Multisite Demonstration of Conservation Management Practices for Soil Health and GHG Emissions Reduction

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CALIFORNIA CLIMATE INVESTMENTS

Cap and Trade Dollars at Work

Municipal Compost and Tomato Production

Objective: evaluate the impact on soil, crop, and greenhouse gas (GHG) emissions from the application of municipal compost on processing tomatoes.

- Jeff Mitchell & Scott Stoddard, UCCE
- Derick Azevedo, Bowles Farming Company, Inc., Los Banos, CA

Methods

- Commercial tomatoes, near Dos Palos, CA
  - 2019: N6428
  - 2020: H4707
- Municipal compost at 0, 15, and 30 tons/A applied in November 2017, 2018, 2019
  - About 1.2% N
  - 17 – 36% moisture
  - Estimated N: 12 to 24 lbs/A/yr


91/90

Soil parameters monitored

Annual sampling

At different depths from
0” to 36”

<u>Analysis:</u>

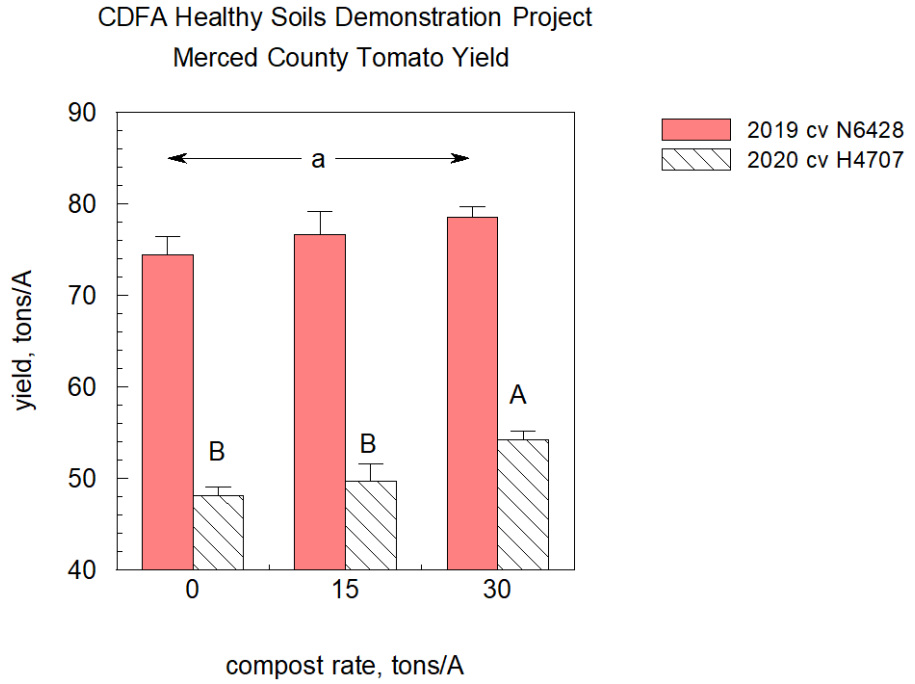
- bulk density
- pH
- Total C & N
- Wet aggregate stability
- E.C.
- PoxC (active carbon)

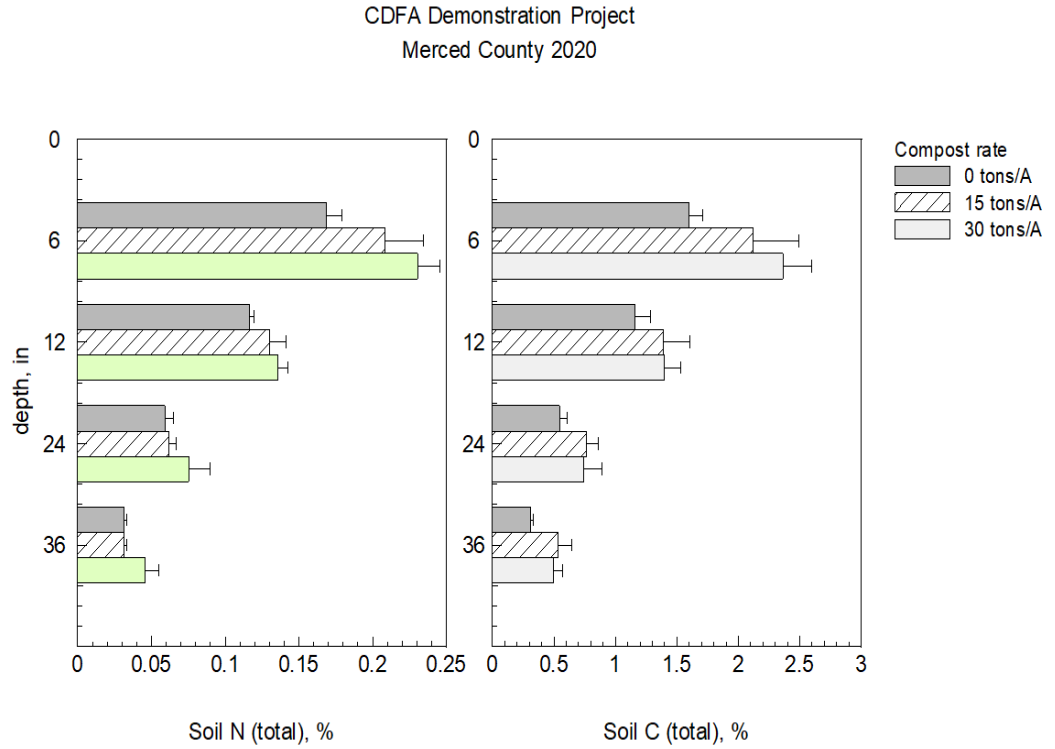
Monthly sampling

At 0” to 6”

