The Chem Gro Crop Watch, **Issue #4, 5/27/11**

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Be careful what you wish for. The majority of us wanted a nice .5" rainfall this week, including myself. My concern was that I was seeing high enough populations of foxtail grasses germinating through the pre-emergence chemical zone. The upper 1" of topsoil was dusty dry. In order for the herbicides to kill the shallow germinating weeds, it needs frequent .5" showers to keep the soil moist to allow the chemicals to keep active. Well, I (we) got our wish as the majority of Western Illinois received a general 3-4 inches of rain across a 3 day time period. Now, the ground is very saturated and when it does dry out, 2nd pass herbicide application will be right on time.

V5-V7 Corn Fungicide…do I or don't I? V5 fungicide application has gained a lot of attention the last two years. Under high disease pressure conditions (corn on corn with high amounts of residue), anthracnose leaf blight can spread rapidly and infect young corn at the V5-V7 stage corn. V5 applications of strobilurin fungicides have shown yield responses in the 4-7 bushel range under these high disease conditions. There is even data that suggests ½ rates (depends on manufacturer product) are as effective as full rates on corn in this young growth stage. Corn yield response on soybean stubble is less consistent as disease pressure is less. These fungicides can easily be mixed with most second pass herbicides, so a separate application is not needed.

The picture to the right shows a good example of what to look for on corn with Anthracnose leaf blight infection. The lesions begin on the bottom corn leaves, as the spores of the disease are splashed onto the leaves from contaminated soil and old corn residue. The lesions will begin as a yellow dot, then progress into a dark, rotting looking lesion that grows outwards. This is the same disease that can progress into anthracnose stalk rot as the corn crop matures. Here are 8 key environmental conditions that favor this disease:

- Corn that is planted in a continuous corn rotation.
- Fields that have had history of Anthracnose disease and/or Anthracnose stalk rot.
- No-Till, reduced tillage, or fields that have high surface residue. Many long term no-till or strip-till fields will still have a large amount of corn residue present even if the previous crop was soybeans.
- Fields that have the highest yield potential.
- Fields planted at high populations and/or narrow rows.
- Hybrids that are more susceptible to Anthracnose disease.
- Fields that are heavy or tend to stay wet.
- High humidity, heavy morning dews, and/or frequent rain showers that keep the soil surface moist with old corn residue.

So, back do my original question… "Do I or don't I spray a fungicide at V5-V7?" In my opinion, if your fields fall into the description check list for a high probability of Anthracnose leaf blight as mentioned above, and with $6.40 + new crop corn; why would you not consider it? You would need approximately 3 bushel gain to break even.

I have attached an article from the University of Illinois with their comments about V5-V7 fungicide application in corn. After reading it, you can see that they are not exactly "pumped up" in promoting this application. However, their data is a bit vague for me. They do not describe the crop rotation or residue amounts in their data. They also do not describe which particular disease(s) they are measuring in their disease severity %. If the University of Illinois were to separate their V5-V7 fungicide data by previous residue (corn on corn vs. soybean stubble), I am willing to speculate that their data would show different results based upon field cropping history instead of lumping all of the data as a whole.

V5-V7 Micro-nutrient application. The V5 growth stage in corn begins a critical time period in development as the girth in kernel rows is being determined. This growth stage would be an excellent opportunity to submit leaf tissue samples to a lab to see if the nutritional needs are being met within the corn plant. If N, P, K, or micro-nutrients such as Zinc, Sulfur, and Boron are not sufficient in tissue levels, kernel set in girth and length can be sacrificed. Again, this $6.40 + new crop corn market serves as a great motivational tool for a person to be proactive and learn more about your crops in your fields. There is huge potential for large net returns to those who put some extra effort into livelihoods (and if Mother Nature cooperates for the next 3-4 months).

That's my 2 cents worth…..the choice and decision is always yours. Lonne

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Paying for Fungicides, or Making Fungicides pay?

