MARIN CARBON PROJECT/ SILVER LAB, UC BERKELEY PEER-REVIEWED PUBLISHED PAPER LIST

1. ***Soil Carbon Pools in California's Annual Grassland Ecosystems***
Whendee L. Silver,1, Rebecca Ryals,2, and Valerie Eviner,3.
Rangeland Ecology and Management 63:128–136 | January 2010 | DOI: 10.2111/REM-D-09-00106.1

When we started this research, we wanted to review the existing knowledge on how much C is stored in California's rangeland soils and if there were predictable patterns in C storage (i.e. if there were known drivers of patterns across space and time). This paper is a meta-analysis of the literature data on soil C storage in California's rangelands.
We found that climate was not a good predictor of soil C pools at this scale of resolution and soil texture (clay content) was a weak correlate of soil C stocks.

2. ***Effects of organic matter amendments on net primary productivity and greenhouse gas emissions in annual grasslands***
Rebecca Ryals,1, and Whendee L. Silver,2.
Ecological Applications, 23(1), 2013, pp. 46–59, 2013 by the Ecological Society of America

This paper showed that a topical application of compost increased plant production, soil water holding capacity, and ecosystem C storage in rangelands in two bioclimatic zones in California.

3. ***Impacts of organic matter amendments on carbon and nitrogen dynamics in grassland soils***
Rebecca Ryals,1, Whendee L. Silver a Michael Kaiser,2, Margaret S. Torn,3, Asmeret Asefaw Berhe,4.
Soil Biology & Biochemistry 68 (2014) 52e61

This paper showed that compost applications (above) led to an increase in bulk soil C stocks and that over 3 years we detected an increase in the free light and occluded light C fractions.
NOTE that compost was hand-sorted from soils prior to analysis so that the increase in soil C represents microbially processed plant and fine compost materials.

4. ***Long-term climate change mitigation potential with organic matter management on grasslands***
Melannie D. Hartman,1, William J. Parton,2, Marcia S. DeLonge,3, and Whendee L. Silver,4.
Ecological Applications, 25(2), 2015, pp. 531–545, 2015 by the Ecological Society of America

This paper used the field data to model patterns in C and greenhouse gas dynamics following compost applications on three soil types and over long time periods (100 y).
Results indicated that C storage would persist for 30 to 100 y, and that compost application resulted in a long-term increase in C capture and associated nutrient cycling.
Few differences were seen when applying small amounts for multiple years versus a single one-time application. Compost with lower C:N ratios led to greater sequestration, but higher N2O emissions.

*5****. A Lifecycle Model to Evaluate Carbon Sequestration Potential and Greenhouse Gas Dynamics of Managed Grasslands***
Marcia S. DeLonge,1, Rebecca Ryals,2, and Whendee L. Silver,3.
Ecosystems (2013) 16: 962–979 DOI: 10.1007/s10021-013-9660-5

We used a lifecycle assessment approach to explore the more integrated impacts of compost amendments.

Results showed that waste diversion represented a large offset in emissions; which increased when coupled with compost applications.

6. ***Grassland compost amendments increase plant production without changing plant communities***
Rebecca Ryals,1,3,† Valerie T. Eviner,2, Claudia Stein,1,4, Katharine N. Suding,1,5, and Whendee L. Silver,1.
Ecosphere March 2016 v Volume 7(3) v Article e01270

This paper showed that there were no losses in biodiversity in composted-amended sites and that we did not see an increase in invasive weed species.

7. ***Long-term impacts of manure amendments on carbon and greenhouse gas dynamics of*** **rangelands**
Justine J. Owen,1 , William J. Parton,2, and Whendee L. Silver,1, Rebecca Ryals,1,
Global Change Biology (2015), doi: 10.1111/gcb.13044

Here we explored the long-term implications of manure amendments to rangeland soils. We used data from amended and un-amended fields in California to parameterize a model of C, nitrogen, and greenhouse gas fluxes.
This paper showed that manure amendments increased C storage in soils, but over time the C gain was completely offset by N2O emissions.

8. ***Greenhouse gas emissions from dairy manure management: a review of field-based studies***
Justine J. Owen, and Whendee L. Silver
Global Change Biology (2014), doi: 10.1111/gcb.12687

In this paper we do meta-analyses on dairy manure emissions globally and use the results to update the IPCC Tier 2 model.
Results showed that the current models underestimate CH4 and N2O emissions from dairy manure management and identify gaps in knowledge and opportunities for emissions resolution.

9. ***Greenhouse Gas Mitigation Opportunities in California Agriculture Review of Emissions and Mitigation Potential of Animal Manure Management and Land Application of Manure***
Justine J. Owen,1, Ermias Kebreab,2, Whendee Silver,3.
Nicholas Institute for Environmental Policy Solutions, Report, NI GGMOCA R 6, February 2014

Similar to above – review paper.

10. ***Greenhouse Gas Mitigation Opportunities in California Agriculture Review of California Rangeland Emissions and Mitigation Potential***
Marcia S. DeLonge, Justine J. Owen, and Whendee L. Silver.
Nicholas Institute for Environmental Policy Solutions, Report NI GGMOCA R 4, February 2014

Review of greenhouse gas emissions and C sequestration potential of California's grassland soils.