

Soil Bacteria and Nematode Functional Diversity: A Comparison Across Vegetation Types

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Abstract	<p>Vegetation types are an above-ground component that plays an important role in shaping soil community through their different life history. Plant organic material as the main source for the below-ground community is available at various time and amount based on plant growth. The objective of this study was to compare the bacteria and nematode functional diversity on soil planted with five plant types. These greenhouse experiments are selected <i>Oryza sativa</i> L. (grass), <i>Amaranthus</i> sp. (herb), <i>Solanum lycopersicum</i> (L.) Karst. (shrub), <i>Citrus reticulata</i> Blanco (tree), and <i>Arachis hypogaea</i> L. (legume). To create seven treatments, control and plant mixture were included. Soil samples and plants were collected after five weeks for bacteria and nematode enumerations, plant biomass and specific leaf area measurements. Plant growth was followed approximately every two weeks. The bacteria were separated into the heterotrophic or autotrophic group and nematodes were classified into their functional group after identification. Canonical Correspondence Analysis was used to investigate the correlation between plant types and the soil organism composition. The preliminary results showed that the plant types determined the soil bacteria and nematode composition, except for <i>O. sativa</i> and <i>S. lycopersicum</i> with the greatest similarity of composition (eigenvalue: 0.33 and 0.24, correlation: 0.80, cumulative variance: 84.1 %). This was consistent with stem growth rate, leaf growth rate, specific leaf area and plant biomass allocation. Strong to medium correlations were observed between soil organisms and above-ground plant biomass allocation ($r = -0.81$), plant growth rate ($r = -0.59$) and leaf growth rate ($r = -0.46$) indicating below-ground resources most likely influenced soil food web development.</p>
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