Spore traps help researchers watch for soybean rust

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Spore traps help researchers watch for soybean rust

Abstract
We want to keep track of any movement of soybean rust so that we can inform and warn Iowa producers of any risk to their crop. Last year a spore tracking system was set up in the southern states as a part of soybean rust monitoring efforts. In some locations, spores were detected with the spore traps and the spore maps were generally consistent with the predicted spore map, according to reports presented last winter. In the North Central Region, spores also were detected with another type of spore trap.

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We want to keep track of any movement of soybean rust so that we can inform and warn Iowa producers of any risk to their crop. Last year a spore tracking system was set up in the southern states as a part of soybean rust monitoring efforts. In some locations, spores were detected with the spore traps and the spore maps were generally consistent with the predicted spore map, according to reports presented last winter. In the North Central Region, spores also were detected with another type of spore trap.

We now have a new tool to help in detecting the presence of soybean rust (P. pachyrhizi) spores in Iowa. In cooperation with Syngenta Corporation’s Syntinel RustTracker system, we have placed two spore traps in Iowa. One is at ISU’s Armstrong Research and Demonstration Farm at Lewis, and the other is at the Southeast Research and Demonstration Farm at Crawfordsville. Each trap has a sticky microscope slide that will catch spores that impact it. Each trap is designed to rotate with the wind and is about 6 feet tall. Once a week observers will collect the microscope slides, send them to John Rupe’s laboratory at the University of Arkansas, and then put another sticky slide in each trap. Spores trapped on the slides will then be observed microscopically by specially trained plant pathologists. Syngenta posts these results at www.soybeanrust.com.

Results from these spore traps should be interpreted cautiously. Positive results will likely be reported as “rust-like spores were found . . .”. It is possible that similar spores of another rust fungus could be confused with those of P. pachyrhizi, as there are many other rust fungi in Iowa. (Producers are familiar with common rust and southern rust that infect corn every year.) There is not enough DNA in one or a few spores to positively identify spores by testing the DNA. It also should be noted that windborne P. pachyrhizi spores do not survive long when exposed to sunlight. We will not know whether spores in the traps are viable.

Although the results from the spore traps should be interpreted carefully, the spore traps together with computer modeling will give us warning as to when spores may have arrived and when we should double our efforts in scouting sentinel plots for disease development. The disease will develop when we have these three conditions met: viable P. pachyrhizi spores and cool, wet conditions and soybeans in the reproductive growth stage.

Sentinel plots update. Together with ISU Extension field crops specialists, we are closely monitoring Iowa’s sentinel plots on a weekly basis. The scouting results are being reported at www.shrusa.net. Our sentinel plots in northeastern, northwestern, and southeastern Iowa have begun to flower and thus have reached the reproductive growth stage. This is the growth stage when soybeans are most likely to first show soybean rust. Farm managers are planting late-maturing soybean varieties, and we will monitor these until the first frost in case soybean rust reaches Iowa after commercial varieties mature.

Ralph von Qualen is an independent plant pathologist assisting with the sentinel plots. X. B. Yang is a professor of plant pathology with research and extension responsibilities in soybean diseases.

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