Changes in microbial activity under elevated CO2, as revealed by the decomposition of C13N15 labeled residues. (S03-vankessel133803-Poster)

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Abstract:

Elevated atmospheric CO2 may alter decomposition rates through changes in residue quality and the impact of prolonged elevated CO2 on soil microbial activity. This study aims to elucidate whether residue from plants grown under elevated CO2 decomposes differently than litter grown under ambient CO2. Double labeled clover (Trifolium repens) and grass (Lolium perenne) residues grown under elevated and ambient CO2 at two levels of 15N fertilizer were incubated in soils under controlled conditions. The soils had been exposed to ambient and elevated CO2 under FACE-conditions and had received 15Nfertilizer for 9 years. After 2 weeks, there was no significant effect on soil respiration following the application of the different residues, suggesting that the rate of decomposition was not affected whether residues were grown under elevated or ambient CO2. Moreover, there was no soil effect; the release of CO2 was similar whether the residue was incubated in a soil exposed to elevated CO2 or to ambient CO2 levels. If changes in residue quality and soil microbial activity had occurred under prolonged elevated CO2, such changes did not affect decomposition and possible net C sequestration.

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