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The use of foliar fungicides on corn and soybean has increased dramatically over the last few years. Fungicides can be valuable tools that can be used to protect crops against plant diseases, which helps producers be more profitable. However, when the use of fungicides is not warranted under low disease pressure situations, they are much more likely to result into an added expense and not added profits. Trials have been conducted by the University of Illinois in the past few years to help determine when fungicide applications are more likely to be profitable. The following paper discusses the results of trials conducted during the 2010 growing season.

Corn Fungicide Trials in Illinois

Disease pressure and corn yield response to foliar fungicides. A uniform set of fungicide treatments were applied to corn (growth stage R1) in research trials located at six locations in Illinois (Auburn, DeKalb, Dixon Springs, Monmouth, Perry, and Urbana), and evaluated for their effect on yield in 2010. Averaged over all fungicide treatments and locations, the overall yield response was 8 bu/A, with yield responses ranging from –12 to 28 bu/A (Fig. 1). Disease pressure varied by location. The DeKalb location had the least amount of disease pressure (3% severity), while the Auburn location had the highest amount of disease pressure (48% severity). In general, the highest yield responses to fungicides occurred at locations with the highest disease pressure. At locations where disease severity was less than 10%, yield responses were generally less than 10 bu/A. These results indicate that disease severity plays a large role in corn's yield response to fungicides.

Application timing trials. Prior to and during the 2010 growing season, foliar fungicide applications to corn at the V4–V6 growth stages were aggressively marketed by some companies. Prior to 2010, very few university field trials had been conducted in Illinois and surrounding states where fungicides applied to V4–V6 stage were evaluated. In 2010, field trials were conducted at Urbana and Monmouth, IL to evaluate the effect of fungicides applied at different timings to corn on disease control and yield. At Urbana, different fungicide products were evaluated at 3 different timings: V6, R1, and V6 followed by R1. At Monmouth, Headline fungicide was evaluated at 4 different timings: V5, V15, VT, and R1. At Urbana, very low disease pressure was observed throughout the trial (2% severity and less), and no statistically significant differences in disease or yield were observed across all of the different treatments (Table 1). At Monmouth, high disease pressure was observed (66% severity in the non-treated control). Disease severity was significantly reduced by Headline fungicide applications made at VT or R1, but not by applications made at V5 or V15 when compared to the non-treated control. Headline fungicide applications made to VT or R1 corn provided significantly greater yields than the non-treated control or applications made to V5 or V15 corn.

Soybean Fungicide Trials in Illinois

Multi-site fungicide trial. Foliar fungicide trials were conducted on soybean at six different locations in Illinois (Belleville, DeKalb, Monmouth, Perry, Ridgway, and Urbana) in 2010. The overall average yield response across all locations was 1 bu/A (Fig. 2). Yield responses ranged from –10 to 9 bu/A. In

