CIVIL EATS

A New California Law Will Create a Lot More Compost—but Will it Make it to Farmland?

A lack of uniform rules and the state's past missteps could keep farmers from getting access to 'brown gold'—and the many climate and farm benefits it offers.

BY GOSIA WOZNIACKA MARCH 2, 2022

A pile of compost in the farm field at Shone Farm, a teaching farm at Sonoma State University in California. (Photo by Emma K. Morris)

Since January, new regulations in California now require all residents and businesses across the state to separate food and other organic materials from the rest of their garbage in an effort to reduce organic waste in landfills. The new law is seen as

groundbreaking, a significant step in combating climate change by reducing greenhouse gas emissions, producing fuel, and creating compost that can help sequester carbon in soils.

But compost advocates say the law could make it difficult for farmers to access the so-called "brown gold" at scale, thwarting efforts to increase adoption of climate-friendly agriculture. The regulations don't require that the newly generated compost be used on farmland, include funding for costly transportation to farms, or mandate that compost be of a quality that would make it appealing to farmers and ranchers. And because each municipality must decide how to implement the rules, there is no uniform approach that could lead to an increase in on-farm compost applications.

"Everyone is looking at California as a hopeful example. It's a huge win to get the food scraps and green waste out of the landfills," said Anthony Myint, executive director of Zero Foodprint, a nonprofit that distributes grants for sustainable agricultural practices. "But the regulation could also create a challenge for farmers."

Undervalued 'Brown Gold' Can Increase Carbon Capture

California generates 23 million tons of organic waste every year, including 5 to 6 million tons of food waste, according to CalRecycle, the state agency overseeing the new regulations. As it decomposes in landfills, organic waste emits methane, a powerful greenhouse gas with a 25 times greater impact on global warming than carbon dioxide. Organic waste is the third-largest source of methane emissions in the U.S.

Senate Bill 1383, which was signed into law in 2016, aimed to reduce the level of organic waste sent to landfills by 50 percent by 2020 and 75 percent by 2025—though the state has acknowledged it failed to meet the 2020 target. The newly diverted organic waste will be transformed into compost, mulch, and energy via the burning of biomass. But the state says compost will make up the bulk of the new material given that California produces limited amounts of biogas and compressed recycled natural gas (RNG).

Compost, long used by organic growers and backyard gardeners, has in recent years become popular among mainstream farmers interested in regenerative agriculture. Several studies have shown that spreading a layer of compost on farmland and ranchland can lead to increased carbon storage, especially if the compost is coupled with cover crops. Compost also increases the water holding capacity of soils. And while compost use on urban

landscapes, including in parks and school grounds, may improve soil health, applying compost to farmland has multiple co-benefits, experts say, including boosting food's nutrient content, increasing crop yields, helping soil absorb and retain more water (which cuts irrigation costs), and reducing the need for expensive synthetic fertilizers and pesticides.

CalRecycle estimates that about 5.5 million more tons of compost should be produced in California by 2025—enough to apply to an extra 27 million acres or up to 4 percent of the total cropland in the state. Ramping up compost production through organic waste diversion dovetails with California's efforts to sequester carbon and reduce greenhouse gas emissions, including improving soil health through "carbon farming." Nearly three quarters of the agricultural projects that received grants from the state's signature Healthy Soils Incentives Program include compost applications. But the number of funded projects —around 600 so far— is small relative to the enormous number of farms in California. Experts say expanding access to compost could help more farmers reduce emissions and put them on track to adopt other sustainable practices.

A Recology truck drops a load of compostable material at a transfer station in San Francisco, California. (Photo by Justin Sullivan/Getty Images)

"We have an impetus to try to build bridges between compost producers, generators, and farmers. Getting compost to agricultural land is a critical part of closing the loop," said Neil Edgar, executive director of the California Compost Coalition, a statewide lobbying group.

Some cities in Northern California, such as San Francisco, have run food waste diversion programs for years and already have robust compost markets and relationships with local composting companies. But many other cities and counties—particularly in the southern part of the state, where most residents live—are scrambling to accommodate the new law. While some existing waste-processing facilities will expand, several dozen facilities still need to be permitted and built around the state. Meanwhile, fines for failing to separate out food and other organic waste from garbage bound for the landfill are set to go into effect in 2024.

