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Knowing the risk of soybean rust by comparison with Brazil

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Knowing the risk of soybean rust by comparison with Brazil

Abstract

One of the common questions we receive is whether to move away from soybean because of the risk of soybean rust (SBR). Although studies indicate that the U.S. soybean production region is suitable to this disease, many experts believe outbreaks of the disease are likely to be sporadic.

Keywords

Plant Pathology

Disciplines

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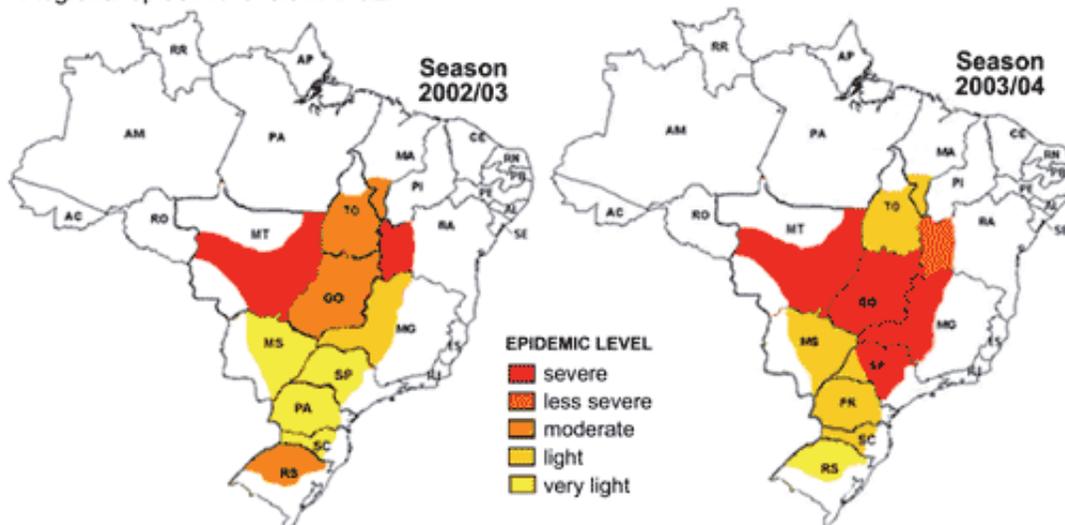
INTEGRATED CROP MANAGEMENT

Knowing the risk of soybean rust by comparison with Brazil

One of the common questions we receive is whether to move away from soybean because of the risk of soybean rust (SBR). Although studies indicate that the U.S. soybean production region is suitable to this disease, many experts believe outbreaks of the disease are likely to be sporadic.

