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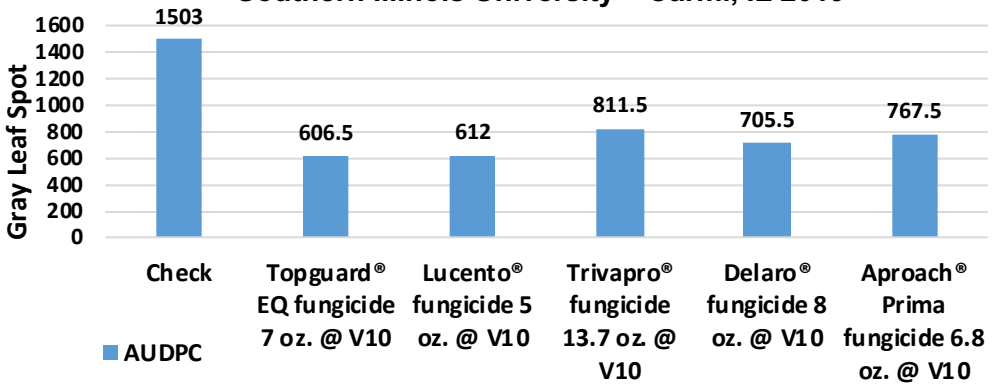
FUNGICIDE APPLICATIONS IN CORN

Weather patterns during the spring stretched planting dates out again in 2020. Early-planted corn will soon be tasseling in areas of Illinois and Indiana. However, many acres were not seeded until the first week of June. Later planting dates often facilitate increased disease pressure as infection during earlier growth stages is probable. Research has demonstrated protecting the upper canopy (ear leaf and above) is critical to allow corn plants to capture sunlight needed to optimize photosynthesis and grain fill. If applying prior to tassel, research has shown that V10-V12 treatments are optimal. However, generally VT-R1 applications are most consistent for managing foliar diseases in corn.

Dry weather patterns in the past few weeks have been less conducive for disease infection. Nevertheless, rainfall over the weekend and forecasted precipitation and storms over the next 10 days may deposit wind-blown fungal pathogens in addition to facilitating infections of residue-borne pathogens through inoculum splash and leaf wetting. It will be critical to monitor the progression of air borne diseases that are blown up from the South (Southern rust) in addition to the development of diseases initiating in the lower canopy (GLS, NCLB, anthracnose etc.) when making fungicide decisions this season.

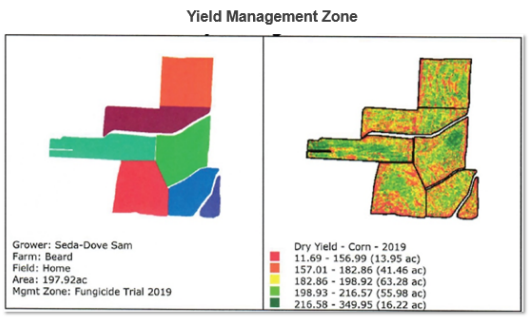
INSIDE THIS ISSUE

Early Foliar Fungicide Application Comparisons
Southern Illinois University – Carmi, IL 2019



This trial illustrates improved xylem mobility and residual with flutriafol, the DMI in Topguard EQ and Lucento fungicides, vs. competitive standards in early applications.

2019 CORN YIELD CHALLENGE REPORT – PETTIS COUNTY, MO



Fungicide Treatment	Bu/A
Lucento® fungicide	197.6
Veltyma® fungicide	192.9
Delaro® fungicide	191.4
Headline AMP® fungicide	190.7
Aproach® Prima fungicide	190.6
Trivapro® fungicide	185.5
Nontreated	172.1

Contact your local FMC representative for more information

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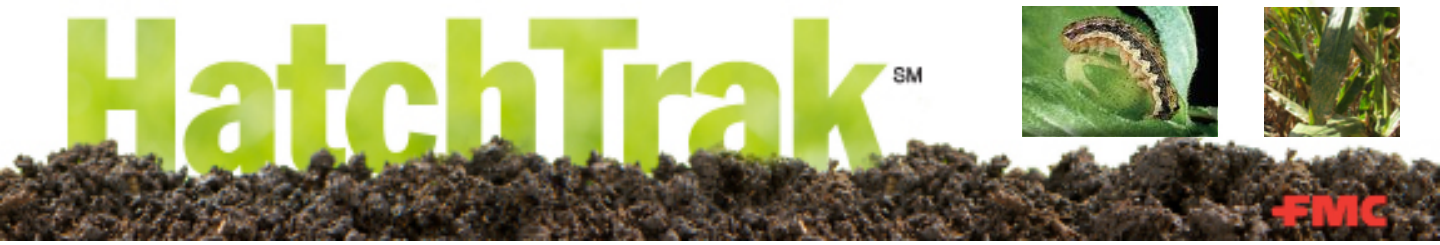
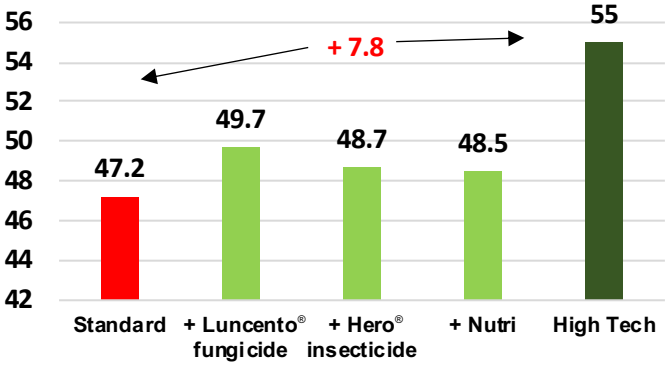


