Objective: Determine the effect on corn seedling emergence, corn yield and weed control when using Keeton seed firmers to plant corn in an organic production system.

Hypothesis: Keeton seed firmers will improve corn yield by improving rate and uniformity of corn seedling emergence and reducing emergence of weeds in the corn row.

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>Keeton firmers</td>
<td>Plant corn with Keeton seed firmers installed on planter row-units.</td>
</tr>
<tr>
<td>Control</td>
<td>Plant corn without seed firmers installed on planter row-units.</td>
</tr>
</tbody>
</table>

- Apply these 2 treatments in a randomized, replicated trial: six replications of randomized paired strips. 2 treatments x 6 replications = 12 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):

- Corn seedling emergence
  - After corn seedlings have emerged, conduct stand counts in each strip.
    - Count and record number of seedlings from a distance along a row representing 1/1,000th of an acre.
  - Optional: repeat every day for 5-6 days.
- Weed assessment?
  - Visually observe?
- Corn yield
  - Harvest and record grain yield and moisture from each strip.

Photo List (cooperator):

- Keeton seed firmer on planter row-unit
- Corn seedlings emerging.
- Cooperator collecting data.
- Cooperator in field trial.

Project Timeline:

<table>
<thead>
<tr>
<th>Spring</th>
<th>Summer</th>
<th>Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant corn to entire field.</td>
<td>Conduct weed assessment?</td>
<td>Harvest corn from all strips.</td>
</tr>
<tr>
<td>Conduct stand counts</td>
<td>Take photos.</td>
<td>Turn in data.</td>
</tr>
<tr>
<td>Take photos.</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