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## **Critical Issue Report: Soil Quality**



# **Assessing Soil Quality in Organic Agriculture**

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To waste, to destroy our natural resources, to skin and exhaust the land instead of using it so as to increase its usefulness, will result in undermining in the days of our children the very prosperity which we ought by right to hand down to them amplified and developed.

—Theodore Roosevelt, U.S. President, 1907.



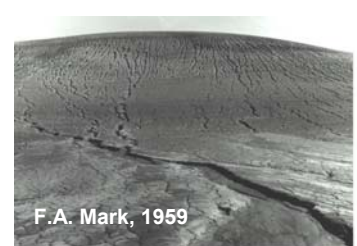
A nation that destroys its soils destroys itself.

—Franklin Roosevelt, U.S. President, 1937.



A-D: Pictorial sequence of a conservation success story initiated during the 1930s in the Coon Valley Watershed in Wisconsin.

Find out more at:  
<http://www.nrcs.usda.gov/about/history/>



Reviewing the past helps us plan for the future

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# Assessing Soil Quality in Organic Agriculture

## Critical Issue Report 2006.2

### *Executive Summary*

Soil quality affects and is affected by food, feed, and fiber production practices. It is also directly linked to environmental quality (i.e. water and air quality, global warming, and energy use for production practices). Unfortunately, moderate to severe soil degradation through erosion, compaction, leaching, and loss of biodiversity, structure, and tilth continues in America and around the world due to previously unrecognized consequences of traditional soil and crop management practices (e.g., intensive tillage, excessive nutrient and pesticide applications, and over-consumption of fossil fuels). Reports on the state of our land suggest that soil (deposited off-site as sediment or dust), nutrients, and organic matter have been lost at rates far exceeding a sustainable level. The result is that traditional agricultural practices have had enormous direct and indirect consequences on productivity, profitability, and environmental quality throughout America (NRC, 1993; USDA-NRCS, 1996).



Recognizing that revitalization of the land requires social, scientific, and ethical considerations; a growing population of agriculturists across America have focused renewed attention on developing locally led, high-quality food production systems to achieve a global vision of environmental stewardship. Organic agricultural systems offer opportunities to substantially improve soil quality and agricultural sustainability. The diversity of organic agricultural systems in different ecoregions of America warrants a broad assessment of how organic management systems might affect soil quality.

Relatively limited research has been conducted on soil quality in organic agricultural systems. A more focused research effort is proposed to assess the magnitude and extent of change in soil quality that can be achieved with adoption of organic agricultural systems. This Critical Issue Report describes a scientific approach to cost-effectively monitor and compare soil quality between conventional and organic agricultural systems across a diversity of ecoregions in America. The proposed minimum-data-set approach for soil quality assessment should not be perceived as all-encompassing. It is simply an approach to highlight how soil quality in organic agricultural systems can be assessed using the current paradigm of soil testing sample submission, data evaluation, and management interpretation. The proposed minimum-data-set approach will serve as the foundation for a national survey of soil quality that *The Organic Center* plans to implement during the next two years.

There is nothing in the whole of nature that is more important or deserves as much attention as the soil. Truly it is the soil that makes the world a friendly environment for humankind. It is the soil that nourishes and provides for the whole of nature; the whole of creation depends on the soil, which is the ultimate foundation of our existence.

—Friedrich Albert Fallon, German scientist, 1862



Photo by Jack Dykstra, USDA-ARS