



## RESEARCH PROTOCOLS

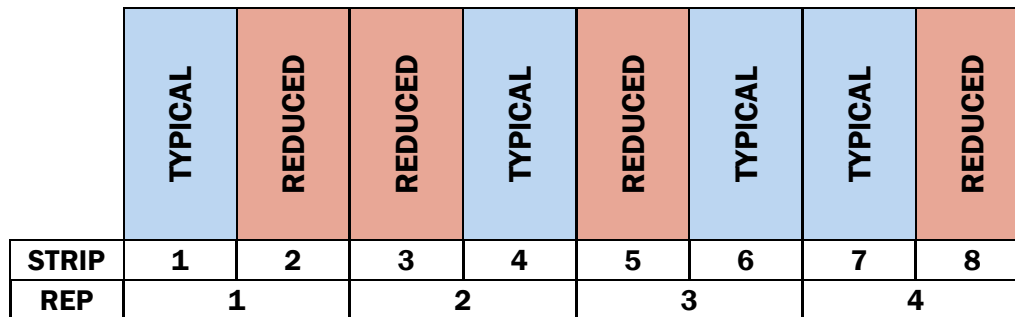
## Can We Reduce Nitrogen Rate and Improve ROI?

**OBJECTIVES:** Determine if, in fields employing soil health management systems for at least 5 years, farmers can reduce N fertilizer application rate without reducing corn yield. We define soil health management systems broadly to include cover crops, integrated grazing livestock, diversified crop rotation, etc. Ultimately, we ask: Is the ability to reduce N fertilizer application without corn yield loss a simple yet robust test of soil health?

**HYPOTHESIS:** Farmers who have made a long-term investment to soil health will be able to practice fertilizer reductions while maintaining corn yields. In so doing they will improve the financial viability and environmental footprint (e.g., water quality, GHG emissions) of their farm.

### PROJECT DESIGN:

Treatment	Description
Typical	Farmer's typical N fertilizer rate.
Reduced	Typical rate reduced by units N of your choosing. (e.g., less 50 units)



### WHAT AM I RESPONSIBLE FOR DURING THE TRIAL?

- Establish treatments in randomized, paired strips: 2 treatments × 4 replications = 8 strips total. (See example above.)
- Establish treatment strips by applying two N rates. This difference can be achieved in any fashion and is left to the preference of the farmer.
  - For instance, 110 lb N/ac applied pre-plant to entire field and 50 lb N/ac side-dressed to half the strips would result in 160 lb N/ac (typical) vs. 110 lb N/ac (reduced).
  - Strips must be at least as wide as one combine pass and should run the length of the field. Aim for each strip to comprise ~2 acres.
- Share field history
  - You will be provided a worksheet to share crop rotation and soil health practices over the past 5 years for the field in which the trial will take place.

## WHAT AM I RESPONSIBLE FOR DURING THE TRIAL? (continued)

- Keep records of field management operations
  - Routinely document management information such as seeding date, seeding rate, row spacing, strip dimensions, and names and amounts of products applied to strips (e.g. fertilizer, herbicide, etc.).
  - You will also be asked to share the cost of fertilizer and amount applied to each strip.
- Corn yield
  - Record grain yield and moisture from each strip.
- Details to calculate ROIs (returns on investments):
  - Cost of fertilizer and amount applied to each strip.
  - Product costs and equipment passes unique to the two treatments.
  - Corn price received.
- Photos of trial throughout the season
  - Please take photos of your trial. Try to capture photos that depict differences you observe between treatments such as side-by-side strips or plants pulled from each treatment and photographed side-by-side to point out differences in plant height, health, etc.
  - We also encourage photos of you in your trial field!
  - You may share photos with the trial contact via email, Google Drive or text.
  - Photos may be used in the trial’s research report published on the PFI website.
- Trial intake and reflection surveys
  - You will be asked to complete two surveys:
    - Before the onset of the trial, an intake survey that documents your willingness to participate and your intentions for participating.
    - At the end of the trial, a reflection survey that documents your overall experience.
  - Your responses from these surveys are appreciated because they help PFI evaluate its on-farm research efforts. Any open-ended responses you share in the surveys may be used in the trial’s research report published on the PFI website. In such cases, we will attribute the quote to you.
- Keep in touch with trial contact about trial progress and any questions you have.
  - The trial contact will monitor progress and provide support when needed.

## WILL I GET PAID?

- You will be paid \$1,000 after completing all responsibilities listed above: submitting info, data, photos; completing surveys.

## TIMELINE

Spring 2023	Summer 2023	Fall 2023
Plant corn Establish treatment strips by applying two N rates that differ by units N of your choosing Take photos	Take photos Make observations	Harvest corn from individual strips Submit field management info and data Complete trial reflection survey

## TRIAL CONTACT

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