SHP Soil Sampling Protocol

For the 2019 Soil Sampling year, you will be completing the following tests:

- Routine Nutrient Analysis Soil Sampling through Ward Lab
- Cornell Soil Health Assessment
- Soil Health Nutrient Tool through Ward Lab

Objectives:
The initial objectives are to:

1. Collect grower information
2. Locate grower fields
3. Establish experiment and plot boundaries and
4. Establish baseline soil characterization for long-term soil health systems

A grower information collection protocol will be provided to collect basic cooperator information, but each grower must supply

1. Grower name
2. Grower address (Township, county, state)
3. Cover crop field boundary GPS coordinates (four corners)
4. Cover crop testing strip boundary GPS coordinates (reference points for testing strips)

Three soil analysis labs will be utilized to analyze key variables. Protocols for each sample type are provided below.

The three soil analysis labs are the following:

1. Ward Labs for standard nutrient analysis:
   P, K, pH, BpH, OM, S, Zn, Ca, Mg, Na, %BSAT, CEC.

2. Cornell University for conducting a Soil Health Assessment:
   Texture, organic matter, aggregate stability, AWC, active carbon, soil respiration, and ACE soil protein

3. Ward Labs for Soil Health Nutrient Tool (SHNT):
   Bio-available N, bio-available P, and others

The costs of sampling will be covered by the Soil Health Partnership. A sampling map, sampling bags, identification bar codes and detailed protocol instructions are provided below. Before soil sampling, the Soil Health Partnership Field Manager will provide a map with the location of the grower's treatment and control strips.

After sampling, the samples of the commercial lab will be stored as per the guidance of the Soil Health Partnership.

All soil test results will be shared back with cooperators.
Submission Addresses:

Routine soil analysis and SHNT samples will be sent to Ward Laboratories, Inc.:

Ward Laboratories, Inc.
4007 Cherry Ave.
P.O. Box 788
Kearney, NE 68847

Cornell soil health samples will be sent to:

Cornell Soil Health Lab
G01 Bradfield Hall
Ithaca, NY 14853

ROUTINE NUTRIENT ANALYSIS SOIL SAMPLING GUIDELINES

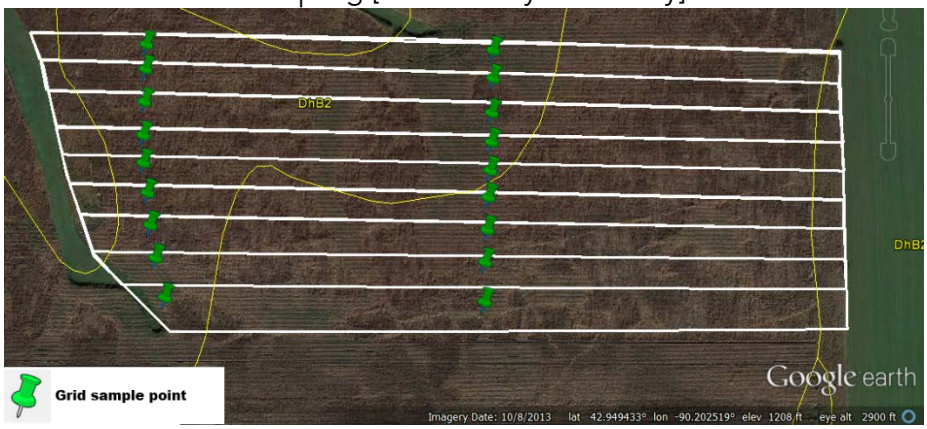
- A grid sampling map will be provided to each cooperator to facilitate soil sampling (Figure 1 example)
    - Each grid map will have individually assigned grid sampling points within each treatment or control strip
    - Each pre-assigned sampling point will follow naming convention provided by the Soil Health Partnership and be linked to the bar code mentioned below
- Grid based soil sampling will be conducted based upon individually assigned grid sampling map, with 1 acre grid.
    - Acre grids will be based upon total field area.
- All soil samples will be hand collected
    - Bags will be provided by the Soil Health Partnership
    - Each sample will be a composite of 12 soil cores, collected in a 30' circle around the point
    - Sampling depth: Two samples will be collected 0 - 2 inches and 2 - 6 inches for all experiments.
    - Collect GPS point in the center of 12 core sampling circle
- Labeling – Use pre-supplied adhesive labels with sample labels and barcodes
- Soil samples will be shipped (ground) to Ward Laboratories, Inc. for the standard tests within 24 hours of sampling [alternatively: same day].
- 

Figure 1: Example grid sampling map individually assigned to each grower. Each sampling location will be submitted as individual samples to Ward Laboratories, Inc.

SOIL SAMPLING PROCEDURE FOR CORNELL SOIL HEALTH ASSESSMENT

- A map will be provided to each cooperator to facilitate soil health assessment sampling (Figure 2 example)
    - Each grid map will have individually assigned composite soil health assessment samples collected based upon field attributes (please see path below in Figure 2)
    - Each composite soil health assessment sample across each testing strip
    - Each pre-assigned sampling point will follow naming convention provided by the Soil Health Partnership and be linked to the bar code mentioned below
- Individual samples should be taken and bulked into composite samples across each testing strip (8 samples in total)
- Take enough samples to fill a half gallon zip lock bag per strip, no cloth bags. - Each sample will be a composite of 12 soil cores, collected in a 30' circle around the point
- All soil health assessment samples for Cornell Soil Health assessment will be 0-6 inch depth samples.
- Labeling – Use pre-supplied adhesive labels with sample labels and barcodes
- Keep samples cool in a cooler while in field and in transport to shipping
- Pack samples with the provided ice packs for shipping
- Soil samples will be sent immediately to Cornell for testing – do not sample or ship on Friday and ensure same day pickup.

Figure 2: Soil Health Assessment sampling locations. Samples collected at each location will be composited across each testing strip for a total of 8 composite samples.

SOIL SAMPLING PROCEDURE FOR SOIL HEALTH NUTRIENT TOOL

- A map will be provided to each cooperator to facilitate soil health assessment sampling (Figure 2 example)
    - Each grid map will have individually assigned composite soil health assessment samples collected based upon field attributes
    - Each pre-assigned sampling point will follow naming convention provided by the Soil Health Partnership and be linked to the bar code mentioned below
- Individual samples should be taken and bulked into composite samples across each testing strip (8 samples in total)
- Take enough samples to fill a half gallon zip lock bag per strip, no cloth bags. - Each sample will be a composite of 12 soil cores, collected in a 30' circle around the point
- All soil health assessment samples the Soil Health Nutrient Tool will be 0-6 inch depth samples.
- Labeling – Use pre-supplied adhesive labels with sample labels and barcodes
- Keep samples cool in a cooler while in field and in transport to shipping
- Pack samples with ice packs for shipping
- Soil samples will be shipped immediately (overnight) to Ward Labs for testing within 24 hours of sampling at the address provided - do not sample or ship on Friday ensure same day pickup.