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Corn seed treatments in 2001

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Abstract

After several years in transition, the fungicidal seed treatment situation for corn is stabilizing. 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 to control *Fusarium*, *Rhizoctonia*, and other fungi, along with a narrow-spectrum product to get better control of *Pythium*.

Keywords

Plant Pathology, Entomology

Disciplines

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INTEGRATED CROP MANAGEMENT

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Two experiments were conducted (Munkvold) in Ames last year, comparing the available seed treatments and a couple of experimental products. In 2000, the Maxim XL treatments (or Maxim + Apron XL) performed slightly better than Captan + Allegiance (CTS) treatments, in terms of emergence (Table 1), but this higher performance did not translate into differences in yield. Similar comparisons have been conducted for several years, and overall, there has not been a consistent difference in field performance between Maxim + Apron XL and Captan + Allegiance. Also this year, some treatments included a double rate of mefenoxam, and this higher rate did not increase stand or plant height compared with the normal rate of mefenoxam in Maxim XL.

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. These products include Kernel Guard Supreme, Germate Plus, Agrox, and others. The additional fungicide can sometimes improve stand, but usually this effect is not statistically significant.

Although the fungicide situation may be getting simpler, new options are available this year in terms of seed-treatment insecticides. This is the first year that imidacloprid will be available for use on hybrid corn. There are two products being marketed by Gustafson, Inc., for hybrid corn: Gaucho and Prescribe. These products are commercial treatments applied by the seed companies. Both have imidacloprid as their active ingredient, but the rate differs by a factor of 8. Gaucho consists of imidacloprid at a rate of 0.165 mg/seed, whereas the Prescribe rate is 1.34 mg/seed. Imidacloprid is a systemic insecticide, so it can protect the plants from early-season leaf-feeding by the corn flea beetle. However, this protection is rate-dependent. At the Gaucho rate, flea beetles will be able to feed on the plants after the V1 stage. Prescribe will protect the plants through the V5 stage, perhaps a little longer. Aside from flea beetles, imidacloprid provides control of soilborne insects such as seed corn maggots and wireworms. Control of these insects with Gaucho is claimed to be as good as with planter box treatments.

Prescribe is being marketed primarily for control of moderate infestations of corn rootworm. Another seed treatment product for rootworm control is Pro-Shield from Syngenta. Pro-Shield

contains tefluthrin (the same as Force insecticide). Some results of Iowa State University rootworm control studies were reported [1] in the November 2000 issue of the Integrated Crop Management newsletter.

Other ways 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 information in your planting decisions. Herbicide stress contributes to seedling disease development, so be careful!

Table 1. Effects of seed treatments on total emergence and plant height in two experiments conducted in Ames, 2000. Planting date was April 14.

	Fungicide	Emergence (%)^a	Height^b
Experiment 1	Nontreated	78.0 ^b	14.56 ^b
	Captan /Allegiance	85.7 ^{ab}	15.92 ^{ab}
	Maxim XL	90.7 ^a	15.18 ^{ab}
	Maxim XL + Apron XL	91.0 ^a	14.66 ^{ab}
	Maxim XL + Experimental (Syngenta)	92.3 ^a	15.04 ^{ab}
	Maxim XL + Adage	88.7 ^a	16.62 ^a
Experiment 2	Nontreated	58.0 ^c	5.24 ^b
	Captan/Allegiance	71.7 ^b	6.24 ^{ab}
	Maxim/Apron XL	84.0 ^a	6.59 ^a
	Maxim/Apron XL (2X)	79.3 ^{ab}	6.19 ^{ab}
	Maxim/Allegiance	79.0 ^{ab}	6.89 ^a
	Maxim/Apron XL + Barracuda + CTS additive	86.7 ^a	6.66 ^a
	Maxim/Apron XL + Kernel Guard Supreme	78.7 ^{ab}	6.79 ^a
	Maxim/Apron XL + Kernel Guard	85.7 ^a	7.08 ^a
	Experimental (Gustafson)	88.0 ^a	6.94 ^a

^aPercentage of emergence 35 days after planting. Values followed by the same letter are not significantly different

according to the Waller-Duncan test (k-ratio = 100).

^bPlant height (cm) from soil surface to tip of tallest leaf 35 days after planting.

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[1] <http://www.ipm.iastate.edu/ipm/icm/2000/11-20-2000/crweval2000.html>

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