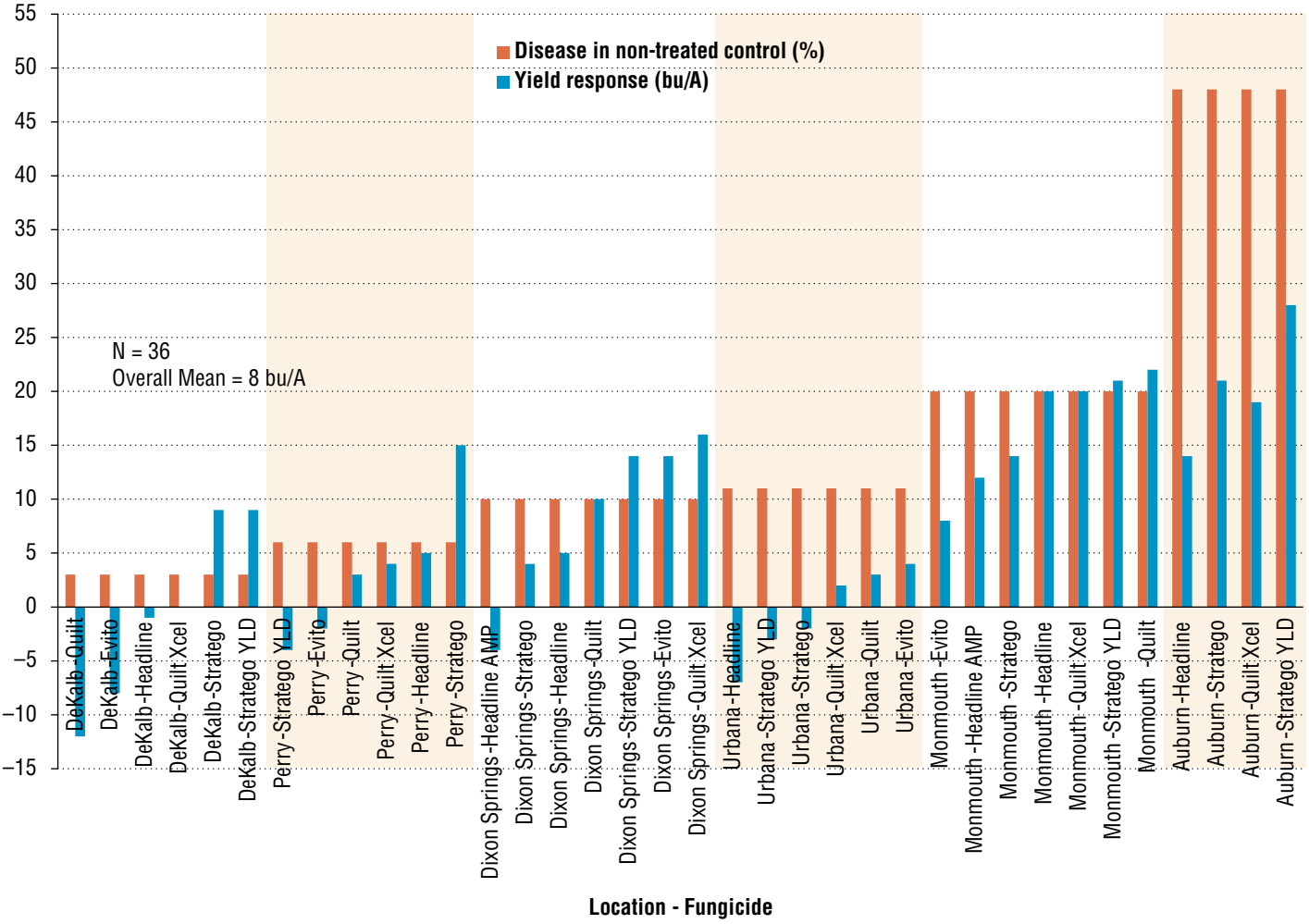

Figure 1 ■ Results of 2010 corn foliar fungicide trials in Illinois.

general, yield responses were consistently positive or not negative at locations with frogeye leaf spot levels of at least 2%.

Cultivar × fungicide trial with high frogeye leaf spot pressure. A foliar fungicide trial was conducted at Belleville, IL in 2010 with four different soybean cultivars. One cultivar (FS 4366) was susceptible to frogeye leaf spot (*Cercospora sojina*), while the other three cultivars were resistant to frogeye leaf spot. Significant yield responses to foliar fungicides were observed only on the frogeye leaf spot-susceptible cultivar (Table 2), and not on the other three cultivars. These results indicate that frogeye leaf spot may be able to cause yield reductions to soybean in Illinois on susceptible cultivars when conditions are favorable for disease. In addition, these results indicate that fungicides did not increase yield on cultivars that were not affected by frogeye leaf spot.

