Guidelines for Sampling for Dynamic Soil Properties for Soil Survey Updates

Arlene J. Tuggle1, Judy Ward1, Jeffrey E. Herrick1, Pete Biggam2, Cathy Seybold2, Mara D. Remmenga2, Ellis C. Benham3, Brandon Bestelmeyer3, Amanda Moore3, Fred Young4, Susan Samson-Liebig5
1NRCS, Las Cruces, NM; 2New Mexico State University, Las Cruces, NM; 3USDA-ARS Jornada Experimental Range; 4USDA-National Park Service; 5NRCS, Lincoln, NE; 6NRCS, Morgantown, WV; 7NRCS, Columbia, MO; 8NRCS, Bismarck, ND

Guidelines for Sampling for Dynamic Soil Properties can be collected during soil survey updates to add value to soil survey products and meet users' needs. Producers and land managers need information about soil and ecosystem change in order to plan for long-term productivity, conduct monitoring and assessments and predict management effects on soil. Data collection technologies that can be used in the soil survey program are, however, not fully developed. NRCS is now developing guidelines in cooperation with the Agricultural Research Service Jornada Experimental Range, National Park Service, Forest Service and Bureau of Land Management. This poster describes the steps for designing dynamic soil properties projects.

The Sampling Guide
- Provides instructions for integrated soil and vegetation data collection.
- Based on experiences from Dynamic Soil Property Pilot Projects in Big Bend NP, TX (2003, 2004), Arches NP, Utah (2005), and Springfield Plateau, Missouri (2006).
- Emphasizes functionally important properties, field methods and efficiency.

Field Work
- Step 5. Verify soil/plant community/land use of potential sample locations; select plots
- Step 6. Collect data/samples

Data Processing and Interpretation
- Step 7. Enter raw field data (interim storage in spread sheet or database)
- Step 8. Acquire sample data from laboratory
- Step 9. Compile and error check raw data; generate and summarize descriptive statistics
- Step 10. Analyze, interpret and report results

Getting ready to conduct projects in your state
Throughout soil survey updates, benchmark soil studies and other projects, soil scientists can begin to collect dynamic soil properties data. Strategic preparation will ensure efficient use of time and money. Pre-project work with other disciplines and cooperators includes:
1. Identify resource issues related to management-induced changes in soil properties.
2. Update benchmark soil lists to help set priorities for projects.
3. Identify reference soils and states for extensive or important ecological sites to help set priorities for projects.
4. Develop hypotheses (questions) to test.
5. Look at existing data for data gaps related to hypotheses.
6. Add dynamic soil properties projects to plans for the New Soil Survey.
7. Receive training in sample collection and methods of data analysis and interpretation.

Conducting projects provides many benefits.
- Dynamic soil property data is a value-added product for Soil Survey updates.
- Project results can be interpreted for important resource issues.
- Participation by soil scientists, range specialists, foresters, agronomists, and biologists will enhance skills for integrated soil-vegetation data collection.
- Initial experiences in data collection will help refine or expand the Sampling Guide for Dynamic Soil Properties.
- Multi-partner projects strengthen collaborative research, technology development, and training.