



STEPS TO DETECT AND RESPOND TO SOYBEAN RUST IN MINNESOTA

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Already soybean rust is active again in several southern states as of mid-June 2007. Soybean rust is still a potential threat to soybean production in Minnesota. During the 2005 and 2006 growing season soybean rust spores were detected at numerous locations in Minnesota and the upper Midwest. Many would like to know if this disease will spread to Minnesota and other major soybean producing states this year. We cannot yet predict when this disease will come to Minnesota or if it will cause significant crop damage, but University of Minnesota scientists are taking steps using a system of sentinel plots and spore traps to detect soybean rust if it does spread into to Minnesota.

Reports from Louisiana, Texas and Alabama indicate that soybean rust is developing earlier than in 2005 and 2007. A mild winter and recent heavy precipitation in these states may have encouraged development of rust. These finds are of particular interest because experience has shown that cereal rust spores often spread from Louisiana and Texas into the upper Midwest. Soybean rust spores could behave like the spores of cereal rusts. On the other hand, dry weather conditions in parts of the south this spring may eventually limit movement and development of soybean rust. Since we have limited experience with soybean rust in the U.S., plant pathologists in the Upper Midwest are watching closely see if this year the disease spreads north early in the season or late in the season similar to 2005 and 2006. As of late June 2007, the risk appears to be low for significant levels of soybean rust developing in Minnesota in the foreseeable future.

As in the past, the Minnesota Soybean Rust Task Force, which is composed of a diverse group of representatives from the University of Minnesota, Minnesota Soybean Research and Promotion board, Minnesota Department of Agriculture (MDA), crop consultants, and others has continued to prepare and plan for soybean rust.

The University of Minnesota and University of Minnesota Extension with the help of farmers and crop consultants has



Early infection of soybean rust and advanced infection on a soybean leaves.

established a network of 26 sentinel plots and experimental spore traps to detect soybean rust spores and potentially infection by soybean rust in Minnesota. The plots and traps are monitored weekly as part of a nationwide system established to monitor soybean rust throughout the U.S. This system has the rather long name: Integrated Pest Management – Pest Information Platform for Extension and Education (hence it's commonly referred to as IPM-PIPE). Results from the sentinel plots as well as soybean rust observations from all participating states can be found at www.sbrusa.net. This web site is the best place to find out where soybean rust has been detected in the U.S.

In 2007, Minnesota has sentinel plots located in the following counties: Blue Earth, Dakota, Freeborn, Goodhue, Houston, Jackson, Lyon, Marshall, McLeod, Nicollet, Nobles, Norman, Olmsted, Otter Tail, Pipestone, Polk, Ramsey, Redwood, Renville, Sibley, Stearns, Stevens, Swift, Waseca (2), and Wilkin. These plots are supported by funds from the North Central Soybean Research Program, the USDA, and the Minnesota Rapid Agricultural Response Fund. The plots are scouted and sampled weekly. Then leaf samples are sent to a laboratory on the U. of Minnesota campus in St Paul, where they will be closely examined with a stereomicroscope and incubated to promote growth of suspicious-looking lesions. This approach has been found to be important for early detection of soybean rust in the southern U.S.

The sentinel plots are intended to detect and monitor actual disease development if soybean rust infection occurs. Before soybean rust can develop, soybean rust spores must be transported to Minnesota from southern states. A long-term goal is to develop a system to monitor spore movement and to forecast soybean rust development before disease actually occurs in sentinel plots or commer-

cial fields. In 2005 and 2006 these 'traps' indicated that soybean rust spores were transported to Minnesota, even though soybean rust did not develop in Minnesota or in nearby states. A key point here is that takes more than the presence of pathogen to initiate disease: there must also be wet conditions and a sufficient number of spores introduced into a field before infection can occur.

Management of soybean rust, when needed in Minnesota, will depend on foliar fungicides applications for at least several years into the future. A number of different fungicides are available in Minnesota to manage soybean rust, many with section 18 emergency registrations and a number with old and new section 3 labels,. Please see a recent MN Crop eNews article with an update on the fungicides available for soybean rust management in Minnesota. Fungicide trial data for soybean rust management from Georgia, Florida, and Alabama, as well as from other countries, has been published in 'Plant Disease Management Reports', and can be found at this web site (www.plantmanagementnetwork.org/pub/trial/pdmr/).

While we cannot yet predict when, where, or how severely soybean rust may develop, we can prepare well and be well informed to minimize potential losses from this disease.