Residue compositon and decomposition of shoots and roots among C3 and C4 species. (S03-johnson143205-Poster)

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Abstract:

Understanding decomposition of plant residue is vital to understanding C and N cycling, both in terms of plant nutrient needs and global C balance. The rate of residue decomposition reflects decomposition of the degrading substrates. Roots typically constitute less than half the total plant biomass but literature suggests they contribute 1.4 to 1.8 times as much C to the soil. This study addresses the related issues of plant composition, residue decomposition, and C and N cycling. The first objective compared biochemical composition among roots, leaves and stems of C3 and C4 crops, alternative crops and potential biofuel species. The second objective was to evaluate the decomposition of roots, leaves and stems among species as it related to C and N mineralization rates. Plant materials from C3 and C4 species were collected at physiological maturity. Structural and nonstructural components were isolated from roots, stems and leaves. Decomposition was monitored by total respired CO2 at 25oC and 60% water-filled pore space, using ground material. Chemical composition and decomposition varied among species, and leaves, stems and roots.

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