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Advances in sudden death syndrome management

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Management of sudden death syndrome (SDS) of soybean, caused by soil borne *Fusarium* species, is challenging. Planting resistant cultivars is the primary management strategy. Moderately resistant cultivars has shown less foliar symptoms than susceptible cultivars with increased yield in many field evaluations. However, the currently available cultivars are at best partially resistant to foliar symptoms, only a few may have resistance to root rot. In 2013 to 2016, we performed multi-location field experiments to determine the effect of fungicides on SDS and yield. Foliar fungicides and the most seed treatment fungicides are in-effective. Fluopyram (ILeVO®, Bayer CropScience) has shown efficacy against SDS when applying as seed treatment or in-furrow. Recently, we summarized the efficacy of fluopyram seed treatment using meta-analysis from 260 field studies conducted in 12 U.S. states and Ontario, Canada from 2013 to 2015. Result showed that the fluopyram reduced foliar SDS symptoms by an average of 23%. Yield response to fluopyram was mostly positive. Greater yield response to fluopyram was observed with higher disease levels. SCN populations was positively associated with SDS. Greater foliar SDS symptoms and lower yield were observed in varieties with no SCN resistance than cultivars with SCN resistance in our multi-year multi-state field evaluations. Managing SCN by selecting resistant varieties may help manage SDS too. However, soybean rotating with corn does not reduce SDS. A traditional approach to reduce SDS in a field with SDS history was to delay planting. Recent research shows that the delayed planting decrease yield potential but may not reduce SDS. Therefore, delayed planting can only be considered as an option if the field is at severe risk of SDS. To summarize, since no single management strategy fully controls the disease, partnering seed treatment and cultural practices with genetic resistance may be more effective. However, continued efforts including other biological or cultural approaches are necessary to develop sustainable management plan for the disease.