

Probing Our Country's Soil Health

SHAPE: Soil Health Assessment Protocol and Evaluation



Background

SHAPE is an online tool designed to interpret soil health measurements, monitor soil health change, and offer management practice alternatives for improving soil health. An initiative has been funded by the USDA-Natural Resources Conservation Service to work with farmers to provide a more representative dataset to support SHAPE. To do so, diverse management practices and variable soils from across the U.S. are needed.

The SHAPE tool is online, publicly available, and easy to use to score a wide selection of soil health indicators. The outcome is effective and meaningful soil health interpretation across the different soils and landscapes of the U.S.

Partnering With People

The initiative will foster innovative partnerships that are mutually beneficial for farmers and landowners and the public. The SHAPE tool is intended to lead to improved interpretations for soil management recommendations and increased adoption of conservation management practices. These improvements can lead to positive, longterm impacts on the environment, commerce, and quality of life.

Leading Partners

This initiative partners University of Missouri and USDA to work with farmers and landowners, public, and private institutions across the U.S. The SHAPE tool prototype was first developed by a team of government and university scientists led by Dr. Kristen Veum at the USDA ARS Cropping Systems and Water Quality Research Unit, Columbia MO.

SHAPE Project Goals

Probing Soil Health

Teams will collect over 13,000 soil samples across the U.S. (~6000 fields) from different soil, climate, and management conditions.

Soil Health Indicators

Expand and improve soil health measurements using SHAPE to custom score soils for local and regional land use interpretation.

Open Access Tool

SHAPE tool shared publicly with free web-based apps for easy soil health scoring.

Get Involved

The SHAPE team is looking for farmers and landowners across the U.S. to collaborate with for obtaining management information and soil samples.

If interested, contact Newell Kitchen at AGES.KitchenN@gmail.com.

Benefits of Participation

Soil Health Report and Project Book entitled “Probing Our Country's Soil Health.”

Read Program FAQs on the back of this page.



Agricultural Research Service
U.S. DEPARTMENT OF AGRICULTURE



Center for Regenerative Agriculture
University of Missouri



National Association of
Conservation Districts

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Frequently Asked Questions

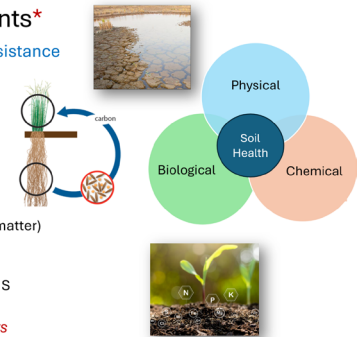
1. **What is the goal of the project?** The goal of this project is to help farmers and ranchers across the US better understand how soil health practices impact agricultural productivity. An overview of the project is presented in this short video: [Probing Our Country's Soil Health](#).
2. **Who is sponsoring this project?** The project is mainly sponsored by the USDA (Natural Resource Conservation Service and Agricultural Research Service), with contributions from various other public and private partners.
3. **Who does the project aim to benefit?** The project will enhance the development of a tool that goes by the acronym "SHAPE". This tool benchmarks soil health measurements across US soils and agricultural management practices. The main outcome of the tool is to help farmers, ranchers, and landowners interested in knowing the status of soil health on their fields and the potential to increase soil health and crop productivity. The tool will be freely available online and as a smartphone app.
4. **Will my data and personally identifiable information be protected?** The identity of participants will be protected. Your soil health data from your fields is used in developing the SHAPE tool. However, the precise location of your fields, your responses to the management questions, and your personal contact information will not be shared unless you explicitly give your permission to do so.
5. **How do I enroll?** You will sign up through an online calendar program, selecting a date and time that best works for you. This sign up sets up a Zoom meeting survey with you and a SHAPE project facilitator. During the meeting the facilitator will share their screen and walk you through the process. It is crucial you are using the Zoom video feature and can see the screen of the facilitator. During the enrollment you will be responding to questions about how your fields have been managed over the past decade. These are basic questions such as tillage, crop types, rotation, manure/cover crop/grazing practices (if any), etc. Typically the survey is for only 2 or 3 fields, based on farm size. The survey typically takes about 30 minutes or less.

6. **How does the soil sample collection work?** Usually within 3-6 months after the management survey a soil-sample team will come to your area and hand-sample 2 or 3 locations within each field you enrolled. This time frame may be longer when an area has only a few fields ready for sampling. Locations within a field are based on predominant soil types within the field. Within days the samples are delivered to the lab for processing and analysis. The soil sample team will be in communication with you a few days prior to arriving at your fields.
7. **What soil health measurements are being tested?** The plan is for 24 soil health tests for each sampling location (i.e. 2-3 per field). See figure for soil health categories and example analyses. All of your soil health data will be shared with you when it is ready. Since some of these tests are time-consuming and thousands of samples are being processed at the same time on this project, results could take months.

Soil Health Measurements*

- **Regulating Water and Erosion Resistance**
 - Aggregate stability
 - Soil texture (sand, silt, and clay)
- **Biological activity**
 - Soil respiration
 - Active carbon
- **Nutrient availability**
 - ACE protein
 - Potential N mineralization (PMN)
 - Standard soil fertility (P, K, organic matter)
 - Soil pH
- **Recycling of nutrients**
 - Soil enzymes related to C, N, P, and S

*24 different soil health measurements



8. **When will I see the soil health results from my fields?** Results from your fields will be shared in batches, as they are completed, using the SHAPE tool to help interpret the results. A final report will be given to you at the conclusion showing all the results, after the SHAPE tool has been improved using the entire project dataset.
9. **When will the improved SHAPE tool be made available for all farmers?** The plan is to release the enhanced SHAPE tool in 2029 when all the data has been analyzed and the tool has been modified.
10. **What are the deadlines for participating as a farmer/landowner?** There are a certain number of fields allocated to each state. Once those spots have been filled, we will not seek any new applications from those states. Please sign up early to ensure you have a spot. Most states have space for at least 80-100 fields. States that are largely agricultural will typically have between 150 and 250 fields.

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