

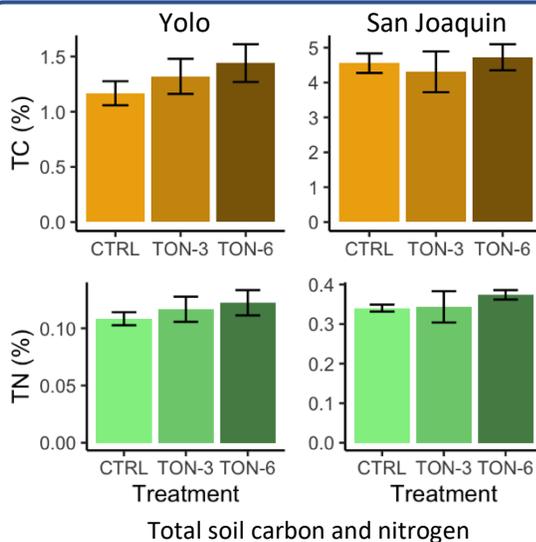
Compost for Soil Improvement in Alfalfa

Radomir Schmidt UC Davis (radschmidt@ucdavis.edu)



Why compost?

- Increases soil carbon
 - Slow release of nutrients
 - steady food supply for microbes
 - Organic compound supply
 - promotes metabolic diversity
 - feeds range of soil cycles
- Improves soil structure and water infiltration
- Compost nutrient content is important
 - It's possible to manipulate nutrients for desired effects
- There is a threshold minimum application rate (~3 ton/acre)
- Greenhouse gas emissions - reduced in many systems, details under study

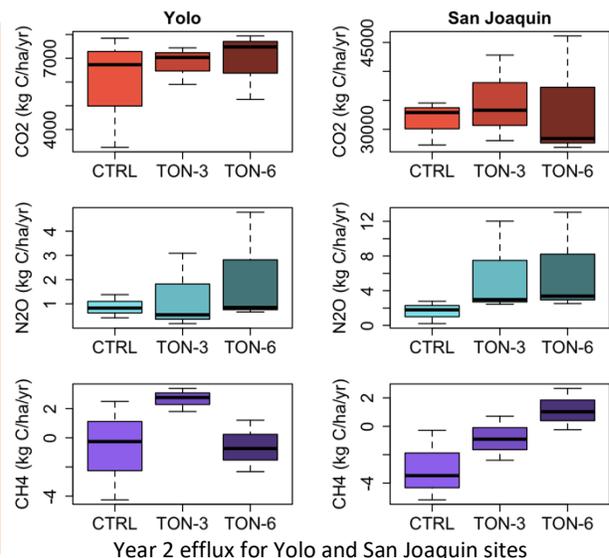


Alfalfa compost trial

- Green waste compost application at two rates - 3 or 6 tons/acre
- Two field sites - San Joaquin and Yolo county
- Compost was applied in fall
- Alfalfa flood irrigated
- Compost treatments had similar yields to no compost controls during first season
- Nutrients - increasing trends in low OM soil, limited changes in high OM soil

Greenhouse gas fluxes

- Carbon dioxide (CO₂)
 - Year 1 - higher efflux with compost
 - Year 2 - similar CO₂ efflux to control
- Nitrous oxide (N₂O)
 - Similar efflux between control and compost additions
- Methane (CH₄)
 - Negative flux - soils act as methane sink - in high OM soils
 - Higher efflux at 3 tons/ac compost in Yolo - "threshold" application rate?



Healthy Soils Program

CDFA OFFICE OF ENVIRONMENTAL FARMING & INNOVATION



Department of
LAND, AIR AND WATER RESOURCES
University of California, Davis

Climate Change • Sustainable Agriculture
Environmental Quality • Landscape Processes