

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



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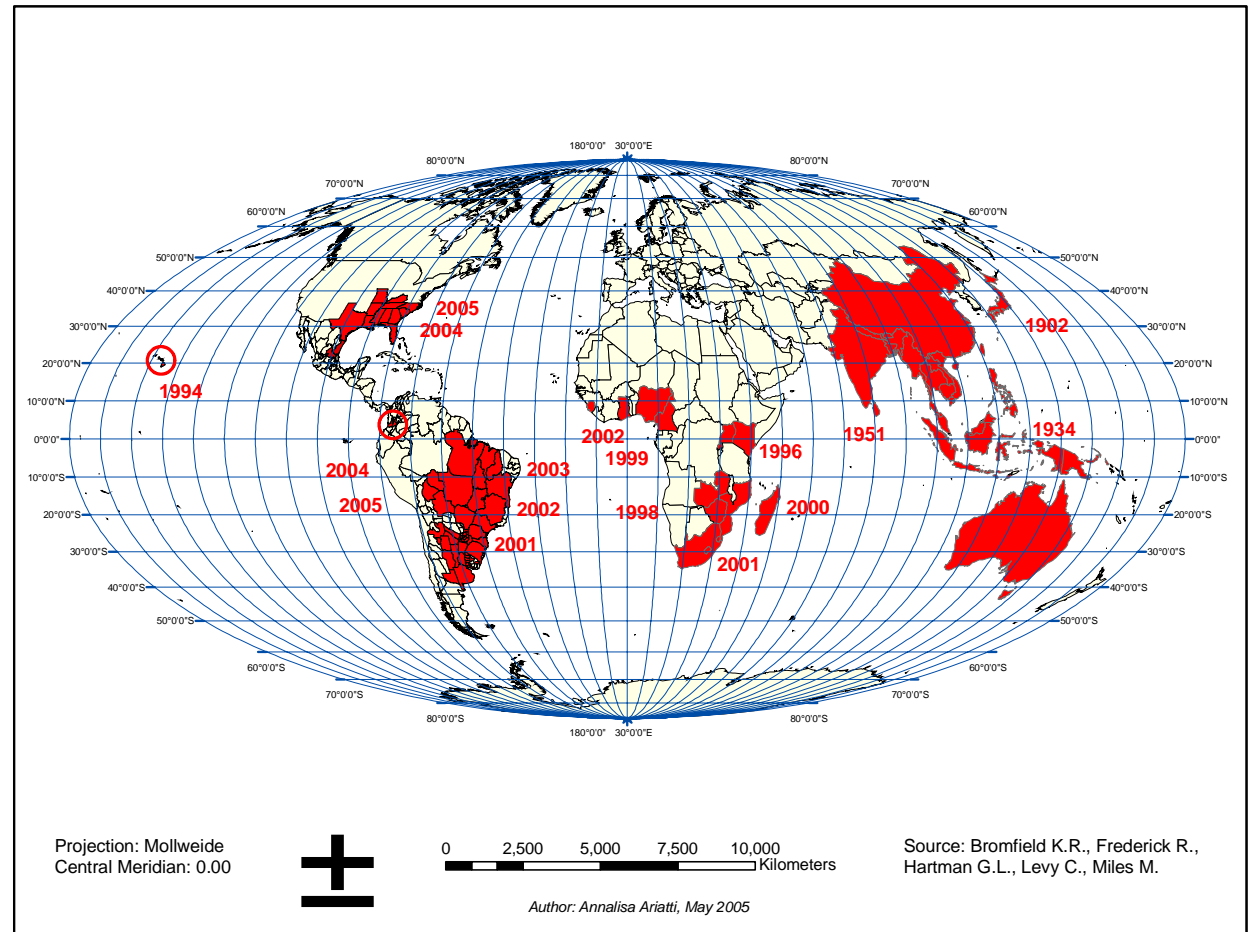


# Outline

- 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.

