

# CONSERVATION Showcase

## New Guides Aid Integration of Soils and Plant Community Data

New guides and tools available to conservationists are enabling them to better assess soils and plant communities and develop long-term sustainable conservation plans for our nation's farms and ranches.

The multi-agency "Soil Change Guide: Procedures for Soil Survey and Resource Inventory" and "Interagency Ecological Site Description Manual" discussed at the recent 2009 National Conference of the Cooperative Soil Survey held in Las Cruces highlight ways to integrate the influences soils and plant communities have upon each other – and note how to fully recognize the dynamics imposed by past management practices.

"Subtle changes in both native plants and soils may indicate that a threshold may have been exceeded which could cause an ecological site to degrade to a different state," said Ken Scheffe, New Mexico NRCS state soil scientist. "Crossing such a threshold is almost always an irreversible degradation of the ecological site."

Desert grassland may be converted to desert shrub land. The site may develop sand dunes caused by soil erosion. Gullies that drain water may incise the landscape. These state changes can be predicted based upon the types and degree of disturbance – and may be prevented if management action is taken early enough to prevent crossing the threshold.

Plants grow in the soil relying upon it to provide the nutrients and water they need. If the soil is not healthy and functioning properly, desirable plant production will fail.

It is not commonly understood that in crop production, farmers fertilize, irrigate, and cultivate the soil, not the

plant. Their goal is to maintain an optimum habitat for soil microbes to break down organic matter and convert fertilizers to forms available to plants.

Soils can be depleted of nutrients, contaminated with salts, and made impervious to water infiltration and air exchange – if pushed beyond their capacities with excessive fertilization, excessive tillage, and inefficient use of irrigation water. Soil degradation is not always the result of failure to provide something needed by the soil to be healthy. Unfortunately, degradation often results from a well intended over application of irrigation water, tillage operations, or unbalanced nutrients – especially when coupled with excessive removal of crop residues.

Soil health can be measured relatively easily using soil quality test kits, and provide farmers with information that can be used to determine the most effective management practices. To manage soil health for long-term sustained

production primarily means ensuring there is:

- Adequate active carbon stocks (organic matter)
- Structure to maintain optimum density which affects permeability of rainfall and irrigation and facilitation of aeration
- Leaching to remove accumulating salts, but not in excess which would remove nutrients and contaminated groundwater, and
- Erosion control to protect topsoil from the forces of wind and water, preventing losses of nutrients and damage to crops.

"Sustaining productivity of our croplands and rangelands through conservation requires knowledge of the health of the soil and plant communities," said Scheffe. "These new guides and manuals provide the tools needed, and they are being used by NRCS and other agencies."

For more information about your soils go on-line to [www.nm.nrcs.usda.gov](http://www.nm.nrcs.usda.gov) or visit your local NRCS field office.

