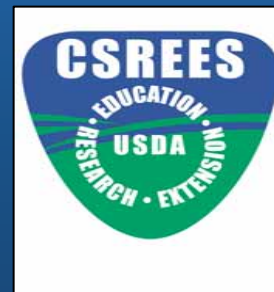


Current Policy Perspectives from CSREES and USDA

Kitty F. Cardwell

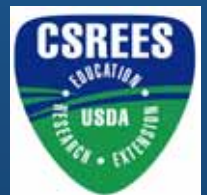
National Program Leader, Plant Pathology
CSREES Washington DC

2006 National Soybean Rust Symposium
St Louis, MO
Nov 29-Dec 1, 2006



CSREES Mission

- CSREES' unique mission is to advance knowledge for agriculture, the environment, human health and well-being, and communities by supporting **research**, **education**, and **extension** programs in the Land-Grant University System and other partner organizations.



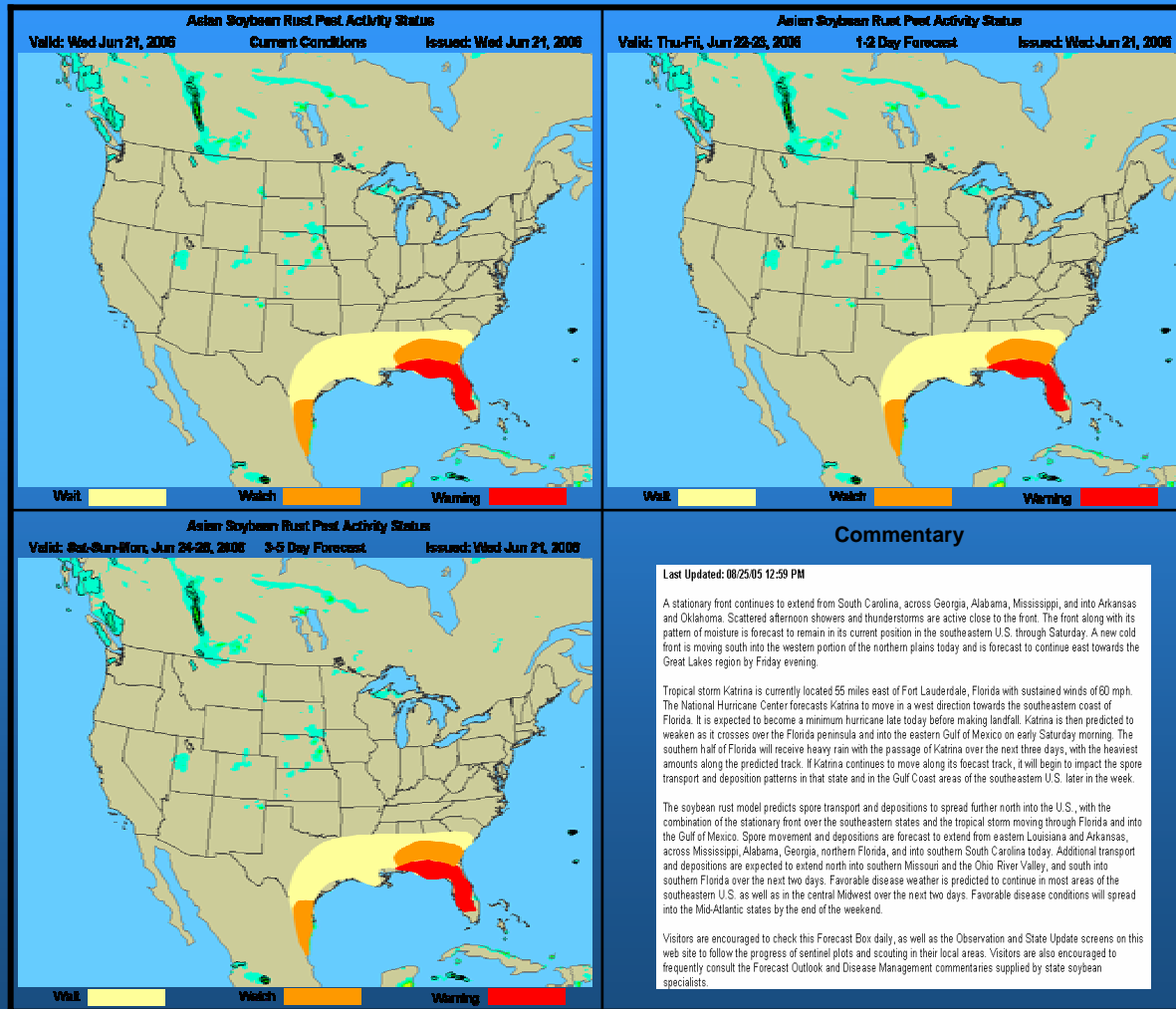
Plant Systems Programs for Soybean Rust

- Research (Grants programs)
 - NRI Plant Biosecurity
 - Critical & Emerging Issues
- National Plant Diagnostic Network
- Regional IPM Centers
- Pest Information Platform for Extension

Soybean Rust and Related Research Programs

- **NRI Plant Biosecurity~ \$2 ¼ million**
 - Aerial Dispersal of Soybean Rust Spores
 - A GIS and Web-Based Disease Monitoring, Forecasting, and Information Delivery System
 - Mass Spectrometry for the Proteomic Detection and Analysis of Plant Pathogenic Fungi Including Soybean Rust Testing Strategies and Tools for Organic Soybean Producers
- **Critical and Emerging Issues~ \$370 k**
 - Evaluation of Fungicide Application Methods and Efficacy
 - Testing Strategies and Tools for Organic Soybean Producers
 - Ensemble Modeling Support and Documentation for PIPE
 - Standardized Practical Method for Detecting Legume and Soybean Viruses for PIPE

Ensemble Approach for Epidemiology



Regional IPM Centers

- Established in 2000 to respond to pest management challenges with coordinated regional and national efforts
 - Eight specific objectives
 - National IPM Roadmap defines broad objectives/desired outcomes
 - Contribute to three CSREES goals
- Provide regional infrastructure