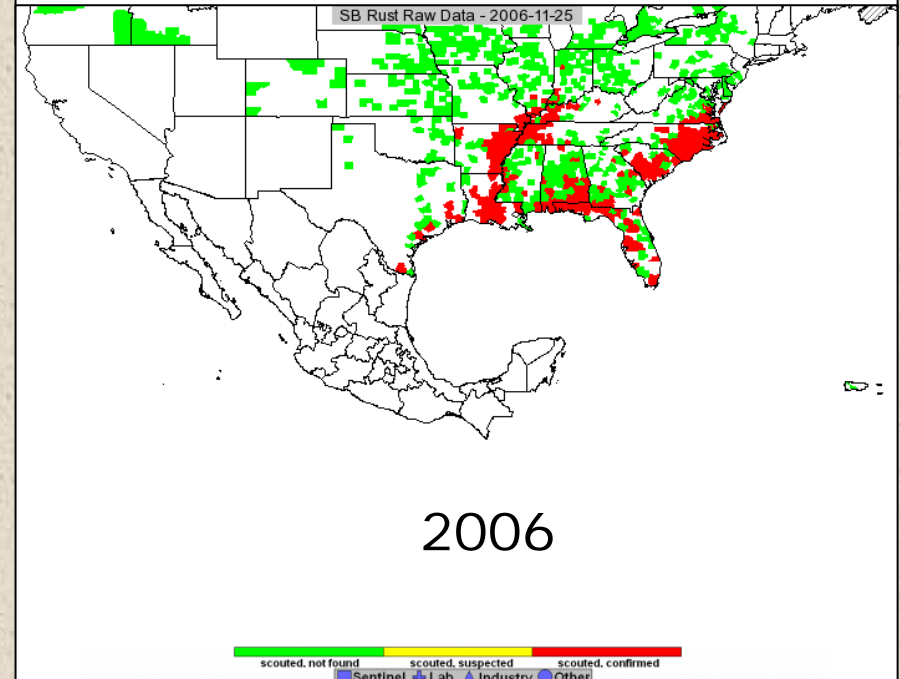
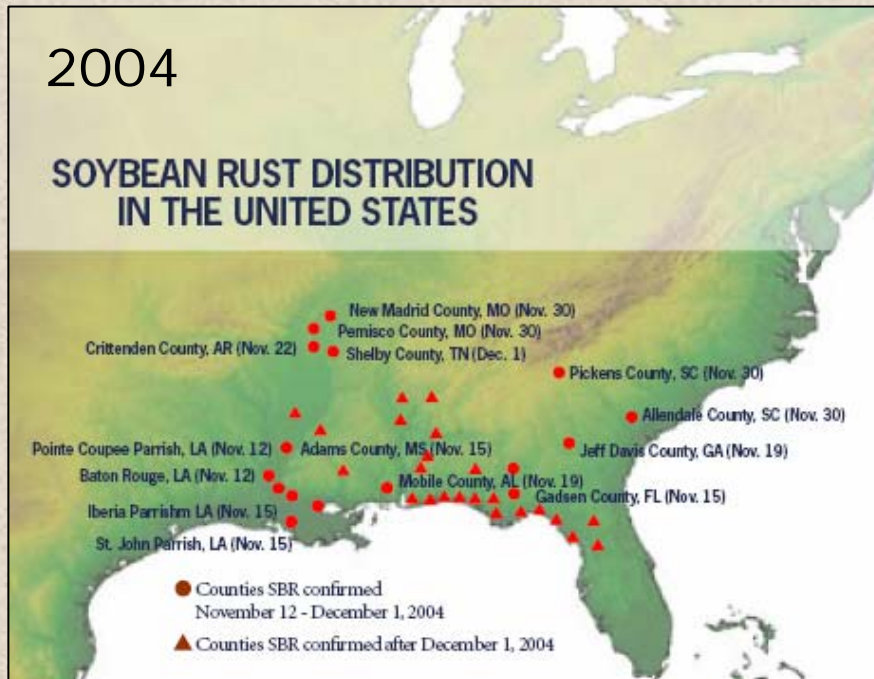
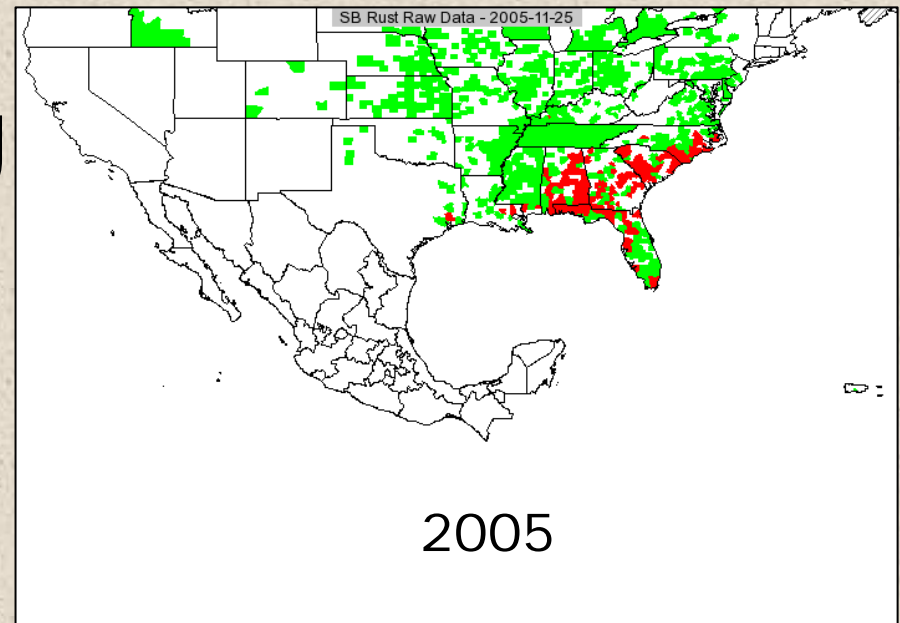