INSECTICIDE / FUNGICIDE APPLICATION BENEFITS

University and industry trials have demonstrated optimized yields when implementing high-tech systems (in furrow, fungicide, insecticide and nutritional) in corn and soybeans. The use of fungicides preserves photosynthetic leaf area for grain fill, and when employing mitochondrial respiration inhibitors plant health effects are often observed. These effects include increased CO_2 assimilation, water use efficiency and stress tolerance during critical reproductive stages. Utilizing insecticides to address defoliating as well as insects that feed on developing seeds may also promote greater yield and seed quality.

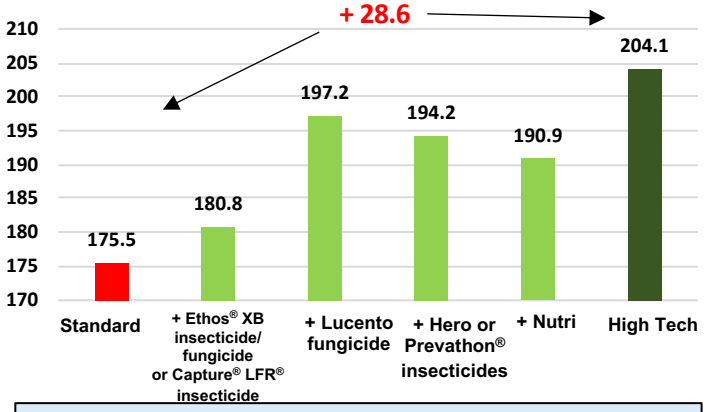
Weather patterns will determine disease progression. However, insect pressure is starting to increase. Thistle caterpillars, Japanese beetles and spider mites are beginning to materialize in several crop fields. Corn earworm and Western bean cutworm flights will soon transpire. The past few years have revealed relatively high CEW and WBC moth flights and subsequent ear feeding, particularly for corn maturing later than normal due to planting date. As crops begin their reproductive stages, this represents a vital period to protect them from biotic and abiotic stress. Replicated research has demonstrated preserved yield potential by employing high-tech management programs, emphasizing crop protection from furrow to finish. Talk to your FMC representative to determine the best options to exploit **FMC Freedom Pass** programs to optimize crop yields and return on investment.

Selected Treatments from Omission / Addition Trials - Soybean
Data Pooled Over Three Trials (N=3)
Randomized Complete Block – Three Replications
Whitestown, IN 2019



In this replicated trial, adding each input (fungicide, insecticide, nutritional) separately improved crop yields 1.3-2.5 bushels per acre. However, the high-tech treatment including all inputs in a program resulted in a 7.8 bu/A increase vs. the standard.

Selected Treatments from Omission / Addition Trials - Corn
Data Pooled Over Three Trials (N=3)
Randomized Complete Block – Three Replications
Whitestown, IN 2019



In this replicated trial, adding each input (In-furrow, fungicide, insecticide, nutritional) separately improved crop yields 5.3-21.7 bushels per acre. However, the high-tech treatment including all inputs in a program resulted in a 28.6 bu/A increase vs. the standard.

LUCENTO FUNGICIDE

Field Corn, Seed Corn, Popcorn, Soybean Recommendations:

- Use Rate: 5 oz./A
- Methods Allowed: Ground, aerial, chemigation.
- Adjuvants: Corn – yes, prior to V8 and after VT. Soybeans – yes, at any stage.
- Number of Applications: Two
- Do not apply more than 11 fl. oz/A per crop year.
- Final Application Timing: Corn - R4
- REI: 12 hours, except five days for de-tasseling.
- PHI: Corn – 30 days (grain and stover), 10 days forage. Soybeans – 21 days.

TOPGUARD EQ FUNGICIDE

Field Corn, Seed Corn, Popcorn, Soybean Recommendations:

- Use Rate: 5-7 oz./A
- Methods allowed: Ground, aerial.
- Adjuvants: Corn – Yes, prior to V8 and after VT. Soybeans – Yes at any stage.
- Number of Applications: Two (corn), Three (soybean)
- Do not apply more than 14 (corn), or 15.5 (soy) fl. oz/A per crop year.
- Final Application Timing: Corn - R4
- REI: 12 hours, except five days for de-tasseling.
- PHI: Corn – 7 days, soybean – 21 days.

