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Response of broad-spectrum and target-specific seed treatments and seeding rate on soybean seed yield, profitability, and economic risk

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Seed applied fungicides and insecticides have become common components in modern soybean [*Glycine max* (L.) Merr.] production for their broad spectrum of activity. However, the value proposition of adding a target specific seed treatment (fluopyram) to these seed treatment packages in the realm of increased costs and declining grain sale prices hasn't been evaluated. Reducing seeding rates is possibly one avenue to maximize the economic benefit of these seed treatments. Three seed treatments and six seeding rates were evaluated to determine yield, profitability, and economic risk benefits across 26 environments. Seed treatment effects on plant stand and yield were environment specific. CB and ILeVO (CB + fluopyram) increased plant stand over the UTC and across all environments the addition of fluopyram in ILeVO increased yield by 2.8% over CB. In environments where SDS symptoms were present, the yield response of ILeVO over CB was 5.3 (WI) and 6.1% (IA). CB, and more so, ILeVO, lowered farmer risk (>70%) and increased profit (\$4 – 32 a⁻¹) at currently recommended (140,000 seeds a⁻¹) and reduced seeding rates regardless of grain sale prices. The lowest risk and largest average profit increase always occurred at the *EOSR*, which decreased with the grain sale price and differed between seed treatments by as much as 7,000 seeds ha⁻¹. This study reinforces the profit and economic risk benefits of broad spectrum and target specific seed treatments across diverse environments. These benefits may be amplified by targeting fields with a history of early season insect and disease pressure.