# Disease monitoring

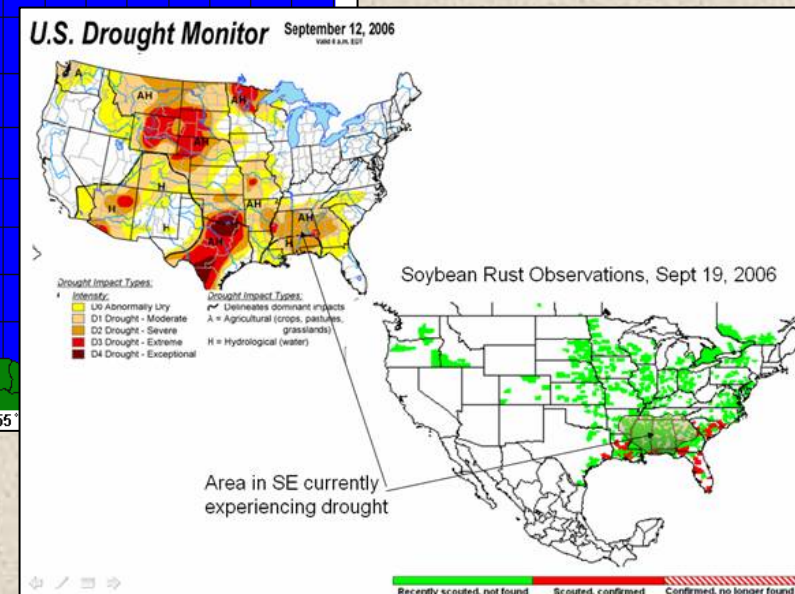
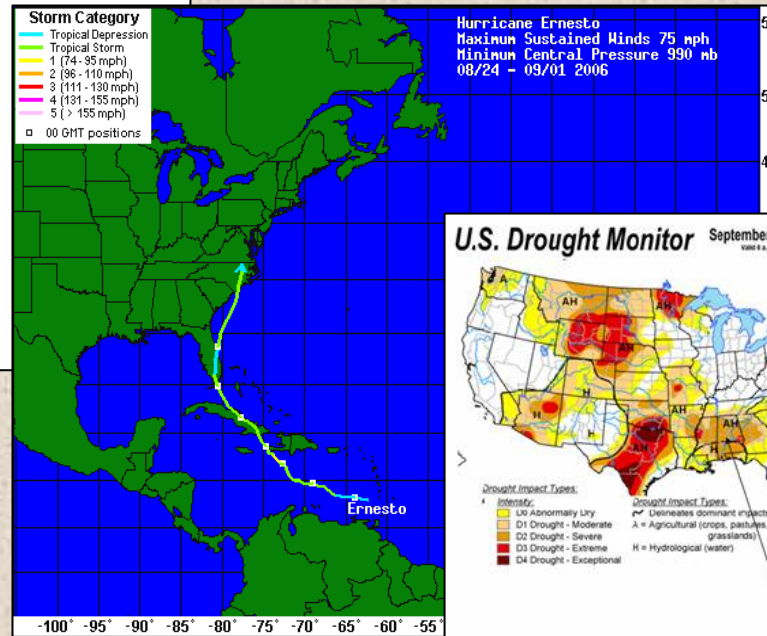
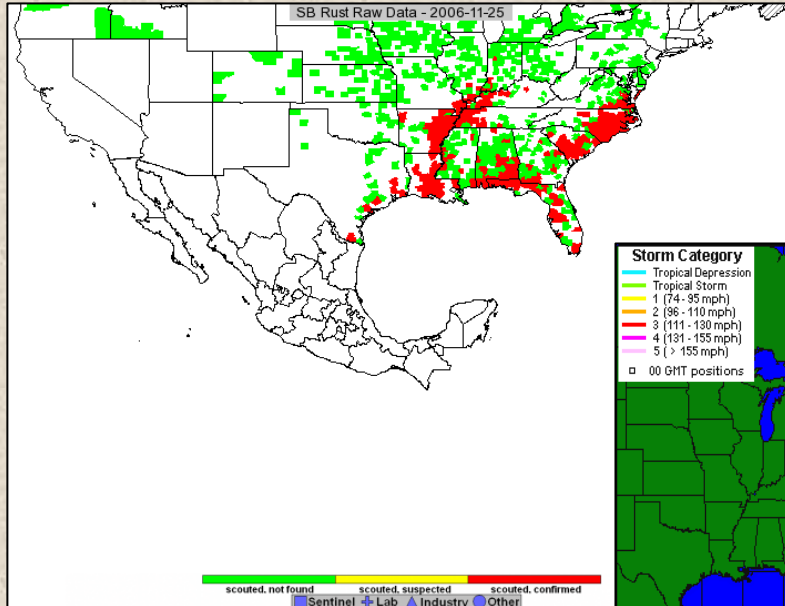
2004: 39 counties