Fungicide Resistance Risk and Management in Illinois

Strobilurin fungicide-resistant *Cercospora sojina*. In 2010, isolates of *Cercospora sojina* (causal agent of frogeye leaf spot) were collected from a soybean field in Tennessee that were found to be resistant to quinone outside inhibitor (QoI—also known as strobilurin) fungicides. To date, this is the only

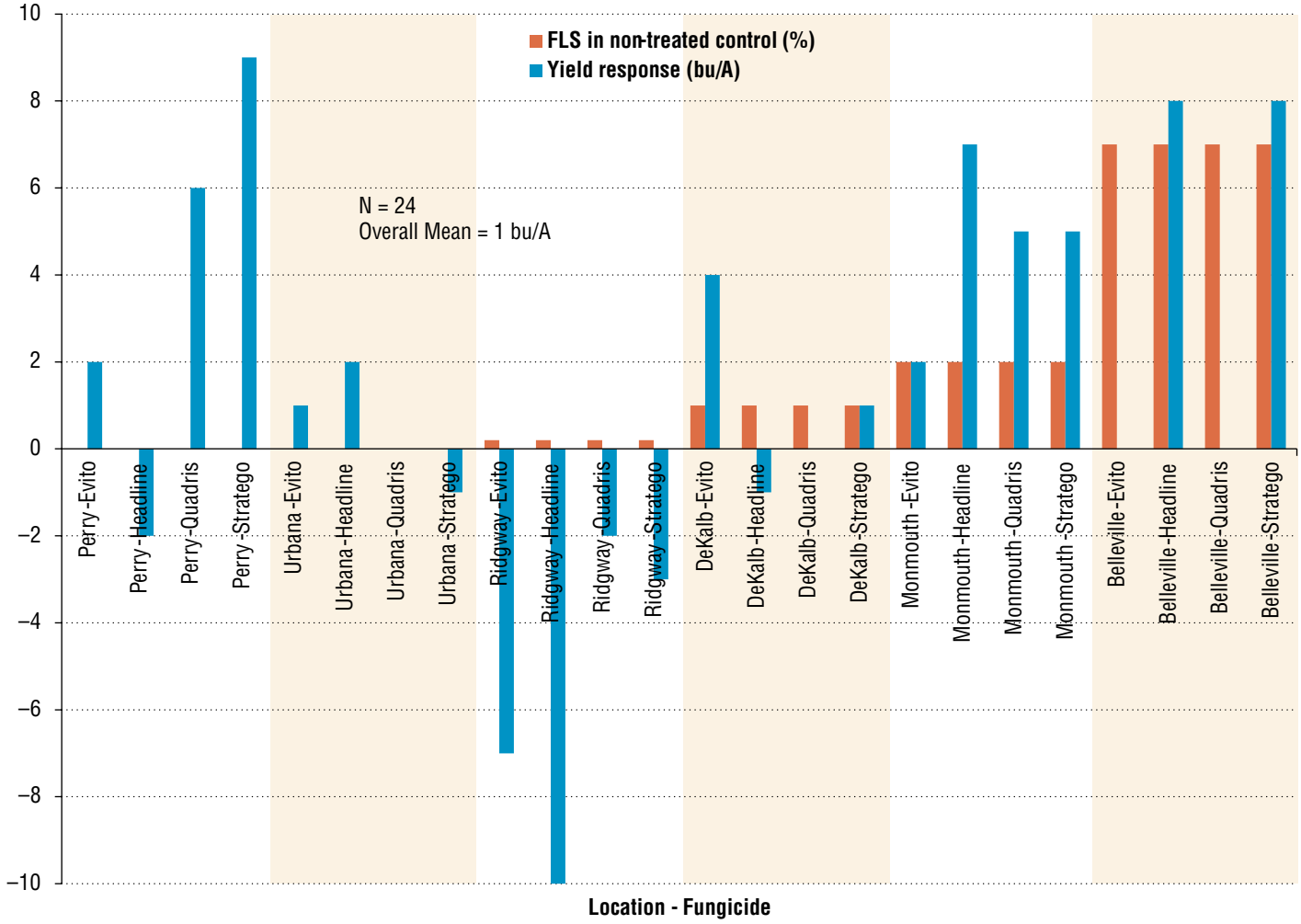

Figure 2 ■ Results of 2010 soybean foliar fungicide trials in Illinois.

