

Water Extractable Organic Matter (WEOM) Concentration as Affected by Soil Properties

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Abstract

Effect of soil parameters on one of the least, but so much the more important fraction of soil organic matter, so called dissolved organic matter fraction, was investigated. We have hypothesised that soil parameters have substantial influence on dissolved organic matter concentrations.

Based on soils of Soil Monitoring System of Hungary, relationship between soil parameters and WEOM was carried out by correlation and regression analysis. We measured dissolved organic matter by extraction of 0.01 M CaCl₂, and in case of extraction methods, the soil dissolved organic matter commonly called as water extractable organic matter (WEOM). Soil parameters were as follows: pH (H₂O and KCl), humus, y_1 , CaCO₃, particle-size soil fractions, NO₃⁻, NH₄⁺, total N, water extractable organic nitrogen (WEON).

Correlation analysis showed a significant relationship between WEOM and WEON concentrations ($r=0.617$). Besides this there were other relatively strong relations, e. g. between y_1 and WEOM, and between C to N ratio of water extractable organic matter and WEOM ($r=0.367$, $r=0.311$). WEOM correlated less extent with ammonia concentration and soil fraction of 0.05-0.02.

With running linear regression standardized coefficients were got with which we can evaluate the soil parameters effects on soil WEOM concentrations. Principally, the NO₃⁻ and total N content of soil have influence on WEOM concentration, with opposite sign: -1.879 and 1.833, respectively. With increasing of the 0.05-0.02 fraction caused a decrease in WEOM content (-0.240), while WEON concentration increased that (0.476).

Key words: dissolved organic matter, water extractable organic matter, soil parameters, soil data base

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