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

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A Consortium of Regional Networks

Protecting Agriculture in America’s Heartland

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www.npdsn.org
What Does NPDN Look Like?

A Partnership between NIFA, APHIS, and LGUs

NPDN:
Founded 6/2002
USDA/Homeland Security

Map of the United States with regions divided into different networks:
- Western Plant Diagnostic Network
  - University of California, Davis
- Great Plains Diagnostic Network
  - Kansas State University
- North Central Plant Diagnostic Network
  - Michigan State University
- North Eastern Plant Diagnostic Network
  - Cornell University
- South Eastern Plant Diagnostic Network
  - University of Florida
- National Agricultural Pest Information System
  - Purdue University
National Plant Diagnostic Network

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

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 the number of parishes in which ASR has been found on 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 soybeans the growth stage was R5. On August 15th ASR was confirmed in two parishes, Rapides and Tensas.
Private Site

Expanded mapping tools including forecast models

Crop and Pest Drop-down menus

Data and Commentary Tools

Date Selection Tool
ipmPIPE System

Currently active ipmPIPEs include:

- soybean rust
- legume pests & diseases
- curcurbit downy mildew
- onion pests & diseases
- southern 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
Welcome to iPiPE … "Progress thru Sharing"

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

IPM Elements
IPM Elements
Lists of IPM Practices
Learn More..

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

Repository Site
National Pest Observation Repository
Bugwood
Learn More..

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

Intern Site
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 pseudothecium removal from an apple
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.
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.

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

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

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. 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!