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Preparing for Soybean Rust

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On November 10, 2004, the first confirmed case of soybean rust was found in the continental United States, in Louisiana. (Hawaii has had soybean rust since 1994.) In the weeks that followed, soybean rust was also confirmed in Alabama, Arkansas, Florida, Georgia, Mississippi, Missouri, South Carolina, and Tennessee. The most likely scenario as to how soybean rust arrived in the continental United States is via Hurricane Ivan. Ivan formed in the Atlantic in early September, brushed the South American coast, and proceeded to strike the southeastern United States, carrying rust spores from Colombia and Venezuela. This scenario highlights the ability of soybean rust spores to travel over large distances to create new areas of infestation. Given this initial bout with soybean rust, U.S. soybean producers, researchers, and federal and state governments have sought to learn about soybean rust as quickly as possible. Much of our knowledge about soybean rust comes from Brazil, where rust has been a persistent issue for a few years. We’ll look at Brazil’s response to soybean rust and the possible trade effects following an assessment of our efforts so far in the United States to mitigate this new challenge to soybean production.

TREATMENTS AND RESOURCES

Even before soybean rust was discovered in Louisiana, research and planning was underway in the United States to deal with the disease. The Environmental Protection Agency (EPA) has registered three chemicals—azoxystrobin, chlorothalonil, and pyraclostrobin—for the treatment of soybean rust. These chemicals are preventative treatments in that they protect soybean plants from infestation and limit subsequent rust development. Soybean rust spreads by spores. Spore germination occurs when soybean leaves experience prolonged wetness, temperatures between 59 and 86 degrees, and humidity between 75 and 80 percent. Under these conditions, pustules form on soybean leaves within 5 to 10 days and spores are produced within 10 to 21 days. The treatment chemicals prevent spore germination and penetration. In April 2004, the USDA’s Economic Research Service examined the possible impact of soybean rust on the U.S. agricultural economy. The study looked at regional and national scenarios of soybean rust infestation, with yield impacts of up to 10 percent losses in affected areas. Under assumed costs of $25 per acre for treatment, the study indicated that soybean rust would cause losses of $640 million to $1.34 billion, depending on the severity of the outbreak.

Since the first sighting, efforts have been directed at monitoring the soybean rust situation in the United States, keeping soybean producers up to date on the latest soybean rust information and treatments, and outlining how the government is responding and will continue to respond to soybean rust. Various federal and state government agencies and university research centers have set up Web sites to allow producers to check the spread of soybean rust and find the latest information on the disease. For example, USDA has set up a Web site, www.usda.gov/soybeanrust, as a clearinghouse on soybean rust information. The site has links to other sites or publications that help producers identify soybean rust, track the scouting and confirmation of soybean rust in the United States, outline fungicide information for treatment, and provide information on the interaction between government programs and soybean rust (such as crop insurance).

USDA has continued to scout for soybean rust in the southeast in 2005. As of April 15, plant samples from 94 counties across the Southeast have been checked for soybean rust.
rusted. Rust has been found in three counties just north of Tampa, Florida, on overwintering kudzu in one case and on new-season kudzu in the other two. Kudzu can serve as a host plant for soybean rust. Another USDA Web site, www.sbrusa.net, has daily updates on soybean rust scouting and detection. The EPA has also approved seven chemical treatments for soybean rust on an emergency basis. Some of these chemicals are preventative in nature, while others are curative. These treatments are restricted to certain states, cannot be used until the state’s pesticide regulatory agency approves them, and are limited to a certain number of applications. These treatments will be available on this emergency basis through the 2007 soybean production season. As the EPA is continuing to explore other treatments and updating treatment guidelines, producers will need to check for the latest information on soybean rust treatments as the season progresses.

**Managing Soybean Rust Risk**
USDA’s Risk Management Agency (RMA), the agency that manages crop insurance, has also been active in providing information to producers on how soybean rust is covered. Losses due to soybean rust are covered by crop insurance as long as producers follow “good farming practices” in combating the disease. A good farming practice is defined as a practice, agreed to by agricultural experts, that would allow the crop to make normal progress to maturity and produce the yield used to set the crop insurance. RMA currently lists plant pathologists employed by the Cooperative State Research, Education, and Extension Service (CSREES), agricultural departments of individual states, universities, and certified crop consultants as agricultural experts. Producers are required to keep informed on the spread of soybean rust and react if rust becomes a threat to their production.

Producers should document any advice they receive from agricultural experts, along with their efforts to combat soybean rust. Crop insurance will cover yield losses due to soybean rust even if the crop was not treated under certain conditions, such as inaccessibility of chemicals and/or equipment in the area when the treatment was needed. In these cases, though, producers will have to document that they attempted to follow good farming practices. If producers do not treat for soybean rust because of the cost of treatment, however, insurance coverage will be reduced. Economic reasons for non-treatment are not covered by crop insurance. RMA has posted updated information on crop insurance and soybean rust on their Web site (www.rma.usda.gov/news/soybeanrust), including a list of acceptable documentation of farm practices and discussion of rules for organic producers.

**Brazil, Learning in the Field, and Trade Impacts**
Brazilian soybean producers have dealt with soybean rust since 2001. It has been estimated that soybean rust costs the Brazilian agricultural economy $1 to $2 billion a year. The techniques Brazilian producers use to combat rust will likely need to be adopted by U.S. producers, but this will represent a significant shift in U.S. soybean production practices. Detection of soybean rust in its early stages requires extensive scouting within soybean fields. Producers may need to scout their fields two to four times a week for soybean rust and inspect soybean leaves with a magnifying glass. Fungicides that combat soybean rust can be applied preventively or at the first sign of infection. There is some evidence that the chemicals recently approved by the EPA on an emergency basis are more effective than those previously approved, but these chemicals may have additional restrictions put on them because of their emergency use status.

Failure of a producer to account for soybean rust can create a twofold problem: possible yield loss for the producer and a possible source of rust infection for surrounding soybean producers. Since the soybean rust spores are lightweight, they can spread easily across adjoining fields or over wide areas, depending on wind and weather patterns. Drought conditions do not necessarily eliminate soybean rust risk: some areas of Brazil have experienced drought but still had rust issues.

From a trade perspective, the introduction of soybean rust to the continental United States will change the competitive balance. When rust infected Brazil, U.S. producers gained a competitive advantage, as Brazilian soybean producers faced the costs of combating rust. Now, U.S. soybean producers face similar additional costs. The final impact on soybean markets will depend on how producers in both countries continue to respond to soybean rust and the relative cost of that response. Given the patchwork of soybean fields, among the corn, oat, and hay fields and pastureland here in Iowa versus the relative lack of crop diversity around soybean fields in Brazil (soybean fields surrounded by soybean fields); it would seem that the Brazilians have a competitive advantage when dealing with soybean rust. Treatments can be applied more efficiently over a combined area, as opposed to hopping from field to field and trying to minimize the impact on surrounding crops.