Objective: High tunnel tomato growers are often focused on specialized hybrids. We are interested in determining if our preferred heirloom varieties perform as well inside the high tunnel as outside.

Hypothesis: We expect the indoor heirlooms to have comparable quantity, but earlier yields than field-grown heirlooms of the same varieties.

Farmer-Cooperator will:
- Follow Research Protocols for study
- Take photos throughout the project
- Keep in contact with PFI with updates and questions
- Turn in all data by November 2019

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 cooperator payment at conclusion of project year.

Project Design:
- Each farm will set up a randomized, replicated trial in the field and in the high tunnel. The field should have four replications, and the high tunnel should have four replications.
- 2 varieties x 4 replications = 8 plots in the high tunnel, 8 plots in the field
  - Faux varieties: Paul Robeson, Black Krim
  - Raasch varieties: Cherokee Carbon, Black Krim
  - Each plot should have at least 5 plants.
- Planting dates and growing practices can be determined by farm, but recorded in provided excel workbook.

Example layout (high tunnel or field):

<table>
<thead>
<tr>
<th>Rep1</th>
<th>Rep2</th>
<th>Rep3</th>
<th>Rep4</th>
</tr>
</thead>
<tbody>
<tr>
<td>C. Carbon</td>
<td>Black Krim</td>
<td>Black Krim</td>
<td>C. Carbon</td>
</tr>
<tr>
<td>Black Krim</td>
<td>C. Carbon</td>
<td>C. Carbon</td>
<td>Black Krim</td>
</tr>
</tbody>
</table>

Data to Collect (see excel workbook):
- Harvest tomatoes as mature, keep records by plot and harvest date. Record weight and count of marketable fruit harvested by plot.
- Take photos of harvested tomatoes (each variety), and the plants in the field and the high tunnel.
- In notes section of workbook, indicate issues with disease, pests, and quality of fruit.
- See excel workbook for pick sheets and data entry.
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.

**Project Timeline:**

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>• Edit/Approve Protocol</td>
<td>• Start seed</td>
<td>• Turn in data and photos</td>
</tr>
<tr>
<td>• Send Liz seeds needed</td>
<td>• Layout plots</td>
<td>• Take post-survey</td>
</tr>
<tr>
<td>• Complete MOU &amp; pre-survey</td>
<td>• Update other cooperators and PFI with progress of trial</td>
<td></td>
</tr>
<tr>
<td>• Liz will order seed</td>
<td>• Conduct trial and collect data! Take photos!</td>
<td></td>
</tr>
</tbody>
</table>

**Contact:** Liz Kolbe, Horticulture and Habitat Programs Manager, (515) 232-5661; liz@practicalfarmers.org