

# eFields

## Ohio State University Extension Soybean Fungicide Trial Protocol

### Study Overview

The goal of this study is to estimate the effect of strobilurin and triazole fungicides on soybean yield in the presence of strobilurin fungicide resistant strains of *Cercospora sojina*, causal agent of frogeye leaf spot in Ohio. Strobilurin fungicides have been very effective over the past decade of protecting soybean yield from losses associated with foliar diseases, especially frogeye leaf spot. However, during 2015-2017, our lab identified an increasing incidence of strains of *C. sojina* that had the mutation, rendering them insensitive to this class of fungicides. Thus, the objective of this study is to evaluate the effect of strobilurin as well as other fungicides on their impact on yield of soybean in Ohio in the face of this changing pathogen populations.

Proper experimental design is important to ensure the validity of season-end yield results. Plot replication and randomization make it possible for statistical analysis to account for the natural field variation that occurs. For this study, a minimum of three replications should be used with four replications recommended. Plots should be randomized within each replication to eliminate bias due to plot order. **Replication is important as these diseases do not occur uniformly throughout the field, so the disease levels and yield in each strip are critically important.**

### Treatments

#### Fungicides alone – will be applied at the R3 growth stage.

CHK - Untreated check

- A. Quadris – 6 fl oz/A – azoxystrobin alone
- B. Quadris Top SBX- 7 fl oz/A – azoxystrobin, difenocoazole
- C. Trivapro- 13.7 fl oz/A – azoxystrobin, propiconazole, benzovindiflupyr (Solatenol)

Solatenol – SDHI fungicide

Fungicide will be provided, details coming.

So plan on 1 gallon of each project – *although we might be short on the Trivapro if the fields are really long. Just note where the fungicide runs out and shorten that last strip.*

### Field Dimensions

The field size will determine the total number of plots that can be installed. Remember, at least 3 replications per treatment. Plot length is typically determined by the length of the field. All plots should be at least 500 feet long. Plot width will be determined by equipment size. It is important to take into account the size of both the sprayer and the combine, as well as any other equipment that might impact the trial.

- Passes / plots no less than 500-feet (not counting headland rows) are recommended.
- Plots widths should consist of **three** or more combine header widths.
- For soybeans, it is important to be aware that field activities, including harvest, may not be conducted parallel to the row direction. Wider plots are necessary to account for this.

# Data Collection

5 primary data needs for this project

1. Complete worksheet
2. Field boundary (lat/long of field will work at minimum)
3. Disease ratings before sprays, 2 weeks after and at R6/R7. (Acre Scout/Dorrance)
4. Notes on insect feeding – general health of the crop, anything that could impact yield
5. Yield Monitor Data (calibrated); If a yield monitor is not available, a weigh wagon can be used to weigh the total amount harvested from each plot. Accurate plot dimensions are needed (e.g. width and length of each plot)

## Example Layouts

Rep 1				Rep 2				Rep 3				Rep 4			
B	A	CHK	C	C	CHK	B	A	CHK	A	C	B	B	C	A	CHK
101	102	103	104	201	202	203	204	301	302	303	304	401	402	403	404

A, B, and C will be the strips for the potentially three different fungicides – depending on the width of the field. The best trials are at least 300 to 500’ in length. The width of each strip is usually the spray boom – as long as this is wider than the width of the combine.

For each strip – the combine width should be in the center of the spray boom – to avoid treatment overlap. The yield will be measured up the center of the study – where we would expect the most fungicide activity would be – and not on the edges.

