Early Detection and Rapid Response: NPDN, ipmPIPE, Sentinel Plant Network, Protect U.S. Community I.S. Network

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National Program Leader for
Bio-Based Pest Management
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NPDN
National Plant Diagnostic Network

A Consortium of Regional Networks

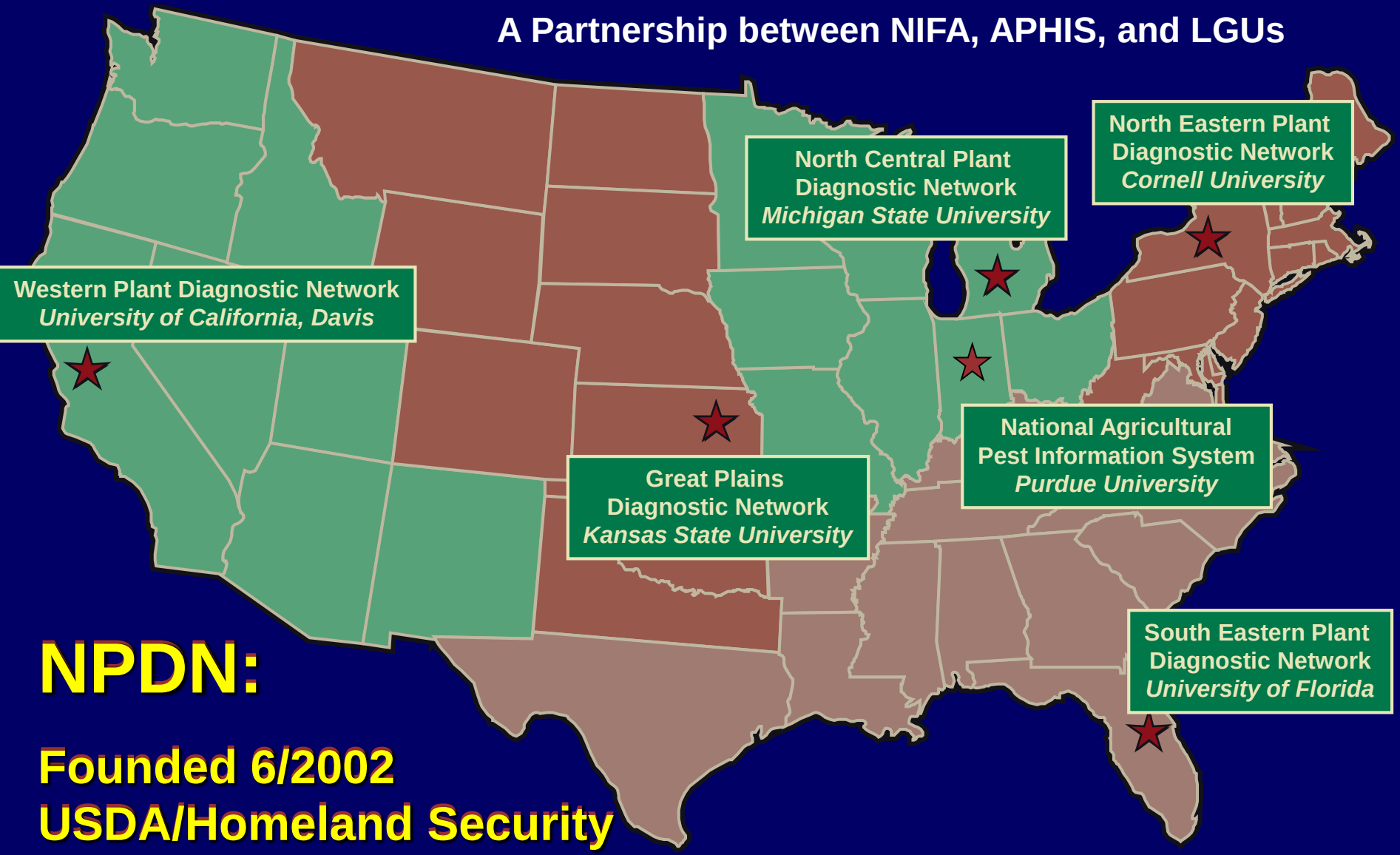
Protecting Agriculture in America's Heartland

Kitty F. Cardwell and Marty Draper
Former National Program Leaders, Plant Pathology, USDA-NIFA

www.npdn.org

What Does NPDN Look Like?

