Used at Plant Inspection Stations as a statistically-supported sampling method that accounts for the level of pest risk in a plant shipment
• Staggered implementation of the program
• Started in October 2013 in Honolulu, HI; Linden, NJ; Puerto Rico, and Houston, TX
• Continued in February in Beltsville, MD; San Diego, CA; Orlando, FL; and Nogales, AZ
• Next round hopefully added in July 2014
Plant Inspection Station Update

- One of PPQ’s initiatives is to ensure that all Plant Inspection Stations can handle the volume and complexity of trade.

- Four Plant Inspection Stations have been updated:
  - Linden, New Jersey
  - Atlanta, Georgia
  - Nogales, Arizona
  - Los Angeles, California

Identification Facilitation Project

- Address actual and perceived delays

- Strategies for facilitating the pest processing:
  - Activities to evaluate pest processing and identification operations
  - Activities including procedural and staffing changes

- Main project goals:
  - Identify common, significant causes of delay in the pest ID process
  - Coordinate resolution of significant delay problems with CBP
  - Develop policy and procedural change options to facilitate PPQ ID process
  - Address staffing options to facilitate PPQ identification processes

AQI Summit

- Ensure a cohesive and effective AQI program
- Strengthen our partnership with CBP
- Established AQI board

Program Highlights

- Citrus
- Emerald ash borer
- Phytophthora ramorum
- Exports

Questions?
Farm Bill Update
Section 10007: Plant Pest and Disease Management and Disaster Prevention

Rebecca Bech
Associate Deputy Administrator
PPQ Field Operations
Southern Plant Board

FY14 Spending Plan
• FY14 Spending Plan Released April 3
  – Spending Plan organized by states on APHIS Farm Bill website
  – 386 projects in 49 states, as well as Guam and Puerto Rico.
  – PPQ representatives contacting cooperators to establish cooperative agreements
• APHIS has funded more than 1,000 projects in 50 States and 2 U.S. territories since 2009.
• Stakeholders who want feedback specific to their FY14 submitted suggestion should email the PPQ Farm Bill Management Team at farmbillsection10007@aphis.usda.gov.

Farm Bill – FY14 Funding by Goal

1. Enhanced Analysis & Survey
2. Domestic Inspection
3. Pest ID & Technology
5. 6. Enhanced Mitigation Capabilities

New Provisions in 2014 Farm Bill
• Consolidates Sections 10201 (Plant Pest and Disease Management and Disaster Prevention Programs) and 10202 (National Clean Plant Network) of the 2008 Farm Bill

Into New Section 10007
(ten double-o-seven)

New Provisions in 2014 Farm Bill: Funding Increase
• For fiscal years (FY) 2014 through 2017:
  – Section 10007 provides $62.5 million annually for Plant Pest and Disease Management and Disaster Prevention Programs, and the National Clean Plant Network (NCPN)
  – a minimum of $5 million designated for the NCPN.
• For FY 2018 and thereafter, Section 10007 funding will increase to $75 million annually.

New Provisions in 2014 Farm Bill: Limitation on Indirect Cost Rates
Indirect costs charged against a cooperative agreement under this section shall not exceed the lesser of—
• 15 percent of the total Federal funds provided under the cooperative agreement,
• the indirect cost rate applicable to the recipient as otherwise established by law.
Farm Bill Section 10007 - Resources

- USDA Farm Bill Web site:

- APHIS Farm Bill Section 10007 Website:

- Important Information:
  - FY14 Spending Plan
  - FY14 Spending Plan Implementation Questions and Answers
  - FY14 Feedback to Suggestors

Group Email: farmbillsection10007@aphis.usda.gov
Or click the red envelope on [http://www.aphis.usda.gov]

Next Steps

- Closing out original Implementation Plan (from 2009)
- New Strategic Plan underway
- Better coordination with Cooperative Agricultural Pest Survey (CAPS)
- Continued process improvement

Questions?
Figure 2.2
Binational Trade Corridors

Legend:
- Highway serving binational trade between the U.S. and Mexico
- Trade corridors with more than 40,000 annual trade trucks.
- Trade corridors with less than 40,000 annual trade trucks.

Source: Barton-Aeschman & La Empresa, 1997
Based on information from McCray Research.
State level comparison of Shipments from 2010-2012

- Arizona: 45%
- California: 24%
- New Mexico: 30%
- Texas: 1%
Comparison of Ag Shipment Volume along the Mexican Border (Totals 2010-2012)
OUR PARTNERS
TEXAS DEPT. OF AGRICULTURE
TEXAS A&M KINGSVILLE CITRUS RESEARCH CENTER
TEXAS CITRUS MUTUAL
TEXAS NURSERY AND LANDSCAPE ASSOCIATION
TEXAS AGRI-LIFE EXTENSION
TEXAS AGRILIFE RESEARCH
USDA-ARS
TEXAS INTERNATIONAL PRODUCE ASSOC.
DHS-CBP
SAGARPA SENASICA
Thank you!

http://www.aphis.usda.gov/plant_health
Cooperative Agreements: Update on Activities

Rebecca Bech
Associate Deputy Administrator
PPQ Field Operations
Southern Plant Board

Audit Results
• January 2013 audit by APHIS Review and Analysis Branch (RAB)
• Concluded that PPQ has a weak internal control
• PPQ's Deputy Administrator identified recommendations for training and non-training solutions.
• Established Cooperative Agreements Management Working Group

PPQ's Actions
• Strengthened management of cooperative agreements
• Streamlined processes
• Completed a side-by-side explanation of the articles and guidance on their applicability

PPQ's Actions (cont.)
• Developed a list of the statutes, regulations, and directives that drive the inclusion of a number of articles in the Notice of Award
• Rolled out the Agreements Electronic Signature process

Cooperative Agreement Training
• Developed by PPQ and the National Plant Board
• 13 Modules
• Open to PPQ and cooperators
• Major goals:
  1. Standardize the cooperative agreement process across all PPQ
  2. Educate those involved about the entire cooperative agreement process

Business Process Review
• Conducted in coordination with PPQ's Cooperative Agreements Management Working Group
• Hope to develop a process for umbrella or boiler plate agreements
• Continue to communicate our progress
Questions?
United States – Canada Greenhouse Certification Program
Status of Revision

Southern Plant Board Meeting
April 27-30, 2014
Laney Campbell – USDA/APHIS/PPQ

Background

- The GCP has been in place since 1996
- Certification of greenhouse-grown plants to facilitate trade between the United States and Canada using an audit based program.
- Allows movement of certified plants using an Export Certification Label (ECL) in lieu of a phytosanitary certificate (PC).

Background, cont.

