4/17/2024

Dear Dr. Caldarau and all other special issue editors,

Please accept the revision of our manuscript entitled *"Long-term fertilization increases soil but not plant nor microbial N in a Chihuahuan Desert Grassland"* for publication as an article in the special issue of *Biogeosciences:* Ecosystem experiments as a window to future carbon, water and nutrient cycling in terrestrial ecosystems. This novel research is being submitted here because it furthers to our understanding of how long-term N deposition may affect dryland ecosystems, including the potential for N-release to other.

Our revisions are described below in our response to comments from the Associate Editor. The text in italics is our response to each change.

Sincerely,

Violeta Mendoza- Martinez (Colorado State University)
Scott L. Collins (University of New Mexico)
Jennie R. McLaren (University of Texas at El Paso)


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Short Summary:

We examine the impacts of *multi-decadal nitrogen additions* on a dryland ecosystem N budget, including the *soil, microbial and plant N pools.* After 25 years, there appears to be little impact on the soil microbial or plant community and only minimal increases in N pools within the soil. While perhaps encouraging from a conservation standpoint, we calculate that greater than 95% of the nitrogen added to the system is not retained and is instead either lost deeper in the soil or emitted as gas.

**Comments:**

Keywords are lost?
*Keywords were accidentally deleted from the previous revision and have been replaced.*

P5, not 2.8, but going from 2.7 to 2.9?
*We corrected the numbering of the sections*

P8, 3.3 right after the text of figure 2
*Space was added before section 3.3.*

P14, line 350: add 'was' lost
P 14, line 352 'both the application of nitrogen and (take out: also in) the timing of measurements'
*Both edits made as requested*