# A Microbial Basis for Rapid Nitrification of Urea Nitrogen. (S03-mulvaney181044-Poster)

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## Abstract:

Urea is unique among synthetic N fertilizers in that hydrolysis generates carbon dioxide, which could stimulate the growth of autotrophic nitrifying microorganisms and thereby promote accumulation of nitrite and nitrate. To ascertain whether urea-C is assimilated by autotrophic microorganisms during nitrification of urea-N, a laboratory incubation experiment was conducted to trace C-14 and N-15 applied to soil as labeled urea (100, 500, 1000 mg N/kg). Following incubation at 25C for 1, 3, 7, 14, 21, or 29 d, analyses were performed to recover gaseous, extractable, and hydrolyzable forms of C-14 and N-15. Preliminary results indicate that, as expected, an increase in the rate of urea application promoted gaseous loss of labeled N as ammonia; whereas a decrease was observed in recovery of labeled urea-C as carbon dioxide. The latter trend would be expected if urea-C is increasingly assimilated in response to an abundant supply of available N for autotrophic oxidation. This possibility will be evaluated conclusively by measuring the recovery of radiolabeled C as hydrolyzable amino acids.

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