

INTEGRATED CROP MANAGEMENT

Corn seed treatment developments

Seed treatments for corn have traditionally been used for the control of seedling diseases caused by fungi. A majority of the seed planted this year will have been treated with Maxim XL, a combination of fludioxonil and mefenoxam. Alternatively, a few companies are using the CTS system, which is a combination of captan, metalaxyl, and a polymer coating. Both combinations include a broad-spectrum fungicide (fludioxonil or captan) to control *Fusarium*, *Rhizoctonia*, and other fungi, along with a narrow-spectrum product (metalaxyl or mefenoxam) to provide better control of *Pythium*.

The primary purpose of seed treatments is still disease control, but recent developments in seed treatments have shifted the focus toward insect control. Products such as Gaucho, Prescribe, and ProShield offer various levels of protection against different insects, which previously was available only by applying a soil insecticide or planter-box treatment. Another recent development is the use of polymer coatings, either to preserve the activity of fungicides and other seed treatments, or to delay germination, allowing extremely early planting. In addition, a few biological control agents have been developed as seed treatments, notably T-22 (a planter-box treatment), but these have yet to catch on.

Development of new fungicide seed treatment products continues as well. Last year, two experiments conducted in Ames compared the available seed treatments and a couple of experimental products. In one experiment, the dry soil conditions resulted in essentially no seedling disease, and there were no differences among treatments. In the other experiment, the seed treatments significantly increased plant stands, and had higher yields (although not statistically different) compared with the check (Table 1). There was little or no difference between Maxim XL and Captan + Allegiance. Similar comparisons have been conducted for several years, and overall, there has not been a consistent difference in field performance between these two combinations. Vortex + Allegiance, the experimental product under development and marketing by Gustafson had the highest number of plants per acre and the highest yield. In this experiment, the Gaucho treatment did not increase plant stands or yield. Last year, Gaucho was used on a limited number of acres and I heard favorable reports about its performance, especially where there were insect problems in stand establishment.

There are several planter-box seed treatments available for corn that can be used in addition to the commercially applied fungicides. Most planter-box treatments are a combination of an insecticide and a fungicide, and their best use is for the control of wireworms or seed corn maggots. Some products include Kernel Guard Supreme, Germate Plus, and Agrox. The additional fungicide can sometimes improve stand, but usually this effect is not statistically significant.

What else should I do to prevent seedling diseases?

Planting high-quality, fungicide-treated seed goes a long way toward controlling seedling diseases. But other practices can help, too. Crop rotation has limited value for controlling soybean seedling diseases, but there is a benefit for corn seedling diseases. Reducing the amount of crop residue over the seed row also can be helpful (especially if it is corn residue). Planting conditions are important. Do not try to "mud in" your crop just for the sake of planting early. Well-drained soil will have the least risk of seedling disease. Soil temperatures lower than 55°F are conducive to seedling disease development. Although it is not always possible to delay planting until the soil reaches this temperature, you should keep track of soil temperatures in the spring and consider this in your planting decisions. Herbicide stress contributes to seedling disease development, so be careful!

Table 1. Effects of seed treatments on total emergence and yield in Ames, 2001. Planting date was April 19.

	Plant Stand (plants/acre)			Yield (bu/acre)
Treatment	3 May	10 May	17 May	
Nontreated check	23,027 ^b	24,791 ^b	24,871 ^b	125.7
Maxim XL	27,213 ^a	28,475 ^a	28,850 ^a	133.6
Captan + Allegiance (CTS)	26,615 ^a	28,774 ^a	28,552 ^a	128.1
Vortex + Allegiance	28,111 ^a	29,770 ^a	30,442 ^a	138.4
Maxim XL + Gaucho	27,812 ^a	28,774 ^a	28,950 ^a	130.3

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