



# Soybean Rust (*Phakopsora pachyrhizi*)

Burleson Smith

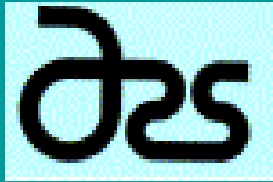
USDA, Office of Deputy Secretary

Washington, DC





# USDA, Office of the Deputy Secretary



**Agricultural Research Service**



**Office of Pest Management Policy**



**Animal & Plant Health Inspection Service**



**Cooperative State Research, Education,  
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## Pesticide Data Program



Pest Management Centers are sponsored by the USDA, Cooperative State Research, Education, and Extension Service





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American Soybean Association



United Soybean Board



U. S. Environmental Protection  
Agency



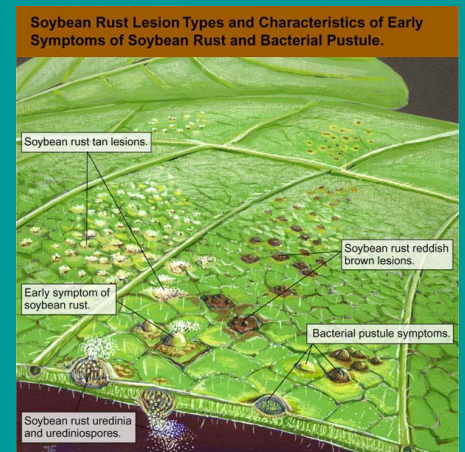
# Soybean Rust (*Phakopsora pachyrhizi*)

Kent L. Smith, Ph.D.

Plant Pathologist

USDA, Office of Pest Management Policy

Washington, DC



# History

- 1914 – first reported from the Philippines
- Over next 80 years, reported as a serious pathogen on soybeans throughout Southeast Asia and in the southwest Pacific: China, India, Taiwan, Japan, Australia, etc.
- 1994 – discovered in Hawaiian Islands
- 1998 – entry into Africa: Zimbabwe, South Africa, Nigeria, etc.
- 2001 – entry into South America: Paraguay, Brazil, and Argentina

# Status

- Unknown north of Brazil in Western Hemisphere
- Lesser form of soybean rust, caused by *Phakopsora meibomia*, is present in Caribbean, Central and South America – does not cause significant yield losses

# Impact

- **Yield losses** in soybeans – reported to be 10 to 50% of area yield where established, up to 90% or greater in selected fields
- **Minor crop impact** – soybean rust pathogen has wide host range on leguminous crops – lima beans, black-eyed peas, kidney beans, green beans, etc.
- **Economic impact** on U.S. Economy – estimated by USDA/ERS in 1984:
  - **Losses** of \$0.6 to 19.9 billion for 4% to 25% yield loss, respectively
  - **Benefits** of higher prices for soybeans and corn
  - **Net effect** of \$0.2 to 4.5 billion

# Research

- **Host resistance** – screening of existing soybeans by ARS
- **Sequencing** – ARS initiating work
- **Comparative efficacy trials:**
  - **Africa** – funded by United Soybean Board directed by ARS
  - **South America** – funded by registrants directed by ARS
- **Application methods** – funded by CSREES directed by ARS and states



# North Central Region Pest Management Center

Response to Soybean Rust



# OPMP Request

- OPMP asks for pulse of North Central States on soybean rust – August 1, 2002
- NCPMC sends out request to NC states
- 8 states respond

# NC Response Plan

## Create a Multistate Research Committee

- Early September, process started for a Multistate Research Activity
- Contacted Steve Slack – administrative advisor for NCR-137 Soybean Diseases
- Draft for NC-500 series committee (Rapid Response Research Activity) reviewed by CSREES
- NC-500 committee open to all states

# Multistate Research Proposal

- On November 15, 2002, a call for participation was released
- December 16, 2002, deadline for participation
- First meeting will be in February, 2003

# NC-500 Initial Objectives

- Develop survey procedures
- Develop education materials for soybean rust identification
- Identify potential impact of soybean rust
- Identify & evaluate tactics for soybean rust control & communicate with user community
- Identify & prioritize information & research needs. Add specificity to objectives 1-4.

# For More Information

- To become a member of the NC-500 series committee, contact Shelley Whitworth at 330/263-3701
- For more information on the North Central Pest Management Center and its role, contact Lynnae Jess at 517/432-1702



Teung F. Chin, Ph.D.  
Office of Pest Management Policy



## With Soybeans on Label

Quadris (Azoxystrobin)

Bravo (Chlorothalonil)

Cinnacure P1005 (Cinnamaldehyde)

## Soybean Rust?

Phakopsora spp.

Awaiting additional data

rust

(cont. on next slide)

## With Soybeans on Label

Trilogy (Neem Oil)

Messenger (Harpin Protein)

Various seed treatments

Coppers, sulfur, phosphorous  
salts, others

## Soybean Rust?

rust

Plant disease management/  
Plant growth enhancement

The BASF logo is displayed in a white rectangular box. It features the word "BASF" in a bold, black, sans-serif font. Above the letters "A" and "S" are the words "AGRI" and "NUTRI" respectively, and below "S" and "F" are the words "SOLUTIONS" and "FOR LIFE".

## BASF's Own Efficacy Trials

- In Brazil and South Africa
- Pyraclostrobin (BASF 500)
- BASF 510
- BASF 516 (BASF 500 & BASF 510)





# Bayer's Own Efficacy Trials

- In Brazil and Argentina
- Tebuconazole (Folicur)
- Trifloxystrobin & Propiconazole (Stratego)





## Dow Agro Sciences' Own Efficacy Trials

- In Brazil
- Myclobutanil (Rally)
- Mancozeb (Dithane)
- Fenbuconazole (Enable)





# Sipcam Agro, USA's Own Efficacy Trials

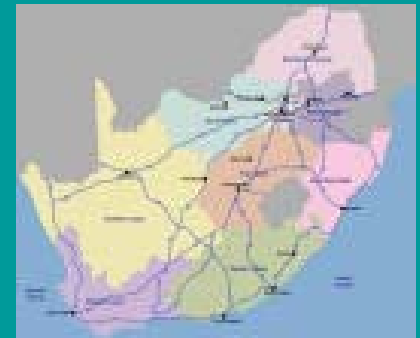
- In Brazil
- Tetraconazole (Eminent)
- Chlorothalonil (Echo)





# Syngenta's Own Efficacy Trials

- In South America and South Africa
- Azoxystrobin (Quadris)
- Chlorothalonil (Bravo)
- Propiconazole (Tilt)



# EPA Data Needs for Triazoles 11/21/02

- Additional tox data for free triazole and conjugates
- Residue monitoring data
  - USDA PDP/EPA/Triazole Task Force Collaborative effort underway
- Feeding and Processing studies
- Aquatic metabolism studies

# EPA Data Needs for Triazoles 11/21/02

(cont.)

- Groundwater and drinking water monitoring data
- Potential for dislodgeable foliar (DFR) and turf transferable residue (TTR) data
- Triazole Task Force will soon respond to EPA

# Next Steps

- Majority of USDA and registrant efficacy data by March-May '03
- USDA and registrants' efficacy info will be made available to the four Regional Pest Management Centers/State plant pathologists
- Posting on the web, with registrant permission
- Section 3's and Section 18's for soybean rust will be supported

# SOYBEAN RUST

*A collaborative plan to minimize effects  
of an introduction on US growers*

**Bob Spaide  
PPQ – SEPPC  
Riverdale, MD**

