Accounting for Dissolved Organic Carbon Losses from the Soil Rooting Zone. (S06-lentz114518-Poster)

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Abstract:

Little or no published information is available describing drainage losses of dissolved organic carbon (DOC) from furrow-irrigated calcareous Portneuf silt loam to the vadose zone beneath. Vacuum soil water percolation samplers at 1.2-m depth collected leachate and monitored soil water flux during the cropping season. Inflow, net infiltration, runoff, and percolation water from 5 to 7 irrigations per season were monitored in 1997, 1998, and 1999. Leachate DOC concentrations averaged 12.2 mg/L at the inflow-end furrow position (30-m), and 17.1 mg/L at the outflow-end furrow position. Increased percolation volumes at the inflow-end field position diluted the DOC in the leachate, compared to that at outflow-end positions. Annual mass loss of DOC from the field was 56.4 kg/ha/y, or about 0.1% of the organic carbon present in the soil (0 to 120 cm). These leachate DOC concentrations are significant; are high enough to permit denitrification under anaerobic soil conditions; and thus, may influence nitrate leaching processes in these soils. If not absorbed and sequestered during transport, the leached DOC could impact surface water quality via groundwater seepage.

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