United States – Canada Greenhouse Certification Program (GCP)

- Operates under a Memorandum of Understanding (MOU) between the countries, which is due to expire September 30, 2014
- Over 200 facilities in Canada, including brokers and growers, primarily in Ontario
- 111 facilities in the United States, primarily in Florida

Benefits

- Facilitation of trade
- Reduce cost to industry and regulators
- Greater flexibility for growers in fulfilling orders
- Greater accountability
- Greater consistency in pest management
- Lower pest risk

Revision

- Original MOU: greenhouse grown plants, including tropicals, annuals and bedding plants
- Current program includes a specific list of genera prohibited from the program.
- Over time, APHIS and CFIA recognized need to review and revise the program to ensure appropriate risk mitigation for plants moving under the program
- Also considered current market realities – minimize negative impacts to facilities operating under the GCP

Revision, cont.

- Revisions initiated in 2005, but delayed due to changing staff and resource priorities
- In 2011 the revision of the GCP was included as a priority project under the US-Canada Regulatory Cooperation Council (RCC)
- The existing MOU has been renewed and is in effect pending the revision
Working Group
USDA APHIS PPQ and CFIA Regulatory Officials

PPQ - Trade Director for Canada, Plants for Planting, Field Operations
CFIA – Plants for Planting

Revision, cont.

• In September 2013, a draft revision was provided to a small group of reviewers from U.S. and Canadian industry and National Plant Board representatives
• The draft focused on measures to improve phytosanitary security, particularly with respect to plant material entering the GCP that originates in a third country
• Improved consistency and harmonization of operations and oversight between APHIS and CFIA

What we heard
• The current program is working, it is important, and there is fear that changes will impact trade or a participant’s business model
• The draft document was too prescriptive in some places, and unclear and confusing in others
• The eligible plant list was too restrictive and would be difficult to implement and manage
• Concerns about duplication of efforts or inconsistency with the Systems Approach to Nursery Certification (SANC) program under development

Revisions – current status
• The Working Group is finalizing a new draft that takes comments into account
• Proposing an alternative to the approved plant list, that would require facilities to provide the list of plants they plan to ship under the program for NPPO review
• Document is shorter, more concise
• Focus on outcomes, not specific procedural requirements

Revisions – next steps
• Hope to have document ready for broad stakeholder review later this spring
• Encourage review and comments, particularly related to practical implementation
• During review, we can arrange meetings or calls to discuss and plan to visit greenhouses in the program
• Ideally, finalize by September 30 (MOU expires)

Revisions – transition
• There will be a transition period to allow existing participants to successfully implement the revised GCP with minimal impact on their businesses.
• The phase in period would include training and assistance for the greenhouses and cooperators to help them incorporate any needed changes to their programs before full implementation.
### Key Elements of Revised Document

- Description of NPPO responsibilities for program oversight
- Description of Facility actions and responsibilities
  - Application and Evaluation Process
  - Compliance Agreements
  - Approved Pest Management Plan
  - Audits
  - Responses to Non-compliances

### Summary

- GCP is a bilateral program for export certification of greenhouse plants between United States and Canada
- In effect since 1996 with no major revisions
- Current revisions aimed at improving oversight and consistency and ensuring appropriate phytosanitary measures, particularly for plants that originate in third countries
- Should be completely compatible with nursery systems approach under development by NPB and U.S. industry
- We will be looking forward to your comments

### For more information:

- Terri Dunahay, PPQ-PIM Trade Director for Canada
  - Terri.g.dunahay@aphis.usda.gov
- Kimberly Merenz, PPQ Trade Specialist
  - Kimberly.d.merenz@aphis.usda.gov

### Questions?
Phytosanitary Certificate Issuance & Tracking (PCIT)

PCIT Facts
- Operational since 2005
- 47 Releases since inception (4 in 2013)
- Over 3,000 changes to initial release
- Over 24,000 registered users world wide
- 2,691,738 million certificates generated (>600K/year)
- User Fee Collection and Remittance
  - APHIS
  - 31 States
  - 22 US counties
- Responsible for on-line training of 3,331 ACOs
- 28 State Phytosanitary Certificates
- PCIT platform used for other APHIS systems such as PExD, VEHCS, LAWGS

PExD Facts
- Completed in 2013
- PCIT module
- Replaced EXCERPT system
- Database driven as opposed to text based
- Role based
- Phytosanitary import requirements repository for 236 countries
- Direct transfer of Additional Declarations to PCIT certificate

Electronic Certification

eCert Challenges
- Not just related to technical capabilities
- Continual evolution of eCert XML schema
  - U.S. using 6.0
- Web security mechanism
  - Digital signatures, encryptions (1 or 2)
- Non-uniform codes
- Error handling (basic and data related)
- ISPM12 versus electronic systems
- Free for all versus structure
- Commodity versus certificate Additional Declarations
- Multiple units/packages
- Complete rework for many systems
- Treatment (Process)
- Attachments
Alternative ePhyto Systems

- **Point to Point**: NPPO develops an interface to connect with another NPPO

- **Single Point**: NPPO develops an interface to connect to the IPPC system that connects to all other participating NPPOs and enforces a single set of rules

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Point to Point System

- USA-PCIT
- Mexico
- Canada
- Australia
- Netherlands

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Single Point System (Hub)

- USA-PCIT
- Canada
- Mexico
- Australia
- New Zealand
- Costa Rica
- Cloud

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PCIT eCertification Status

- Can send and receive electronic phytosanitary certificates
- Takes approximately 3 months with each trading partner to establish
- June 2013 - began receiving phytosanitary certificates for seeds from the Netherlands
- October 2013 - began receiving phytosanitary certificates from Australia
- Ongoing discussions with Mexico, China, Chile, and New Zealand
- Investigating Pilot of Single Point amongst the Quad countries

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Questions??
Smuggling Interdiction & Trade Compliance (SITC) and e-commerce

eCommerce

- The buying & selling of products over electronic systems with the internet (WWW) being used in at least one point in the transaction
- For SITC’s purpose, we work with or utilize:
  - E-tailing (virtual storefronts) – stores with online catalogs
  - Buying/selling/trading on websites, forums &/or online marketplaces
  - Gathering data through forums, sites and social media
  - Working with internet companies to exchange data, ideas to close pathways and gain seller compliance

SITC Internet Team (SIT)

- The SITC Internet Team consists of the two regional analysts
  - Cory Marker, Raleigh
  - Sylvia Shadman-Adolpho, Ft. Collins
- Purpose: To monitor internet sites for prohibited agricultural commodities

Legal Policy

- OGC has ruled that PPQ does not have authority to demand cease/desist of sales when prohibited items are found
- OGC has ruled that sites such as Amazon and eBay can not be held liable for facilitating movement of prohibited products
- The SIT does not engage in chat rooms and forums for entrapment reasons but do monitor them

Internal Policies

- Focus on internet based companies rather than brick and mortar stores that maintain a website
  - Does not mean we don’t act on material found on sites associated with brick/mortar