2005: 132 counties

2006: 236 counties



# Weather in 2006



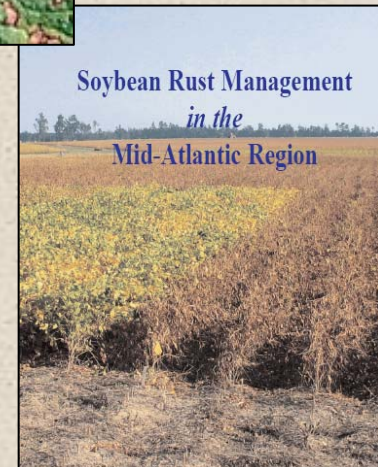
# What have we learned so far?

- 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!



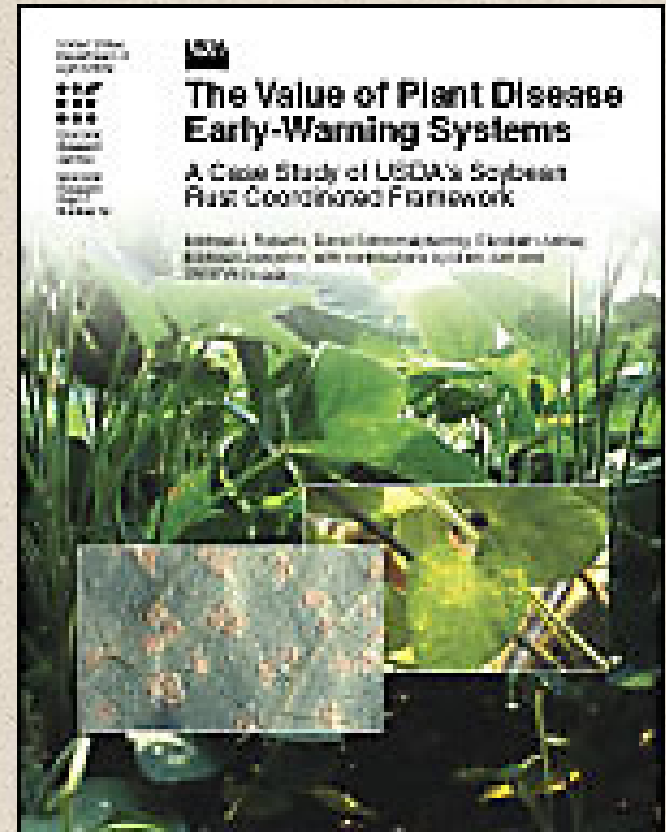
# What have we learned so far?

