PRACTICAL FARMERS OF IOWA
COOPERATORS' PROGRAM Farmer-Led Research

RESEARCH PROTOCOLS

MycoApply Soil Inoculant for Corn and Soybeans

Objective: Determine the effect of a commercial mycorrhizal soil incoluant (MycoApply) on corn and soybean yield and economic performance. **Hypothesis:** Application of MycoApply will improve crop yields and economic performance relative to where no MycoApply is applied.

Farmer-Cooperator will:

- Take photos throughout the project and keep in contact with PFI with updates and questions.

Spring 2019, plant separate fields to 1) corn and 2) soybeans.

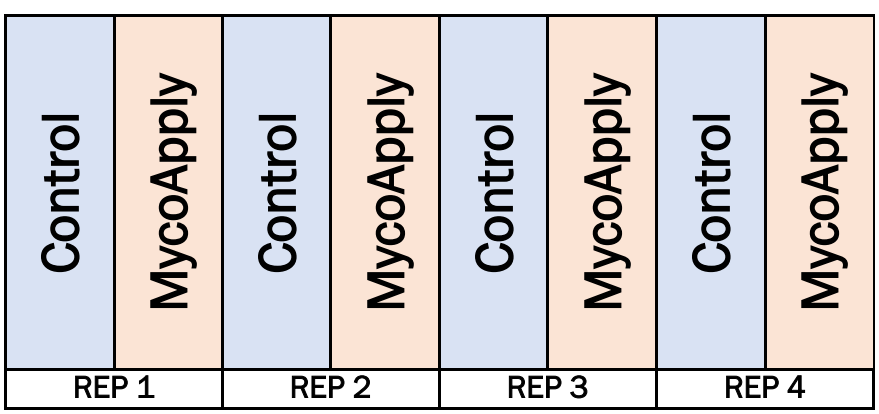
- *In both fields*, establish at least 4 replications of treatments as shown in the diagram below.
  - Control (no MycoApply)
  - MycoApply
    - Applied at time of planting in furrow using insecticide boxes on planter.
    - Note cost of product and cost of application.
- Strips will be as wide as at least one combine pass and run the length of the field.

Summer 2019, collect data and observations (see next page for more detail)

- Take photos of trial progress.
- June (V6): collect whole-plant samples (roots and shoots) from each strip in both fields.
  - Send samples to PFI office.
- June: Take corn and soybean stand counts from each strip.
- September (physiological maturity of corn): collect cornstalk samples from each strip in corn field for nitrate analysis (pending available funding).

Fall 2019, harvest corn and soybeans from each strip individually.

- Turn in all info and data pertinent to this trial to Practical Farmers of Iowa by the end of the project



Practical Farmers of Iowa will:

- Help set up monitoring 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 honorarium per field ($1,100 total) when yield data is submitted at conclusion of the project in 2019.

Contact: Stefan Gailans, research and field crops director, (515) 232-5661; stefan@practicalfarmers.org

Summer Data Collection Details

June (V6): Whole-plant samples (roots and shoots) from each strip in both fields.

- Collect 5 samples from random locations in each strip.
    - Use trowel to carefully dig up roots
    - Shake off as much soil from plant roots as possible
    - Take photos of whole-plant samples from both treatments
        - Ruler or yardstick for scale
- Place whole-plant samples into one paper bag per strip (5 samples per bag)
    - Label paper bags accordingly
        - Control or MycoApply
        - Date of collection
- Send paper bags to PFI office
    - Roots will be washed (remove any remaining soil)
    - Photos will be taken
    - Samples will be dried and weighed
        - Samples will be sent to Midwest Labs for nutrient analysis if funding is available

June: Take stand counts in each strip in both fields.

- Take stand counts from 3 random locations in each strip.
    - Count and record number of plants from within 1/1000 of an acre:

Row-width	Length of row to count from
30 in.	17 ft, 5 in.
15 in.	34 ft, 10 in.
10 in.	52 ft, 3 in.
7.5 in.	69 ft, 8 in.

    - For narrow, drilled rows, consider using the hula hoop method.
        - Randomly toss hoop into strip and count the number of plants inside the circle.
        - Note diameter of hoop.
- For more info, consult this website: https://fyi.extension.wisc.edu/discoveryfarms/2010/05/taking-a-stand-count/

September: Cornstalk nitrate testing (after physiological maturity of corn)

- Consult these resources from Iowa State University for sample collection protocols
    - https://store.extension.iastate.edu/product/Use-of-the-End-of-Season-Corn-Stalk-Nitrate-Test-in-Iowa-Corn-Production
    - https://store.extension.iastate.edu/product/End-of-Season-Cornstalk-Nitrate-Testing-Video