



Nitrogen fate and impacts in temperate forests: roles of mycorrhizae and pH

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Chronic nitrogen deposition has long been expected to enhance forest carbon uptake and storage, although the magnitude and mechanisms of these responses have been uncertain and sometimes may vary by tree species or be confounded by other biogeochemical constraints. Recent results from a ^{15}N tracer study in central New York State, USA, show that ectomycorrhizal tree species acquire more tracer than trees with arbuscular mycorrhizae, but that both types of trees take up only a small fraction of added N, acquired shortly after tracer addition. Most ^{15}N remained in the soil, even five years after the addition. A recent N x pH addition experiment nearby shows that added N can slow decomposition, regardless of pH response, with greater responses in ectomycorrhizal than arbuscular dominated stands, and that some mature stands can also still increase growth. These results add to other observations from tracer and N addition studies as well as N deposition gradients and model analyses to improve estimates of the magnitude and persistence of ecosystem C storage in response to past and projected changes in atmospheric deposition.