Microbial Communities of Serpentine Soils. (S03-scow211337-Oral)

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Abstract:

Serpentine soils, found throughout the world, form from hydrated magnesium silicates, contain high levels of heavy metals, low levels of macronutrients, and a low Ca:Mg. Plant communities are known to differ substantially between serpentine and adjacent nonserpentine soils; yet almost nothing is known of serpentine microbial communities. We compared soil properties and microbial communities in 550 samples of serpentine and nonserpentine soils in the California Coastal Range. Serpentine soils were high in Mg and low in Ca, positively correlated with Co, Ni, and pH levels, but negatively correlated with Fe, P, Na, Mn, Zn, K, Cu, H, S, B, and organic matter. Serpentine soils had higher respiration rates than nonserpentine soils and were stimulated by addition of Ca and N, but not P. Microbial communities (by phospholipid acid analysis) differed substantially between serpentine and adjacent nonserpentine soils. Serpentine communities had a high relative proportion of actinomycete and a low proportion of fungal biomarkers. These results suggest the chemistry and vegetation of serpentine soils select for unique microbial communities.

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