TRACKING SOYBEAN RUST: SENTINEL PLOTS AND SPORE TRAPPING

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Introduction

Tracking soybean rust's movement throughout the United States is an essential Integrated Pest Management technique. Crop advisors need to know where soybean rust is currently detected and if rust is moving northward so they can recommend appropriate management practices. During the 2005 growing season, soybean rust sentinel plots were coordinated in a 32 state area. Furthermore, spore movement was monitored through the use of two different style of traps.

Soybean Sentinel Plots

The 2005 soybean rust sentinel plot network was established in 32 states. These plots were intended to provide the means of first detection within a state or region. In Wisconsin, 22 sentinel plots were monitored in 19 counties by UW Extension, Agricultural Research Station and UW-Madison research personnel. Nationwide, an average of 25.75 plots were monitored/state. The Wisconsin, plots were monitored on a weekly basis from emergence to the end of August when the threat of soybean rust had ended. A national protocol was established to detect soybean rust at the 5% level of incidence. As a result 150 leaves were examined each week/plot for signs and symptoms of soybean rust. All questionable samples were sent to the UW Plant Disease Diagnostic Clinic. Although no positive samples were found, USDA protocol for handling the first potential soybean rust positive sample/state consist of sending a duplicate sample to the USDA laboratory in Beltsville, Maryland for official confirmation. Dissemination of this information was through the USDA's Soybean Rust Website, http://www.usda.gov/soybeanrust/ Additionally, the Plant Disease Diagnostic Clinic operated a toll free (866-787-8411) telephone recorded message which was funded by the Wis. Soybean Marketing Board. Plans are underway to identify a minimum of 15 soybean sentinel plots in Wisconsin for the 2006 growing season.

Spore Trapping

Two different spore trapping systems were studied in Wisconsin to determine if an early warning system was reliable and useful. These traps are considered experimental at this time. One of these trap styles was an active system which used a trap designed to collect and filter rainwater. Filter papers were changed after a rain event and were analyzed by the UW Plant Pathogen Diagnostic Clinic using Polymerase Chain Reaction analysis to determine if DNA from Asian soybean rust is present. Six of these traps were used at each of three locations, the Arlington, West Madison and Lancaster Agricultural Research Stations. The Wis. Association of Professional Agricultural Consultants also sponsored a network of rainfall traps during the 2005 field season. Soybean rust spores were not detected in either trapping network.

A passive spore trapping system was also studied using traps supplied by Syngenta. These traps were styled after a wind vane and a petroleum covered microscope slide was mounted inside the trap and replaced on a weekly schedule. Two traps were monitored in Wisconsin as part of a nationwide effort. Slides were sent by overnight express to Dr. John Rupe, Univ. of Arkansas, for visual analysis to determine if rust spores were present. One "rust-like spore" was detected in a trap located at the West Madison Agricultural Research Station.

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