

# Effect of Soybean Seed Treatments on Seed Emergence and Yield

X.B. Yang, associate professor  
Peter Lundeen, research associate  
Department of Plant Pathology

## Introduction

The purpose of this study was to evaluate soybean seed treatments on disease pressure. There have been experimental plots for seed treatment evaluation at the McNay Research Farm for the last two years. The McNay farm was selected for seed treatment experimental plots because it exhibited a high level of *Phytophthora* damping off in the spring of 1999. The objective of this study is to determine the effect of different seed treatments on seedling diseases under high disease pressure as expressed by stand establishment, plant vigor, and harvest yield.

One experiment was comparing the effect of fungicidal seed treatments. The second experiment compared the effect of a seed application of Cell-Tech 2000 and Cell-TechSci Rhizobium (nitrogen fixing bacteria) and fungicides.

## Materials and Methods

Field plots were planted on May 23, 2001 at the McNay farm, Chariton, Iowa. The two studies were randomized complete block designs of 5 replications. Plots were 17 feet long, with a 3 foot break between plots, and 4 rows wide, planted at 7 seeds/foot.

Emergence data were taken on June 11 and 27. Stand counts were averaged over 10 feet from each of the middle two rows of each plot. Vigor was a visual rating of plant development based on a 1–5 scale averaged across both inner rows. A vigor rating of 1 was poor emergence with uneven plant sizes and poor color, and a rating of 5 was uniform emergence with healthy green color and no visible disease.

Ten feet of the inner two rows of each plot were harvested for yield on October 8. Harvest weights were adjusted to 13% moisture.

## Results and Discussion

Seedling disease pressure was high, with poor emergence and irregular stands. See the table for results of individual treatments.

**Table 1. Average stand and yield ratings for McNay 2001 fungicide test plots.**

Entry	Treatment	Emergence*	Gaps**	Vigor***	Bu/A
1	Apron Maxx 2EC	1.6	7.9	2.8	34.3
2	Apron Maxx 2EC & Apron XL 3LS	1.9	6.7	2.5	35.1
3	CGA 48988 & Rival 2.92FS	2.8	4.3	3.2	38.3
4	Untreated	2.4	6.0	2.9	32.5
	Average	2.7	4.5	2.9	36.0

\* Average plants per foot

\*\* Total length in feet of gaps 1 foot or more in center two rows of each plot (averaged across reps).

\*\*\* Vigor is based on a scale of 1–5, with 5 a large healthy uniform stand and 1 an irregular, sick, stunted stand.

**Table 2. Average stand and yield ratings for McNay 2001 Rhizobium test plots.**

Entry	Treatment	Emergence*	Gaps**	Vigor***	Bu/A
1	Apron Maxx 2EC	1.22	8.1	2.8	33.9
2	Apron Maxx RTA 0.159ES	1.49	6.3	3.3	24.3
3	Apron Maxx 2EC + Apron XL 3LS	2.22	4.6	3.0	29.9
4	Apron Maxx RTA 0.159ES + Cell-Tech2000	1.90	4.9	3.0	23.8
5	Apron Maxx RTA 0.159ES + Cell-Tech Sci	1.75	7.1	2.7	25.4
6	Cell-tech 2000	1.83	5.2	3.1	27.5
7	Cell-tech Sci	1.70	5.9	3.0	31.7
8	Untreated Control	1.72	6.0	3.3	24.6
	Average	1.54	6.53	3.03	26.6

\* Average plants/foot in 6.5 feet of center two rows of each plot.

\*\* Length of gaps of 1 foot or more in center two rows of each plot.

\*\*\* Based on a scale of 1–5, with 5 a large healthy uniform stand and 1 an irregular, sick, stunted stand.