Midwest regional risk forecast of soybean rust in 2009

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Introduction

Soybean rust (SBR) caused by *Phakopsora pachyrhizi* Sydow has been reported in major soybean production regions in the United States. Since the most SBR occurrences reported in late season, SBR epidemic has not been to a severe level that would cause major yield damage in the Soybean Belt. However, characterized with capabilities of long-distance dispersal and fast development in field, SBR still poses a great threat to the soybean industry in the United States.

Based on a research program for SBR risk assessment and forecast since 2005, month-long forecasts of soybean rust over Midwest was carried out every week from May to September in 2009. The risk information of possible SBR occurrence was delivered in regional risk maps so that growers can have visualized disease risk information when making decisions for SBR control.

Results of SBR Risk Forecast

**Early season situation.** The forecast started in early May. With warmer and drier than normal weather in Texas in the early season, spore sources along the Puccinia Pathway were very weak. Most spores were from the coastal areas in Alabama, Florida, Louisiana, and Mississippi (Figs. 2 and 3).

**Late season disease occurrences.** The first report of soybean rust in northern Mississippi was in August 8, followed by numerous reports in the following weeks. By mid September, soybean rust had been reported throughout this region and in South Carolina as predicted (Figs. 4 and 5).

**Middle season forecast.** Risk forecast maps in June and July indicated potential disease occurrences along the Mississippi River and the Ohio River Valley in July and August. Scattered spore dispersal would possibly reach South Carolina (Figs. 4 and 5).

Discussion

The risk forecasts were able to provide disease risk information for up to 4-6 weeks in advance before the disease was detected in a field. The observed disease occurrences have demonstrated the accuracy of these weekly forecasts and their applicability in soybean production so that the odds for growers to take timely and proper disease management actions have been greatly raised.