



# SCALING UP CARBON FARMING

OPPORTUNITIES AND BARRIERS  
IN SANTA BARBARA COUNTY

MARCH 2018



# EXECUTIVE SUMMARY



Carbon farming practices – such as new methods of tilling, planting trees along the edges of fields, and applying compost to working lands to accelerate plant growth – are powerful opportunities for returning excess atmospheric carbon to the soil. If applied globally, these practices have the capacity to sequester hundreds of billions of tons of carbon from the atmosphere in the coming decades and rebalance the global carbon cycle.

As one of the leading agricultural counties in California, the Santa Barbara region can lead our state and the nation in modeling carbon farming practices on exceptionally diverse types of row crops, orchards, vineyards and cattle ranches. As one of the counties hardest hit by cycles of drought and intense precipitation, these practices also can be valuable tools for improving the ability of soil to hold more water and increasing the resilience of the ecosystem to droughts and flooding. And as a region facing critical decisions over waste management, we have a unique opportunity to improve agricultural soils through compost development.

Over the past five years, the Community Environmental Council (CEC) and the Cachuma Resource Conservation District (CRCD) have supported the development of carbon farming in Santa Barbara County. Our work has helped position the region as a leader and model of cooperation between environmental stewardship, climate action and agriculture. This work began in earnest in 2016, when the Ted Chamberlin Ranch became the first ranch in southern California to complete a full carbon farm plan – and then became one of fifteen sites in a statewide Natural Resources Conservation Service field trial to develop a conservation practice standard for compost application on grazed rangelands.

Over the next couple of years, CEC and CRCD explored how carbon farming practices could be implemented on a larger scale in our region – coordinating more than a dozen partners involved in research and policy development, hosting five stakeholder events, and working with the ranch to host over sixty agricultural and community leaders at the compost research site. In 2017, our coalition applied for and was awarded funding from the California Healthy Soils Program to expand the Ted Chamberlin Ranch's compost pilot from one to sixty acres. Three other agricultural operations in Santa Barbara County also received Healthy Soils Program funding, making the county the most awarded southern region in the first year of the program.

Capturing this momentum and bringing carbon farming into mainstream practice will require even further leadership and collaboration. To this end, CEC and CRCD have identified several short, near-term actions that are summarized in this report.

## **CARBON FARMING =**

agricultural practices that capture excess carbon from the atmosphere and store it in the soil, where it improves soil health and restores balance in the carbon cycle.

# RECOMMENDATIONS - CARBON FARMING

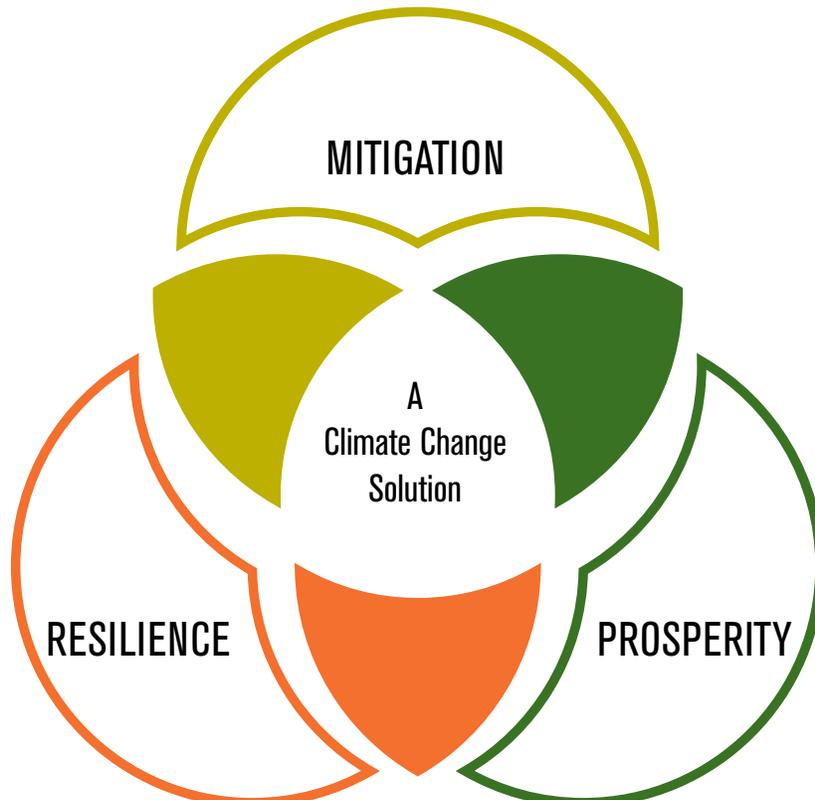
*Following are a list of recommended next steps to support and scale implementation of carbon farming in Santa Barbara County:*

