

## 2011 UW Extension Western Wisconsin Corn Grain Foliar Fungicide Research Trials

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**Project Description:** There has been a significant increase in the promotion of foliar fungicide use for corn grain production over the last four years by fungicide manufacturers with claims of large yield increases and improved plant health. There has not been any third party unbiased research data to support the use of foliar fungicides in corn grain production. To evaluate foliar fungicide use in corn grain production in Western Wisconsin, the University of Wisconsin Extension Service conducted three small plot replicated trials in Western Wisconsin in 2011. One of the plots had environmental impacts that made the plot data unusable. This work is building on previous work in the region and incorporating the new formulations of fungicides released by the companies in 2010.

**Materials and methods:** The trials were conducted in cooperating farmers' fields using hybrids selected by the farmer at the site chosen and all other management practices except for the fungicide applications were the farmers normal management for those locations. Treatments were as follows; at V5 maturity Headline @ 6.0 oz/a, Quadris @ 6.0 oz/a, and Stratego YLD @ 2.5 oz/a, at R1 treatments were Headline Amp @ 10 oz/a, Stratego Yld @ 5 oz/a and Quilt Xcel @ 10.5 oz./a, and an untreated check treatment. The trial was set up in a randomized complete block design, with three replications. Each treatment bed was four rows wide by thirty feet long. Fungicide was applied with a back-pack sprayer using an extended boom equipped with 11003XR flat fan nozzles at 40 psi delivering a total volume of 18.3 gallons per acre at V5 and 20.6 gallons per acre at R1. Sprayer volumes were different due to sprayer configuration differences to allow for correct application at the timings due to different plant heights.

The plots were rated for foliar diseases based on percentage of leaf area infected at the time of fungicide applications and in early September. Stalk top dieback was also assessed in early September. Plots were rated for stalk rot using the University of Illinois numeric rating system (5 stalks in each replicate) and using the stalk nudge test (30 stalks for each replicate) at harvest time. Harvest was conducted using the 1/1000<sup>th</sup> of an acre method used by USDA Farm Service Agency, with the two center rows measured for yield.

**Results and Discussion:** Mindoro results indicated a significant yield reduction (-13 bu/A) when using Headline at the V5 stage of development. This treatment also reduced yield when compared to Headline AMP (R1) and Stratego YLD (V5 and R1). Headline AMP (V5) significantly increased grain moisture when compared to all treatment except Quadris (R5) and Quilt Xcel (R1). The only other parameters affected were the R5disease severity ratings. There was moderate disease pressure at the LaCrosse County site and all three fungicides applied at R1 decreased severity ratings significantly.

At the Wilton site, yield and disease severity ratings were not significantly affect by fungicide or application timing, however, disease pressure was low. Stratego YLD (V5) had significantly higher grain moisture than the untreated check and Headline AMP (V5). However this treatment was not significantly different from the other fungicide treatments and/or timings. All fungicides applied at V5 had significantly lower test weight than the untreated check.

The results from these trials are consistent with previous year's plots conducted by UW Extension evaluating the effect of foliar fungicides on corn grain yields. We have not been able to measure consistent responses, or predict situations where foliar fungicides would increase corn yields.

It is important for corn growers to remember the “three legged stool” for a plant disease to be successful, you must have a susceptible host, a favorable environment, and the presence of the disease. Our climate in Wisconsin does not favor plant disease pressure like the climatic conditions growers face in areas farther south in the United States. Growers also have access to a large number of high yielding hybrids with very strong agronomics traits for resistance to disease pressure. Selecting hybrids with strong agronomic traits should be considered the most important step in disease management.

**Presentation of the Results:** The results from the two corn grain fungicide plots conducted in Western Wisconsin are presented below. They include general information about the site including hybrid, applications timing and related information as available.

Additional results and information on the use of foliar fungicides can be found at the following website: <http://fyi.uwex.edu/fieldcroppathology/>

**Interpretation of the data:** <sup>a</sup> means within a column for a location that are followed by the same letter are not significantly different (P=0.10, Duncan’s New Multiple Range Test)

### Individual Site Results– 2011 Western WI Corn Grain Fungicide Trials

**Location: Mindoro Hybrid:** DeKalb 53-45 btrw-rr **Tillage:** chisel plow **Previous crop:** corn **Planting date** 05-01-11  
**Application dates: V5:** 06-14-11 **R1:** 07-24-11 **Late Season Foliar Rating:** 09-09-11 **Stalk Rating:** 10-05-11  
**Harvest date:** 10-13-11

Treatment	Application Timing	Yield Bu/a	Grain Moisture %	Test Wt. Lb./bu.	Stalk Health Rating Oct. 5	Disease Rating @ V5	Disease Rating @ R1	Disease Rating Sept. 9
Untreated Check		167.8 ab	21.1 ab	54.0 a	0.4 a	0.0 a	0.5 a	10.0 b
Headline @ 6.0 oz/a	V5	154.8 c	20.7 b	54.3 a	0.4 a	0.0 a	0.5 a	10.0 b
Quadris @ 6.0 oz/a	V5	161.6 bc	20.2 b	54.3 a	0.4 a	0.0 a	0.5 a	11.7 b
Stratego YLD @ 2.5 oz/a	V5	167.4 ab	19.9 b	54.3 a	0.4 a	0.0 a	0.5 a	15.0 a
Headline AMP @ 10.0 oz/a	R1	174.4 a	22.6 a	54.3 a	0.4 a	0.0 a	0.5 a	5.0 c
Quilt XL@ 10.5 oz/a	R1	163.0 abc	22.3 a	54.0 a	0.4 a	0.0 a	0.5 a	6.7 c
Stratego YLD @ 5.0 oz/a	R1	170.9 ab	19.5 b	54.3 a	0.4 a	0.0 a	0.5 a	5.0 c

**Individual Site Results– 2011 Western WI Corn Grain Fungicide Trials**

**Location:** Wilton **Hybrid:** Croplan 3724 **Tillage:** moldboard plow **Previous crop:** corn **Planting date** 06-01-11  
**Application dates:** V5: 06-28-11 R1: 08-01-11 **Late Season Foliar Rating:** 09-09-11 **Stalk Rating:** 10-05-11  
**Harvest date:** 10-13-11 **Special note:** This location had heavy second generation European Corn Borer damage

Treatment	Application Timing	Yield Bu/a	Grain Moisture %	Test Wt. Lb./bu.	Stalk Health Rating Oct. 5	Disease Rating @ V5	Disease Rating @ R1	Disease Rating Sept. 9
Untreated Check		140.1 a	21.8 b	54.3 a	0.73 a	0.0 a	0.0 a	1.0 a
Headline @ 6.0 oz/a	V5	132.2 a	22.6 ab	52.7 c	0.87 a	0.0 a	0.0 a	1.0 a
Quadris @ 6.0 oz/a	V5	123.7 a	23.3 ab	53.0 bc	1.13 a	0.0 a	0.0 a	1.0 a
Stratego YLD @ 2.5 oz/a	V5	124.2 a	24.4 a	53.0 bc	0.93 a	0.0 a	0.0 a	1.3 a
Headline AMP @ 10.0 oz/a	R1	129.6 a	21.9 b	54.0 ab	0.87 a	0.0 a	0.0 a	1.0 a
Quilt XL @ 10.5 oz/a	R1	134.7 a	23.5 ab	54.0 ab	0.93 a	0.0 a	0.0 a	1.0 a
Stratego YLD @ 5.0 oz/a	R1	132.7 a	22.3 ab	54.3 a	0.73 a	0.0 a	0.0 a	1.0 a