The new regulations also require that cities and counties purchase a certain amount of compost and other products made from recycled organic waste every year—based on the jurisdiction's population size—and either use it or give it away to residents for free. Localities can procure and distribute the products anywhere in the state. But the regulations do not specify who should receive the compost, where, or how to pay for the transport and spreading costs.

Will Farmers Get More Compost?

About half of what California composters currently produce is compost, and they sell 65 percent of their compost to the agriculture industry, according to a report commissioned by CalRecycle. The market is tight, with agriculture-quality compost in very high demand, especially in areas with access to composting facilities, transportation, and spreading services, said Cole Smith, a staff research associate with the University of California.

Still, for many other farmers, the cost of compost—and that of transporting and spreading it, which often double the price for farmers—is prohibitive, Smith said. While some small and medium farms do use it, their budgets don't allow them to do so every year, the interval that would be optimal for their soil and for the environment. When money gets

tight, Smith said, compost applications are among the first practices to go. Growers of high-value fruit, vegetables, and cannabis tend to rely more on compost, Smith said, because they can afford it.

But by far the biggest challenges are contamination and convincing farmers to use compost in the first place, Smith said. Many will use it from agricultural, on-farm waste but avoid urban-generated compost. The distrust is partly linked to California's history of direct farmland applications of green waste without composting, said Smith. Similarly, it echoes a decade-old controversy over a San Francisco program that aimed to transform human waste into backyard compost. The distrust is also a direct result of farmers receiving badly contaminated compost batches.

"Yes, we want to bring organic waste out of landfill and reduce landfill emissions. But when growers hear that, they think it has hit the plate, then the trash, and now you want to use their fields as a disposal [site]," said Smith.

Paul Muller of Full Belly Farm, a 400-acre diversified operation in northern California, said he stopped using urban compost several years ago.

"The compost we were getting had a good deal of foreign material in it . . . there was glass, plastic, forks, and bits of non-carbon material that we ended up spreading on our fields," Muller said. "We were concerned about microplastics and also about handling safety for our crew if small bits of glass were spread around."

Muller also said since compost quality is poorly defined in the state, the material was often "pretty raw," meaning it had to break down in the fields.

Trucks deliver fresh compost from food waste to Tresch Family Farms in California. (Photo courtesy of Zero Foodprint)

Smith has been working to build trust and communication between compost facilities and growers. Part of that work is teaching farmers how to assess compost for quality before it's delivered or spread on the fields. Smith is also working with Edgar of the California Compost Coalition to run workshops for farmers on how compost can improve soil, boost productivity, and help fulfill the state's climate goals. The two hope for more funding to continue similar outreach to farmers across the state. But all of those efforts, Smith said, are dependent on local governments teaching their residents how to effectively sort their trash.

Where Will All the Compost Go?

As California's new law goes into effect, it's hard to predict how much compost will be available and where it will end up. With food waste diversion just starting up for many localities and a dearth of composting facilities, the law's procurement requirements are currently unattainable, said Kelly Schoonmaker, program manager with StopWaste, a public

agency that helps residents and businesses in Alameda County, just east of San Francisco, recycle better. And yet the requirement also means California will soon see a huge unmet demand from cities and counties for compost.

But over time, as new collection schemes ramp up the supply of compost will grow. And once supply increases, there won't be enough space in cities to spread the compost purchased by local jurisdictions, added Schoonmaker.

Two years ago, a study showed that "enough farmland exists near every city in California for the distribution of 100 percent of . . . . diverted organic waste as compost." But it's unclear how many communities will choose to work with farmers because that would entail willingness to produce and purchase higher quality compost and pay additional money to transport it to the farms. Under the current regulations, a jurisdiction could potentially pay for low quality compost and let it sit in an empty lot.

"In theory, the law has the potential for a lot of greenhouse gas benefits *if* we're putting the compost in the right locations and in appropriate ways," said Ian Howell, a resource conservationist at the Alameda County Resource Conservation District. "We need to work with local governments and farmers to ensure that . . . . it isn't just put wherever."

Some cities own large tracts of land where they can potentially apply compost to fulfill their procurement requirement. The San Francisco Public Utilities Commission, for example, owns approximately 60,000 acres of rangeland, more than half of which is leased out for grazing.

Rangeland could offers a significant home for municipal compost, given that there are about 38 million acres of it in California. Recent studies at the Marin Carbon Project have shown that compost significantly increases carbon sequestration on rangeland—however, the impact of compost applications can last for decades, meaning that annual applications aren't needed. And some rangeland may be difficult to access and spread compost on.