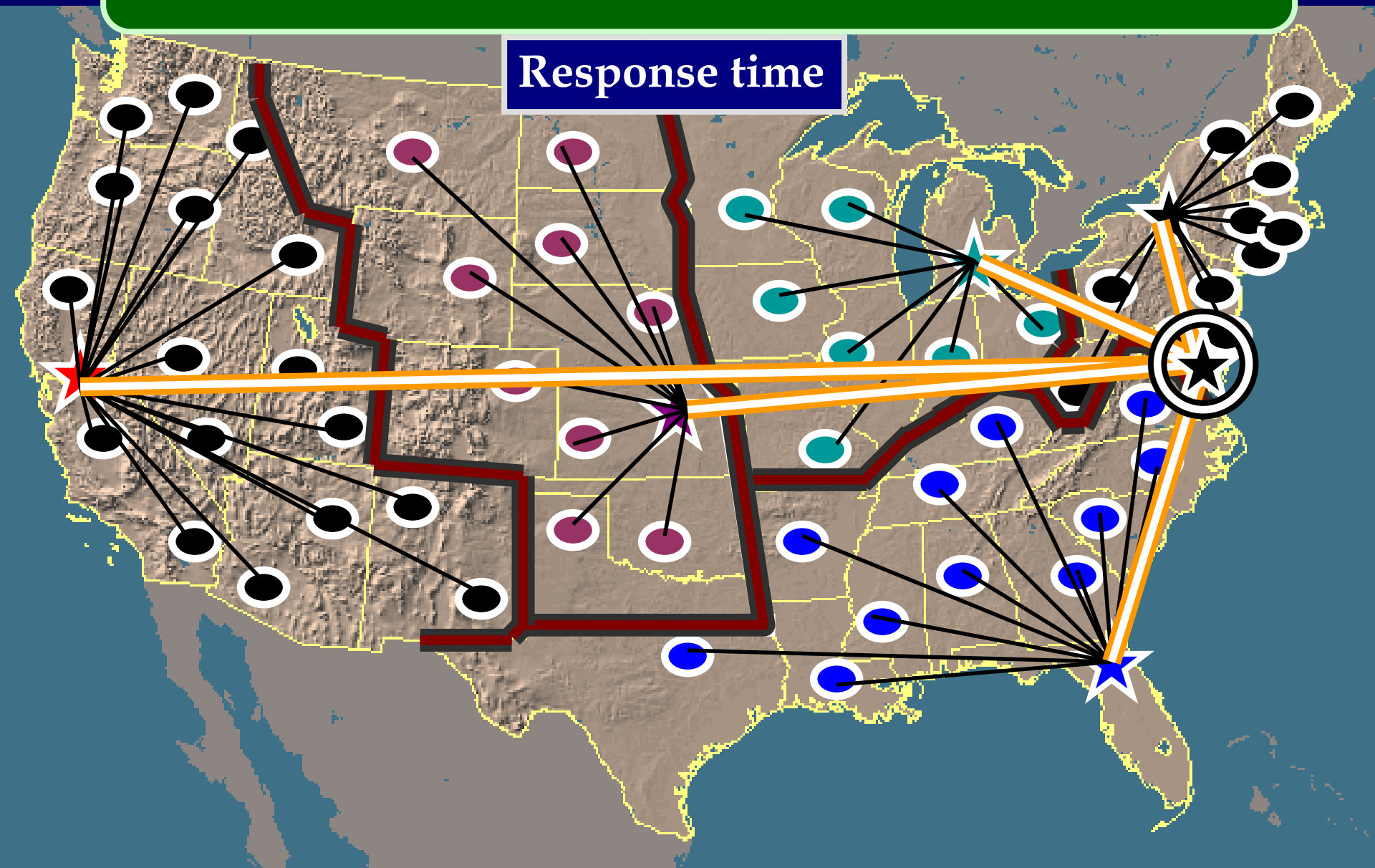
A Partnership between NIFA, APHIS, and LGUs



NPDN:

Founded 6/2002
USDA/Homeland Security

National Plant Diagnostic Network



Collaborative Diagnostics

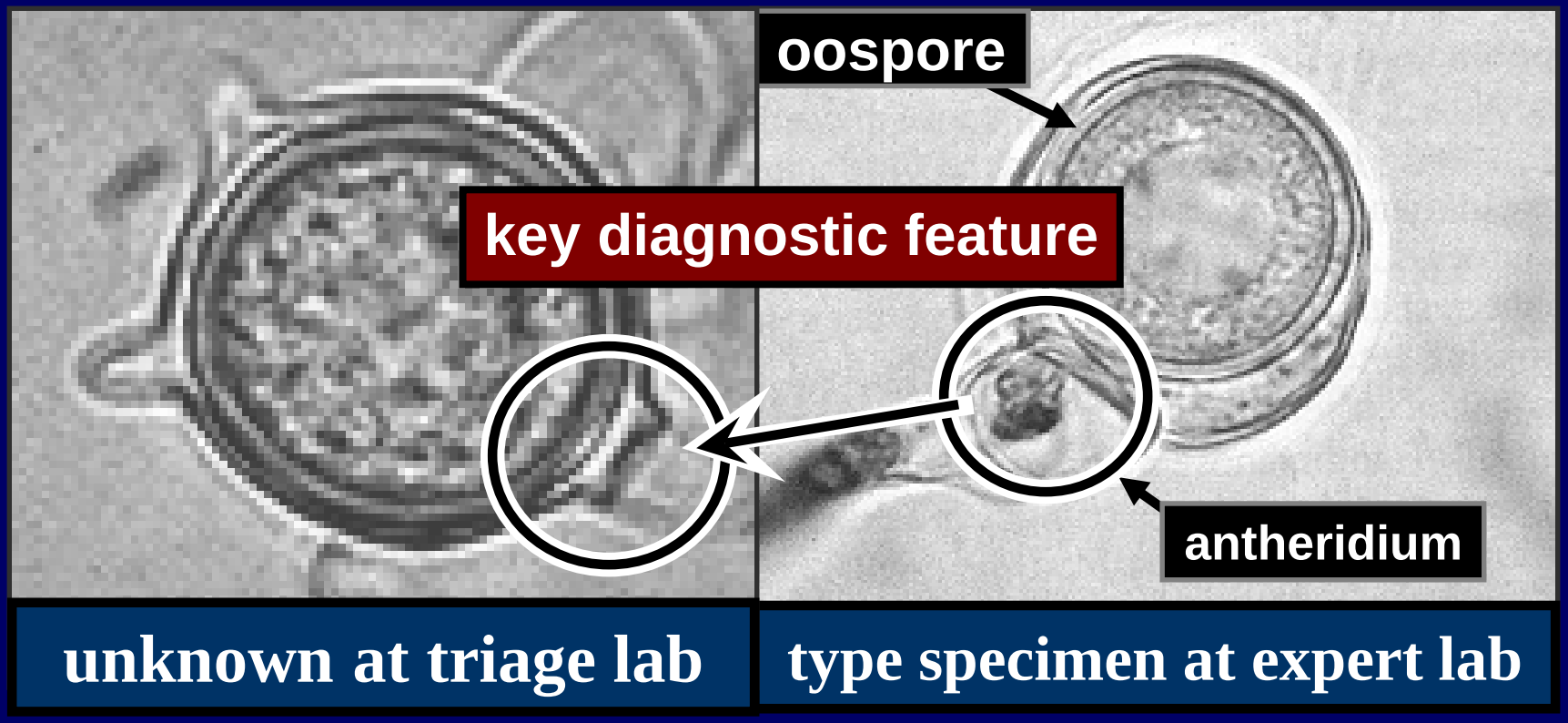
image of type specimen from expert lab

image of unknown at state triage lab

video conferencing among diagnosticians

Key Diagnostic Features

For most exotic pests there are few diagnostic experts



First Detector Program

- First Detectors are trained in person and/or online.
- Training modules include: Mission of the NPDN, Monitoring High Risk Pests, Diagnosing Plant Problems, Submitting Diagnostic Samples, Photography for Diagnosis, Disease and Pest Scenarios , and several pest specific modules.
- First Detectors are crop consultants, extension educators, Master Gardeners, and others with a level of expertise and exposure to plants in their environment.