Acquiring Leads

- Tips from HQ, field, other agencies and industry
- Web crawler
  - Currently 5 different commodities are searched
  - We can use as many variations, species, etc under each
    - Bonsai plants or seeds
    - Moraceae plants
    - Ziziphus sp (Jujube) plants
    - Rosa sp plants
    - Oleaceae plants
Problems

- Usernames
- Host/domain’s - use of proxy
- IP gives away who you are
- Multiple sites – change sites they’re selling on
  - Different agreements/no agreements
  - What info they’ll give you

*Usernames*

*Host/domain’s - use of proxy*

*IP gives away who you are*

*Multiple sites – change sites they’re selling on*
  - Different agreements/no agreements
  - What info they’ll give you*
Success

- Two major companies agreed to implement filters to block prohibited items from being sold
- Prohibited items are often removed upon request
- An increase of disclaimers or not offering prohibited products
- Increasing number of sellers no longer registered
- Sites have been banning vendors based on manifesting, ignoring compliance regulations and feedback

Success with Businesses

- Booshoot - WA
- Neoasis Nursery – MS
- Heather Ervin - OH
- Oikos Tree Crops – MI
- Jim Rehor – CA
- Phipps Conservatory & Botanical Gardens - PA
- Various farms nationwide
- Various nurseries nationwide

Questions?

Contact Info:
Cory Marker
919-855-7758
cory.a.marker@aphis.usda.gov

Or
Sylvia Shadman-Adolpho
970-494-7517
Sylvia.a.shadman-adolpho@aphis.usda.gov
State Statutes and Rule Requirements
- Most State Statute and Rules deal in the Movement of Plant materials
  - Through -
    - Grower and Plant Dealer Inspections and
    - Record audits
      - Checking to see if all plants have come from certified sources
      - Appropriate Compliance documentation accompanying shipments showing compliance.

Regulatory looks at Pest Risk
- Small Mom and Pop plant dealers generally are considered low risk as long as they understand the laws. (usually buy locally)
- Box or Chain Stores can be challenging.
  - They have regional buyers that buy large quantities of materials leading to potential outsourcing by nurseries and regulatory problems.
  - Materials move through Distribution Centers and then are moved to numerous stores. Pest problems cause headaches.

When problems occur they are magnified because more than one store receives the product
- Problems that other SPROs have listed are:
  - Often the store does not keep important paperwork at the individual store (Origin, Compliance information)
  - Certificates are not posted because corporate office purchases the certificates and don't send them to the various stores or they go to someone in the store and they are lost
  - When a regulated problem occurs – it take numerous inspectors across the state (and other states) to get to the stores to see if they have the problems

Regulatory Action
- When Stop Movements are put in place on Plant Materials – there is changing of the guard to contend with – evening garden center manager is replaced with morning garden manager – sometimes the plants are moved back to stock for sale.
- Most Box Stores can put Stop Sales on infested materials through corporate computerization. This keeps the product from being sold.

Understanding the system
- Many stores are going to Pay per Scan.
  - Who owns the materials?
  - Who keeps the records?
  - Who do you issue the Stop Movements to?
    - Store
    - Owner of plant materials
Distribution Centers

- What part do they play.
- Are the distribution centers in regulated areas and moving to unregulated areas? What paperwork is used – Chain of custody
- Federal issue with GM, IFA, etc?

Stop Movements

- Traceability of stock that has moved.
- Fear of using pesticides to take care of pest problems
- Poor conditions for maintaining stock. (Asphalt)
- Sometime slow to move but they can limit movement of produce by corporate means which is usually a plus.

How to solve or marginalize the problem

- Communicate, Communicate, Communicate
  - Through Plant Boards and panels like this.
  - Understanding the box store workings.
    - Identify the problems
    - Work out solutions with Box Stores participation (We need to understand each other)
    - They don’t want problems anymore than we do. It costs money on all sides.
Federally Recognized State Managed Phytosanitary (FRSMP) Program

Diane Schuble
National Coordinator for Official Control
Riverdale Maryland
Southern Plant Board
April 2014
Federally Recognized State Managed Phytosanitary (FRSMP) Program

What evidence is required in a petition?

• Absence or limited distribution
• Likelihood of entry and establishment
• Potential economic/ environmental harm
• A program for maintenance/ verification
• Phytosanitary regulations

Interested states must collaborate before submitting to PPQ
The Official Control Advisory Panel (OCAP) reviews and evaluates FRSMP petitions for science, economics, and technical credibility, then makes a recommendation to the PPQ Deputy Administrator.

OCAP members:

Robert Bailey, Field Operations
Joseph Cavey, National Identification Services
Robert Griffin, Science & Technology
TBD, Assistant Executive Director, Plant Health Programs
Diane Schuble, Coordinator

Website: http://www.aphis.usda.gov/frsmp
Model Petition: Florida – Potato/Tomato Psyllid

Pest Info

- Vectors **Zebra chip disease** – renders potatoes unsellable
- Present in Mexico, Central America and Canada
- US distribution – 18 western states
- 35 Hosts, including tomatoes and peppers

PPQ Review Criteria

- Biology and Risk info well presented
- Pathways established
- Well planned inspection program
- Well planned response to detections
- Pest-specific regulatory authority initiated
Model Petition: Florida – Potato/Tomato Psyllid

<table>
<thead>
<tr>
<th>Additional OCAP Factors</th>
<th>FRSMP Program Initiation</th>
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<tbody>
<tr>
<td>• Endorsement by NPB</td>
<td>• Cooperative Arrangement</td>
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<tr>
<td>• Ability of PPQ to concur with risk data</td>
<td>• Federal Collaborator</td>
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<tr>
<td>• Examine for potential trade concerns</td>
<td>• Annual reporting requirement</td>
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<tr>
<td>• Account for federal environmental compliance</td>
<td>• Audits every three years</td>
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<tr>
<td>• Submit a recommendation to the PPQ Deputy Administrator</td>
<td>• Achieve 1-2% inspection rate</td>
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<td>• Federal action at ports</td>
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</table>
Examples: Potato Psyllid Detected Arriving in Foreign Commerce

Florida participates in a FRSMP program to exclude potato psyllid.

A shipment with potato psyllid is arriving there by freighter and must be mitigated. The importer is ordered to re-export, destroy or ship to a state that does not regulate the psyllid. There is no PPQ-approved treatment for potato psyllid.

A shipment with the potato psyllid is arriving by truck in Texas. PPQ will issue an order to the importer to undergo mitigations if the importer wishes to move to FRSMP states. Then the shipment is released. If the final destination was to be Florida, the importer has time to change to another state.
FDACS DPI maintains Interdiction Stations at northern points in the state. As host shipments enter Florida in interstate commerce, inspectors check for Potato psyllid and reject shipments that contain the psyllid. Some shipments may have originated in another country.
THANK YOU FOR YOUR ATTENTION!