 - The will existed previously, but the means were lacking
 - Focal point for regional team-building efforts, communication networks, and stakeholder participation
- Four regions
 - North Central, Northeastern, Southern, Western
- Funding from Center grant ~ \$1 million per region annually
 - Competitively awarded every four years (next in FY 2007)

Benefits of Regionalization

- Local clientele benefit from bigger pool of expertise and resources
 - Also, potential to harmonize recommendations across state lines
- Broad access to science-based information, regardless of the state it comes from
- Opportunity to form new collaborations & non-traditional partnerships
 - Broader input from diverse set of stakeholders
- Potential for bigger impacts & broader recognition of successes
 - Enhanced (national) accountability
 - Stronger advocacy for programs

Benefits of Regionalization (cont.)

- Opportunities for faculty & staff to engage, avoid isolation
- Can be efficient way to address needs of small or specialized groups when individual states cannot justify full-fledged effort
 - E.g., specialty crops, niche markets
- Minimizes redundancy, stretches available resources – better use of existing resources
- Benefits can increase during shrinking resource base
 - Enhanced opportunity to share information across state boundaries

Major Hurdles

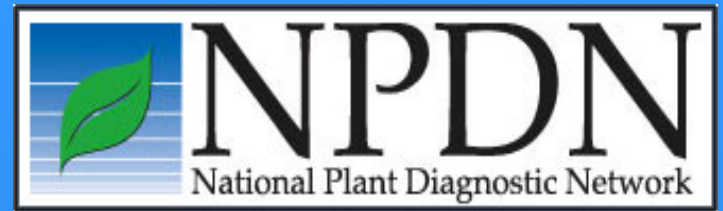
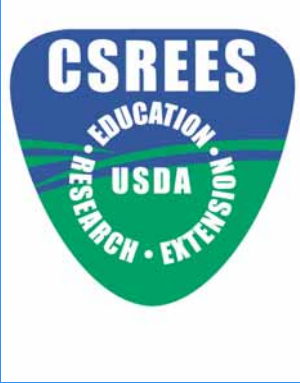
- Faculty, clientele and legislators can be territorial
 - Preference for local control
 - Competition for resources & prestige
- Lack of political support base in Congress – representatives are elected based on local issues & ability to bring home federal \$
 - Thus, more difficult to win support for regional programs vs. those that assure funding for state and local programs

About the Money . . .