Example of a First Detector Success

- July 2006 - Western leaf footed bug was detected in Florida by two Master Gardener volunteers (trained First Detectors) from a tomato sample; followed up by a second sample from a third FD from a pomegranate
- They recognized the bug as “unlike the common leaf-footed bug”
- The specimen was routed through the NPDN for confirmation by a qualified identifier

***Leptoglossus zonatus* – Western Leaf-footed Bug**

ipmPIPE:
Pest Information Platform for Extension and Education

Real-time IPM for Detection and Response

www.ipmpipe.org

ipmPIPE

- A system to track invasive and high consequence pests and diseases, forecast risk, and coordinate a grower management response.
- Began with soybean rust

USDA Public PIPE Website - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites

Address http://www.sbrusa.net/ Go Links

Public Site

USDA United States Department of Agriculture

Pest Information Platform for Extension and Education

Sign Up For Alerts

Getting Started

Prev Next

July - 2006

August - 2006

September - 2006

Date Selection Tool

- Overlay - Load

Last Update: 08/24/06

Crop and Pest Drop-down menus

Aug 24, 2006

Legumes/Kudzu

Soybean Rust

SB Rust Observation

SB Rust State Update

Mapping tools

Chronology of Positive Detections

SBR Forecast Click For Details...

Recently scouted, not found | Scouted, confirmed | Confirmed, no longer found

- National Commentary
- ID/Scouting Tools
- Not sure if it is Rust?
- Other SBR Sites
- Hurricane Animations
- Observation Animations
- Partners
- Professional Societies
- Soybean Rust: Scout Before

Printable Map Legend

National Soybean Rust Commentary (updated: 08/23/06)

The latest soybean rust find was reported on soybeans in Concordia Parish in eastern Louisiana (8-23). Currently rust has been found infecting this year's soybeans in 16 different counties in six state: AL, FL, GA, LA, MS, and SC. Including reports on kudzu, there is a total of 36 counties in seven states with rust this year including five in Alabama, 13 in Florida, eight in Louisiana, six in Georgia, one in Mississippi and South Carolina, and two in Texas. Spore trapping continues throughout the U.S. using both active and passive traps. Any positive spore trap information does not

Management Toolbox

- Tactics - USA
- Guidelines - USA
- GFP Tool
- Insurance Docs
- Commentary Chron

Done Internet

USDA Public PIPE Website - Microsoft Internet Explorer

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Back Search Favorites

Address http://www.sbrusa.net/ Go Links

USDA United States Department of Agriculture

Pest Information Platform for Extension and Education

Zooming to a state brings up county level resolution and specific guidelines for that state.

Getting Started

Prev Next

July - 2006

September - 2006

- Overlay - Load

SB Rust Observation - 2006-08-25 Last Update: 08/24/06

Recently scouted, not found | Scouted, confirmed | Confirmed, no longer found

Sign Up For Alerts

Aug 25, 2006

Legumes/Kudzu

Soybean Rust

SB Rust Observation

SB Rust State Update

Chronology of Positive Detections

SBR Forecast Click For Details...

- LA Commentary
- ID/Scouting Tools
- Not sure if it is Rust?
- Other SBR Sites
- Hurricane Animations
- Observation Animations
- Partners
- Professional Societies
- Soybean Rust: Scout Before

Printable Map Legend

Louisiana Soybean Rust Commentary (updated: 08/23/06)

ASR was found in Concordia Parish in a commercial field (which also contains the soybean sentinel plot) of Group V soybeans at the R6 stage. Incidence and severity levels were low. This brings to eight (8) the number of parishes in which ASR has been found on either soybeans or kudzu. Please check the federal public website http://www.sbrusa.net/ to see where ASR has been confirmed in the US.

Management Toolbox

- Tactics - USA
- Guidelines - USA
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- Commentary Chron

Done Internet

http://www2.sbrusa.net - GFP Tool - Microsoft Internet Explorer

Good Farming Practices Documentation Tool Instructions **Report Date: August 25, 2006**

Disclaimer: Use of this documentation tool is strictly voluntary. Information entered by you is not retained on this system and may only be printed or saved on your system in a PDF format. RMA does not control or guarantee the accuracy, relevance, timeliness, or completeness of this information. Neither RMA nor any of its employees makes any warranty, express or implied, including the warranties of fitness for a particular purpose, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of this tool.

First time users are strongly encouraged to read the instructions prior to using this documentation tool.

