Objectives: Determine the effects of reduced herbicide programs on weed control and soybean yield when allowing a cereal rye cover crop to grow to at least two feet tall before planting the soybeans. Hypothesis: Provided adequate cover crop growth, weed control and soybean yield will not be sacrificed by reducing herbicide use. A cereal rye cover crop paired with reduced herbicide use could be considered a cost-effective weed control program.

Farmer-Cooperator will:

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

Establish treatments

- Fall 2018, seed cereal rye cover crop to the entire field.
- Spring 2019, establish at least 4 replications of treatments as shown in the diagram below
  - 1 pass: Cover crop termination only (glyphosate)
  - 2 passes: Early weed burndown (2,4-D) + cover crop termination (glyphosate)
  - 3 passes: Early weed burndown (2,4-D) + cover crop termination (glyphosate + residual) + post emergence herbicide
- Plant soybeans to all strips on the same date.
- Strips will be as wide as at least one combine pass and run the length of the field.

Measurements

- Spring 2019, prior to cover crop termination
  - Measure cover crop height and collect aboveground biomass samples from each strip.
- Summer 2019
  - Take photos of trial progress.
  - Conduct weed counts in 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.

Contact: Stefan Gailans, Research and Field Crops Director, (515) 232-5661; stefan@practicalfarmers.org

The terms of this Research Protocols document are subject to the terms of the individual Research Cooperator’s Memorandum of Understanding agreement with PFI. To the extent these terms may differ or conflict, the Memorandum of Understanding shall control.