<u>Analysis:</u>

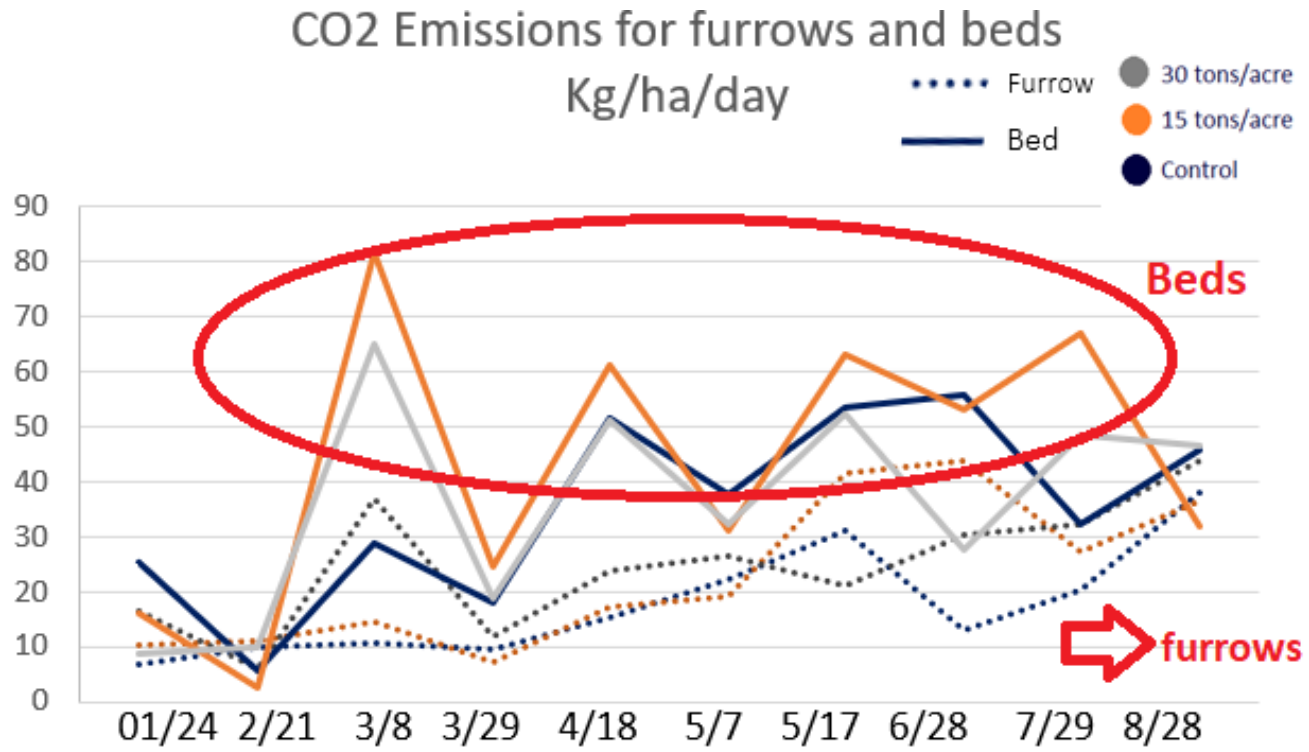
- Greenhouse gas (CO_2, CH_4, N_2O)
- Ammonium (NH_4)
- Nitrate (NO_3)
- Moisture



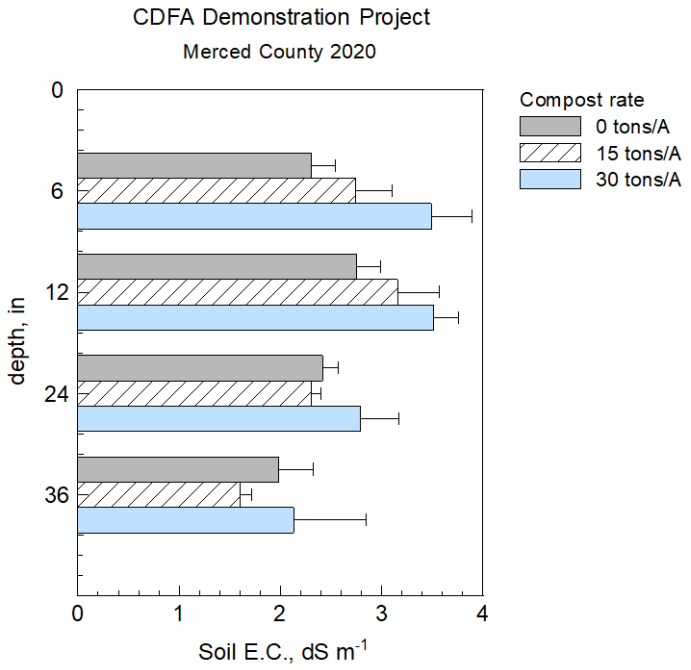


Results: Yield and Soil C

Carbon dioxide Emissions (CO_2)



- No clear difference in GHG emissions between compost treatments.
  - Compost usually increased GHG over UTC
- The beds emitted more GHGs compared to the furrows
- Less moisture in the furrows decreased GHG emissions of the overall field compared to other irrigation systems.



Simple budget (2020 results only)

increased return $/A	compost $/A	total $/A	return, $/A
$ -	$ -	$ 3,847.79	$ -
$ 130.02	$ 317.64	$ 3,660.17	$ (187.62)
$ 491.47	$ 530.93	$ 3,808.33	$ (39.46)

Tomatoes	$80 per ton
compost cost	$23.50/ton and $67.71/A application

Concerns

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- Veronica Suarez Ramiro, UCD graduate student

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