# Dairy Diet Effects on Manure Nitrogen Excretion and Cycling in Soils. (S04-powell140513-Poster)

Authors:

• J.M.Powell - USDA-ARS

## Abstract:

Dairy cow excretion of urinary nitrogen (UN), fecal endogenous N (FEN) of microbial and gut origin and fecal undigested feed N (FUN) is highly affected by diet. A greenhouse trial was conducted to test the hypothesis that crop N uptake is affected by UN, FEN, and FUN applications. Dairy feces from 12 diets, and feces and urine from 4 diets, after mixing in the UN:total fecal N ratio as excreted and left standing for 24h to observed possible diet effects on ammonia loss, were applied at equivalent N rates (350 kg/ha) to 2 silt loam and 1 sandy loam soil and oats were grown for 45 days. For pots containing feces only, there were no interactive effects on oat N uptake between soil and manure types. Oats grown in silt loams had similar N recoveries (34 and 33%) of total applied N), which were significantly lower than for the sandy loam (41%). Oat N uptake in pots that received approx. half of applied N as UN was similar (65%) across soil types. Across all diets, oat N uptake in pots containing only feces ranged from 28 to 40%, and in pots containing feces and urine from 53 to 81%. Application of feces and urine derived from different dairy diets significantly affected oat N uptake.

#### **Corresponding Author Information:**

Mark Powell	phone: 608-264-5044
USDA-ARS	fax: 608-264-5147
1925 Linden Dr. West	e-mail: jmpowel2@facstaff.wisc.edu
Madison, WI 53706	

## **Presentation Information:**

Presentation Date: Wednesday, November 13, 2002 Presentation Time: 2:00-4:00 pm Poster Board Number: 1922

### **Keywords:**

dairy manure, N cycling, dairy diet, N mineralization