Incubation trial examining mineralized N using various labeled manure components and soils. (S08-cusick123940-Poster)

Authors:

- P.R.Cusick* Univ. of Wisconsin- Madison.
- J.M.Powell USDA-ARS, Madison, WI.
- R.F.Hensler Univ. of Wisconsin- Stevens Point.
- K.A.Kelling Univ. of Wisconsin- Madison

Abstract:

The rate and extent of manure N mineralization in soil determines manure N availability for crop uptake. A laboratory incubation study was conducted in which 15N-labeled or unlabeled feces, urine and oat straw bedding were mixed with 6 soils of differing physical and chemical characteristics. Manure N equivalent to 350 kg/ha (36% derived from feces, 42% from urine and 22% from bedding) was applied to incubation vessels (2L glass jars containing 250g soil dry wt.) in the following combinations: 1) 15N-labeled feces with urine and bedding at natural abundance, 2) 15N-labeled urine with feces and bedding at natural abundance), 3) 15N-labeled bedding with feces and urine at natural abundance, and 4) all components 15N-labeled. Triplicate vessels per manure treatment plus controls were kept at 60% water filled pore space and incubated at 11, 18, or 25C. Vessels were sampled at 0, 14, 21, 42, 84, and 168 days and were analyzed for mineralized N (NH4 and NO3) and 15N abundance. Based on the average mineral 15N content in all soils at 168 days (25C), we estimate that 15, 48, 16, and 30 percent of the fecal, urine, bedding, and total manure N had mineralized over the course of the study.

Corresponding Author Information:

Paul Cusick University of Wisconsin 1525 Observatory Dr. Madison, WI 53706 phone: 608-263-3878 e-mail: prcusick@students.wisc.edu

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