Cities or counties that don't own much land could focus on using compost to help solve food justice issues, said Edgar. They could distribute the compost to urban farming projects, food banks, and gardeners in food deserts or send it to smaller and mid-size, disadvantaged, and BIPOC farmers who usually cannot afford compost, such as the Latino farmworkers-turned-farmers who are members of the ALBA farm training program in Salinas.

"Local jurisdictions could be part of a solution to bridge the gap on food insecurity," Edgar said.

Compost Brokers Connect Cities, Counties with Farmers

Assuming compost quality is high enough and farmers want to use it, several innovative approaches already exist for getting it to growers. The new regulations allow local governments to contract with so-called "direct service providers" to fulfill their procurement requirement on their behalf.

One model is for local Resource Conservation Districts (RCDs)—special independent districts that offer expertise in conservation, agriculture, and wildlife—to step in to work with farmers. There are around 60 active districts across the state.

For instance, the San Mateo Resource Conservation District is already teaming up with San Mateo County to start a two-year compost brokering pilot program for farmers. The pilot program will launch later this spring and the county hopes to pay for initial implementation costs through a pending grant from CalRecycle, said Adria Arko, senior program manager of the conservation district's Climate and Agriculture program.

San Mateo county has only one small composting facility that doesn't offer transportation or spreading services, so farms typically bring it in from other counties.

"Farmers here are interested in using it and sequestering carbon, but they tell us it's too expensive," Arko said. "So it seemed a great opportunity to connect the county with farmers to get the compost to them at no cost."

A tractor drives past piles of compost at the Jepson Prairie Organics compost facility outside Vacaville, California. (Photo by Justin Sullivan/Getty Images)

The conservation district has the staff and expertise to identify the farmers in need and distribute the compost to them. “We can help connect the dots,” Arko said. “We want to develop a system that could be scaled up and replicated by other RCDs.”

The pilot will distribute free agricultural-quality compost to any farmer in the county, though initially the number of participating farms may be limited, Arko said. The county’s average farm size is 191 acres, well below that of the rest of California.

If interest proves high, the conservation district can apply for additional funding from the Healthy Soils program or the USDA’s Natural Resource Conservation Service (NRCS), Arko said. But the ultimate goal, she added, is to find a consistent source of funding to help farmers adopt regenerative practices that lead to carbon sequestration—practices that require the kind of money many small and medium-sized farmers don’t have.

Opting in to Fund Carbon Farming Practices

Zero Foodprint already offers a funding mechanism. The nonprofit teams up with restaurants and other food businesses to collect a 1 percent opt-in fee from dining customers (usually a few cents per meal) to fund the adoption of regenerative farming practices.

The nonprofit then distributes grants to farmers and ranchers. Two-thirds of the projects Zero Foodprint has funded involve compost applications, said Myint, the executive director. Currently, the organization works with restaurants and farmers in California, Colorado, and is expanding to other parts of the U.S. and the world.

Over the past two years, Zero Foodprint has distributed grants to more than 30 farms, Myint said. And while any farmer can apply, BIPOC farmers and small farmers are prioritized in the process. Farmers work with cooperative extension and other technical assistance advisers to track project benefits.

In anticipation of the new regulations, Zero Foodprint is preparing to help match farmer demand for free compost with cities and counties that need to buy and give away enough to fulfill their procurement goals. Its Compost Connector program will identify and coordinate farm compost projects and share the costs of additional regenerative practices so as to maximize the amount of carbon sequestered. The nonprofit already has pilot contracts with Alameda and San Mateo County and is in talks with the city of San Francisco.

But for compost to fulfill its carbon farming potential, systemic solutions are needed, Myint said. Instead of local governments trying to claw the funding for compost procurement out of existing budgets and fee increases, they could set up formal programs to fund healthy soils, giving local customers the solution. This could include funding structures similar to Zero Foodprint's, with local businesses—restaurants, wineries, even online food retailers—opting in to pay a small percentage per customer to fund these practices, he said. Alternatively, a small fee could be added to waste collection or energy bills. Government agencies would then equitably re-distribute the funding to farmers.

"If you had all these local businesses contributing, you could hit huge ambitious carbon farming targets," Myint said. "Customers would still buy the sandwich if it's 6 cents more." And, he hopes, as the links between healthy soils and resilience in the face of extreme drought and other aspects of the deepening climate crisis become clearer—some may even be eager to contribute to a solution.

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