Questions?
FRSMP@aphis.usda.gov
PPQ Pest Management

ALB and other approaching pests

Mr. Billy Newton, Acting Associate Executive Director

Southern Plant Board Meeting
Raleigh, NC

April 27-30, 2014
Asian Longhorn Beetle Update

- The ceremony to announce **eradication** in Boston will be held on May 12th. This will reduce the quarantine area in Massachusetts to 110 square miles. We anticipate delimitation of the Worcester area to be completed by the end of Fiscal Year 2014.

- Progress towards **delimitation** of the Ohio infestation continues. There are currently 61 square miles under quarantine in Ohio. The second cycle of treatments in Ohio will begin in late April.

- In July of 2013 a citizen submitted a cell phone video of a suspect ALB in Long Island. Within a few weeks several highly infested trees were **detected** and delimiting survey began. To date, 369 infested trees have been detected. The find will add approximately 27 square miles to the original quarantine on Long Island, bringing the total number of square miles under quarantine in New York to 137.
Domestic Breach

• The least of my worries
• Hurricane Sandy
Don’t Forget Foreign Movement

• Several interceptions in warehouses
• CBP reports rising captures coming from Mexico: Chinese cargo?
Emerald Ash Borer Update

➢ Regulatory
EAB Quarantine - 526,228 square miles in 22 States
  Western most EAB state – Colorado
  Eastern most EAB state – Massachusetts
  Southern most EAB state – Georgia

➢ Biocontrol
500,000 stingless wasps released in 17 States (2013)
10 States recovered one or more wasps post release

➢ Survey: 22,000 purple panel traps proposed in 39 States
Movement of EAB regulated articles cannot exit
Federal quarantine boundaries without Federal permits.

Movement of EAB regulated articles within
Federal quarantine boundaries (excluding
protected areas) does not require Federal permits
but may require State permits.

Check for and follow any relevant interior State EAB
quarantine regulations before moving regulated articles.

For more information: 866-322-4512

Map Key

- Federal quarantine boundaries
- Protected area restricted for interstate and
  intrastate movement and permits are required
- Area subject to Michigan Department of Agriculture
  and Rural Development regulatory policies
Projected parasitoid production

*Oobius agrili*:
150,000-175,000

*Spathius agrili*:
30,000-35,000

*Tetrastichus planipennisi*:
375,000-400,000

StopTheBeetle.info will migrate to HungryPests.com

### 2014

#### EAB survey begins phasing in green funnel trap design

### 2015

- Selective release of new stingless wasp *Spathius galinae* upon completion of permit process
Gypsy Moth Program Status

FY 2014 Funding

- 2014 EGM Cooperative Agreements: 21 states – AZ, IA, ID, KY, ME, MN, MO, MT, NC, NE, NV, OH, OR, SD, TN, TX, UT, VA, WA, WI, WY
- 2014 AGM Cooperative Agreement: 1 state – OK
- 2014 Farm Bill Asian Defoliator Survey: 8 states – AK, CA, MN, NC, OK, OR, UT, WA
- Establishment of a GM Working Group
States with EGM Detections in 2013
<table>
<thead>
<tr>
<th>State</th>
<th>Counties Surveyed</th>
<th>Traps Deployed</th>
<th>Positive Counties w/Detections</th>
</tr>
</thead>
<tbody>
<tr>
<td>FL</td>
<td>28</td>
<td>498</td>
<td>0</td>
</tr>
<tr>
<td>GA</td>
<td>13</td>
<td>2,881</td>
<td>1</td>
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<tr>
<td>KY</td>
<td>58</td>
<td>3,481</td>
<td>6</td>
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<tr>
<td>LA</td>
<td>54</td>
<td>2,780</td>
<td>0</td>
</tr>
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<td>NC (2013)</td>
<td>47</td>
<td>4,748</td>
<td>13</td>
</tr>
<tr>
<td>OK</td>
<td>31</td>
<td>1,678</td>
<td>2</td>
</tr>
<tr>
<td>SC</td>
<td>19</td>
<td>762</td>
<td>2</td>
</tr>
<tr>
<td>TN</td>
<td>95</td>
<td>10,520</td>
<td>7</td>
</tr>
<tr>
<td>TX</td>
<td>28</td>
<td>2,708</td>
<td>0.3 (1 in 2012)</td>
</tr>
</tbody>
</table>
Other Beasts

- Snails
- PSB
- Exotics: Caribbean is a big pathway for SPB exotics.
Questions?
Southern Plant Board
Sweet Potato Trapping Protocol Review

Richard Miller, LDAF
April 29, 2014
Raleigh, North Carolina
In June of 1995, a meeting was held with APHIS personnel and regulatory officials from SPB. The APHIS personnel were specialized in SPW biology, behavior, and pheromone chemistry.

The meeting was held to develop a survey for certifying weevil free areas.

Upon completion, the SPB technical committee reviewed the plan and endorsed it for all sweet potato producing states.
SPW trapping protocols

• Production fields
  ▪ 3 Options
• Seedbeds
• Pesticide Applications
• Storage and Packing Sheds
• Security
Production Field Option 1

- Trap rate of 1 trap/10 acres with a minimum of 3 traps for fields under 30 acres
- Survey would begin a minimum of 2 weeks prior to harvest and continue until 1 week post harvest
- Traps would remain baited for the 3 week period. Checked at harvest and moved temporarily for harvesting equipment
Production Field Option 2

• Trap rate of 1/10 acres with a minimum of 3 traps for fields under 30 acres
• For late harvested fields (late Oct – Nov)
• Survey would start when 2 ½ SPW generations were completed and continue for 4 weeks
• Traps would remain baited for entire 4 weeks
• Traps would not be moved during the 4 week period
Production Field Option 3

• Trap rate of 1/10 acres with a minimum of 3 traps for fields under 30 acres
• Fields are trapped every 3 weeks for 3 days
• Traps are baited for the 3 day period only
• Last survey period will be within no more than 7 days post harvest
Seedbeds

- Trapping is voluntary for table stock but, any slips sold as green tag must be trapped.
- If trapped, 1 trap/acre. A minimum of 3 traps/seedbed under 3 acres.
- Traps checked 7 days prior to first slip cutting and checked every 2 weeks thereafter.
- Final check made within 1 week following seedbed destruction.
Pesticide Applications

• Pesticides should not be applied with the intention of interfering with the trapping system for the SPW and also not as a certifying method for the potatoes

• Growers will maintain records of all pesticide applications on seedbeds and production fields

• Date of application, rate of application, and pesticide used should be included in the records
Storage and Packing Sheds

• Not mandatory
• Suggest a visual inspection of the facilities and pheromone traps to be placed adjacent to the storage structures
• Also recommend trap(s) placed within the storage facilities
• Encourage inspection and rapid destruction of culls
Security

• Each state should have a security system that is acceptable to all other states
• The system would be adopted in such a manner that traps, lures, or results cannot be easily tampered with or made ineffective
• States should cooperate with each other to share information about security integrity and trapping results
Questions?
Phytophthora ramorum: Changes to Federal Order

Christel Harden
Department of Plant Industry
Clemson University
2014 *Phytophthora ramorum* Regulatory Procedures - Non-Regulated States

For nurseries within the United States and its territories that are outside the regulated or quarantined areas, the revised regulations will apply to nurseries moving *P. ramorum* host plants interstate only if *P. ramorum* was detected at the nursery on or after March 31, 2014.

