Title Infection of soybean seed by *Fusarium graminearum* and effect of seed treatments on disease under controlled conditions

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Citation Plant Disease 95 (4): 401-407. 2011

Keywords soybean; seed decay

Abstract

Fusarium graminearum causes seed decay and damping-off of soybean. This study evaluated the effect of inoculum density of *F. graminearum*, temperature, and fungicide seed treatments on disease development. To determine the optimum conditions for disease development, individual soybean seed was inoculated with 100 µl of a suspension of 2.5×10^2, 2.5×10^3, 2.5×10^4, or 2.5×10^5 macroconidia/ml in a rolled-towel assay at temperatures of 18, 22, and 25°C. Inoculum concentrations of 2.5×10^4 macroconidia/ml or higher were necessary for optimum disease development at all temperatures. The efficacy of captan, fludioxonil, mefenoxam + fludioxonil, azoxystrobin, trifloxystrobin, and pyraclostrobin as seed treatments was then evaluated with the same assay at 2.5×10^4 and 2.5×10^5 macroconidia/ml. Seed treated with captan at 61.9 g a.i. or fludioxonil at 2.5 or 5.0 g a.i. per 100 kg developed smaller lesions than other seed treatments and the nontreated control. Based on these results, there are limited choices in fungicide seed treatments for managing this seedling disease, and it is possible that shifts in seed treatment products may have played a role in the recent emergence of this soybean pathogen.