



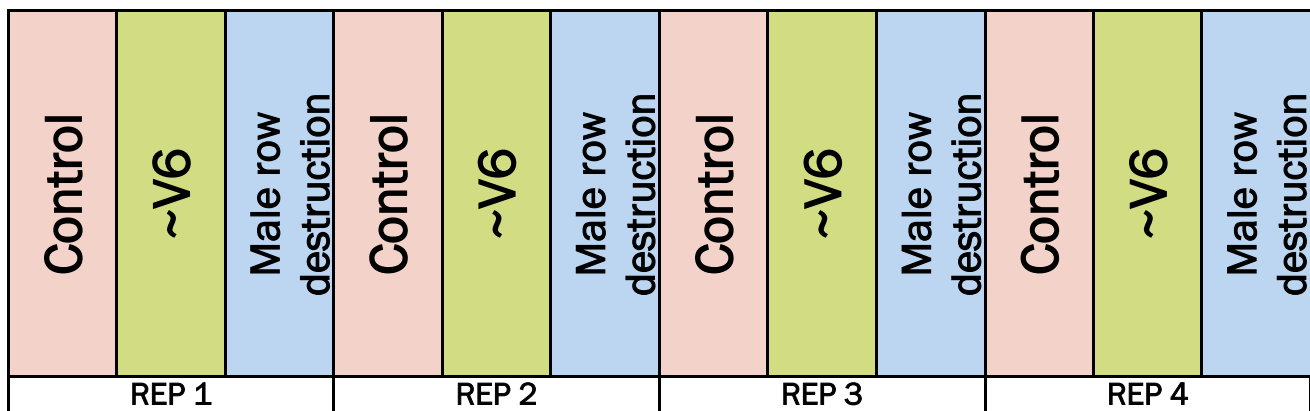
**RESEARCH
 PROTOCOLS**

**Interseeding Date for Cereal Rye Cover
 Crop in Seed Corn**

Objectives: Determine the effects of a cereal rye cover crop interseeded to seed corn at the ~V6 stage and after the male rows are destroyed on 1) cover crop biomass production (survival); 2) weed (waterhemp) suppression; and 3) seed corn yield. **Hypothesis:** The cereal rye interseeded at the ~V6 stage (June) will produce more biomass and weed suppression; interseeded cereal rye cover crop (either date) will not reduce seed corn yield compared to the control (no cover crop); interseeding a cereal rye cover crop to seed corn can be considered a cost-effective measure for managing weeds.

Farmer-Cooperator will:

- Take photos throughout the project and keep in contact with PFI with updates and questions.
- **Spring 2019**, plant entire field to seed corn (per seed corn company).
- Establish at least 4 replications of treatments as shown in the diagram below (see next page for more details)
 - Cereal rye cover crop interseeded at ~V6 stage
 - Cereal rye cover crop interseeded after male rows are destroyed
 - Control (no cover crop)
- Strips will be as wide as at least one combine pass and run the length of the field.
- **Summer 2019**, collect data and observations (see next page for more details)
 - Take photos of trial progress.
 - Conduct weed counts in the center male row of each strip.
 - Collect aboveground biomass samples of cover crop from strips just prior to seed corn harvest.
- **Fall 2019**, harvest seed corn from each strip individually.
 - Observe continued growth of cereal rye cover crop.
 - Turn in all info and data pertinent to this trial to Practical Farmers of Iowa by the end of the project.



Practical Farmers of Iowa will:

- Help set up monitoring protocol, monitor progress of project and provide support when needed.
- Publish results in a PFI research report, on PFI website and potentially other outlets.
- Provide \$550 honorarium when yield data is submitted at conclusion of the project in 2019.

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Seed Corn Planting and Cover Crop Seeding Details

16-row corn planter will achieve a 4:1 pattern of female:male corn rows. Two planter passes will create enough corn rows for one replication of each of the three cover crop treatments (25 ft-wide strips). Cover crop will be seeded (either date) by traveling down the center male row of each treatment strip with an ATV equipped with a broadcast spreader. Weed counts and cover crop biomass will be assessed in the center male row of each treatment strip. Seed corn harvester is nine rows wide – this will harvest the eight female rows comprising each treatment strip.

Rep #	Planter Pass	Row	Male/Female	Strip # (Treatment)
1	1 ->	1	Male	1 (Control)
		2	Female	
		3	Female	
		4	Female	
		5	Female	
		6	Center Male	
		7	Female	
		8	Female	
		9	Female	
		10	Female	
		11	Male	
	<- 2	12	Female	2 (~V6)
		13	Female	
		14	Female	
		15	Female	
		16/1	Center Male	
2		Female	3 (Male row destruction)	
3		Female		
4	Female			
5	Female			
6	Male			
7	Female			
8	Female			
9	Female			
10	Female			
11	Center Male			
12	Female			
13	Female			
14	Female			
15	Female			
16	Male			

Summer Data Collection Details

August/September: Conduct weed counts before seed corn harvest.

- Travel down center male row of each strip
 - Count and record number of waterhemp plants visible

August/September: Collect cereal rye cover crop biomass samples before seed corn harvest.

- Collect at least one sample from center male row of each cover crop strip
 - No samples will be collected from control strips (no cover crop)
- Randomly place 1'x1' PVC square in strip
 - Use shears to clip all aboveground plant material from within the square
- Place all samples from a single strip into one paper bag (e.g., one paper bag per strip)
 - Label paper bags accordingly
 - Cover crop seeding date: V6 or male row destruction
 - Number of squares sampled from (e.g., 3 squares = 3 ft²)
 - Date of collection
- Send paper bags to PFI office
 - Samples will be dried and weighed