1. Such nurseries must be inspected, sampled, and certified in order to continue to ship host and associated articles interstate. Regulatory samples will be taken from regulated plants, soil, standing water, drainage water, irrigation water, growing media, and any other articles designated by the inspector as a possible source of *P. ramorum* inoculum. All samples will be tested for the presence of *P. ramorum*. 
2. The nursery must enter into a compliance agreement with APHIS in order to retain interstate shipping status for any regulated and associated articles for *P. ramorum*. The compliance agreement must address sources of *P. ramorum* at the nursery, and critical control points identified by APHIS must be addressed by mitigation measures. The compliance agreement is for 3 years.
For Host Nurseries in the *P. ramorum* Regulated Area

- The January 2014 FO removed the *P. ramorum* inspection and certification requirement for certain host nurseries wishing to ship interstate as of 3/31/14
- If *P. ramorum* has not been detected in a nursery on or after March 31, 2011, the nursery is no longer required to be inspected, sampled, and certified per 7 CFR 301.92
- Nurseries with detections since March 31, 2011 are required to undergo an increased inspection and sampling protocol.
For nurseries CA, OR, and WA, as well as newly-positive nurseries across the US. The revised regulations will apply to nurseries moving *P. ramorum* host plants interstate.

The Federal Order of 12/10/12 remains in effect, but is altered by the FO of 1/10/14. Nurseries must notify for interstate shipments of high-risk genera for a period of two years after samples test negative for *P. ramorum*. 
Deviations From Compliance Agreement

- **Minor non-compliance** (1\textsuperscript{st} incidence of non-compliance) – letter of finding to nursery and modified compliance agreement

- **Major non-compliance** (2\textsuperscript{nd} incidence OR 3 minor non-compliances in a single inspection) – warning letter and modified compliance agreement
Deviations From Compliance Agreement, Cont.

- **Critical non-compliance** [Failure to correct 2 or more major N-C within timeframe OR more than 2 major N-C during a single inspection (after 2 corrective actions each) OR other situation found by inspector warranting immediate suspension] – immediate suspension of interstate shipping. May cause revocation of compliance agreement.
Official Regulatory Protocol for Nurseries* Containing Plants Infected with *Phytophthora ramorum*

*Interstate shipping retail nurseries, brokers, inter/intrastate wholesale and production nurseries

Confirmed Nursery Protocol: Version 8.2
Revised: March 11, 2014

United States Department of Agriculture (USDA)
Animal Plant Health Inspection Service (APHIS)
Plant Protection and Quarantine (PPQ)

Center for Plant Health Science and Technology (CPHST)
Questions?
Boxwood Blight & the NC Industry
Leah Roberts
NCDA&CS Plant Pathologist

Southern Plant Board 2014

Very sticky spores on leaves, stems
No good fungicide treatments
Best destruction = burning, but that has limits
Only means of dealing with it is sanitation

Single best take home point
• In NC, box blight is spreading on workers not necessarily on plants
• We, as regulators, may affect movement of plant material but we cannot regulate the act of sanitation

Regulations can restrict movement of plants and plant products and dictate destruction methods BUT they cannot force individuals to spray their boots with Ethanol, or change clothes, wash their trucks, or tools between every single field

NC Boxwood Industry
• Mountains or foothills = ideal climate for box blight pathogen
• Field grown, B&B
• Few large growers who act as brokers/dealers

Education or Regulation?
• What needs to happen? Sanitation
• How to achieve that? Education
• Roles for government versus extension
• “Typical” regulatory tools
  – Visual inspections followed by stop sales
  – Destruction

Found in NC and US in 2011
Boxwood blight: caused by fungal pathogen, Cylindrocladium pseudonaviculatum
  – Probably arrived on infected material from UK/Europe
Destruction

- Cannot eliminate 100% of inoculum, so is it worth the effort?
- Many growers within immediate proximity – if you force some to destroy, do you do it to all, even those not visibly infected or who have few resources?

Our Efforts

- Stop sales to the extent possible
- Assist with voluntary destruction efforts
- Voluntary compliance program
  - Strengthening program to address the way our industry works

Voluntary Compliance Program

- Consistent with many other states; based on NPB BMPs
- More centered on buy-ins than sales
- Currently stipulations and self-reporting requirements being rewritten to address allowing nursery crews onto one’s property

Questions?
Boxwood Blight: Virginia case study and lessons learned

Norman L. Dart
State Plant Pathologist, VDACS OPIS

Overview

- Disease cycle/Biology
  - Primary diseases cycle (overwintering inoculum)
  - Secondary (repeating disease cycle)
- Implications on management and detection (Trojan Horse Effect)
- Case studies from VA retail nurseries in Fall 2013

Boxwood blight
Polycyclic disease cycle

Conidia produced by fungus (64-77F)

Conidia in summer

Pathogen in dead plant material and cankers in stems

Conidia in leaves

Leaves fall

Secondary cycles (64-77F)

Need free moisture

Conidia produced by fungus (64-77F)

Pathogen on/in plant

Leaves fall

Stem cankers form

Boxwood blight
Polycyclic disease cycle

Conidia produced by fungus (64-77F)

Conidia in summer

Pathogen in dead plant material and cankers in stems

Conidia in leaves

Leaves fall

Secondary cycles (64-77F)

Need free moisture

Conidia produced by fungus (64-77F)

Pathogen on/in plant

Leaves fall

Stem cankers form

Conidia spores splash from plant to plant

Conidia spores infect wet foliage

Cankers

Leaf spots
Defoliated boxwood
Fallen leaves under infected boxwood

Microsclerotia of *Calonectria pseudonaviculata* in leaf tissue

**Boxwood blight**
*Polycyclic disease cycle*

- Pathogen on/in plant
- Leaves fall
- Stem cankers form
- Secondary cycles (64-77F)
- Need free moisture on leaves
- Conidia in summer
- Conidia produced by fungus (64-77F)
- Pathogen in dead plant material and cankers in stems

**Boxwood blight**
*Polycyclic disease cycle*

- Pathogen on/in plant
- Leaves fall
- Stem cankers form
- Secondary cycles (64-77F)
- Need free moisture on leaves
- Conidia in summer
- Conidia produced by fungus (64-77F)
- Pathogen in dead plant material and cankers in stems

**Monocyclic Disease Progress**

- Disease
- Time (Years)
- No control

**Monocyclic Disease Progress**

- Disease
- Time (Years)
- No control
- Eradicate inoculum
Boxwood blight
Polycyclic disease cycle

Pathogen on/in plant
Leaves fall
Stem cankers

Secondary cycle
(64-77°F)
Need free moisture on leaves
Conidia in summer

Pathogen in dead plant material and cankers in stems
Conidia produced by fungus (64-77°F)

Polycyclic Disease Progress

Disease

Time (weeks)

No control
Reduced inoculum
Reduced rate of leaf infection

Polycyclic Disease Progress

Disease

Time (weeks)

No control
Reduced inoculum
Reduced rate of leaf infection

Polycyclic Disease Progress

Disease

Time (weeks)

No control
Reduced inoculum
Reduced rate of leaf infection
Both

No visible disease development with fungicides & eradication of inoculum

Disease development with just eradication of inoculum
What does this all mean?

