

On-Farm Evaluation of Soybean Seed Treatment

Applying seed treatments as a form of self-insurance prevented yield loss 14% of the time. Managing soil-borne pests will become more deliberate and precise only when the risk of loss is easier to estimate.

WHILE THERE ARE proven scouting techniques and economic thresholds for several foliar pests, farmers have very few tools to estimate risk from soil-borne pests. As a result, seed treatments are frequently applied on a just-in-case basis with little knowledge of the risk soil-borne pests actually pose to a given crop. With the cost of common seed treatments ranging from \$6–18/ac, optimizing the seed treatment decision would be a positive step toward profitable and sustainable soybean production.

The objective of this project was to examine the decision to treat seed versus planting untreated seed when armed with minimal knowledge of the risk from soil-borne pests.

Thirty On-Farm Network soybean field trials were established in eastern Manitoba comparing treated versus untreated seed. Seed treatments consisted of fungicide + insecticide (Cruiser Maxx Vibrance

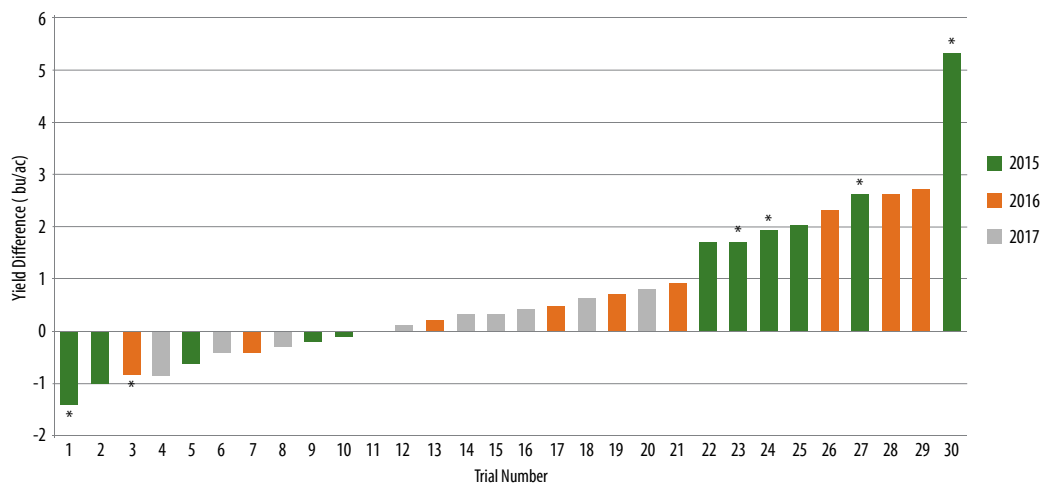
Beans or EverGol Energy + Stress Shield) or fungicide alone (EverGol Energy). In addition, one on-farm trial was conducted in the south Interlake that included the above treatments plus a seed treatment of the fungicide Vibrance Max RFC. Each treatment was replicated three to six times per trial and planted at the host farmer's normal seeding rate (190,000 seeds/ac on average). The south Interlake trial was planted at 220,000 seeds/ac. Field histories varied from more than six previous soybean crops to first-time soybeans. Other than field cropping history no attempt was made to identify soil-borne pests prior to seeding.

Overall growing conditions were very good resulting in robust crop growth. The average soybean yield across eastern sites was about 43 bu/ac with the south Interlake site producing 47 bu/ac. Ten trials yielded more than 45 bu/ac while only two trials yielded less than 30 bu/ac.

Within individual trials, the decision to treat seed resulted in a yield benefit four out of 30 times (14%) (Figure 1). There were no differences in yield among the seed treatment products in any trial. In two trials, the treated plots yielded less than untreated checks. The extent of testing necessary to reveal reasons for this effect was outside the scope of this study. In the four cases where yields were higher with treated seed, it is assumed the products protected the crops from yield-reducing soil-borne pests. However, no attempt was made to measure pest incidence across treatments.

These trials focused on the decision to incur the cost of treating seed when it is not possible to accurately gauge risk – where the choice to treat seed is taken as a means of self-insurance. The suitability of this approach depends on a farmer's perspective on risk. However, it is likely that this approach is not sustainable. The imperative lies with producer groups to encourage the development of pest scouting tools that enable the responsible and profitable use of crop-protection chemicals. To view individual reports for these trials, visit manitobapulse.ca/on-farm-network. The use of seed treatments should be evaluated on a field basis, considering the risk factors that would warrant a seed treatment. To learn more about these risk factors, consult the *Soybean Seed Treatment Risk Assessment* fact sheet at manitobapulse.ca.

Figure 1. Yield difference between soybean seed with and without seed treatment at 30 On-Farm Network trials in eastern Manitoba from 2015–2017.



*Denotes statistically significant yield response at 95% confidence level.