Preparer Name

Grower Name

State * Louisiana

County * --

Farm Description

Field ID(s)

Crop * Soybeans

Crop Stage * -- Crop Stage Images

* = Required

Louisiana Scouting and Management Commentary

Soybean Rust

- August 23, 2006: ASR was found in Concordia Parish in a commercial field (which also contains the soybean sentinel plot) of Group V soybeans at the R6 stage. Incidence and severity levels were low. This brings to eight (8) the number of parishes in which ASR has been found on either soybeans or kudzu. The recommendation is for soybeans in the R1 through R5 growth stages and have a good yield potential be treated with a rust fungicide. The fungicides for rust control have a triazole alone or in combination with a strobilurin. These products are listed in the 2006 Plant Disease Management Guide and are on the LSU AgCenter Rust website, http://www.lsuagcenter.com/soybeanrust. Again, it is especially important at this time to monitor your crop very carefully and be alert for reports of disease outbreaks in the area. You can monitor the AgCenter's website (http://www.lsuagcenter.com/soybeanrust/), contact your county agent, or call the Asian Soybean Rust Hotline at 1-800-516-0865.
- August 18, 2006: On August 18th ASR was confirmed in Iberia and St. Mary Parishes. The finds were on

Done Internet

Go Links

tion Platform
and Education

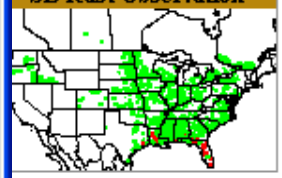
Sign Up For Alerts

Aug 25, 2006

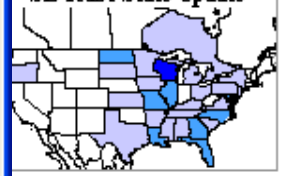
Legumes/Kudzu

Soybean Rust

SB Rust Observation



SB Rust State Update



Chronology of Positive Detections

SBR Forecast Click For Details...

Management Toolbox

- Tactics - USA
- Guidelines - USA
- GFP Tool
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javascript:void(0) Internet

USDA Restricted PIPE Website - Microsoft Internet Explorer

Private Site

File Edit View Favorites Tools Help

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Address http://aphis.zedxinc.com/cgi-bin/sbr/sbr_main.cgi Go Links

USDA specialist Edit Profile Tools Menu

Data and Commentary Tools

Crop and Pest Drop-down menus

Date Selection Tool

Expanded mapping tools including forecast models

Up

July - 2006

August - 2006

September - 2006

Down

State Point County Commentary

- Overlay - Load

SB Rust Raw D

scouted, not found scouted, suspected scouted, confirmed

Sentinel Lab Industry Other

Aug 24, 2006

Legumes/Kudzu

Soybean Rust

Chronology of Positive Detections

SB Rust Raw Data

SBR Activity Ensemble

SBR Combo Ensemble

SBR Transport Ensemble

- SBR Research Forecast
- SBR Public Forecast
- National Commentary
- Hurricane Animations
- ID/Scouting Tools
- Management

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Management Toolbox

See Public Site

Done Internet

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USDA specialist Edit Profile Tools Menu

