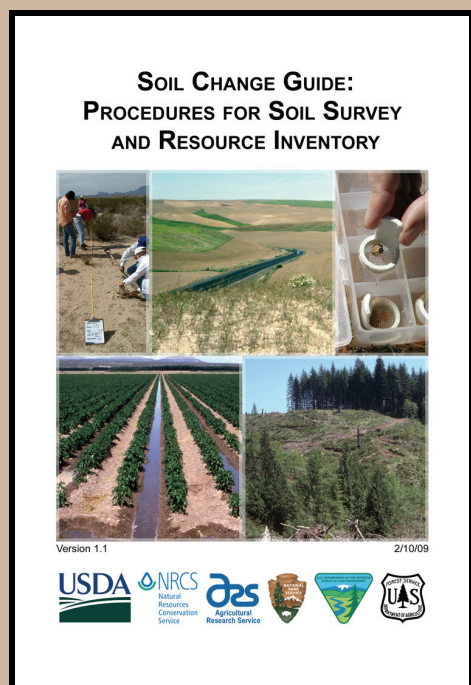


Soil Change Guide: Procedures for Soil Survey and Resource Inventory

Version 1.1



The *Guide* is available as a PDF file to download and print, as needed, from http://soils.usda.gov/technical/soil_change.

What's In the Guide?

- Provides **comparison study**** procedures that can be used for soil survey and ecological site inventory work
- Provides instructions on project planning, data collection, and data analysis
- Includes field forms and files for interim data storage

Who's It For?

- Soil scientists
- Agronomy, range, biology, and forestry specialists
- NCSS and other partners

Usage

- Some of the field methods can be used for monitoring, but the *Guide* was designed for inventory, not monitoring.

The Guide was developed by the Natural Resources Conservation Service, the Jornada Experimental Range of the Agricultural Research Service, and the National Park Service; in cooperation with the Forest Service and Bureau of Land Management.

Procedures were tested by soil survey, field, and state offices and cooperators during several pilot projects.

The importance of soil change is its effect on function.

The *Soil Change Guide* provides instruction on how to characterize dynamic soil properties* for management systems or plant communities at steady state conditions. The procedures are designed primarily for use on soil survey update projects on benchmark soils. Projects provide information for conservation planning and policy development, including:

- Land use and management effects on soil,
- Standard values for soil quality indicators, and
- Changes in soil properties, such as soil organic matter, over the human time scale.

* Minimum Data Set and Criteria for Dynamic Soil Properties

Dynamic soil properties

- Organic Carbon
- pH
- Electrical Conductivity
- Bulk Density / Soil Porosity
- Soil Structure
- Aggregate Stability (wet)
- Total Nitrogen
- Soil Stability Test Kit

Additional properties can be added for local situations and to help interpret the data.

Criteria

- Sensitive to disturbances or management: properties could recover within a few hundred years in the absence of anthropogenic disturbance or under proper management, OR the change may be nearly irreversible.
- Relationships between the properties and the processes or functions they reflect are clearly defined.
- Relatively insensitive to daily or seasonal fluctuations in environmental conditions of moisture, temperature, and light, or such fluctuations are well-understood and can be quantitatively predicted.
- Easy to measure accurately and precisely by different people and by the same person at different times.
- Cost and time, both in the field and the laboratory, to obtain the required number of measurements is low.

** Comparison Study

A comparison study compares two or more different management conditions on the same kind of soil. In each comparison study, dynamic soil properties are measured for a phase of a soil map unit component. A comparison study will:

- Document spatial variability at two scales;
- Integrate soil and vegetation data collection with methods tailored to each land use;
- Include a minimum data set of functionally important soil and vegetation properties; and
- Estimate changes in soil properties over the human time scale by comparing managed systems to a reference state.

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