- Persistent soil phase (primary disease cycle)
- Aggressive secondary disease cycle (polycyclic)
- These two factors create the “Trojan Horse Effect”
- This is a great challenge to the industry and regulatory inspectors
Summary

- Boxwood blight pathogen has a significant soil phase that can initiate a disease epidemic in a single growing season.
- Landscape introductions must use eradication/reduction of inoculum combined with fungicides, resistant cultivars, etc. for effective control.
- Nursery regulatory programs should focus on excluding pathogen through clean stock programs, not based on inspections alone.
- Boxwood Blight Cleanliness Program/Compliance Agreement for Production Nurseries
Current use of molecular diagnosis and development of new molecular methodologies

Phil Berger, Executive Director
PPQ Science and Technology
Southern Plant Board Meeting
April 27-30, 2014

Plant Pathogen Diagnostics
Beltsville Laboratory

- Federal confirmatory operational diagnostics
- Development and validation of diagnostic methods for regulatory pathogens and foreign germplasm
- Evaluating new diagnostic technologies
- Provide training on diagnostics
- Proficiency testing for National Plant Pathogen Laboratory Accreditation Program
- Participation in international evaluation of new diagnostics

Confirmatory Pathogen Diagnostics

- Phytophthora ramorum (SOD)
- Citrus Greening (HLB)
- Plum pox virus (PPV)
- Ralstonia solanacearum race 3 biovar 2
- Potato Cyst Nematode (PCN)
- Citrus Canker (CC)
- Citrus Black Spot (CBS): Guignardia citricarpa
- Sweet Orange Scab (SOS): Elsinoe australis
- Citrus Variegated Chlorosis (CVC)
- Citrus leprosis virus (CiLV)
- Potato wart
- Potato cyst Nematode

New advances in HLB diagnosis

- New work instruction for HLB:Liberibacter asiaticus and L. americanus combo assays reduces the cost of HLB screening tests by 50%.
- New methods based on two additional target genes for HLB confirmatory tests greatly reduces inconclusive results and increases the test reliability.
- New DNA extraction allows pooling up to 25 ACP adults to cut the cost of HLB bacteria detection in the vector insects by 80%.

Online Identification Tools to Phytophthora

- Additional: Photos morphology, Sequences with up to 17 Genes, Glossary, Methods, Links

Coming Spring of 2015
**Identification of Intercepted Wood Borers by DNA Barcoding**

- ID of new South American slug species (Colusius confusus) on imported cut flowers – Allows proper action status at ports
- ID of Brevipalpus mites in Texas – Provides information on what flat mite species known to vector Citrus leprosis virus are along TX border
- ID of non-pest variants of Boll weevil trapped near cotton fields – Notifies cotton growers when treatment for the pest is not necessary
- ID of Asian longhorned beetle larva – Confirmed new location of the beetle for rapid response and evaluation of likely source populations

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**Taxonomic ID by Molecular Diagnostics**

- DNA repository of >16K samples in TX
- Development of DNA barcode resources and other tools for pest fruit flies
- Specimen identification projects that target ports to ensure new species are not entering a pathway
- Identification support to states through technology transfer and specimen diagnosis

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**Fruit Fly Molecular Diagnostics**

- Examination of genetic profiles of fly specimens captured in the US to determine possible sources
- Ex: Bactrocera dorsalis (Oriental FF) captures in CA are diverse and not the result of a Hawaiian source alone

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**Otis Lab-Molecular Analysis of Forest Pests**

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**Global Gypsy Moth Population Structure as Determined by Microsatellite Analysis**

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**Identification of Intercepted Wood Borers by DNA Barcoding**

- Location of Interception
  - Houston, TX: Anoplophora chinensis (2), Arhopalus sp (2), Monochamus alternatus (1), Monochamus sp (17), Monochamus alternatus (3), Leptura sp (1), Euchlorus notatus (1), not available (2)
  - Lasalle, TX: Arhopalus sp (10), Euchlorus sp (7), not available (11)
  - Long Beach, CA: Anoplophora chinensis (2), Monochamus alteratus (1), Anoplophora chinensis (1), Monochamus alternatus (1), Monochamus alternatus (1), Monochamus alternatus (1), Monochamus alternatus (1), not available (1), not available (8), Bollus campestris (1), not available (10)
  - Pharr/Hidalgo, TX: Euchlorus sp (1), Monochamus alternatus (1)
  - Romulos, MI: Anoplophora chinensis (2), Arhopalus sp (1), Arhopalus rusticus (1), Callidium scabrum (1), Monochamus alternatus (1), Monochamus alternatus (1), not available (1), not available (1), not available (1), not available (1), not available (1), not available (1)
  - Seattle, WA: Anoplophora chinensis (2), Arhopalus sp (1), Monochamus alternatus (1), Monochamus alternatus (1), Bollus campestris (1), not available (1), not available (1), not available (1)
**Lab-based technology used by APHIS for pest detection and identification**

- Conventional and real-time PCR: DNA sequencing
- ELISA and serological flow devices
- e.g., DNA analysis of pest gastropods and nematodes supports surveys

How can we adapt this type of technology for inspection?

**Technology pilots at Plant Inspection Stations**

**Work of the PPQ Molecular Diagnostics Taskforce and Pilot study teams**

- Detection of *Ralstonia solanacearum* in *Pelargonium* using CANARY
  - Piloting CANARY as a rapid detection tool at the Linden, NJ and Atlanta, GA PIS.
  - This pilot introduces a new diagnostic platform and concepts for detecting plant pathogens.
  - Determine the utility of CANARY to *Ra.* sp. screen, *Ra.*_sp._alive plant materials not in the pre-clearance program.
  - Train inspectors on the theory and use of the CANARY assay, and interpretation of data outputs to make accurate determinations.
  - Success in detection of *Rs.* in CANARY in blind samples provided to the PIS locations prepared by the CPHTS Beltsville Lab.
  - Training conducted, first 6-week pilot completed and possible a second pilot in the early fall when shipment levels increase.
  - Evaluation of PIS training, PIS staff acceptance, technology performance and impact on PIS work flows.

