Spatiotemporal distributions of soil resources and organisms in a no-till corn field. (S03-cavigelli153255-Poster)

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Abstract:

As part of a site uniformity assessment, we tested the hypothesis that soil chemical, biochemical and biological properties are related to soil drainage class and texture. We sampled soil in April, June, August, and October, 1995 from 16 mapping units in a no-till corn field that had been managed uniformly for at least nine years. Principal components analysis (PCA) of soil physical and chemical properties (bulk density, water holding capacity, total C, total N, glomalin, pH) showed that poorly drained soils clustered separately from other soils but there was no discernable pattern among somewhat poorly drained, moderately well drained and well drained soils. The first three principal components (PCs), however, were correlated to soil particle size distributions of surface and subsurface horizons. We found similar, albeit weaker, relationships between 10 soil biochemical properties and drainage class and soil texture. FAME profiles, culturable microbial populations, nematode communities, and glomalean fungal communities were weakly and inconsistently related to soil drainage class and texture. Soil biological characteristics, however, exhibited strong temporal

variability.

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