The Sustainable Agriculture Research and Education (SARE) Federal Grant Program

The United States Department of Agriculture is a huge agency of the federal government, with an annual budget of nearly $200 billion and close to 100,000 employees (Source). The USDA houses a wide variety of grant programs, several of which present valuable opportunities to explore, refine, and expand both composting and compost use. This document is the first in a series of backgrounders to explain how the programs work and provide case studies showing how the grants have been used.

Background

In the past seven years alone, the Sustainable Agriculture Research and Education (SARE) USDA grant program has supported composting with 32 projects and $2.5 million in funding (see table on page 4).

The presence of compost in the SARE grant awards has grown over time, as interest in compost has increased across the country. SARE has provided $51 million of funding to 1,142 compost-related projects since the start of the program. 2022 was the highest individual year watermark yet, with over $500,000 awarded by SARE to compost-related projects. After this section are two case studies of SARE grant awards given to projects centered around compost.

The SARE program is a federal grant initiative supported by the USDA National Institute of Food and Agriculture. SARE's mission is “to advance – to the whole of American agriculture – innovations that promote profitability, stewardship of the land, air and water, and quality of life for farmers, ranchers and their communities” (Source). The program was initially authorized in 1988 and got its first $3.9 million in appropriations six months later; SARE received formal authorization under Subtitle B of Title XVI of the Food, Agriculture, Conservation, and Trade Act of 1990 (Source).

SARE champions three pillars of sustainability: economic, social, and environmental. The program’s preferred terms for the three legs of the sustainability stool are profitability, quality of life, and stewardship, respectively (Source). SARE has four regions—North Central, Northeast, South, and West—governed by volunteer Administrative Councils that “make grants and set regional priorities” (Source). These councils “include farmers and ranchers along with representatives from universities, government, agribusiness and nonprofit organizations. Technical reviewers, also volunteers, lend professional and practical experience to help councils evaluate project proposals” (Source). Every council has 2-3 farmers, but often up to 5-6; the program is designed to embrace true grassroots input and administration, and is one of the few programs where not only does part of the program allow farmers and ranchers to apply directly, but also farmers and ranchers serve as reviewers of the submitted proposals. SARE also reflects USDA’s embrace of the “Train the Trainer” model, wherein producers get together face-to-face to teach each other new tactics to boost their operations and benefit their communities.

Primary grant programs for SARE “include research and education grants, professional development grants and producer grants. Depending on the region, applicants also can propose projects under special grant programs for graduate students, community development practitioners and ag educators conducting on-farm research” (Source). Funding for projects includes resources for education and outreach, and every year, each region gives out 50-100 awards, for 400 as the annual total. Since 1988, SARE has disbursed $381 million to 8,187 projects (Source).
In 2021, homesteader Scott Johnson, director of the Low Technology Institute (LTI) in Wisconsin, got $13,747 from North Central SARE for a project called “Hot Box Compost,” with the goal of developing a modular composting system that heats, waters, and fertilizes grow beds in greenhouses for off-season production. LTI is a non-profit organization “interested in how we are going to live in a quarter century, as gas prices will continue to rise and then eventually force a drastic transition in how we grow food, because the current industrial ag model will no longer be financially viable” (Personal Interview). Johnson found out about the SARE program from a friend in agriculture, who was watching his chickens at the time and suggested he apply to the program. LTI got an earlier grant from SARE as well—to test and compare various methods for growing potatoes—and favors SARE for grant applications because it allows the use of funds for the market gardener scale of growing, which is LTI’s focus.

From LTI’s perspective, “if you can’t produce something locally, that resource is de facto not sustainable, especially when it comes to large-scale, bulky staples. For example, if you can’t produce nitrogen via the Haber-Bosch process on your local property—without piping in natural gas!—the plan is not sustainable in the long term” (Personal Interview). LTI believes that any nitrogen that is fixed in a way that plants can absorb—especially human and animal waste—must be managed very carefully. LTI cites real compost production as being done locally, as only the nutrients that are available locally will be accessible far into the future.