Up

July - 2007						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

August - 2007						
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

September - 2007						
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2	3	4	5	6	7	8
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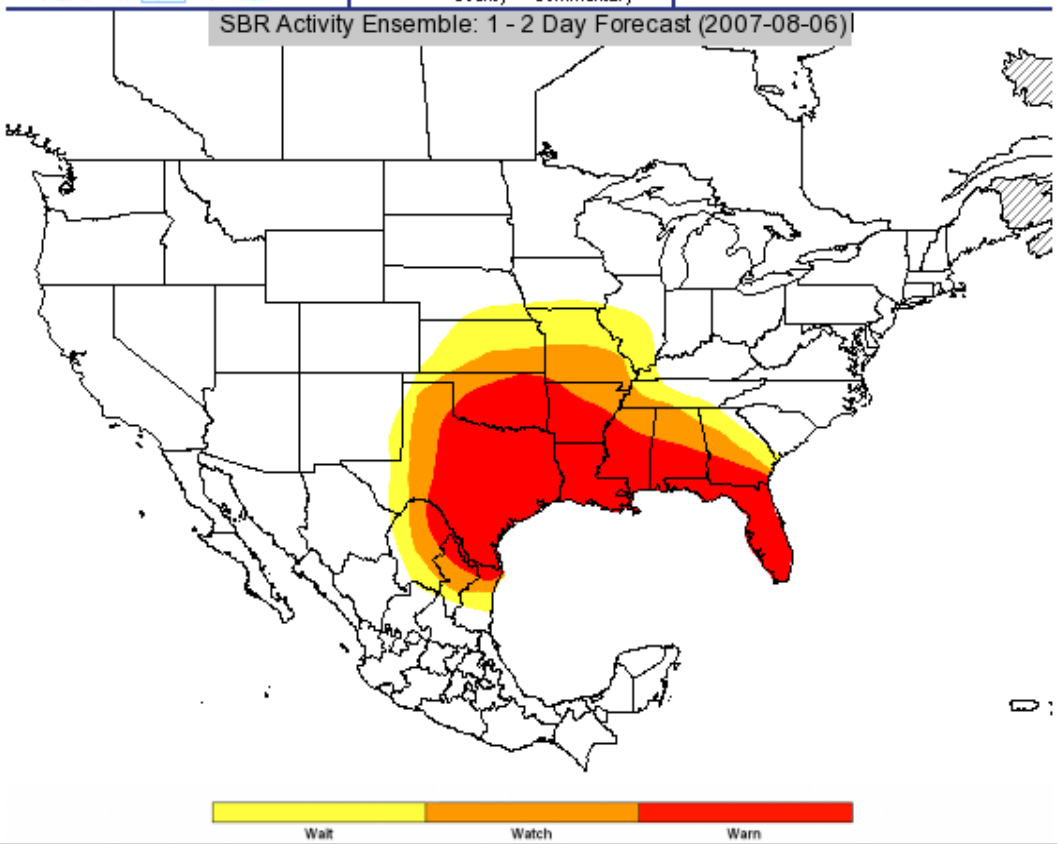
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

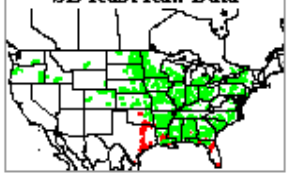
Down

State Point County Commentary - Overlay - Load

SBR Activity Ensemble: 1 - 2 Day Forecast (2007-08-06)

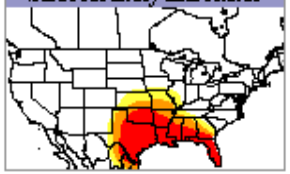


SB Rust Raw Data

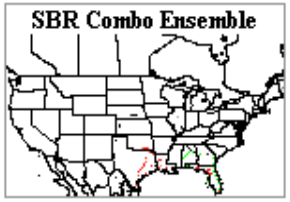


HYSPLIT 48 Hour

SBR Activity Ensemble



SBR Combo Ensemble



SBR Transport Ensemble

- SBR Research Forecast
- **SBR Public Forecast**
- United States Commentary
- Hurricane Animations
- ID/Scouting Tools
- IPM PIPE General Site

Soybean Rust Public Forecast (issued: 2007-08-06)

Current Conditions

Current Conditions: August 6th

A disturbance in the Mid-West is producing rain and thunderstorms that are capable of becoming severe and with the potential for flash flooding across Iowa, northern Missouri, and northern Illinois. The

Management Toolbox

See Public Site

Done Internet

ipmPIPE System

Currently active ipmPIPEs include:

- soybean rust
- legume pests & diseases
- curcurbit downy mildew
- onion pests & diseases
- southern corn rust

Soybean rust

Bact. disease in snap beans

Onion fly maggots

Corn rust

The ipmPIPE System for SBR saved growers hundreds of millions of dollars in 2006 by providing real-time info. that enabled growers to avoid unnecessary fungic. applications!

A new project funded by the National Institute for Food and Agriculture (NIFA), the Integrated Pest Information Platform for Extension and Education (iPiPE) has integrated parts of the soybean rust, legume and southern corn rust PIPEs and is developing PIPEs for pests and diseases across numerous commodities.

