Sonoma County Carbon Sequestration through Compost Application: Case Study #3 - Rangeland

Report prepared by Ava Faithe Castro of Daily Acts Organization

---

Sonoma County - Rangeland

Project Site: Eames Institute of Infinite Curiosity Ranch - Petaluma, CA. - Petaluma River Watershed
Project Lead: Sonoma RCD

GRANT SUMMARY

The Carbon Sequestration through Compost Application Pilot Project, funded through Sonoma County's Climate Resiliency Fund, sought to maximize carbon drawdown within both agricultural and community settings. In 2023, through this project, a compost rebate was created which incentivized agriculturalists to spread compost at their sites, helping to meet the goals of the Short-Lived Climate Pollutants Act (SB1383). Compost was also spread at community sites and communities engaged through educational workshops and programming on the topics of compost, food waste reduction, and soil health.

SITE CRITERIA

Eligibility for agricultural sites had to meet the following criteria:

- Legitimate agricultural enterprise
- Has the ability to implement the practice (spread rebated compost in the given time frame)
- Gave permission for the grant partners to enter project information into the project tracker.

Agricultural sites who applied were prioritized based upon:

- An in process or developed Carbon Farm Plan (or implementing carbon farming practices)
- If they are a part of, or serve, underserved communities
- Support community education, habitat, and/or water conservation activity on their site.
- A high carbon sequestration amount per cost of application (ROI)
- If they are a small farm
- If they have not previously received financial support from the RCD

SITE BACKGROUND

Eames Ranch is a beautiful site with the mission of being "a landscape for cultivating curiosity, a working farm where the practices of design and regenerative agriculture are integrated to build a better world for tomorrow." Eames views the ranch as a living laboratory and knows that sustainable, regenerative agriculture is about the act of design. Eames Ranch is home to grazing livestock and conservation efforts in habitat restoration.

The 451 ranch is located in the narrow and sunny valley of San Antonio Creek in the outskirts of Petaluma, on land originally inhabited by Coast Miwok. Cattle and sheep are managed with rotational grazing. The sheep are sheared and the wool is made into blankets and garments. The

pastures include a mix of wild grasses, mustard, dandelions, coast live oaks, california buckeyes, and a variety of other native plants.

PROJECT SUMMARY

Eames Ranch applied 877.5 tons of compost across 50 acres. This was by far the largest application of compost out of the 16 agricultural projects funded through the "Carbon Sequestration through Compost Application Pilot Project." The compost was applied by Poncia Fertilizer with a truck equipped with a compost spreader attachment. Eames applied for the compost rebate through the RCDs application process and was awarded $24,839, which covered 68% of the cost of the project.

PROJECT METRICS

Total Size of Farm/Landscape (acres)	451
Area of Compost Applied (acres)	50
Amount of Compost Applied (tons)	877.5
Spreading Method	Truck with compost spreader
Cost of Compost and Trucking	$36,371
Amount Rebated	$24,839
Years of Benefit	15
One Year Sequestration Benefit	585.47 Mg CO2e
15 Year Sequestration Benefit	1,117.5 Mg CO2e
Total Sequestration Benefit	1,702.97 Mg CO2e

RESULTS

This compost application helps to improve soil health, and sequester an estimated 1,702.97 Mg CO2e over 15 years. Rangelands can sequester carbon dioxide for longer than row crop and vineyard systems because of how they are managed. Rangelands are generally not tilled, with less disrupted soils; this helps to sequester more carbon and provide more forage when compost is applied.

The amount of carbon dioxide equivalent sequestered from this application is comparable to the greenhouse gas emissions from 4.4 million miles driven by the average gasoline powered passenger vehicle. It is also equivalent to the CO2 emissions of 222 homes' energy use for one year. Another notable comparison of the CO2 equivalent of the compost application is that it is equal to the amount of CO2 sequestered by just under 2,000 acres of US forests in 1 year. (according to calculations using EPA's greenhouse gas equivalencies calculator)[1].

[1] United States EPA Greenhouse Gas Equivalencies Calculator - epa.gov/energy/greenhouse-gas-equivalencies-calculator

rcpa
REGIONAL CLIMATE PROTECTION AUTHORITY

AG + OPEN SPACE
SONOMA COUNTY

GOLD RIDGE
RESOURCE CONSERVATION DISTRICT

SONOMA
RESOURCE CONSERVATION DISTRICT

Carbon Cycle Institute

Daily Acts

ZERO WASTE SONOMA

SONOMA COUNTY
1850
AGRICULTURE
INDUSTRY
RECREATION
CALIFORNIA