- Total two-year income = \$17.7 million
 - 17% increase in second year (FY 2004)
 - Diversification occurred, will it continue?
- Core operations consume 15% of income (indirect costs not included)
 - Salaries, supplies, travel, advisory committees, review panels
- 72% of income is invested in state-based projects

Pest Alerts Developed

- Key educational piece for invasive species
- Collaborators include NPDN, APHIS, ARS, FS
- Over 1.2 million distributed, including to a retail garden center near you!
- Pest alerts developed for:
 - West Nile Virus
 - Asian Lady Beetle
 - Soybean Rust
 - Sudden Oak Death
 - Soybean Aphid
 - Ralstonia
 - Brown Marmorated Stink Bug



The NPDN and Soybean Rust

- Diagnostician training workshops
- First detector programs
- Exercises
- Diagnostic lab infrastructure enhancement
- Diagnostic and data upload support



NPDN DIAGNOSTICS SUBCOMMITTEE: Picture Clues and SOP

	Picture Clues for Plant Diagnostic Laboratories <i>Phakopsora pachyrhizi</i> and <i>P. meibomia</i>	
		
		

Commonly known as:
Soybean Rust


Host Range:
Soybean, Kudzu, yellow sweet clover, many members of Fabacea (bean) family

Symptoms:

- Early symptoms may be confused with bacterial pustules, brown spot and bacterial blight.
- Infected plants initially develop symptoms on their lower leaves.
- The plants usually experience a yellowing of the leaves followed by defoliation.
- Early maturation of the plant may occur when the infection is severe.
- Lesions may be present on the leaves, petioles, pods, and stems (Figures 1-4).
- Lesions are typically small (2 to 5 mm²) and the color may appear to be dark red-brown or tan, but grey-green lesions are possible (Figures 3 & 4).
- Rust lesions contain multiple globular erumpent uredinia.
- Urediniospores (figure 5) are released through a round ostiole on the uredinia and are found throughout the season.
- Late in the season the less common telia and teliospores may be found. They are waxy, dark and erumpent. Teliospores will germinate and produce basidiospores in the lab.
- *Phakopsora pachyrhizi* and *P. meibomia* telia and teliospores are morphologically different. However, Real Time PCR must be used to determine the species. (United Soybean Board 2002, Miles et al. 2003, and Palm 2004)

Images:


		
Figure 1. Yellowing of cotyledons with soybean rust lesions. (Jed Fiedelik, USDA, ARS, Ft. Detrick, MD)	Figure 2. Soybean Rust lesions on a petiole. (Jed Fiedelik, USDA, ARS, Ft. Detrick, MD)	Figure 3. Soybean leaf showing early symptoms of rust. (Jed Fiedelik, USDA, ARS, Ft. Detrick, MD)








National Plant Diagnostic Network

**Standard Operating Procedure for
Plant Diagnostic Laboratories**

Soybean Rust
Phakopsora pachyrhizi and *P. meibomia*



VERSION 1.9

				
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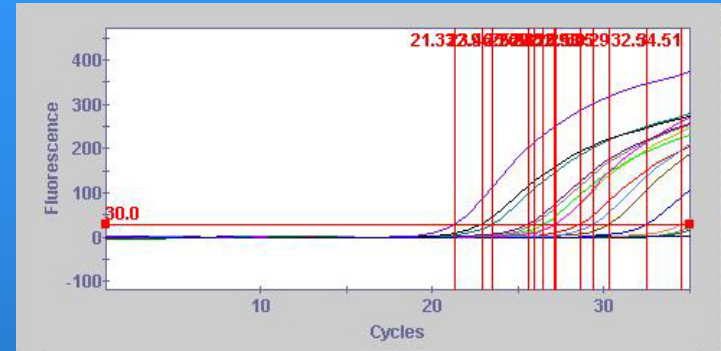
NPDN Diagnostics Training

- SBR workshop with USDA/APHIS
- SPDN hands-on diagnostics workshops
- NCPDN PCR techniques training for SBR
- Coming: Training for Mexican counterparts