**Technology pilots at PIS**

- Identification of immature thrips species
  - CPHTS cooperation with Miami PIS and UC Riverside to test DNA sequencing methods at a PIS for *Frankliniella* (thrips) in a cut flower pathway from South America.
  - The majority of thrips intercepted along the pathway are immature and cannot be expertly identified. The adults intercepted along the pathway tend to be just two non-actionable species.
  - Molecular techniques may be able to determine if this pathway poses a risk to US growers and help develop newer ID tools for use at ports.

**Identifying New Detection Technology**

- Joint Study with DHS S&T and PPQ

**Goal**
- Guide investments in R&D of detection systems to meet stakeholder needs

**Interviews, site visit and horizon scanning**
- Determine stakeholder needs based on interviews with PPQ and CBP staff regarding Ag Inspections. Extensive scanning of available technologies.

**Findings**
- Report summarizes requirements, available technologies, gap analysis. Compared hypothetical inspection scenarios using performance characteristics of technology to identify promising technologies to move forward.
- Determined technology readiness levels and identified a follow-on project to determine the methods and cost of validation the promising technology.
**DHS S&T and APHIS PPQ Study Detection Technology**

**PPQ and CBP Inspector Requirements**

- **False positive/negative rates**: below 5%
- **Level of detection**: as low as possible, desired - one organism
- **Time to results**:
  - Passenger luggage - seconds
  - Cargo - less than one hour, preferably 15 min
- **Specificity**: find plant material in non-plant cargo and for pests at least to the family level
- **Instrument Size**: portable weighing 3-5 lbs., or on a cart
- **Instrument Power**: battery operated 8 hr. (a shift), ideal 24 hr.
- **Instrument Training**: less than one week, 2 days preferred
- **Instrument Cost**: Issued to an inspector ($1,000 to $20,000); Issued to a unit ($15,000 to $50,000)

**Study Recommendations**

- **Technology with promising characteristics**
  - At the tailgate, in de-vanned pallets or in boxes:
    - **Acoustic detection** to “hear” chewing patterns or mating calls of live wood-boring insects.
    - **Volatile organic compound detection** to “smell” specific compounds present that identify plant families; chemicals released by insects or plant pathogens; and compounds released by distressed plants.
  - At the point of inspection stations:
    - **Near infrared detection** to “see” insects and some diseases in sorters of seeds, grains, spices or dried goods.
    - **Hyperspectral imaging cameras** to “visualize” insect or pathogen damage; maybe useful for detection of plant pests in cut flowers.
    - Any technology to enhance the vision of inspection specialists.

**Volatile Organic Compound detection and pest identification using zNose®**

- Computer graph indicating detection of five relevant specific VOCs
- Based upon ultra-fast gas chromatography

PPQ Inspector, Jose Santos, assists with bonsai tree z-Nose experiments
Update on honey bee declines

David R. Tarpy, Associate Professor of Entomology
NC State University

photo by Alex Wid
Importance of bees

Honey bee pollination

Economic Impact of Honey Bee Pollination

Bee-dependent crops account for $47.1 billion every year, of which $14.6 billion is attributable to honey bee pollination.

Honey bees are responsible for one-third of everything that people eat every day.
Breakfast with bees

Breakfast without bees

Commercial apiculture

Annual migration of managed beehives
Migratory beehives in California’s Central Valley

Problems in apiculture

Colony collapse disorder
Symptoms

- Adult bee population suddenly gone without any accumulation of dead bees
- Small cluster with queen, remaining bees often young
- Brood, pollen, and honey present
- Little evidence of hive pests
Colony mortality ≠ CCD!

Honey bee population

Unexplained losses

CCD

Colony Collaps in context

Commentary

Honey bee population

Unexplained losses

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Honey bee population

Unexplained losses

CCD
“Low-priority” possible causes of CCD

- Cell Phones
- Rapture
- Terrorist
- Russian plot

Nutritional stress

Pathology
Environmental contamination

Colony Collapse Disorder: A Descriptive Study

Dennis vanEngelsdorp1 2, Jay D. Evans5, Claude Saegerman3, Chris Mullin2, Eric Haubruge4, Bach Kim Nguyen4, Maryann Frazier2, Jim Frazier2, Diana Cox Foster2, Yanping Chen5, Robyn Underwood2, David R. Tarpy6, Jeffrey S. Pettis5

1 Pennsylvania Department of Agriculture Harrisburg Pennsylvania United States of America
2 Department of Entomology The Pennsylvania State University University Park Pennsylvania United States of America
3 Department of Nodous and Parasitic Diseases Epidemiology and Risk Analysis Applied to the Veterinary Sciences University of Liege Liege Belgium
4 Department of Functional and Evolutionary Entomology Gembloux Agricultural University Gembloux Belgium
5 Department of Agricul ture (USDA) – Agricultural Research Service Bee Research Laboratory Beltsville Maryland and United States of America
6 Department of Entomology North Carolina State University Raleigh North Carolina United States of America

Of 61 quantified variables (including adult bee physiology, pathogen loads, and pesticide levels), no single measure emerged as a most-likely cause of CCD

Bees in CCD colonies had higher pathogen loads and were co-infected with a greater number of pathogens than control populations, suggesting either an increased exposure to pathogens or a reduced resistance of bees toward pathogens.

High Levels of Miticides and Agrochemicals in North American Apiaries: Implications for Honey Bee Health

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Synergistic Interactions Between In-Hive Miticides in Apis mellifera

REED M JOHNSON1 HENRY S POLLOCK AND MAY R BERENBAUM

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Pathogen Webs in Collapsing Honey Bee Colonies

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Pathogen webs in collapsing honey bee colonies.
The Start
In 1996, the GSMNP was losing all poaching cases because they couldn't prove the poached plants came from the park. In 1997, 80 cases were made involving the first marking system. 99 percent of the cases were won as opposed to 0 percent prior to the program. The remaining 1 percent of the cases represented plea agreements. Populations of plants in 1996 and prior to marking plants were disappearing at record rates. After the insertion of the program, populations showed immediate recovery through reproduction and population number increases.

Where can Ginseng Grow?
1. Companion tree species differs depending on location in the country
2. Plants found in cove forest
3. Soil type Tusquitee loam?
4. Amphibolite is perfect
5. Ca and Mg must have a relationship to grow good material

Ginseng Habitat

CULTIVATED VS WILD

2014 Demand
2014 was a green season due to the influx of Korean buyers and the evolution of a domestic market in large cities.

The Chinese buyers prefer old figured root. The Koreans prefer large roots.
HOW MANY ROOTS PER POUND?

