DEMONSTRATION REPORT

MONSANTO LEARNING CENTER AT MONMOUTH, IL

EFFECTS OF FUNGICIDE APPLICATION TIMING IN HAIL-DAMAGED CORN

TRIAL OVERVIEW

- There have been previous field reports from farmers regarding hail-damaged crops benefiting from a fungicide application.
- Foliar diseases such as gray leaf spot, leaf blights, and rusts, which may be managed by fungicide application, do not require plant wounds (such as from hail) for plant infection.
- Diseases such as Goss's wilt, common smut, and stalk rots, which are favored by plant wounds, are not controlled with fungicide application.
- A previous 2011 study at the Monsanto Learning Center at Monmouth, IL evaluating fungicide application on undamaged corn during vegetative growth stages did not produce a consistent yield response.

RESEARCH OBJECTIVE

- The objective of the trial was to evaluate yield response to three different fungicide application timings on corn damaged by hail at two different growth stages.

Location	Soil	Previous Crop	Tillage Type	Planting Date	Harvest Date	Potential Yield/Acre	Planting Rate/Acre
Monmouth, IL	Silt loam	Corn	Conventional		09/29/2016		36,000 seeds

SITE NOTES:

- Two plots with the same corn seed product (105 day RM SmartStax® RIB Complete® corn blend) at the Monsanto Learning Center at Monmouth, IL were damaged by hail on June 22, 2016.
- One plot was at V4 (4 leaf collars) growth stage and one plot was at V7 (7 leaf collars) growth stage when the hail event occurred.
- Treatments applied to both hail-damaged plots included the following:
  - Fungicide applied at vegetative growth stage on June 28.
  - Fungicide applied at R1 (silking) growth stage.
    - August 9 application on V4 hail damaged plot.
    - August 5 application on V7 hail damaged plot.
  - Fungicide applied at vegetative growth stage on June 28 followed by an application at R1 growth stage on:
    - August 9 for the V4 hail damaged plot.
    - August 5 for the V7 hail damaged plot.
- There were 2 replications.

UNDERSTANDING THE RESULTS

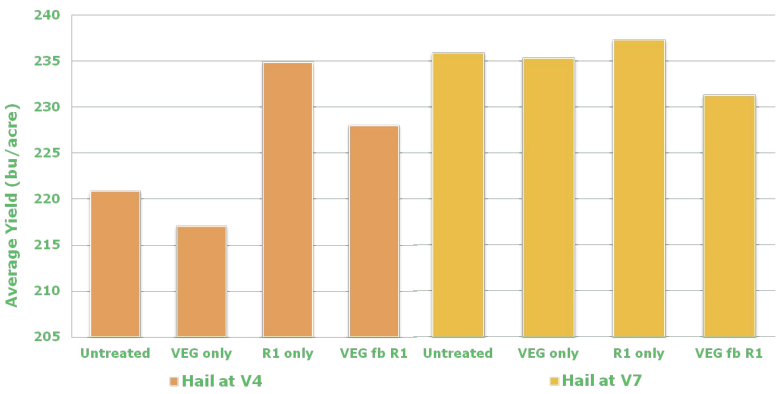

Figure 1. Average Yield From Timing of Fungicide Treatments

Figure 2. Top - Goss's wilt "leaf freckles" (yellow arrow) and necrotic streaks (red arrow). Bottom - Common smut

- **Hail-damaged corn at V4**
  - Fungicide application at vegetative growth stage did not result in a positive yield response compared to the untreated control.
  - Fungicide application at silking (R1) or in a combination with a vegetative growth stage application resulted in higher average yields compared to the untreated control.
- **Hail-damaged corn at V7**
  - All fungicide timing applications did not result in a positive economic yield response compared to the untreated control.
- **Comparing V4 and V7 hail-damaged corn plots**
  - Yield response of the two applications (Veg fb R1) treatment was less than the R1 only application in both hail damaged plots.
  - The hail-damaged V4 growth stage plot had a higher yield response from fungicide applications compared to the hail-damaged V7 growth stage plot.
  - The larger yield response at V4 growth stage may have been due to ear development taking place when hail damaged occurred.

WHAT DOES THIS MEAN FOR YOUR FARM?

- Fungicide applications cannot recover lost yield potential due to hail damage.
- Fungicides protect yield potential by reducing disease infestations.
- Incidence of some corn diseases are not affected by fungicide application.
- Under these conditions the results of the fungicide application at vegetative growth stages indicated no return on investment, which is similar to previous results at the Monsanto Learning Center, at Monmouth IL.
- Corn yield response to fungicide application is highly variable due to seed product disease resistance, disease pressure, environment and other factors.

SOURCES
1 Jackson-Ziems, T.A. 2014. Fungicide in corn after hail or wind damage. CropWatch. University of Nebraska-Lincoln. http://cropwatch.unl.edu/fungicide-use-corn-after-hail-or-wind-damage.
2 Robertson, A.R. and Mueller, D. 2009. Should hail damaged crops be sprayed with a fungicide? Integrated Crop Management. Iowa State University. http://crops.extension.iastate.edu/cropnews/2009/07/should-hail-damaged-crops-be-sprayed-fungicide. Web sources verified 11/10/16. 161107090114