How Much N in Soil Organic Matter is Derived from N2 Fixation after Exposing Clover to Elevated CO2 for 8 Years? (S03-vankessel174654-Oral)

Authors:

- C.vanKessel* - *Univ. of California-Davis, CA*
- K.J.vanGroenigen - *Univ. of California-Davis*
- J.Six - *Univ. of California-Davis*
- W.R.Horwath - *Univ. of California-Davis*
- D.Harris - *Univ. of California-Davis*
- U.A.Hartwig - *Univ. of Hohenheim, Germany*

Abstract:

We used 15N data of soil under clover and grass to determine the relative amount of N in SOM that was derived from N2-fixation. Samples were taken from a 9 year old FACE experiment at two levels of N fertilization (140 and 560 kg ha-1 yr-1). Since 15N labelled fertilizer was applied, we could use an isotope dilution model in which N derived from N2-fixation was the only source of isotopic dilution. After 9 years, high N fertilization did not affect the total amount of soil N under clover but reduced the amount of N derived from N2-fixation. Nine years of elevated CO2 did not affect the amount of fixed N incorporated in the soil. Because of differences in fraction size distribution between grass and clover, we could not estimate the amount of fixed N per SOM fraction. However, isotopic data suggest that most of the N derived from fixation is incorporated in SOM fractions having a high carbon turnover rate.

Corresponding Author Information:

Chris van Kessel
University of California-Davis
Dept. of Agronomy and Range Science
Davis, CA 95616

phone: 530-752-4377
e-mail:
cvankessel@ucdavis.edu

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