Information on the iPiPE can be found at the main iPiPE Portal — http://ipipe.org

iPiPE INTEGRATED PEST INFORMATION PLATFORM FOR EXTENSION AND EDUCATION

Progress thru Sharing Progress thru Sharing Progress thru Sharing Progress thru Sharing Progress thru Sharing

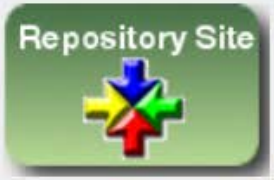
iPiPE | About | Contacts

Welcome to iPiPE ..."Progress thru Sharing"

Outreach Website
iPiPE and Crop Pest Programs Explained
Learn More..

Extension Website
Pest Management Decision Making Information and Tools
Learn More..

IPM Elements
Lists of IPM Practices
Learn More..



National Pest Observation Repository
Bugwood
Learn More..

Participant Website
Join iPiPE, Enter Data, View Models and Maps
Learn More..

Intern Website
Tools and Learning Modules
Learn More..

Recent Announcements

iPiPE Interns create video of pseudothecium removal from an apple leaf Paul O'Connor and Nicole Foley, iPiPE Interns in the 2017 Apple (New York/New England) Crop-Pest Program have created an interesting video showing psudothecium removal from an apple

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Apple (New England – New York)
Citrus (Florida)
Corn (South and Midwest)
Cotton (California)
Cotton (Southeast)
Hops (Pennsylvania)
Peanut (Virginia)
Small Fruit (New England)
Sorghum (Texas)
Soybean (Missouri)
Soybean (North Central)
Stone and Tree Fruit (Oregon)
Sunflower (North Dakota)
Sweet Corn (Pennsylvania)
Tomato and Pepper (Florida)
Tree Fruit (Mid–Atlantic)
Tree Fruit (Utah)
Vegetables (New York)

Welcome to the iPiPE CAP Outreach Website

There is a critical need to develop a national infrastructure of professionals who routinely monitor crop health and pest incidence then share this knowledge enabling dissemination of mitigation measures to limit food security impairment

Want to learn more? Check us out!

Sponsored by a USDA AFRI Cooperative Agricultural Project to change the culture in American agriculture to one of sharing agronomic pest observations and derivative information for the benefit of all stakeholders.

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Tree Fruit (Utah)

Alfalfa (California)

Coordinated by Peter B. Goodell (pbgoodell@ucanr.edu), Cooperative Extension Advisor,
University of California Statewide IPM Program

Background

Alfalfa forage has a major economic ($1 billion annually) and landscape (7 million acres) footprint throughout CA. Integrated Pest Management (IPM) is well developed and the Statewide IPM program has developed and delivered multiple programs to manage insect pests including IPM manuals and continually updated Pest Management Guidelines.

Alfalfa (*Medicago sativa* L.)
Gerald Holmes, California Polytechnic State University at San Luis Obispo,
Bugwood.org