Cooperative Project to Validate PCR Identification of SBR

- Partners in evaluation
 - USDA/ARS
 - USDA/APHIS
 - Cornell, Kansas State, Michigan State, Univ. of Florida, and Univ. of Tennessee
- Both conventional and RT PCR procedures evaluation
- Results consistent across labs
- Results published in Plant Health Progress



Exercise Scenarios

- 19 SBR exercise run
- 22 States involved
- Exercises helped develop partnerships among NPDPN labs, state departments of agriculture and USDA



Exercise Log Aid in Tracking and Documenting Exercise Events

NPDN Exercise Evaluation - Microsoft Internet Explorer provided by MSN

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss MSN Messenger

Address http://www.pdis.org/ExerciseScenarios/Scenarios/01_SoyBeanRust/report.aspx Go Links >>


Event: 6/11/2003 6:05:00 PM UTC [Reported: 6/11/2003 12:09:47 PM CST]
UNL Diagnostic Lab
I called Vicki Wohlers, state SPRO, to inform her of the suspect soybean rust sample that came into the UNL diagnostic lab this morning. I notified her that a sample will be sent to the diagnostic lab at KSU and also to the APHIS lab in MD.
- Jennifer Chaky

904: Receipt
Event: 6/11/2003 6:30:00 PM UTC [Reported: 6/11/2003 1:10:03 PM CST]
Nebraska Department of Agriculture, Lincoln, NE
Received call from Jennifer Chakey, UNL Plant Pathology diagnostician, at approx. 11:50 am who informed me that a suspect soybean rust sample had been received at the Triage Lab. She informed me that the sample would be sent onto the Expert Lab and also to the APHIS Confirming Diagnosis Designate. I also got information from Jennifer such as: who brought the sample in, location information on the field such as county, section, township, range and/or GPS reading. I then followed protocol (what we will do if sample is positive) for containment and delimitation of the site in coop. w/Steve Johnson, SPHD.
- Vicki Wohlers

911: Receipt
Event: 6/11/2003 6:00:01 PM UTC [Reported: 6/11/2003 1:30:03 PM CST]
Lincoln
I recieved a call from Jennifer Chaky about possible soybean rust in sample collected by Jim Stack. Questions that I have is that I would like to have more information on the location of the sample, what county did it come from, amount of acres in field. I believe we need to be prepared to respond to this sample maybe delimit the area.
- Steve Johnson

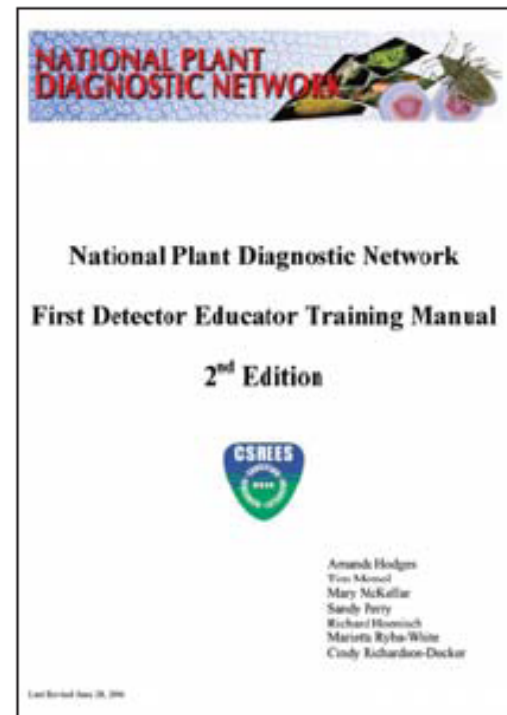
918: Notification
Event: 6/11/2003 8:30:00 PM UTC [Reported: 6/11/2003 2:32:46 PM CST]
APHIS Beltsville
I called Bob Spaide (who had just landed in Arizona) to tell him of the suspect that was being sent to me as part of the simulation. I should have called him earlier (and I imagine I would have had it been the real thing but thats no excuse!).
- MaryPalm

925: Notification
Event: 6/11/2003 3:30:00 PM UTC [Reported: 6/11/2003 2:47:27 PM CST]
UNL Diagnostic Lab
I received a call from Jim Stack, UNL cooperative extension staff, to notify me that he was going to be delivering a sample to the UNL diagnostic lab which he believed may be soybean rust.

