Objective: Determine if a clover cover crop interseeded to corn in early summer can survive underneath the corn canopy and reduce the amount of N fertilizer needed for corn grown the following year.

Hypothesis: Second-year corn yield will be improved by clover interseeded the previous year.

Farmer-Cooperator will:

- Follow Research Protocols in accordance with Project Design, Data to Collect 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 2021.

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>Control</td>
<td>Typical practice. Corn grown in 2020 with no interseeded cover crop.</td>
</tr>
<tr>
<td>Clover</td>
<td>Interseed clover to corn grown in 2020 at ~V4 stage in early summer.</td>
</tr>
</tbody>
</table>

- Apply these three 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):

- Clover biomass 2020
  - Just prior to onset of winter, sample aboveground biomass 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 ft²)
      - Date of collection
    - Send paper bags to PFI office
      - Samples will be dried and weighed

- Corn grain yield 2020 and 2021
  - Harvest and record grain yield and moisture from each strip.

- Optional: Late-spring soil nitrate test (LSNT) 2021
  - When the corn is 6-12 in. tall, collect soil cores to a depth of 12 in. from each strip.
    - One sample per strip.
      - Collect samples in sets of 8 cores.
        - The first core is collected in a corn row.
        - The second is collected 1/8 of the distance between any two rows after moving to another part of the sampling area.
        - The third is collected 1/4 of the distance between any two corn rows after moving to another part of the sampling area.
        - The process is continued until the eighth core is collected 7/8 of the distance between any two corn rows.
      - At least three sets (24 cores) should be collected to comprise one sample.

- Optional: Cornstalk nitrate test 2021
  - In late summer, after corn has reached physiological maturity, collect stalk samples from each strip.
  - Sample collection protocols from ISU:

Project Timeline:

<table>
<thead>
<tr>
<th>Spring 2020</th>
<th>Summer 2020</th>
<th>Fall 2020</th>
<th>Spring 2021</th>
<th>Summer 2021</th>
<th>Fall 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant corn.</td>
<td>Interseed clover to designated strips.</td>
<td>Harvest corn from all strips.</td>
<td>Plant corn.</td>
<td>Collect LSNT soil samples.</td>
<td>Harvest corn from all strips.</td>
</tr>
<tr>
<td></td>
<td>Take photos.</td>
<td>Collect clover biomass samples.</td>
<td></td>
<td>Collect cornstalk samples.</td>
<td>Turn in data and photos.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Take photos.</td>
<td></td>
<td></td>
<td>Take post-project survey.</td>
</tr>
</tbody>
</table>

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.