

## Spring Malting Barley

### 2013 FUNGICIDE MANAGEMENT TRIAL

*Fusarium* head blight is caused by the organism *Fusarium graminearum*. Barley infected by FHB may become contaminated by a mycotoxin called Deoxynivalenol (DON). DON levels above 1.0 ppm lead to rejection of the grain for malting. FHB is the primary fungal contamination issue affecting quality malting barley, and the climatic conditions of Michigan highly favor disease formation.

Six fungicides were used, along with two different spray timings. (Table 1.) A control treatment of no fungicide was incorporated also. Spray timings were applied at boot stage (Feekes stage 10) and at heading (Feekes stage 10.5).

**Table 1.** Fungicide treatments in 2013 UPREC trial

Treatment	Rate (oz./acre)	Growth stage applied
Control	0	N/A
Twinline	9	Feekes stage 10
Prosaro	8.2	Feekes stage 10.5
Caramba	14	Feekes stage 10.5
Absolute	3.3	Feekes stage 10
Quilt Xcel	14	Feekes stage 10
Stratego YLD	2.3	Feekes stage 10

Fungicide treatments were applied with an International Cub tractor modified for spraying small plot treatments (see photo right). The trial was planted late due to an abnormally cool and wet spring. These weather conditions persisted throughout the entire



growing season, impacting harvesting date as well. The trial was harvested on September 16, 2013 with a Hege 125b plot combine. Samples were collected and cleaned through a Clipper Eclipse fanning mill. Grain moisture and test weight were analyzed on a Dickey-John GAC 2500. Replicate samples were composited across each treatment, and sent to North Dakota State University for grain quality analysis. Yield was adjusted to 14.5% moisture.

## RESEARCH AT A GLANCE

### PURPOSE:

Evaluate fungicides for control of *Fusarium* head blight (FHB)

### TRIAL LOCATION:

Upper Peninsula Research and Extension Center, Chatham, MI

Soil type – well-drained Eben Very Cobbly Sandy Loam

### EXPERIMENTAL DESIGN:

Randomized complete block with four replications.

### TRIAL ESTABLISHMENT:

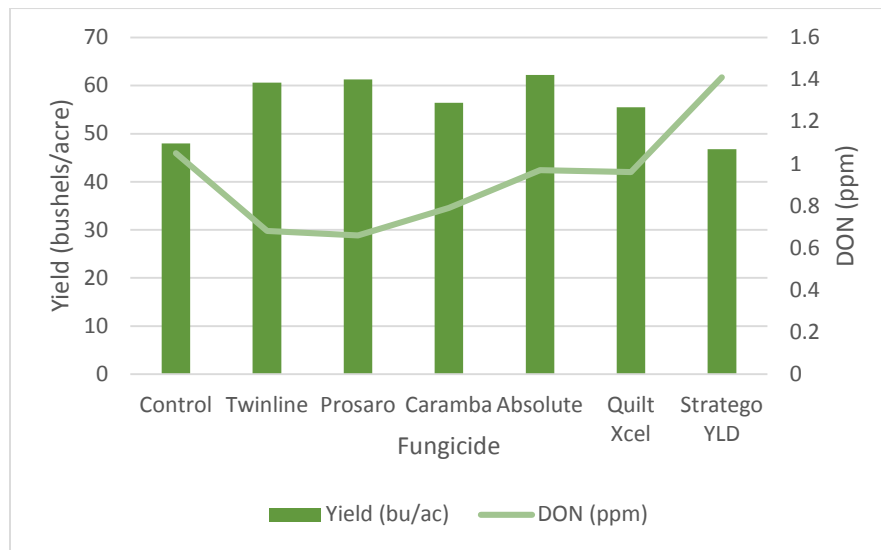
- Rasmussen, 6-row malting barley variety from Minnesota
- Planted May 5, 2013
- Trial planted into a plot previously in corn (2012) to insure a high inoculum load (corn is a host for FHB)
- Plot size 3' wide by 20' long
- Borders and alleys trimmed to minimize edge effect
- 77 lbs./acre of N top-dressed after planting in the form of ESN (44-0-0)
- Huskie applied for weed control (11 oz./acre)

Plot data showed a significant difference in yield. (Table 2.) There was no significant difference in DON levels. Analysis of data should be made with caution, due to only one year of data. However, it can be theorized that certain fungicide applications made to malting barley may lead to a response in yield.

**Table 2.** Yield in bushels/acre and DON levels (ppm) in grain for various fungicide treatments

Fungicide	Rate (ozs/ac)	Yield (bu/ac)	LSD @ 0.05	DON (ppm)	LSD @ 0.05
Control	0	48.0	B	1.05	A
Twinline	9	60.6	A	0.68	A
Prosaro	8.2	61.3	A	0.66	A
Caramba	14	56.4	AB	0.79	A
Absolute	3.3	62.2	A	0.97	A
Quilt Xcel	14	55.5	AB	0.96	A
Stratego YLD	2.3	46.8	B	1.41	A

**Figure 1.** Yield and DON levels compared based on fungicide products



**Figure 2.** Fungicide trial at UPREC (photo courtesy J. Isleib, 2013)



## CONCLUSIONS

Fungicide application is a proven method of controlling Fusarium head blight (FHB) and the resulting DON levels in malting barley. Although a significant difference was not noted in DON levels between treatments, it was apparent that yield was impacted by appropriate FHB control. Findings from this trial continue to inform fungicide recommendations by the malting barley research program.

This trial was managed by Jim Isleib (U.P. MSUE Field Crop Educator) Dr. Russ Freed (MSU Professor) and Christian Kapp (UPREC Crop Technician), and supported through Michigan State University Project GREEN and AgBioResearch.

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Research and resources  
can be found at:

[msue.anr.msu.edu/topic/  
info/malting\\_barley](https://msue.anr.msu.edu/topic/info/malting_barley)