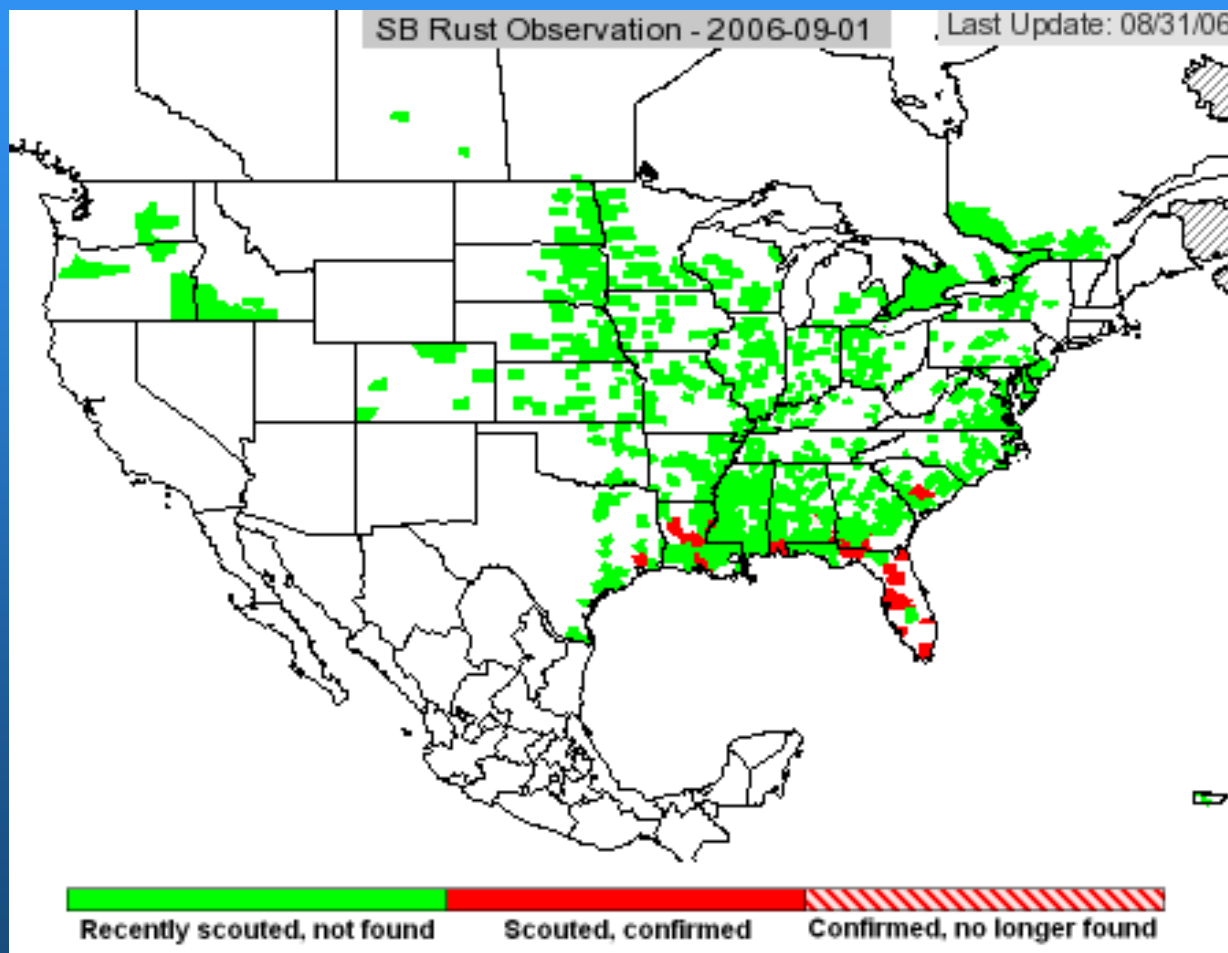


Done Internet

First detector Training



Diagnostics Support and Data Upload for Sentinel Plots and PIPE



Cooperative Partnerships for PIPE

- USDA/CSREES, USDA/RMA, & the Southern Region Integrated Pest Management Center (SRIPMC) at NCSU signed a cooperative partnership agreement that provided funding for soybean rust and aphid activities in 2006
- A new CSREES, RMA, SRIPMC cooperative partnership has now been signed to maintain the SBR PIPE and some expansion for the 2007 growing season.

