Soil Surface Property Changes Over Sixty Years in California. (S05-singer145336-Oral)

Authors:

- M.J.Singer* - *University of California, Davis*
- F.DeClerck - *University of California, Daavis*

Abstract:

Much of the impetus for soil quality research has come from the assertion that the quality of US soil has been reduced through intensive cultivation. Short-term studies have indicated that organic matter has decreased in many soils with attendant changes in soil physical properties. Most of these studies have been in Udic or Ustic soil moisture regimes. Few studies have been made in Xeric or Aridic moisture regimes. We have asked how have soil properties changed in California over the past 60 years and what do these changes mean for soil quality. Using the known locations of archived samples collected by the soil survey staff in the 1940's and 50's we resampled 125 locations in California from the Imperial Valley in the south to Tehama county in the north and analyzed samples for properties important to plant production. For each 1945 and 2001 sample we measured pH, electrical conductivity, total nitrogen, total carbon, plant available phosphorus, texture and color. Across the state we found significant increases at the 95% confidence level for plant-available phosphorus, total carbon, pH, and percent clay. We found significant increases at the 90% confidence level for percent silt and total nitrogen. We measured significant decreases at the 95% confidence level for electrical conductivity, and percent sand. Chroma values decreased statewide at the 90% level. The degree of change varied according to land-use and geographic region. Based on this sample, California's soil quality has not significantly decreased over the past 60 years.

Corresponding Author Information:

Michael Singer
University of California
Dept. LAWR, 1 Shields Ave.
Davis, CA 95616

phone: 530-752-7499
fax: 530-752-1552
e-mail: mjsinger@ucdavis.edu

Presentation Information:

Presentation Date: Monday, November 11, 2002

Presentation Time: 9:30 am

Keywords:
soil quality, phosphorus, nitrogen, land use