Objective: Determine the effect of seeding a cereal rye companion cover crop just prior to planting soybeans on weed pressure and soybean yield.

Hypothesis: Spring-seeded companion cover crop will reduce weed pressure and but will not reduce soybean yield compared to where no companion cover crop is seeded.

Farmer-Cooperator will:
- Follow Research Protocols in accordance with Project Design, Data to Collect, Photo List and Timeline detailed below.
- Take photos throughout the project. Try to capture photos that depict the differences you observe among the treatments.
- Keep in contact with PFI with updates and questions.
- Turn in data and complete post-project survey by November 2020.

Practical Farmers of Iowa will:
- Help set up research 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 research honorarium to cooperator upon receipt of data.

Project Design:

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereal rye</td>
<td>Cereal rye companion cover crop seeded just prior to planting soybeans.</td>
</tr>
<tr>
<td>No-cover</td>
<td>Control. No cover crop seeded.</td>
</tr>
</tbody>
</table>

- Apply these 2 treatments in a randomized, replicated trial: at least four replications of randomized paired strips. 2 treatments x 4 replications = 8 strips total.
- Strips must be at least as wide as one combine pass and should run the length of the field.
  - Example layout:
Data to Collect (cooperator):
- Weed assessment
  - In late summer, count and record number of weeds in a 3-ft radius at seven random points along a 100-pace transect through the center of each strip.
- Soybean yield
  - Harvest and record grain yield and moisture from each strip.

Photo List (cooperator):
- Rye + soybeans emerging/growing (throughout spring).
  - Close ups of each species.
- Whole experiment
  - Photos depicting multiple strips next to each other.
- Cooperator collecting data.
- Cooperator in field trial.

Project Timeline:

<table>
<thead>
<tr>
<th>Spring</th>
<th>Summer</th>
<th>Fall</th>
</tr>
</thead>
</table>
| • Seed companion cover crop just prior to planting soybeans.  
  • Plant soybeans to entire field.  
  • Take photos. | • Hoe, cultivate all soybeans per usual organic weed control practices.  
  - This will eliminate rye/wheat companion from interrows but allow companion to remain in soybean rows.  
  • Conduct weed assessment.  
  • Take photos. | • Harvest soybeans from all strips.  
  • Turn in data.  
  • Take post-project survey. |

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 Cooperators Memorandum of Understanding agreement with PFI. To the extent these terms may differ or conflict, the Memorandum of Understanding shall control.