Asian soybean rust

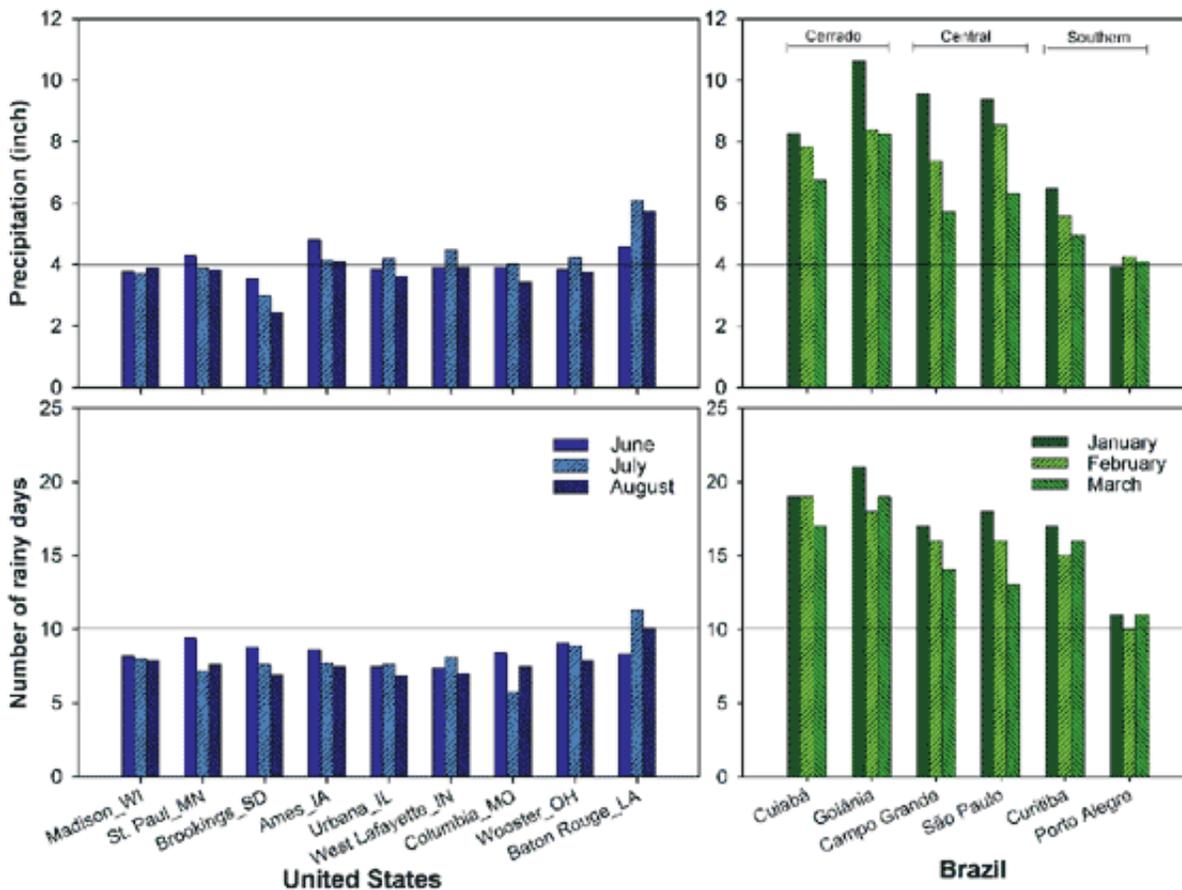
Regional epidemic levels in Brazil



Data Source: Dr. Claudia Godoy / Embrapa Soja

Asian soybean rust regional epidemic levels in Brazil. Data source: Claudia Godoy, Embrapa Soja.

The suitability of weather conditions to SBR in Brazil's major soybean production regions is far greater than what is in the U.S. major soybean production region. Most of the worst rust images circulated here are from the Cerrado region, especially Mato Grosso state (MT). In that region, soybean rust has always been severe since the disease showed up in Brazil, and losses could have been very high if no control had been applied. Figure 1 shows that in other regions, mainly in the southern region, epidemics were less severe in comparison to Mato Grosso. Regional severity levels in Rio Grande do Sul (RS) ranged from light to moderate, although a few farmers experienced considerable losses. In 2004, even though the fungus was detected early in the season in that state, disease progress stopped due to a dry season, and the regional epidemic level was considered very light. The information to date suggests that regional outbreaks in the South would be sporadic compared to central Brazil.



Information based on monthly averages for the 30-year period, 1961-1990. Data source: World Weather Information Service.

Risk factor 1

It is well documented that long dew periods and cool temperatures are favorable to rust development. The current risk map by the United States Department of Agriculture (USDA) and University of Illinois used these two variables. According to the latest reports from an October Syngenta Soybean Workshop, rain, especially number of rain days, is associated with rust outbreaks in Brazil. Claudia Godoy, an epidemiologist at Embrapa Soja, advised us that epidemics in Brazil seemed highly dependent on rain because major losses were found in areas with high frequency of rain during a growing season. Since this rain effect was also reported in Asia, it should be applicable to North America for comparison.

As shown in Figure 2, in Cerrado, the average amount of rainfall from January to March is about 24 inches. In Ames, Iowa, from June to August, the number is about 13 inches. Compared with southern Brazil (Porto Alegre), Iowa has an equivalent amount of rainfall with little less rain days. The implication is that in years with precipitations suitable for rust epidemics in July and August, the risk could be high in central Iowa if the disease (not spore cloud) shows up in July or earlier. The frequency of SBR outbreaks in the North Central Region is yet to be determined.

Risk factor 2

In Brazil, spores are available as early as soybean emerges in most of their soybean production regions. In the United States, the rust likely over winters in the Gulf coast in a mild winter or farther south, a much smaller risk compared with Brazil. Currently, it is unknown how early and how many spores can be carried north by winds in a growing season, a major uncertainty in our risk assessment. To address this uncertainty, a plan to establish monitoring plots in the U.S. soybean production region has been proposed to provide producers early warnings to guide sprays.

Risk factor 3

Unlike Brazil, the soybean production system in the North Central Region is not set up to manage foliar diseases, which is a great risk factor. Brazilian farmers had regularly used fungicides to control soybean foliar disease before Asian soybean rust was found there. Although the risk level in the U.S. North Central Region is not as high as in Brazil's major soybean production region, when outbreaks occur, even with moderate ones, they still could cut yields significantly if not controlled. Be prepared to control the disease with fungicides in the next season and seasons to come.

More information on Asian soybean rust in Iowa can be found at <http://soybeanrust.info> [1].

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[1] <http://soybeanrust.info/>

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