



**RESEARCH  
 PROTOCOLS**

**Spring-Seeded Cereal Rye for Weed  
 Control in Soybeans**

**Objectives:** Determine the effect on weed pressure and soybean yield of a cereal rye cover crop that is seeded in the spring prior to planting soybeans and allowed to grow as a companion to the soybeans. **Hypothesis:** Spring-seeded rye will not reduce soybean yields but will reduce weed pressure and weed control costs compared to where no rye is seeded.

**Farmer-Cooperator will:**

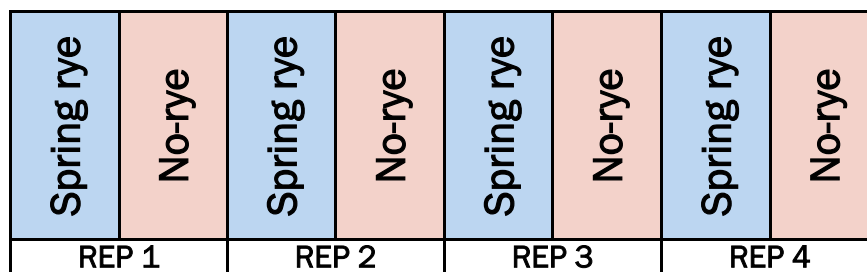
- Take photos throughout the project and keep in contact with PFI with updates and questions.

**Establish treatments**

- **Spring 2019**, establish at least 4 replications of treatments as shown in the diagram below.
  - **Seed cereal rye cover crop as early as possible in spring (before planting soybeans)**
  - **No-rye (control)**
- Strips will be as wide as at least one combine pass and run the length of the field.
- Plant soybeans to all strips on the same date.
- At cooperator's discretion, either terminate spring-seeded rye prior to soybean canopy closure OR allow cereal rye to persist into the summer.
- Use cooperator's normal/preferred weed control program in the control treatment.

**Measurements**

- **Spring 2019**, prior to planting soybeans
  - Collect aboveground biomass samples of cover crop (see next page for more detail).
- **Summer 2019**
  - Take photos of trial progress.
  - June: Take soybean stand counts from each strip (see next page for more detail).
  - Document weed pressure and weed control measures for each strip.
- **Fall 2019**
  - Harvest soybeans from each strip individually.
- 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 after all data is submitted at conclusion of the project in 2019.

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## Spring and Summer Data Collection Details

*Prior to planting soybeans: Collect aboveground biomass samples of cover crop.*

- Collect at least one sample from each strip
- 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
    - Number of squares sampled from (e.g., 3 squares = 3 ft<sup>2</sup>)
    - Date of collection
- Send paper bags to PFI office
  - Samples will be dried and weighed.

*June: Take stand counts in each strip*

- Take stand counts from 3 random locations in each strip.
  - Count and record number of plants from within 1/1000 of an acre:

Row-width	Length of row to count from
30 in.	17 ft, 5 in.
15 in.	34 ft, 10 in.
10 in.	52 ft, 3 in.
7.5 in.	69 ft, 8 in.

- For narrow, drilled rows, consider using the hula hoop method.
  - Randomly toss hoop into strip and count and record the number of plants inside the circle.
  - Note diameter of hoop.
- For more info, consult this website:  
<https://fyi.extension.wisc.edu/discoveryfarms/2010/05/taking-a-stand-count/>

*June: Document weed pressure in each strip*

- Take weed counts from 3 random locations in each strip
  - Randomly toss hoop or PVC square into strip.
  - Count and record number of weeds inside hoop or square.