Situation

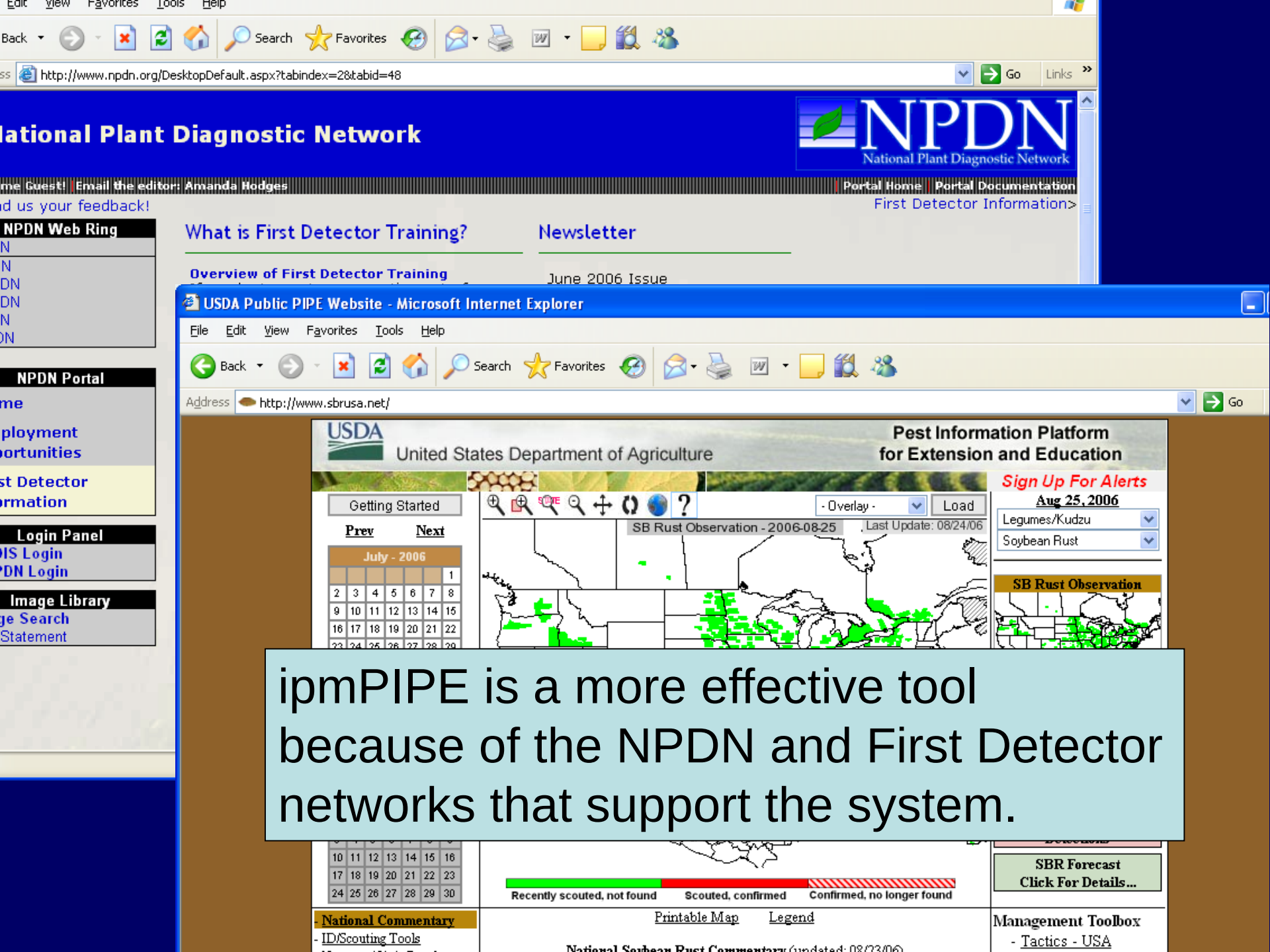
The present challenges facing the industry include:

- A number of new Pest Control Advisers (PCAs), farmers, and consultants entering into the business during the past 10 years
- Shifts in invasive species pressure and population dynamics
- National, state, regional and local regulatory requirements
- Changes in production and pest management practices

Important Pests

Blue Alfalfa Aphid and Pea Aphid, Spotted Alfalfa Aphid, Cowpea Aphid, Alfalfa Weevil, Alfalfa Caterpillar, Western Yellowstriped Armyworm, Alfalfa Stem Nematode.

Identifying Alfalfa Aphids



ipmPIPE is a more effective tool because of the NPDN and First Detector networks that support the system.

Sentinel Plant Network

- Botanical gardens and arboreta offer a unique opportunity to monitor for emerging invasive pests and pathogens in native flora located offshore.
- A pilot program in New Zealand is proving successful and serves as an excellent model to follow.
- A similar initiative is under development for the United States.

Sentinel Plant Network

- Will create a global network of sentinel plantings and will recruit botanical gardens and arboreta to help stop the spread of invasive insects and pathogens.

- Coordinated initially by Kerry Britton, NPL for Plant Pathology, formerly with the USFS

See: www.itap.gov/ Sentinel Plant Network

Protect U.S. Community Invasive Species Network (www.protectingusnow.org)

- Concerned with protecting the U.S. from exotic, invasive species that could harm our food crops and natural ecosystems.

- Collaborative partnership between the NPDN (FD Network), Regional IPM Centers, APHIS-PPQ, NIFA, the National Plant Board, Sentinel Plant Network, Coop. Extension, and other organizations involved in exotic species extension and regulatory activities.

protect u.s.
community invasive species network
Community Invasive Species Network

- **Protect U.S. has developed scripted presentations, e-learning modules, and K-12 lesson plans on various exotic invasive species topics.**

- **Electronic presentations, with speaker notes, are available for educators to use at local training sessions. See "educational material" on their website.**

- **Protect U.S. Coordinator: Stephanie Stocks (sstocks@ufl.edu)**

Thank You!