



Soy3-2011 - Is the Soybean Variety Important for Making Accurate Fungicide Application Decisions?

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Is the Soybean Variety Important for Making Accurate Fungicide Application Decisions?

Purpose:

Foliar fungicide applications have provided inconsistent yield increases in Ontario with an average yield response of 2.1 bu/ac (Figure 1). Only about 30% of the spray decisions produced a yield response that was economically beneficial to the producer. So far, no clear correlation to disease pressure, tillage practice, seed variety, or weather has been demonstrated for the level of yield response achieved with a fungicide. Recent work in corn has revealed that the yield response is highly dependent on the hybrid. This project was designed to assess whether soybean variety plays a significant role in the yield response to foliar fungicides. If some varieties respond more than others, this information could be important in making economic management decisions.

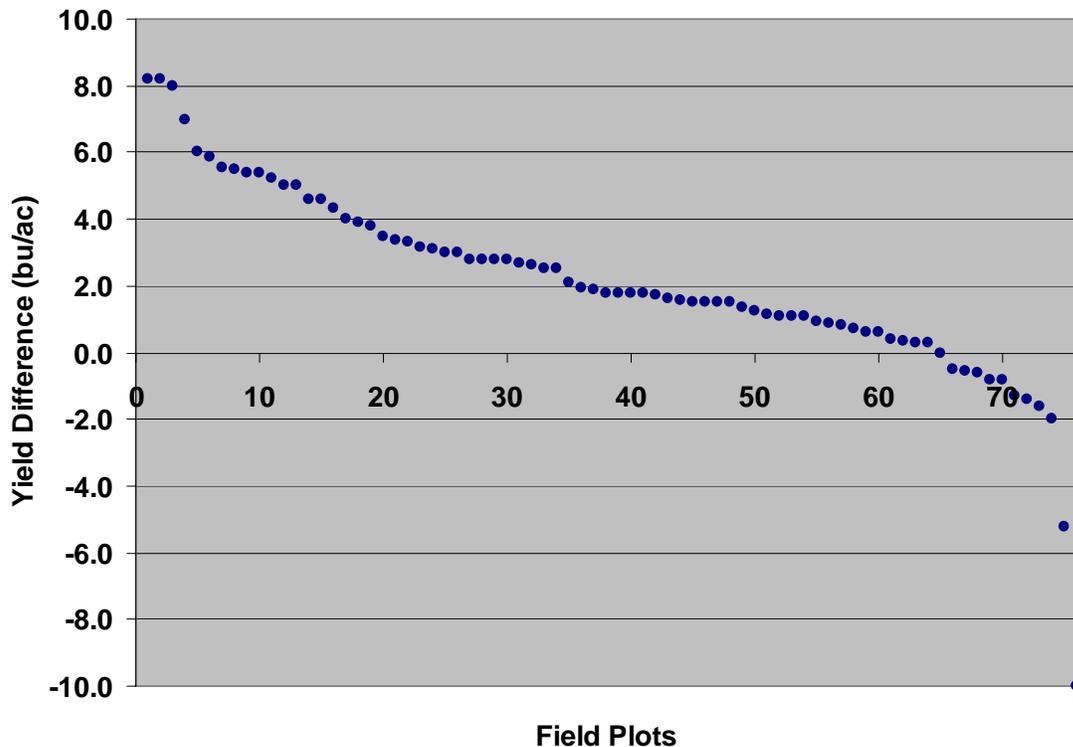


Figure 1: Soybean Response to Foliar Fungicide (2005-2010)

Methods:

This project compared the yield response of 20 soybean varieties to Headline foliar fungicide. The varieties were carefully chosen based on different parentage and a range of observed disease resistances. Trials were planted in 2 locations with four replications each. During this three year study these sites were near Exeter and Chatham, Ontario. Seed quality parameters including oil, protein, seed size, and germination were assessed.

