



## RESEARCH PROTOCOLS

### Demonstration Project: Buckwheat as a Nurse Crop for Sweet Potato

**Objective:** Organic farmers are interested in alternatives to black plastic and paper mulch for weed suppression. The objective of this trial is to determine if buckwheat can be managed to suppress weeds in an organic sweet potato bed without harming yield.

**Hypothesis:** Using buckwheat as a nurse crop for slips and then a mulch for mature plants will provide adequate weed suppression (compared to cultivation, only), and show a difference in sweet potato yield.

#### 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:

- Side-by-side strip trial – one control row, one treatment (buckwheat) row
- May 15: Mow off rye cover crop, 2-in. till in both rows
- May 25: 2-in. till, lay irrigation for control (cultivation only) and buckwheat treatment.
- May 25: Broadcast and harrow-in buckwheat
- June 1: Plant sweet potato slips in control and treatment beds.
- July 1: Hand-weed out buckwheat between plants as vines spread (take photos!). Cultivate control bed (row) as needed.
- Aug. 1-15: When buckwheat is mature and sweet potato vines have filled in row, drive over treatment row to knock down buckwheat (take photos!).
- Sept. 15: Mow off buckwheat from treatment row.
- Sept. 15: Harvest sweet potatoes. Weigh yield for control row and treatment (buckwheat) row separately.
- **Data Collected:**
  - Photos of control and treatment (buckwheat) rows before and after management activities.
  - Sweet potato yield (lbs). Weigh separately control row and treatment (buckwheat) row).

**Project Timeline:**

April - May	June – July – Aug.	Sept. – Nov.
<ul style="list-style-type: none"> <li>• Review research protocol</li> <li>• Complete MOU and pre-project survey</li> <li>• Prepare field</li> <li>• May 15: Mow rye cover crop</li> <li>• May 25: Broadcast buckwheat, harrow-in</li> </ul>	<ul style="list-style-type: none"> <li>• Lay irrigation</li> <li>• June 1: Plant slips in control and treatment beds</li> <li>• July 1: Hand-weed buckwheat within row (between plants) as vines are spreading.</li> <li>• June-July: Cultivate in control bed as needed               <ul style="list-style-type: none"> <li>○ Take photos!</li> </ul> </li> <li>• Aug. 1-15: When plants fill in rows and buckwheat is mature, drive over rows with tractor to knock down buckwheat.               <ul style="list-style-type: none"> <li>○ Take photos!</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Sept. 15: Mow off buckwheat               <ul style="list-style-type: none"> <li>○ Take photos!</li> </ul> </li> <li>• Sept. 15: Harvest sweet potatoes in treatment and control plots               <ul style="list-style-type: none"> <li>○ Weigh harvest for control and treatment plots, separately</li> <li>○ Take photos!</li> </ul> </li> <li>• Turn in data and photos</li> <li>• Take post-survey</li> </ul>

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