Fragmentation of Soil Clods as Affected by Wetting and Drying History. (S01-vazquez200049-Oral)

Authors:

- M.A.Vazquez - *Univ. of PR - Agricultural Experiment Station*
- V.A.Snyder* - *Univ. of PR - Agricultural Experiment Station*

Abstract:

We investigated evolving fragment size distributions produced by subjecting large soil clods from 11 heavy textured soils to successive wetting and drying cycles. Wetting was effected by a fine mist to minimize water drop impact and slaking. After each wetting event, soil was air dried and sieved to determine fragment size distribution, then all fragments were placed on a perforated tray and re-wetted. The process was repeated through four wetting and drying cycles. Median fragment diameter decreased with each successive wet-dry cycle. The rate of decrease correlated positively with soil plasticity index, indicating involvement of shrink-swell phenomena in the fragmentation process. For any given soil and wet-dry cycle, fragment diameters at all cumulative probabilities (of being greater than the specified diameter) differed only by a constant scale factor from diameters at the same probabilities in a designated reference soil, implying similarity of distributions. The same similarity was preserved when fragment populations produced by wetting and drying were further disrupted by a drop shatter procedure.

Corresponding Author Information:

Miguel Vazquez
University of Puerto Rico
Ag. Exp. Sta., POB 21360
Rio Piedras, PR 00928

phone: 787-767-8283
fax: 787-763-0096
e-mail: elizardi@prtc.net

Presentation Information:

Presentation Date: Wednesday, November 13, 2002
Presentation Time: 8:45 am

Keywords:

Soil structure, Tilth mellowing, Aggregate distributions, Soil fragmentation