Sentinel plots for controlling soybean rust

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Abstract
Timely application of fungicides is the only way to effectively and efficiently protect soybean crops from soybean rust infections. Because we do not know when and where the disease outbreaks will occur in the coming season, early detection of soybean rust during the growing season is key for timely applications. Over the past few years in other countries, sentinel plots have been effective in detecting the disease early and guiding producers in making better spray decisions.

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Sentinel plots for soybean rust were first used in Africa. Since the disease arrived in Brazil, more than 1,500 sentinel plots have been established there, and Brazilian farmers make spray decisions once the disease is found in local sentinel plots. In Argentina, hundreds of plots also were established in soybean production regions and no panic sprays were made there, which has saved Argentina's producers from unnecessary treatments. This year, a national sentinel plot program reaching from Florida to North Dakota has been established by university extension pathologists with funds from the North Central Soybean Research Program, United Soybean Board, and USDA-APHIS. In that program, each participating state has 30 sentinel plots.

Iowa is a participating state in the program, and a sentinel plot system has been established by Iowa State University in collaboration with producers, private companies, Cropland Genetics, Garst Seed, Syngenta Seeds, Pioneer Hi-Bred International, Inc., and UAP Midwest. Plots are located in Iowa State University Research Farms, test plot sites, and growers' fields. Twenty-eight of the 30 plots are established in Iowa and some have been planted as of Monday, April 4. Our sentinel plots will be scouted by experienced staff guided by forecasted spore movement and confirmed detections in southern states. Scouting intervals will be weekly before the models predict a high risk of spore arrival and then turn to a 3-day interval once disease is found in neighboring states or presences of spores are predicted by models.

Last year, Iowa State University established a triage system for early detection and fast tracking of soybean rust. Forty triage members and 400 first detectors have been trained to identify soybean rust. Some have visited Brazil or the USDA containment facility in Maryland to gain firsthand rust identification experience. The triage system and sentinel plots serve as a double-insured system that soybean producers can use to protect their soybeans with timely fungicide applications but not waste resources with unnecessary treatments.

Monitoring results from national sentinel plots are reported to a central Web site of APHIS [1]. Plant pathologists recommend that producers apply fungicides after soybean rust is detected locally. However, the range of a locality is yet undetermined quantitatively due to lack of data in this, our first year dealing with rust. So what is "local" will be determined by the risk
tolerance of individual producers.

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