Field sites were also assessed for disease and insect pressure, once during both July and September.

Table 1: Soybean Varieties that were tested at each location included:

Variety #	Variety	Variety #	Variety
1	Secan #1 AM0908A5-DOYN	11	Monsanto 29-60RY
2	Secan #2 AM0808B3-DOYN	12	Monsanto 31-10RY
3	Secan RCAT MatRix	13	Hyland RR Respond
4	Secan RCAT MiRRa	14	Hyland RR Rodney
5	Syngenta S14-A7	15	Hyland HR 12R42
6	Syngenta S14-K6	16	Hyland HS 11R46
7	Syngenta S17-A1	17	Pioneer 91M01
8	Syngenta S21-N6	18	Pioneer 91M41
9	Monsanto 28-60RY	19	Pioneer 91Y90
10	Monsanto 28-61RY	20	Pioneer 92Y30

Results:

Table 2: The Average Effect of Fungicide Application on Days to Maturity, Seed Size and Yield for Chatham and Exeter (2009-2011)

Assessment	2009	2010	2011	Average
Days to Maturity	+1.2 days	+1.6 dys	+1.9 days	+1.6 days
Seed Size (g)	+0.9 g	+0.8 g	+0.9 g	+0.9 g
Yield (bu/ac)	+1.3 bu/ac	+1.7 bu/ac	+4.8 bu/ac	+2.6 bu/ac

Conclusions – Exeter:

No differences in Days to Maturity were found in 2009; in 2010 there was a delay of 1.6 days; while in 2011 there was a 1.8 day delay in maturity in the plots sprayed with Headline. Seed quality on a scale of 1-5 showed little difference. Seed weight was significantly better for the Headline treated plots by 0.8 grams/100 seeds in 2009, 1.0 grams/100 seeds in 2010 and 1.0 grams/100 seed in 2011.

Yield was better for the Headline treated plots by 1.6 bushels/acre in 2009, 3.1 bushels/acre in 2010, and 5 bushels/acre in 2011.

Conclusions – Chatham:

Days to maturity showed a 2 day delay in maturity with Headline in 2009, 1.6 days delay in 2010 and 1.9 days in 2011. Seed quality on a scale of 1-5 showed little difference in 2010 and 2011. Seed weight was significantly better for the Headline treated plots by 1.0 grams/100 seeds in 2009 and 0.6 grams/100 seeds in 2010, and 0.8 grams/100 seeds in 2011.

No statistically significant yield difference was detected in 2009, 2010, however 2011 showed a significant response of 4.6 bushels/acre.

Summary:

At both sites Headline foliar fungicide increased the days to maturity during the past three years. Fungicide applications had a statistically significant impact on days to maturity in 5 out of the 6 trials conducted.

Seed size was improved by 2.5% on average at both sites in the 2009-2011 period, when using Headline versus untreated, which would translate to about 1 bu/ac at harvest. This improvement in seed size is consistent with other work that has been done involving fungicide use and its impacts on seed size. Seed quality did not appear to be significantly impacted by spraying at either site.

While this study has shown yield gains at the Exeter location for the past three years, 1.6 bu/ac in 2009, 3.1 bu/ac in 2010, and 5 bu/ac in 2011, the yield increase at the Chatham location was not statistically significant in two of the three years of the study. Only 2011 showed a statistically significant average response. The average yield increase for all sites over the three years was 2.6 bushels/acre. This is a similar result to the 2.1 bu/ac average yield increase, over 76 field scale trials, from 2005 to 2010, as seen in Figure 1.

The yield response for the different varieties ranged from -5.5 bushels/acre to +9.5 bushels/acre over the three years of this study. However, yield response was not consistent for each variety from year to year, so the relationship between variety and fungicide remains unclear.

Next Steps:

This was the third year of a 3 year project. While there appears to be some relationship between variety and fungicide, it remains unclear how to predict a response to fungicides.

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