Land Use and Management Impact On Infiltration rate of Soils. (S06-shukla061953-Oral)

Authors:

- M.K.Shukla* The Ohio State University*
- R.Lal* The Ohio State University
- P.Unkefer* Los Alomos national Lab, New maxico
- L.B.Owens* USDA-ARS Coshocton

Abstract:

Soil physical properties and water infiltration were measured for five land use and soil management practices at North Appalachian Experimental Watersheds, Coshocton, Ohio. The five treatments were no-till with and without manure (NTM, NTWM), no-till corn-soybean rotation (NTCSR), conventional tillage (CT) and meadow (M). Land use and management factors significantly influenced infiltration characteristics, soil bulk density (rb), aggregation and mean weight diameter (MWD). The maximum cumulative infiltration was measured for the NTM treatment and the lowest for the CT treatment. The infiltration rate at 5 min (i5), steady state infiltration after 3 h (iC) and field capacity water content 24 h after infiltration test (FC) were higher in NTM (1.5 cm min-1, 0.4 cm min-1 and 0.35 gg-1, respectively) compared to other treatments. The least values of i5, ic and FC were observed for the CT treatment. Among NT treatments, saturated hydraulic conductivity (Ks) measured on soil cores was the highest for the NTM and NTCSR for both depths. The rb (1.52 g cm-3 for 0 to 10 cm and 1.62 g cm-3 for 10 to 20 cm depth) was the lowest and water stable soil aggregates (WSA) were the highest (WSA of 89% and 63%) for both depths for the NTM treatment.

Corresponding Author Information:

Manoj* Shukla* The Ohio State University* School of natural Resources,2021 Coffey Road* Columbus*, OH 43210 phone: (614)688-4937 fax: (614)292-7432 e-mail: shukla.9@osu.edu

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