Sentinel Plots: What can we learn after 5 years and should we keep going???
Outline

• History
• Purpose of sentinels
• Disease monitoring in 2004-2006
• What have we learned?
• What’s the value of the sentinel system?
• What will we know in 5 years?
• Should we continue the sentinel system?
History

- Soybean rust sentinels first established in Africa

- Brazil: >1,500 sentinel plots
  - Monitor
  - Scout
  - Spray
Purpose of sentinel plots

• Provide warning to growers

• Indicator for fungicide applications

• Provide data for development of a forecast/warning system

• Provide data for research

• Provide data for PIPE
  Pest Information Platform for Extension and Education

• Provide a better understanding of disease epidemiology – spread, etc.
Disease monitoring

2004: 39 counties
2005: 132 counties
2006: 236 counties
Weather in 2006

Information provided by the U.S. Weather Service and http://www.sbrusa.net/
What have we learned so far?

- Record of the positive and negative sites

- Conditions for disease have to be favorable
  - Environment
  - Available inoculum

- Shows us effect of weather on disease spread

- Over-wintering areas and additional hosts

- Disease progress, rate of development—timing is critical!
What have we learned so far?

• Improved knowledge of soybean diseases, insects, and physiology

• Can significantly reduce disease in commercial fields when detected in sentinels in a TIMELY manner

• Some areas in southeast have disease—other areas have not—need to address questions concerning this

• Need for consistency in data collection in order to have USEFUL info for future
What is the value of the sentinel system?

- Economic Research Report, USDA (ERR-18), April 2006

- Info is valuable to producers even in a ‘low’ rust year

- 2005: increase in producers’ profits by $11-$299 million
  - Depends on info quality, farmer’s beliefs and actions
  - Consistent data collection, etc.

- Sentinel system benefits exceed budgetary costs of $2.6-$5.0 million
How is the sentinel system valuable?

- In southern states, sentinels often had first confirmed detections
- Improved scouting and management recommendations
- Improved crop health and yields with timely pest management...

$$$$$$$$$$$$$$
What will we know in 5 years???

• Will not have ALL the answers

• Disease progress within each year and across several years, across several regions

• Disease correlation with weather across several years

• More reliable forecast models—may be similar to:
  – Fusarium Head Blight Risk Assessment Tool
  – Wheat Leaf and Stem Rust
  – Tobacco Blue Mold
  – Cucurbit Downy Mildew

• Improved detection techniques that may speed scouting process

• Better understanding of disease epidemiology, and timing between sentinel detection and fungicide applications
Should we continue sentinel plots?

• YES!!!!!!

• Soybean acreage will increase
  – Biofuel
  – Increase in market price
    (11/27: ~ $6.94 per bu)

• Sentinel monitoring will become even more critical

• We do not know what the weather will do...

• Need to know when to spray!!
Future monitoring... 
points to remember

- Info only as good as data collected
- Consistent data needed
- Follow protocol closely
- Interstate and intrastate communication is critical
- Where possible, plant a range of maturity groups or multiple planting dates in order to ‘catch’ rust
- On occasion, rust can appear in commercial field and not in a neighboring sentinel plot!!!
Summary

• Soybean rust can be detrimental if undetected

• Sentinel system can provide an early warning for growers

• Reduce unnecessary fungicide applications

• Indicate when neighboring commercial fields need fungicide applications

• Improve yields

• Encourages more communication among extension personnel, researchers and producers
  - Improved knowledge of the crop
  - Data for development of a forecasting system

• Still a learning process...we do not have all the answers yet...still building a database, so we can have some answers down the road!
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