

6-11-2007

Soybean rust update and outlook, June 2007

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Recommended Citation

Yang, Xiao-Bing and Pan, Zaitao, "Soybean rust update and outlook, June 2007" (2007). *Integrated Crop Management News*. 1052.
<http://lib.dr.iastate.edu/cropnews/1052>

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Abstract

For the past two years, we used a computer model to predict the risk of seasonal outbreaks for soybean rust during a growing season. This year, we improved the model and are making predictions using this model together with information from sentinel plot data. Below is an update of the occurrence of soybean rust and our seasonal outlook.

Keywords

Plant Pathology

Disciplines

Agricultural Science | Agriculture | Plant Pathology

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by X. B. Yang, Iowa State University, and Zaitao Pan, St. Louis University

For the past two years, we used a computer model to predict the risk of seasonal outbreaks for soybean rust during a growing season. This year, we improved the model and are making predictions using this model together with information from sentinel plot data. Below is an update of the occurrence of soybean rust and our seasonal outlook.

Situation in the southeastern region

The source regions of soybean rust this year are in three areas along the Gulf Coast: Texas, Louisiana, and the southeastern region, including Florida and Georgia. For the eastern region, which has the largest source area, the weather in Florida has been dry for the entire month of May and that greatly slowed soybean rust development. Spore movement has been limited to areas east of the Appalachian Mountains.

In Louisiana, soybean rust was found in an area west of New Orleans. Detection was 51 days earlier than the previous two years. However, computer modeling indicates little spore movement northward from that source. No disease has been found anywhere north of New Orleans although local expansion has been observed. For the rest of June, computer models predict limited northward movement of this disease from known Louisiana sources because the predicted weather seems less favorable to the disease.

In Texas, a new occurrence of the disease was found along the Gulf of Mexico north of Houston. No disease was found in areas where the disease was first detected in winter. There were abundant rains in Texas in the past few weeks, which were favorable to the occurrence of soybean rust. However, predicted favorability for soybean rust occurrence for Texas in June is less than 20 percent.

Like last year, a system to monitor spores has been established in the soybean production region by university scientists with support from Syngenta. So far, the northernmost detection of soybean rust spores was in South Carolina during the last week of May. No disease has been found yet. The detection in South Carolina was consistent with predicted spore movement. However, that finding does not pose a significant threat to the North Central Region because the disease normally does not move westward over the Appalachian Mountains.

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To determine the risk of soybean rust in the North Central Region, what happens in the Gulf Coast states before the end of June is critical.

Getting into July, the weather will be too hot for soybean rust to develop. For the period of May through the first week of June, there has been abundant rainfall in the Mississippi Basin and the Great Plains Region, including Texas. Such weather is ideal for soybean rust development if spores and hosts are available. Luckily, soybean plants were just planted. Arrival of spores was not predicted by computer models. The possibility of having the disease occur in areas beyond northern Louisiana into Arkansas and Kentucky and go undetected is not high.

Our computer forecast shows that the month of June is less favorable to the establishment of soybean rust in the entire soybean production area because of less rain. The predicted spore movement from known sources of soybean rust is also limited in the eastern region. We are using a newly reported area in Texas for our next forecast. Since the critical stage in the Gulf Coast Region is not over yet, we will continue to watch what happens there. Disease occurrence in mid-Mississippi is what we need to watch before the end of June.

Besides computer modeling and spore monitoring, we have another safeguard system, sentinel plots, to protect us from any surprises. In Iowa, all the sentinel plots have been planted.

X. B. Yang is a professor of plant pathology with research and extension responsibilities in soybean diseases. Zaitao Pan is a climatologist at St. Louis University.

This article originally appeared on page 174 of the IC-498(14) -- June 11, 2007 issue.

Updated 06/15/2007 - 11:31am