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New insights on early planting and SDS

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New insights on early planting and SDS

Abstract

Since SDS was first reported in Iowa in 1994, soybean growers and agronomists who have experience with this disease have observed that it seems more severe in early planted soybean. Surveys completed by participants of extension winter meetings in Iowa also indicated that fields showing severe defoliation in the fall are likely to have been planted before May. Last year's warm spring and early planting may have contributed to the high prevalence of SDS in the 2002 growing season. Rarely, there are cases of severe SDS in fields planted after May 15. Research in Missouri confirms that the disease is more severe in fields planted in early spring.

Keywords

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Disciplines

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INTEGRATED CROP MANAGEMENT

New insights on early planting and SDS

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Despite the relationship between planting date and SDS occurrence, the reason that early planted soybean has high disease risk remains largely unknown, partly because we do not know when and how the SDS fungus attacks soybean. Such limitation also slows our progress in the development of effective greenhouse screening methods. Conventional theory is that SDS fungus attacks soybean at the seedling stage onward. A recent study from Iowa State University indicates this theory may be incorrect.

At a recent plant pathology meeting, Iowa State University plant pathologists reported findings on infection of the SDS fungus in soybean. The study showed that SDS infection can occur as early as seed germination. In their study, germinating soybean seeds were exposed to SDS fungal spores for a short period before being planted in soil free of the pathogen. Seedlings from the seeds that were inoculated at the germination stage developed into diseased seedlings 15 days later. In susceptible varieties, up to 100 percent of plants from seeds that were inoculated at germination showed foliar symptoms. The results suggest that infections early in soybean growth stages could result in a high percentage of foliar symptoms.

The new findings are critical to our understanding of the relationship between early planting and SDS development. A previous Iowa State University study showed that SDS pathogen infects soybean effectively in cool and wet soil. Soybean planted early would have slow germination and emergence, which prolongs the contact period between pathogen and soybean for infection. Because the infection can start as soon as a seed germinates, the earlier the planting, the longer the window of infection, and therefore, the higher the disease risk.

This study and follow-up studies, funded by check-off dollars, are helping plant pathologists to develop greenhouse resistance screening techniques to understand SDS resistance development.

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