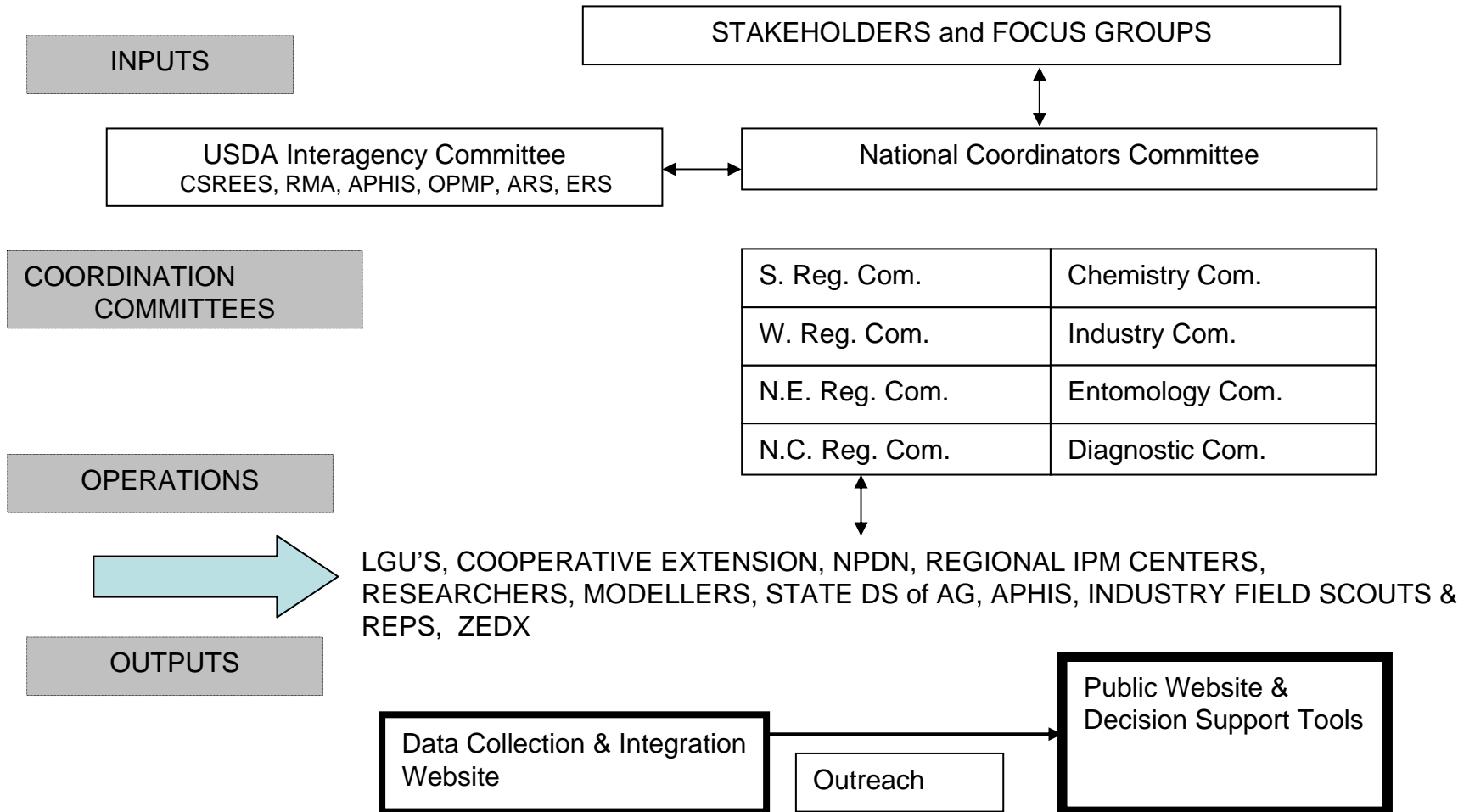
2007 Soybean Rust Services Management Path

