



## Nebraska On-Farm Research Network

# Crop Protection Research Protocol: V5 Fungicide Applications for Corn

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*Protocol developed by: Dr. Tamra Jackson-Ziems, UNL Extension Plant Pathologist; Jennifer Rees and Laura Thompson, UNL Extension Educators*

**Objective:** Fungicide applications are often made during the growing season. The objective of this study is to determine the yield and

**Rationale:** Early season fungicide applications could potentially provide some protection from some leaf diseases and delay onset of symptoms. A potential advantage of early applications is that more producers can make the applications themselves with ground sprayers that could be more economical than applications made by airplane later. Fungicide applications are most commonly made after tassel emergence, and have been less studied during early crop stages for their effects on earlier diseases, like northern corn leaf blight. Previous research has shown limited benefits to a V5 fungicide application and less consistency compared to that of applications made after tasseling.

**Procedure:** This procedure is for a two treatment test which will compare fungicide vs no fungicide on V5 growth stage corn. Because there is possibility for the fungicide to drift into an adjacent treatment when spraying, a *buffer* will be implemented. Buffer rows serve to shelter the middle rows of a treatment from the effects of neighboring treatments – in this case drift from the fungicide application. This area is harvested but is excluded from the comparison. Additionally, 2 harvester passes must fit within the treated area (excluding the buffer).

The same hybrid and management practices should be used across the entire study area. This study will ideally be evaluated over multiple years.

**Example Treatment Design:** There are 7 replicates; a minimum of 5 should be harvested, but harvesting all 7 is preferred.

Because sprayer boom width and harvester header widths will vary, you will have to make adjustments for your unique situation. The following example is how this study could be laid out to accommodate a 60' sprayer width and a 20' corn head. If you would like help in determining the layout for your equipment size, please contact the Nebraska On-Farm Research Network (contact information is at the end of this protocol).

Sprayer	Harvester	Replication
No Fungicide Application (120')	20' buffer	Extra
	Record Yield from 1 round (40'):	Extra
	Record Yield from 1 round (40'):	Replication 1
	20' buffer	
V5 Fungicide Application (1 round with sprayer, 120')	20' buffer	Replication 1
	Record Yield from 1 round (40'):	
	Record Yield from 1 round (40'):	Replication 2
	20' buffer	
No Fungicide Application (120')	20' buffer	Replication 2
	Record Yield from 1 round (40'):	
	Record Yield from 1 round (40'):	Replication 3
	20' buffer	
V5 Fungicide Application (1 round with sprayer, 120')	20' buffer	Replication 3
	Record Yield from 1 round (40'):	
	Record Yield from 1 round (40'):	Replication 4
	20' buffer	
No Fungicide Application (120')	20' buffer	Replication 4
	Record Yield from 1 round (40'):	
	Record Yield from 1 round (40'):	Replication 5
	20' buffer	
V5 Fungicide Application (1 round with sprayer, 120')	20' buffer	Replication 5
	Record Yield from 1 round (40'):	
	Record Yield from 1 round (40'):	Replication 6
	20' buffer	
No Fungicide Application (120')	20' buffer	Replication 6
	Record Yield from 1 round (40'):	
	Record Yield from 1 round (40'):	Replication 7
	20' buffer	
V5 Fungicide Application (1 round with sprayer, 120')	20' buffer	Replication 7
	Record Yield from 1 round (40'):	
	Record Yield from 1 round (40'):	Extra
	20' buffer	Extra

### **Data to Collect:**

-Stand counts at harvest (3 counts of 1/1000 of an acre per treatment strip and averaged)

-Leaf disease severity – Leaf diseases, such as northern corn leaf blight, gray leaf spot, and/or southern rust, can be estimated at least twice during the season in each treatment strip with the assistance of a UNL staff member.

-Stalk strength – There are 2 options for assessing stalk strength, the push test and pinch test.

*Push Test:* Within two weeks of harvest, push a minimum of 50-100 (more is better) randomly selected plants in each treated and non-treated strip at arm's length (about 45 degrees from vertical). Make note of what percentage of plants lodge (bend below the ear and DON'T snap back upright) within each replicate treatment.

*Pinch Test:* Pinch the first internode – the internode directly above the first node up from the ground – with thumb and forefinger. Pinch a minimum of 20 randomly selected plants in each treated and non-treated strip, noting the percentage that easily crush within each replicate treatment.

-Yield (either with yield monitor or weigh wagon)

### **Grower Requirements:**

1. Flag or mark GPS location of each treatment.
2. Provide all necessary inputs for crop production.
3. Complete [background agronomic form](#) about site and practices.
4. Collect yield data and grain moisture with weight wagon or yield monitor. If using yield monitor, please designate a separate "load" for each treatment and set up separate "products" names for each treatment harvested. Yield monitor must be **well calibrated**. Contact UNL Extension if assistance with this process is needed.
5. Collect stand counts at harvest.
6. Submit harvest data to UNL Extension within 30 days of harvest or by Dec. 15.
7. Allow UNL Extension to use submitted and collected data for research, educational, and informational purposes.

### **Nebraska On-Farm Research Network will:**

1. Provide technical assistance in setting up replicated and randomized experimental design.
2. Provide assistance upon request with treatment implementation, flagging, stand counts, stalk rot tests, and recording yield.
3. Analyze raw data using statistical analysis and provide this information to the grower.

**For assistance with this protocol, please contact the Nebraska On-Farm Research Network:**

**Laura Thompson:** [laura.thompson@unl.edu](mailto:laura.thompson@unl.edu) or 402-472-8043

**Jenny Rees:** [jenny.rees@unl.edu](mailto:jenny.rees@unl.edu) or 402-362-5508

**Or your local Extension Educator**

**Disclaimer:** The Nebraska On-Farm Research Network does not endorse the use of products tested in on-farm replicated strip trials. While treatments are replicated within trials and may be replicated across multiple sites under various conditions, your individual results may vary.

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