- 1 Incorporate carbon farming strategies into key planning documents**, such as the County's Energy and Climate Action Strategy. To support carbon farming work, many counties are integrating carbon farming into established planning policies. Marin, Sonoma, and Yolo County have all established carbon farming as a greenhouse gas emission reduction strategy in their counties' climate action plans, and the San Diego Food System Alliance is working to do the same in San Diego County. A first step could be to incorporate into other planning efforts (such as the Santa Barbara Conservation Blueprint) analysis done by the Community Environmental Council, Cachuma Resource Conservation District and Legacy Works to determine the potential for carbon sequestration in Santa Barbara County through the application of compost to rangelands.
- 2 Convene a regional task force on carbon farming**, whose role is to engage with stakeholders to develop and advance climate-friendly agricultural strategies. Key players could include air quality and water quality management districts, resource conservation districts, the County Agriculture Department and agricultural extensions, the Farm Bureau, landowners and land trusts, and advocacy organizations.
- 3 Identify ranchers and farmers who wish to develop and implement a Carbon Farming Plan for their properties.** Agriculture producers are becoming familiar with carbon farming practices, and interest is increasing. The next step will be to identify those producers who would like to develop a Carbon Farming Plan (CFP), and assist them in identifying and securing funding to support implementation. The Carbon Farming Plan created for the Ted Chamberlin Ranch offers a standardized template that can be used as an example for other plans going forward. This project was recently awarded a Demonstration Grant from the California Department of Food and Agriculture's Healthy Soils Program, and has applied for additional funding from the USDA Natural Resources Conservation Service's Environmental Quality Incentives Program (EQIP). Practices in the Chamberlin Ranch plan are also being put forward for CEQA mitigation.
- 4 Increase local and state funding support for farmer and rancher technical assistance for Carbon Farm Planning by the Cachuma Resource Conservation District (RCD).** The RCD is local, non-regulatory agency which operates with tight budgets and limited staffing. While the RCD has the technical capacity and trust of the community, it needs additional funding and support to build out its carbon farm plan program, conduct carbon farm plans with producers, and build out its existing rancher-to-rancher education programs.
- 5 Work with other regions to share research and created shared equipment programs** (such as compost turners and spreaders). Partners could include other individual Resource Conservation Districts (RCDs), the California Association of RCDs, the national Carbon Farming Innovation network, or the newly-formed Central Coast Climate Collaborative (spanning Ventura, Santa Barbara, San Luis Obispo, Monterey, Santa Cruz and San Benito counties).
- 6 Include science curriculum on the carbon cycle and composting in local schools.** Work with Kiss the Ground, Explore Ecology and other members of the food system and education community to integrate science based curriculum into elementary and middle schools.

## WHAT IS CARBON FARMING?

The concept of carbon farming builds off existing agricultural conservation planning programs provided by the Resource Conservation Districts and the U.S. Department of Agriculture Natural Resource Conservation Service. Planning and technical assistance are provided by trusted agricultural advisors who work with land owners to determine the best practices for their landscape and operation within a whole-farm management framework. Greenhouse gas (GHG) calculations for carbon farming are estimated using the federally and state approved COMET-Planner, while practice implementation is tracked through the RCD or lead agricultural conservation planner.

The USDA Natural Resources Conservation Service has recognized 34 long-standing conservation practices as having soil health and carbon sequestration benefits. Over a dozen of these same practices have also been approved to receive cap and trade monies from the State of California's Healthy Soils Program. In Santa Barbara County, these same practices are also considered appropriate for local GHG mitigation requirements through the California Environmental Quality Act (CEQA).



# RECOMMENDATIONS - COMPOST

Applying compost to previously degraded grazed rangelands helps restore system health. A one-time application of 1/4 inch of compost creates a soil carbon sink, increasing total soil carbon storage and soil organic matter content. This in turn increases the soil's ability to absorb and hold water, which reduces flooding and erosion, increases groundwater recharge, lowers soil surface temperatures, increases plant productivity and resilience to heat and drought, stabilizes nutrients in the soil, and increases nutrient and mineral uptake by plants. All of these attributes add economic value to the producer. Compost application on grazed rangeland is an approved practice under the California Healthy Soils Program, and USDA Natural Resources Conservation Service (NRCS) is in the process of adopting it as a conservation practice. One of 15 official state NRCS field trials is located on the Ted Chamberlin Ranch outside of Los Olivos, California.

Without an increase in compost supply from commercial facilities, it will be difficult to scale-up compost application and access California Healthy Soils Program funding or similar funding streams, which require CalRecycle certified compost.

*Following are a list of recommended activities that will help increase the supply of quality compost in the County.*

**1 Support medium scale production of compost at the watershed scale** (operations with more than 12,500 cubic yards of feedstock and finished compost on site at any time). Maximize production at the permitted but inactive site at the Santa Ynez Valley Transfer Station on the Ted Chamberlin Ranch.

**2 Encourage small-scale onsite production of compost in agriculture** (operations with less than 12,500 cubic yards of feedstock and finished compost on site at any time) by providing training and technical assistance to farmers and ranchers. Small-scale onsite production – an option for a cost-effective and quality compost supply—requires a skill set specific to compost creation that many ranchers and farmers don't have. Training and technical assistance can remove this learning barrier and make it more feasible for ranchers and farmers and to create compost.