- A new PIPE Steering Committee has been established with **Don Hershman** as chair (2006-2008)
- **CSREES (Kitty Cardwell and Marty Draper) and SRIPMC (Jim VanKirk)** will continue to have management and accountability responsibility for www.sbrusa.net components
 - FY 2007 funding for sentinel plots, mobile teams, diagnostics, IT Operations via ZedX, & educational programming will be routed through the SRIPMC through RMA/CSREES/NCSU partnership agreement (under the federal oversight of CSREES: Cardwell, Draper, Otto)
- **Julie Golod**, at Penn State University, **will continue** to serve as data manager
 - Will continue to work with independent scouts, industry, & ensure smooth data movement through the system
- **Scott Isard** at PSU & **Joe Russo** at ZedX **will continue** to provide meteorology and modeling expertise as well as manage the www.sbrusa.net website
 - Will work with SRIPMC & RMA to develop additional SBR risk management documentation functionality

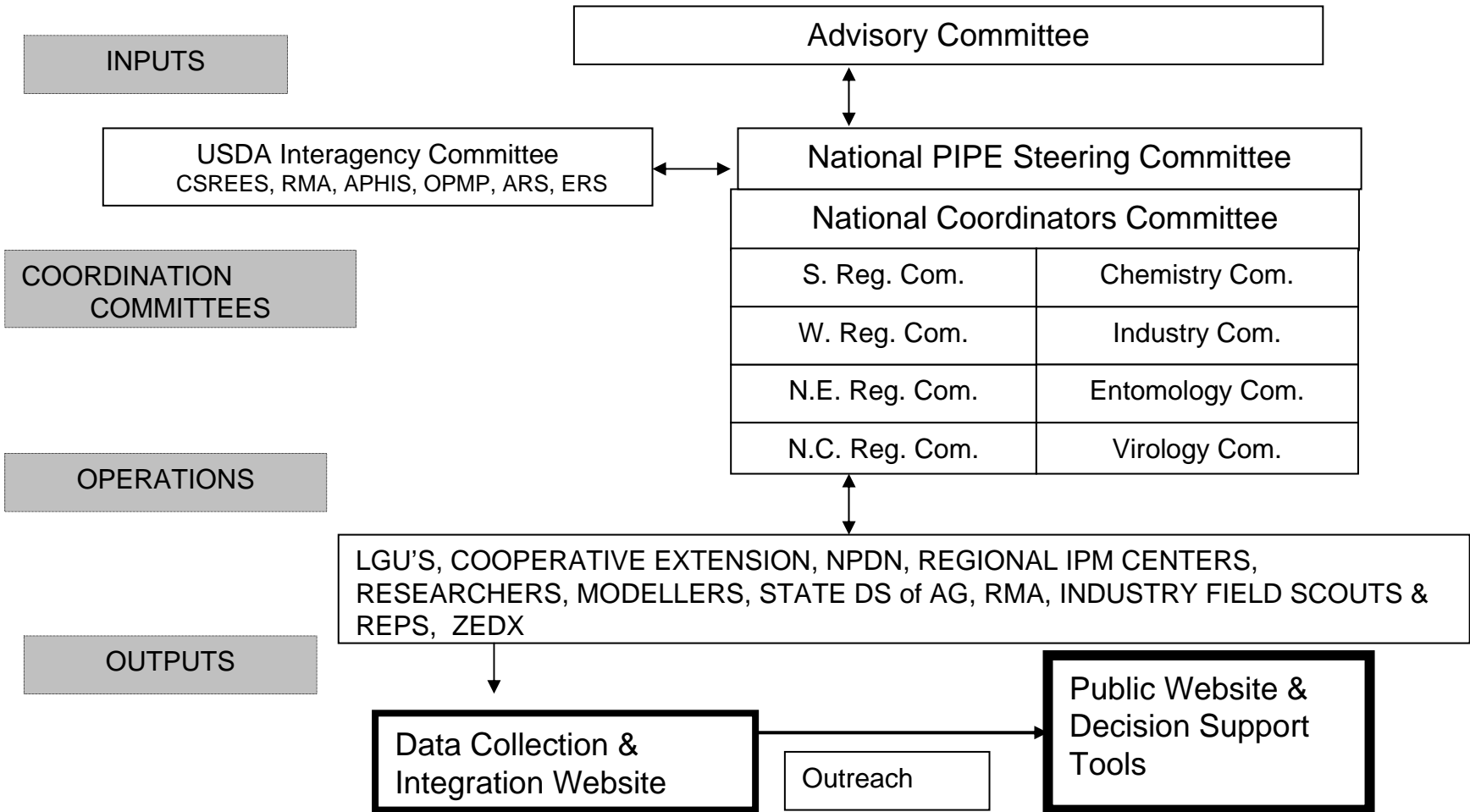
PIPE Funding

- 2003 \$1 million for model development
- 2004-2005 ~\$2.6 million from USDA for soybean rust system
- 2005-2006 \$2.7 million from USDA's Risk Management Agency via CSREES
- 2006-2007 \$3.5 million pledge from RMA + \$2.27 million in President's budget via CSREES

PIPE 2006 Soybean Pest and Disease Management Coordinated Framework Infrastructure



Pest Information Platform for Extension 2007 Legume Pest and Disease Management Coordinated Framework



PIPE Steering Committee

Estd October 2006

- Initiate and/or maintain a competitive RFP process
- Develop a management structure
- Do planning
- Set policy and establish processes
- Develop a business plan
- Set goals
- Monitor activities
- Ensure evaluation
- Do fundraising and maintain sustainability
- Oversee public relations
- Coordinate among all players for efficiency
- Ensure stakeholder input

PIPE Steering Committee

- The vision is that PIPE will help maximize economic returns, and improve social welfare and environmental stewardship through the promotion of efficient and coordinated IPM decision support systems.
- The mission for PIPE is to be a dynamic, integrated national system using information technology to provide 'one stop shopping' for useful tools and reliable information to IPM practitioners.
