Keeton Seed Firmers for Organic Corn Emergence and Weed Control

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>
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<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

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.