- 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

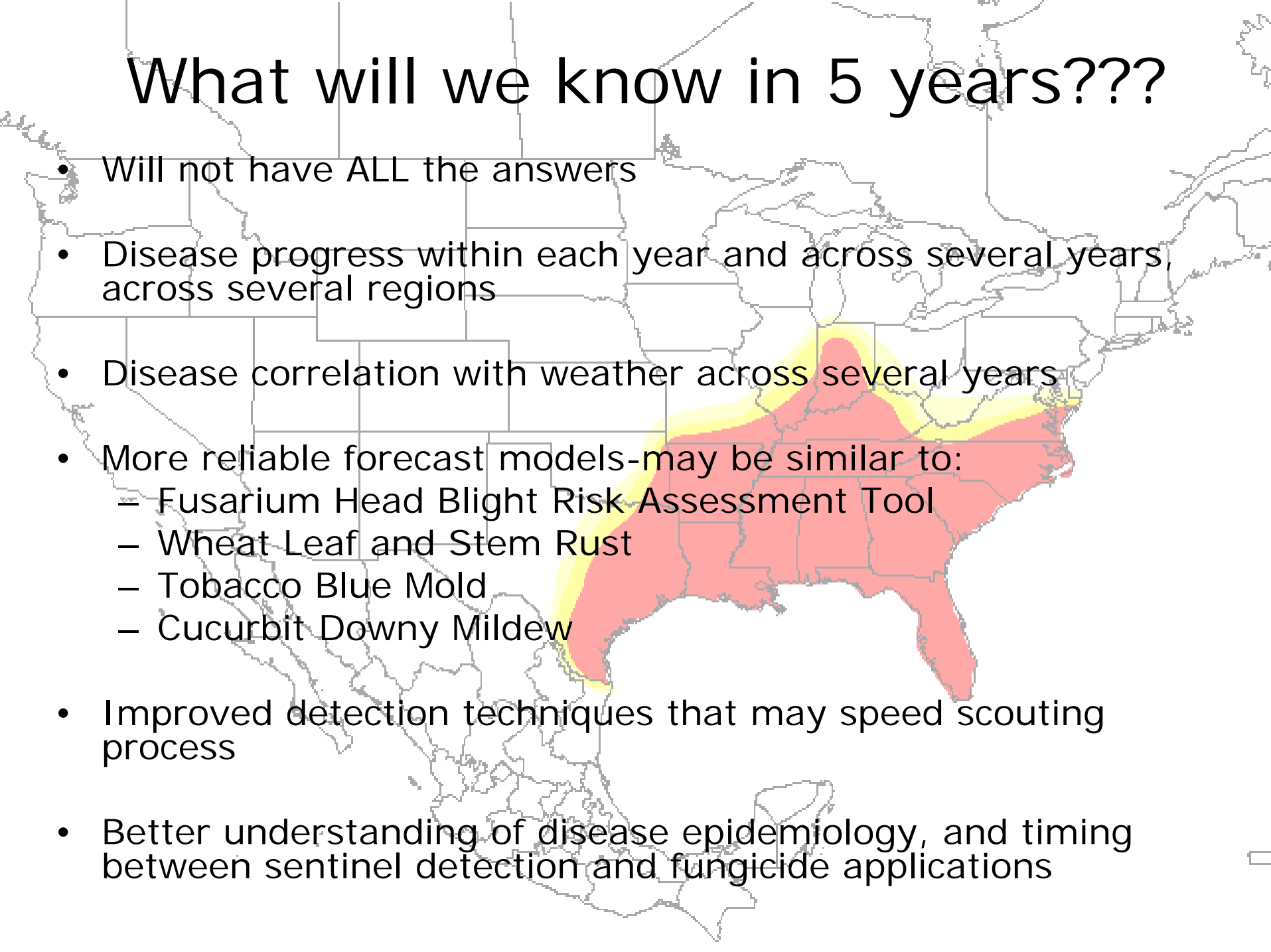


# How is the sentinel system valuable?

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

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# 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
- 
- A map of the United States with a shaded region in red and yellow. The red region covers the central and eastern parts of the country, including the Midwest and the Southeast. The yellow region is a larger area that encompasses the red region and extends further west and north, covering parts of the Great Plains and the northern Midwest. The map shows state boundaries and the outline of the United States.

# 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!

# Acknowledgements

- Soybean producers
- USDA-APHIS, Zedxinc, United Soybean Board, state soybean boards, NCRSP, NC State, Penn State, and all forecast modelers
- State coordinators and specialists, ALL extension personnel, research farm managers
- Julie Golod



**Thank You!**