documented field that has been found to have strobilurin-resistant strains of the frogeye leaf spot fungus; however, it is likely that similar strains are present elsewhere. To prevent the spread and development of strobilurin fungicide-resistant *C. sojina*, it is important to do the following:

1. Plant soybean cultivars with resistance to frogeye leaf spot.
2. If a susceptible cultivar has been planted, and a fungicide application is being considered, then apply an effective triazole fungicide for control.
3. In situations where other foliar diseases may be present along with frogeye leaf spot, and a strobilurin fungicide may be needed to control the other foliar diseases, do not spray a solo strobilurin product. Either apply a strobilurin-triazole tank-mix, or apply a product that contains both a strobilurin and a triazole fungicide.
4. Only apply a foliar fungicide when warranted for disease control.

Conclusions

Fungicides have become important tools used in corn and soybean production in Illinois. For the most profitable use of fungicides, it is important to apply these based on disease risk and scouting observations. When applying for

Table 1 ■ Effect of foliar fungicides applied to corn at different timings on disease severity and yield at Urbana and Monmouth, IL in 2010.

Location	Fungicide	Application timing	Disease severity (%)*	Yield (bu/A)*
Urbana	Non-treated control	—	2.0 A	110 A
	Quilt Xcel 10.5 fl oz	V6	0.8 A	127 A
	Quilt Xcel 10.5 fl oz	R1	0.5 A	127 A
	Quilt Xcel 10.5 fl oz / Quilt Xcel 10.5 fl oz	V6/R1	0.8 A	113 A
	Headline AMP 10 fl oz	V6	1.0 A	129 A
	Headline AMP 10 fl oz	R1	0.5 A	123 A
	Headline AMP 10 fl oz / Headline AMP 10 fl oz	V6/R1	0.8 A	129 A
	Evito 2 fl oz	V6	0.8 A	131 A
	Evito 2 fl oz	R1	0.8 A	125 A
	Evito 2 fl oz / Evito 2 fl oz	V6/R1	1.0 A	127 A
	Stratego 2.5 fl oz/A	V6	1.0 A	119 A
	Stratego 5 fl oz/A	R1	0.5 A	129 A
	Stratego 2.5 fl oz / Stratego 5 fl oz	V6/R1	0.8 A	127 A
Monmouth	Non-treated control	—	66 B	229 A
	Headline 6 fl oz	V5	65 B	234 AB
	Headline 6 fl oz	V15	63 B	239 B
	Headline 6 fl oz	VT	33 A	253 C
	Headline 6 fl oz	R1	26 A	252 C

*Values within a column and location followed by the same letter are not significantly different with 95% confidence.

Table 2 ■ Effect of foliar fungicides on soybean cultivars differing in susceptibility to frogeye leaf spot at Belleville, IL in 2010.

Cultivar	Fungicide	Frogeye leaf spot incidence (%)	Yield (bu/A)
FS 4366	Non-treated control	88	60
	Headline 6 fl oz	22*	71*
	Stratego 10 fl oz	7*	83*
	TopGuard	22*	66
	Domark	50*	62
Pioneer 94Y70	Non-treated control	0	64
	Headline 6 fl oz	0	74
	Stratego 10 fl oz	0	69
	TopGuard	0	72
	Domark	0	65
FS 45T70	Non-treated control	0	68
	Headline 6 fl oz	0	74
	Stratego 10 fl oz	0	70
	TopGuard	0	70
	Domark	0	72
Stone 3A449 NRRRSTS	Non-treated control	0	73
	Headline 6 fl oz	0	75
	Stratego 10 fl oz	0	73
	TopGuard	0	74
	Domark	0	74

*Denotes that value is significantly different than the non-treated control for that cultivar (95% confidence level).

reasons other than disease control, the benefits of fungicides are inconsistent. In addition, use of fungicides for reasons other than disease control could potentially increase the development and spread of fungicide-resistant strains of fungal pathogens.

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