## WHAT IS COMPOST?

Many people incorrectly consider compost to be all sorts of raw organic waste, such as mulch or manure. While compost can be made from anything that was once alive, it is not



the “raw” material itself but rather the final product of a managed thermophilic process through which microorganisms break down organic materials into forms suitable for beneficial application to the soil. A well-managed composting process has plenty of oxygen and goes through a high-heat phase that accelerates the natural biodegradation of organic materials. When mature, compost consists of a stable form of organic matter made up of stable carbon and nitrogen and important nutrients, is rich with healthy microbial life, and is free of weed seeds and harmful pathogens.

**3 Explore opportunities for shared resources and establish collaborations that would allow compost producers to support one another** through community-driven operations and equipment sharing. A barrier to onsite compost production and application is lack of equipment, which comes at too high a cost for most individual producers to own individually. Equipment sharing programs, along with sharing an insured “circuit rider” compost expert who can travel throughout the County providing technical assistance, would help address the lack of on-site compost production and application resources faced by the agricultural sector. Additionally, community opportunities to create compost at a regionally centralized location allows producers of organic wastes to combine feedstocks that may not exist on a single agricultural operation (manure and woody waste), and reduces vehicle miles travel for both organic waste management and compost purchase. Many collaborative models exist to bridge these gaps between supply and demand for compost feedstock, and can be utilized to increase compost production in Santa Barbara County.

**4 Explore creating an “emergency permit” and practice standards with CalRecycle for compost production in support of slope stabilization and fire remediation activities on agricultural and forest lands following natural disasters.** Compost is one of the best products for soil and slope stabilization following vegetative disruption from fire or wind or water erosion. It increases aggregate stability and water infiltration while simultaneously stimulating rapid revegetation of burned, eroded or severely degraded soils. While it is considered one of the top and most effective remediation techniques, it is often not used due to cost. Temporary, local or onsite production of compost for remediation could elevate cost barriers and, when appropriate, could utilize materials such as burned wood, dead trees or other local, non-toxic sources that may be gathered during cleanup.

**5 Encourage small-scale onsite production of compost in urban settings** by creating compost hubs at community gardens, schools, parks and other urban green sites. Proper establishment and training surrounding small scale urban compost operations is essential for their long-term maintenance and quality. Identification of sites supported by interested communities, training and set up of composting bins can be facilitated by outside non-profit parties or could be formalized through a County contract.

**6 Evaluate the expected quality of compost to be produced at the County of Santa Barbara’s proposed Tajiguas Resource Recovery Project,** which would divert most of South Santa Barbara County’s food waste and other organic materials (such as wet paper or cardboard and some green waste) to an anaerobic digester. If the quality of compost from this facility is acceptable to ranchers and farmers, it can increase the amount of compost available regionally.



**7 Develop a “one-stop” resource a guide on State and County compost regulations and on best management practices** related to small scale compost production and application. The complex rules and regulations pertaining to compost production, application can dissuade farmers, ranchers and community groups from making compost. This resource guide could contextualize abstract policy and best management practices into usable knowledge for producers.

**8 Engage with the Central Coast Regional Water Quality Control Board as they interpret rules on compost production and application put forth by the California State Water Resources Control Board.** Regional interpretation of these rules will dictate how they are implemented in Santa Barbara County, and certain interpretations will better support carbon farming practices. For example, reclassifying manure from a Tier Two to Tier One feedstock will make it more viable for smaller agricultural producers to create compost onsite, without triggering cost-prohibitive water quality regulations. As the Central Coast Regional Water Quality Control Board moves forward with these interpretations in the Spring of 2018, we can help ensure that interpretations support scaling up carbon farming.

*Leverage research and support pilot projects*

**9 Work with the County Agricultural Commissioner to gather data during the annual County Crop Report on current on farm compost creation and availability of organic feedstocks that could be used for compost creation.** Data on organic waste produced on farms could help inform regional planning and support the creation of new incentives for compost production. Using existing data collection methods to assess these feedstocks can fill a currently large knowledge gap. Data is collected annually through countywide surveying to develop the County Crop Report. The Agriculture Commissioner’s Office, responsible for the report, could amend the survey to include questions about on-farm waste streams, gaining important new data without the expense, time, and survey-fatigue associated with new surveys. Data would be anonymous per keeping with standard Crop Report practices.

**10 Increase community and environmental education surrounding compost application on grazed rangelands.** Leverage information gathered from the existing Natural Resources Conservation Service field trials for compost application on grazed rangelands to address any concerns about compost application may raise with regards to plant species composition and ecological diversity. The official field trial on the Ted Chamberlin Ranch assesses the effect of compost application on both plant species diversity and forage productivity, and may answer many of the questions raised by different stakeholders.



# Scaling Up Carbon Farming : Opportunities & Barriers In Santa Barbara County

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