- The strategy is to enhance the use of these IPM decision support systems to include other plant diseases, insect pests, and weeds. The platform will serve local, regional, and national scale interests; help growers document their management actions for crop insurance claims, and provide a structure that can be quickly deployed in response to threats from exotic pests. ***The initial focus will be on plant pests of agricultural systems***, however other, broader scope applications will be considered by the steering committee.

Potential expansion for the tool

- Scheduled
 - Legume viruses and other pest/disease complexes
 - Sweet Corn lepidoptera
 - Barley head blight
- Other possible uses
 - Citrus diseases
 - Wheat stem rust and stripe rust
 - Any introduced or migratory pest including arthropods
 - Mapping function could be used for invasive and weedy species, as well.

Restrictions to expanding the network?

- Funding
- Collaboration building
- Capacity in diagnostic labs
- Capacity of extension specialists

Insured Bean/Pea Acres of States NOT in 2006 PIPE

- WY 2,871,801
- ND 1,347,665*
- MT 258,721
- CA 29,498
- UT 3,971

* Only 5 sentinel plots in 2006.

2005 Dry Bean Indemnity

\$1.5 billion

State	Crop	Cause of loss	Acres	Liability	Indemnity	Loss ratio
CO	DRY BEANS	Plant Disease	824	218,706	116,791	4.30
ID	DRY BEANS	Plant Disease	76	32,136	32,137	9.34
MI	DRY BEANS	Wildlife	96	12,345	7,604	4.28
MN	DRY BEANS	Plant Disease	437	134,290	25,388	2.42
MT	DRY BEANS	Plant Disease	157	20,777	5,328	2.14
ND	DRY BEANS	Plant Disease	1,228	257,001	106,457	3.24
NE	DRY BEANS	Plant Disease	2,508	790,488	353,367	4.15
TX	DRY BEANS	Plant Disease	72	12,238	9,289	5.06

Summary

- CSREES expects to continue to support competitive research, the Regional IPM Centers, NPDN and the PIPE;
- USDA NPLs will continue to be involved in the management of these efforts;
- PIPE and NPDN databases will learn to 'cross-talk' to avoid data entry duplication;
- PIPE will need to grow, but Soybean Rust will continue to be the central focus.

More detailed information is
available.

We welcome your questions &
comments!

Contact: Kitty Cardwell or Marty Draper
kcardwell@csrees.usda.gov &
mdraper@csrees.usda.gov