TRUE PRICING (Myth or Fact) ginseng sold for 250 green, 1200 dry

DAMAGE THAT CAN BE DONE

OPERATION NATIONAL PARK
Multiple species are marked
Multiple artifacts marked in the West
Multiple foreign countries marking

FIGHTING POACHING
NCDA&CS FEDERAL

Many Types of Poachers
TYPES OF VIOLATORS
CASUAL, MODERATE
HARDCORE
OCCASSIONAL

Smokies ginseng project
Operation Lightning Bolt started in 1996
48,560 plants have been marked
1296 miles have been recorded
345 prosecutions have occurred
with 321 jail terms fines that involved from $500 to $40,000 dollar fines for Lacey Act violations

The Damage of Poached Ginseng
Seized material
Marked

MARKING IS USED ON VARIOUS SPECIES AND IN MULTIPLE LOCATIONS

Marker #3

MARKING PLANTS FOR PROTECTION
MARKED PLANTS

Marker 10 Years Later

K9 Intervention

Hard Core Poacher in ten years harvested over 20,000 plants

Many Targets

Protection of Endangered Plants
The Future
Giant African Land Snail (GALS)

- Native to tropical East Africa.
- Hawaii 1930s, Caribbean and South America 1980s-90s.
- Globally throughout tropics and subtropics
- Pre-1950s introductions were as a food source.
- More recently moved as “pets”.
Identification

- Shell is usually dark and light brown with swirls wrapping around its cone-like shell.
- Eggs are white to yellow in color, 5-5.5mm by 4-4.5mm and elliptical in shape.
Know Your Enemy

Biological Factors For the Program

- Self fertilization
- Sexual maturity at 4 months old (2.5 inches)
- Adults can produce up to 625 eggs per month
- Eggs were observed hatching 26 days after egg laying (average 5 – 7 days)
- Neonate survival underground without food for 97 days
- Underground at 120 days (4 months)
GALS Impacts

- Homeowner/public nuisance
- Feeding on at least 500 different types of plants
- Feeds on stucco, plaster and cement
- Public Health Concerns
Rat lungworm Testing Results

- Over 600 snails tested to date
- Both Molecular and Traditional Method
- 30 specimens tested a week
- RLW detected in 7 Cores 1, 2, 4, 5, 7, 12 and 15.
Giant African Land Snail (GALS)

- September 2011, GALS were found in residential Miami.
- April 2014, GALS known in 26 residential areas.
- No natural areas or commercial lands known to be infested.
Giant African Land Snail (GALS)

What are we doing?

--52 people working full time on program

- Survey /Control / Regulatory Teams
- Debris Removal Team
- Outreach Team
- Research
- New Control Treatments
- Educational outreach to locate new populations
GALS Survey

- Residential Inspections
  - ~97,000 properties
  - 642 positive properties
  - 139k+ snails collected
  - ½ mile arc survey for each core
GALS Survey

- 85% snails collected in five cores (1, 2, 4, 5 and 10)
- These five cores account for 70% of positive properties
- 92% of positive properties directly from help line calls
GALS Regulatory

- Regulated area is approximately ½ mile arc surrounding each positive core.
- Federal quarantine involve 22 zones in the infested area.
- Includes nursery stock, soil/compost, debris, building materials.
GALS Control

Control Treatments – Physical removal

- Regular hand collection
- Removal of organic debris to reduce food sources
- Bait treated ~60,000 properties
GALS Control

Control treatments – Chemical

- Bi-weekly of properties within 200 yards of find with pelletized bait.
- Organic snail baits with active ingredient Iron Phosphate, a component of fertilizer.
GALS Control

Control treatments – Chemical

- 5% boric acid
- Bi-weekly of properties within 200 yards of find with pelletized bait.
Metaldehyde Treatments

February 25, 2013  Experimental use permit (EUP)

Slug Fest  25%

Durham  7.5 %
Metaldehyde Treatments

- Week of April 1, 2013 program wide Bug-Geta and Hi-Yield applications at 3.25%
- Bi-Weekly of positive properties and three properties out
Metaldehyde Treatments

- SLN Label received April 9th
- 4% metaldehyde
- Incorporate into treatments with Bug-Geta
- Smaller pellets
- 85% mortality rates on juveniles in Barbados
Debris Removal

914,980 pounds collected or 457 tons
Debris Removal
Debris Removal
Debris Removal
2013 GALS Live and Dead Specimen Count by Month

- **Jan**: Live - 2723, Dead - 1604
- **Feb**: Live - 2042, Dead - 972
- **Mar**: Live - 1169, Dead - 950
- **Apr**: Live - 2165, Dead - 819
- **May**: Live - 1877, Dead - 799
- **Jun**: Live - 1943, Dead - 481
- **Jul**: Live - 1517, Dead - 575
- **Aug**: Live - 2158, Dead - 444
- **Sept**: Live - 2137, Dead - 1856
- **Oct**: Live - 1193, Dead - 256
- **Nov**: Live - 1152, Dead - 205
- **Dec**: Live - 1086, Dead - 326
2014 GALS Live and Dead Specimen Count by Month

- **January**:
  - Live: 205
  - Dead: 947

- **February**:
  - Live: 27
  - Dead: 552

- **March**:
  - Live: 7
  - Dead: 517

- **April**:
  - Live: 6
  - Dead: 47
April 14-18 2014—Snapshot

- 648 properties surveyed
- 82 snails collected
- 1 snail recently dead
- 99% dead
COLOR ALERT PLAN

- Increase efficiency of survey and control
- **Red**: 14 day live GALS past 9 months
- **Gray**: 14 days touch property of Red
- **Yellow**: 30 days (17 months)
- **Green**: 90 days (24 months)
- **Blue**: 180 days (36 months)
COLOR ALERT PLAN

- Involving 2,885 properties
- 76% properties changed status
- 40% went from red to yellow
GALS DOGS

- Two canines in training
- Graduation May 23, 2014
- First day on the job: May 27, 2014
- Sierra and Bear
GALS Research

Life cycle, Biology, Natural history

- Growth rates, age/size of maturity
- Attractants, pheromone studies
- Food preferences over life of snail
- Depth vs. mortality in egg clutch
- Seasonal, age related activity
- GALS Symposium June
GALS DATA

- GALS database
- Nexus 7 LTE tablets
GALS Outreach-Education

Established a Helpline 888-397-1517

2,160 calls resolved

Established webpage

www.freshfromflorida.com/pi/plantinsp/gals.html

- Provide information and links to other resources.
GALS Outreach
Week Ending 4/18/2014

- ABC Fusion Network filming at GALS HQ
- Earth Day at Zoo Miami
- Sweet Corn Fiesta
- Homeowner Appreciation Packets
- Junior Detective Program.
GALS Outreach-Education

**Media Blitz** to contact public

- Newspaper ads, billboard, bus sides, park benches, radio and other public service announcements.
Florida Household Hint:

Turn the invasive plaster-and-stucco-eating giant African land snail into an asset!

How about some delicious Chinese drywall?
Questions?