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:
      - https://store.extension.iastate.edu/product/End-of-Season-Cornstalk-Nitrate-Testing-Video

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>
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</thead>
<tbody>
<tr>
<td>Plant corn.</td>
<td>Interseed</td>
<td>Harvest</td>
<td>Plant corn.</td>
<td>Collect LSNT</td>
<td>Harvest</td>
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<td></td>
<td>clover to</td>
<td>corn from</td>
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<td>soil samples.</td>
<td>corn from</td>
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<td>designated</td>
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<td>Take photos.</td>
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<td>project survey.</td>
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Contact: Stefan Gailans, Research and Field Crops Director, (515) 232-5661; stefan@practicalfarmers.org