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Seed-Applied Fungicides for Very Early-Planted Soybeans

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Seed-Applied Fungicides for Very Early-Planted Soybeans

Abstract

Multi-year results from the Northeast Research Farm suggest that mid-April to mid-May planting dates produce top soybean yields if soil conditions are ideal. Research farm trials have also shown that soybeans yield similarly over a wide range of seeding rates and harvest populations. Based on these results, some producers are planting soybeans as soon as spring field conditions allow, with a seeding rate of 150,000 to 175,000 seeds/acre. The yield response of modern varieties to early planting raises questions about expanding the soybean planting season to late March or early April when conditions allow. Producers considering early planting recognize the risk of stand losses caused by seedling diseases in cooler soils. In 2000 and 2002, a soybean “planting date x seed treatment” study was initiated to evaluate yield response of an adapted, high-yield variety to very early planting. Research objectives are to determine if fungicide seed treatments are needed to maintain high yields across several early planting dates.

Disciplines

Agricultural Science | Agriculture

Seed-Applied Fungicides for Very Early-Planted Soybeans

Ken Pecinovsky, farm superintendent

Introduction

Multi-year results from the Northeast Research Farm suggest that mid-April to mid-May planting dates produce top soybean yields if soil conditions are ideal. Research farm trials have also shown that soybeans yield similarly over a wide range of seeding rates and harvest populations. Based on these results, some producers are planting soybeans as soon as spring field conditions allow, with a seeding rate of 150,000 to 175,000 seeds/acre. The yield response of modern varieties to early planting raises questions about expanding the soybean planting season to late March or early April when conditions allow. Producers considering early planting recognize the risk of stand losses caused by seedling diseases in cooler soils. In 2000 and 2002, a soybean “planting date × seed treatment” study was initiated to evaluate yield response of an adapted, high-yield variety to very early planting. Research objectives are to determine if fungicide seed treatments are needed to maintain high yields across several early planting dates.

Materials and Methods

A Roundup Ready[®] variety from Syngenta Seeds (NK S24-K4, relative maturity 2.4) was tested in 2000 and 2002. Syngenta Seeds offers ApronMaxx[®] as a seed treatment. It is a combination of contact and systemic active ingredients of Apron XL[®] and Maxim[®]. ApronMaxx[®] inhibits the growth of several soybean diseases such as Pythium, Phytophthora, Fusarium, Phomopsis, and Rhizoctonia. ApronMaxx[®] is sold as “ready-to-apply” (RTA[®]), or it can be commercially applied. Identical seed lots were planted with and without commercially applied ApronMaxx[®] on each of four planting dates. Experimental plots were planted directly into standing corn

stalks at 182,402 seeds/acre, using a planter with 30-inch row spacing. Planting dates were April 14, April 24, May 5, and May 15, 2000, and April 15, April 24, May 3, and May 15, 2002. Planting dates and treatments were included in a split-plot design with three replications. Main plot treatments were planting dates, and seed treatments were subplot treatments. Plots were machine harvested on October 2, 2000, and October 11, 2002. Grain yield data (adjusted to 13% moisture) are summarized in Table 1.

Results and Discussion

Soybean yields were less on the mid-May planting dates, whereas earlier planting dates yielded similarly. A soybean yield response to fungicide seed treatments was not statistically significant ($P>0.05$) when averaged across all planting dates or individual plantings for either year. A trend toward a yield increase of 0.8 to 1.9 bushel/acre was noted with seed fungicide treatments in 2000 and 2002 on the mid-April planting dates. However, the fungicide seed treatment was not statistically significant, possibly due to ideal early soybean growth conditions in both years. Yield trends suggest that fungicide seed treatments may be a valuable risk management tool for very early-planted soybeans in northern Iowa, particularly in fields with a history of severe seedling disease pressure and less than ideal planting conditions. Depending on planting date, soil conditions, and field history, producers will need to decide whether the \$4–5/acre seed treatment cost can be justified.

Acknowledgments

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Table 1. Planting date and seed treatment effects on soybean yield in 2000 and 2002 at Nashua.

Experimental treatment	Yield performance by average planting date				
	April 14/15	April 24	May 3/5	May 15	All planting dates
	----- (bushels/acre) -----				
Untreated seed (control)	61.4 a ¹	61.8 a	63.6 a	57.5 a	61.1 a
Fungicide-treated seed	62.8 a	61.5 a	62.1 a	58.1 a	61.1 a
Mean	62.1 b	61.7 b	62.9 b	57.8 a	61.1a
L.S.D. (P=0.05)	NS ²	NS	NS	NS	NS

¹Within columns, means followed by the same letters do not differ (P>0.05).

²NS indicates no statistically significant (P>0.05) seed treatment effect on soybean yield.