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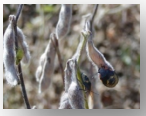

FMC

Whitestown, IN – 2018
FELS – Pod Infection/Seed Quality

Milan, TN – 2018
FELS/Purple Seed Stain – Seed Quality

LUCENTO®
FUNGICIDE

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SOYBEAN GROWTH STAGES

When making fungicide applications it is important to abide by label suggestions based upon soybean growth stage. Below is a guide from Iowa State University that will help distinguish in the field.

Vegetative Stages		
	VE	**Emergence** - cotyledons have been pulled through the soil surface
	VC	**Unrolled unifoliolate leaves** - unfolding of the unifoliolate leaves
	V1	**First trifoliolate** - one set of unfolded trifoliolate leaves
	V2	**Second trifoliolate** - two sets of unfolded trifoliolate leaves
	V4	**Fourth trifoliolate** - four unfolded trifoliolate leaves
	V (n)	**nth trifoliolate** - V stages continue with the unfolding of trifoliolate leaves. The final number of trifoliolate's depends on the soybean variety and the environmental conditions

Reproductive Stages		
	R1	**Beginning flowering** - plants have at least one flower on any node
	R2	**Full flowering** - there is an open flower at one of the two uppermost nodes
	R3	***Optimal fungicide timing for targeting the disease complex in soybeans*** **Beginning pod** - pods are 3/16 inch (5 mm) at one of the four uppermost nodes
	R4	**Full pod** - pods are 3/4 inch (2 cm) at one of the four uppermost nodes
	R5	**Beginning seed** - seed is 1/8 inch long (3 mm) long in the pod at one of the four uppermost nodes on the main stem
	R6	**Full seed** - pod containing a green seed that fills the pod capacity at one of the four uppermost nodes on the main stem
	R7	**Beginning maturity** - one normal pod on the main stem has reached it's mature pod color
	R8	**Full maturity** - 95% of the pods have reached their full mature color

SOYBEAN INSECT COMPLEX

Soybean Aphid

General Facts:
- Overwinters as an egg on buckthorn
- Multiple generations per year
- Damage from feeding on sap
- Indirect damage from spread of soybean mosaic virus and alfalfa mosaic virus

Threshold:
- Varies with several factors such as insecticide cost, application cost, infestation timing, current timing, expected yield and price of soybeans

Two-Spotted Spider Mite

General Facts:
- During drought conditions they will move to soybeans
- Foliar coverage is critical
- Assess mite movement into fields along corners and edges to prevent heavy infestations within the field

Threshold:
- None, easier to manage the population than rescue a heavy infestation

Three-Cornered Alfalfa Hopper

General Facts:
- Generally cause problems on beans less than 12" tall
- Feed on main stem near the soil line
- Seedling plants my be girdled and die, and larger damaged plants may lodge
- Later feeding on pod petiole will cause pod abortion

Threshold:
- One per sweep

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SOYBEAN INSECT COMPLEX

Potato Leafhopper

General Facts:
- Overwinters near the Gulf
- Adult females insert two to three eggs into soybean plants per day
- Feed on phloem
- Cause distorted leaf veins, yellow-brown leaves (hopper burn) and may stunt the plant

Approximate Threshold:
- Five leafhoppers/plant

Corn Earworm (Podworm)

General Facts:
- Moths lay eggs in the upper canopy, 1 female can lay up to 1800 eggs
- Caterpillars (four pairs of prolegs) feed on leaves, blossoms, and pods

Threshold:
[cost of trt/(price/bu x 1.93)]/ 0.68

Soybean Stem Borer

General Facts:
- Overwinters as a larva in the base of the stem
- Adults emerge in late June and lay eggs through August
- Control is difficult – the larva are in the stem and cause lodging, proper timing is key to adult control

Approximate Threshold:
- One per 10 sweeps

Japanese Beetle

General Facts:
- Adults emerge in early June and feed most of the summer
- They group feed and stay exposed to sunlight making them easier to control
- Grubs from these adults can cause problems next year in field corn

Threshold:
- 30% defoliation at pre-bloom stage
- 15% defoliation from bloom to pod-fill

Bean Leaf Beetle

General Facts:
- Overwinters as an adult
- Two in-season generations per year
- Direct damage from feeding on leaves and pods
- Indirect damage from spread of bean pod mottle virus (see photo)

Threshold:
- Difficult to determine depending on direct or indirect damage. Scout earliest planted soybeans first.

Guideline:
- $7 insecticide cost, $12 bu soybeans
- Nine beetles/20 sweeps

Stink Bugs

General Facts:
- Move into the North from the South on weather fronts
- Females lay 10-30 eggs per cluster
- Depending on species it takes 23 days to two months from egg to adult
- Feed directly on pods and seeds

Approximate Threshold:
- One per ft. of row