Soil Amino Acid Distribution Across a Forest Floodplain Successional Sequence in Interior Alaska. (S07werdin163901-Oral)

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Abstract:

Naturally occurring soil amino acids (AA) have been shown to be important sources of organic nitrogen for plant nutrition, yet few studies have examined which of the 20 AAs are most prevalent in the soil. In this study, we examined soil AA composition, concentration, and seasonal patterns across a primary successional sequence encompassing a natural gradient of plant productivity and soil physio-chemical characteristics. Soil cores were collected from five successional stages (willow, alder, balsam poplar, white spruce, and black spruce) in the Bonanza Creek Experimental Forest LTER sites on the Tanana River in interior Alaska. Water extractable AA composition and concentration was determined by HPLC. We found that later coniferous successional stages had a greater variety of AA species and that concentrations were generally five times those of early deciduous-dominated stages. Across successional stages, the AAs Glu, Gln, Asn, Asp, and Ala were prevalent. This suggests that simple soil parameters such as pH or organic matter content are poor predictors of AA species. These results demonstrate the biogeochemical diversity of nitrogen forms in boreal forests.

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