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Asian soybean rust found in South America

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Asian soybean rust found in South America

Abstract

Recently, the United Soybean Board released news on the arrival of Asian soybean rust in South America. This arrival has great impact on soybean production in the Western Hemisphere and on the decision making of agencies involving soybean production in the United States. I have been working on Asian soybean rust, and after the news release, I received questions on this disease. This article provides some background information on this disease.

Keywords

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Disciplines

Agricultural Science | Agriculture | Plant Pathology

INTEGRATED CROP MANAGEMENT

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Asian soybean rust is a major soybean disease in Asia and Australia, causing periodic epidemics in some regions. Soybean rust is caused by the fungus *Phakopsora pachyrhizi*. The fungus is airborne and can quickly spread throughout a field planted with a susceptible soybean variety. Severe infection causes premature defoliation, and yield losses up to 70 percent have been reported in farm production in Asia.



Leaf infected by Asian soybean rust.

[Enlarge](#) [1]



Soybean rust lesions.

[Enlarge](#) [2]

For decades, soybean production in the Western Hemisphere has been free from the threat of this disease. For unknown reasons, the disease was introduced into Africa and documented in Zimbabwe in 1998. The disease spread throughout the continent in a couple of years, and farmers there needed to spray fungicides twice to control the disease.

The disease also is now in South America. In 2001, it was found in Paraguay and some major soybean production regions in Brazil, where it immediately became a major production concern. In these two countries, yield differences as high as 50 percent were found between fields that were sprayed or not sprayed with fungicides (strip comparison) to control Asian soybean rust, according to papers presented at the 2nd Brazilian Soybean Congress.

Asian soybean rust is considered a major threat to U.S. soybean production. A USDA risk

assessment by computer simulation shows that the environmental conditions in U.S. soybean production are suitable for establishment of this disease, and the disease could cause significant yield losses in some U.S. production regions if soybean rust forms a pathway as wheat rust does. Based on another USDA study by economists and pathologists, the disease could result in losses of 7.2 billion dollars (1984 figure) to the U.S. soybean industry once introduced and cause epidemics.

The consensus of pathologists working on this disease is that it is just a matter of time before this disease makes it to North America (as occurred with soybean aphid). Because there is no resistance in U.S. germplasm, soybean production is vulnerable to the attack of this disease. Currently, the United Soybean Board is taking a proactive approach by funding a research project to manage the risk. Through this project, scientists in the USDA Foreign Disease and Weed Research Unit, University of Illinois, and Iowa State University are searching resistance genes from U.S. soybean lines and exotic germplasm so that resistant materials will be available to U.S. soybean breeders.

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