VOLUME I. ISSUE 1 MARCH 2005

USDA • APHIS • PPQ

CPHST NEWS
GIS SPECIAL EDITION

People

Places

Projects & Programs

Publications

Policy & Plans

Presentations

Philosophy

Inside this issue:

Overview

March 2005

For those in PPQ who work with Spatial Technologies (ST), such as GIS and remote sensing, these are exciting times. ST has been part of the scene for over two decades. However, we are finally bringing it into the fabric of daily work as a robust information management and decision support tool. In the following pages, a sampling of projects from CPHST labs demonstrate the breadth and depth of ongoing ST activities.

Each part of PPQ has an appropriate role and responsibility for ST. For example, CPHST is developing ST tools that better serve the needs of the field. We are also developing Enterprise System products: an integrated application of maps, data management, GIS data layers, and tools that solve problems across multiple programs, nationwide. Our NAPPFAST team has developed a predictive modeling tool to leverage more than a dozen pest programs. NAPPFAST risk zone maps help guide program managers to deploy field staff at the right place and time. Risk analysts also find NAPPFAST maps an excellent resource for their work.

CPHST scientists have learned a lot through fruitful engagement with our counterparts and friends in VS- Jerry Freier and the CEAH staff in Fort Collins. To enhance this synergy, Tom Kalaris plans to build ST capacity for CPHST at Fort Collins. CPHST scientists also work with other organizations such as ARS, the US Forest Service, Michigan State University, and Clark University to bring ST capability to PPQ. We are also exploring opportunities for international cooperation.

PPQ personnel have asked how to engage CPHST for support needs. The answer for small projects (three months or less) is to submit an Ad Hoc request. A short written request will trigger this process that vets and tracks the work to successful completion. For details, go to the PPQ home page, then CPHST, then click on "Work Requests."

Dr. Gordon Gordh and CPHST scientists see the benefits that ST can bring to essentially all PPQ programs. Many tangible results are already visible. However, this is only the beginning. Spatial Technology will provide the powerful means for PPQ to better fulfill the Safeguarding Mission.

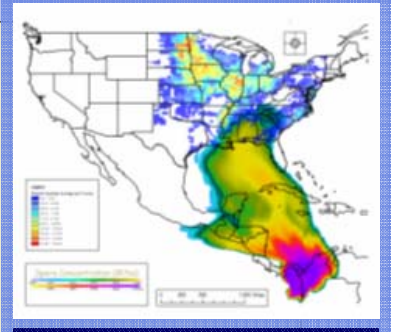
CPHST Spatial Technology Virtual Team

Submitted by Dan Fieselmann

Tracking Spread of Soybean Rust Using Spatial Technology

March 2005

CPHST-PERAL has an exciting project studying the spread of the invasive pathogen soybean rust. The project team includes **Glenn Fowler, Dan Borchert, Roger Magarey** (CPHST) and **Manuel Colunga** (MSU). The project includes North Carolina State University, Penn State University and the information technology company ZedX inc. Soybean rust was initially confined to Asia and Australia, but has been spreading to Africa and South America via atmospheric transport. Most recently it appeared in northern South America in 2004, becoming a major threat to US production areas. In its first year of funding (2003), the research group developed the Integrated Atmospheric Model System (IAMS) to track spore dispersal. The IAMS model is a three-dimensional atmospheric transport model that accounts for spore transport, survival and deposition. The model runs at 14-km^2 grid resolution. The system was used to predict the spore deposition pattern associated with the 2004 hurricane season. The model's results showed that weather conditions associated with Hurricane Ivan (September 2004) provided an opportunity for direct transport of viable rust spores into the southeastern U.S. The pattern of spore deposition predicted by the model suggested that the pathogen was widely distributed across Gulf Coast states and this was later confirmed by surveys (Figure 1). The CPHST team working with **Coanne O'Hern, Matt Royer** and **Osama El-Lissy** from the Pest Detection and Management Programs has been playing a key role in developing a coordinated framework for soybean rust for season 2005. The coordinated framework is an important USDA initiative that also includes CSREES, ARS, NPDN, Land Grant Universities, states and industry. The framework includes decision criteria, surveillance, prediction models, information delivery and outreach. As part of this effort the IAMS model will be used to provide daily updated maps of soybean rust deposition and epidemic development. These maps will be interpreted by soybean pathologists from Land Grant Universities and state Departments of Agriculture to provide stakeholders with simple warning maps of rust incidence at the county scale.



Spore dispersal from South America to US

Submitted by Roger Magarey