

# Understanding Controls on Soil Microbial Nitrogen Use Efficiency in Agroecosystems

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06/01/2017

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Promoting ecosystem nitrogen (N) retention is important for land managers and farmers, as nitrogen losses (via denitrification or leaching) contaminate surrounding natural systems, and represent an expensive waste of fertilizer. Plant and microbial nitrogen use efficiencies (NUE) play a major role in determining agroecosystem N retention. Although plant NUE has been well studied, very little is known about the NUE of soil microorganisms. The proposed study will be the first to quantify soil microbial NUE in relation to agricultural land use (e.g. fertilizer type and quantity). The results of these experiments will provide basic information about ecological controls on soil N cycling, and directly inform management decisions made by land owners.