The inspiration for Johnson’s “Hot Box Compost” SARE project was an organization called the New Alchemy Institute, which existed on Cape Cod from 1971-1991. The New Alchemists built a greenhouse that captured the waste heat produced by compost to stay warm and continue producing in the winter: an ASP compost pile gave off hot air that was then blown into grow beds, and in turn the beds heated the greenhouse.

Johnson’s goal was to replicate the basic design of the New Alchemists’ greenhouse, but make it modular, so that it could be deployed for more than one use. In the first year of the grant, Johnson realized that he set up the experiment too late in the year, and the compost pile failed to reach high enough temperatures to function properly. Johnson applied to SARE for a no-cost, year-long extension so he could try out the project earlier in the year, and the extension was granted. The setup is up and humming this time around, and Johnson will be collecting data through the end of 2023. Each week, Johnson pulls the screen out of the box, removes the horse manure and wheelbarrows it out, and then reverses all those steps to insert fresh nutrient fuel into the setup. Johnson is still thinking carefully about the best ways to manage several aspects of the experiment: how much water to add, whether to add an automatic sensor to the blower system, and the best way to enclose the blower system to control the air temperature before it reaches the composting chamber.
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Case Study 2: Climate Mitigation through Soil Carbon Sequestration

In 2019, a team led by then-graduate student Alexia Cooper and Professor Jennie DeMarco at Western Colorado University got $24,766 from Western SARE for a project that sought to increase soil resilience and plant productivity on rangelands through compost application. The project came about after DeMarco invited guest speaker Rebecca Ryals, Associate Professor of Life and Environmental Sciences at UC Merced, to her environmental management class, to discuss her groundbreaking work adding compost to grasslands in central California. Ryals's findings led to policy changes and kicked off the cap-and-trade program in that state. Cooper, a student in DeMarco's class, became inspired to replicate Ryals's project in the flood-irrigated ranchlands of Gunnison, Colorado for her master's project. Cooper and DeMarco found SARE by looking around online for grant programs related to ranching and soil health. DeMarco notes that SARE is "really helpful with funding, encouraging both the sustainable practices and the educational component" (Personal Interview).

Gunnison, CO has a long history of ranching, primarily involving grazing and haying. Part of a region called the "icebox" of the nation, Gunnison is often the coldest place in the U.S. (Source), and also one of the driest—area ranchers face a growing season of only 62 days, with time for just one harvest of hay, versus the three harvests that are typical for most ranchers in the West.

The year 2018 brought harsh drought that cut the already short local growing season down by two additional weeks, so by 2019, area ranchers were seeking to test ways to increase both the water-holding capacity and the aboveground plant biomass on their lands. The Gunnison City Wastewater Treatment Center produces GunniGold, a Class A biosolid compost, whose only use before this experiment was by home gardeners in their backyards.

Echoing the logic of LTI's Johnson, DeMarco points out that compost is only a sustainable solution if it's local, and importing it cancels out those benefits. This recognition motivated DeMarco to advocate for siting the project in compost-rich Gunnison, with the additional benefit of being just a few miles from the study's host university and the free labor of the graduate master's students studying environmental management and ecology. DeMarco remarks that people often "overlook these local, low-cost solutions because they don't seem sexy and don't make someone a ton of money," adding that creativity and hyper-local thinking are necessary for creating the circular economy (Personal Interview).

DeMarco's study involved collaboration with four different ranchers and their properties. Across all sites, treatment plots maintained a higher soil moisture throughout the growing season, and plant yields were increased on average by 66%. Compost application increased production by 1,500 pounds per acre, demonstrating compost's power as a slow-release source of nutrients, allowing for longer benefits than chemical fertilizers. The current students at Western Colorado University continue to monitor the sites, and future research will investigate long-term changes in soil health, microbial communities, and carbon storage. DeMarco has continued to advocate for using compost to promote soil health in a new project to restore ski slopes by applying compost and planting native seeds.
**WHY SHOULD PRODUCERS CARE ABOUT COMPOSTING?**

These two SARE case studies manifest the most important contributions composting can make to a grower’s production. They illustrate that compost nourishes soil health by increasing retention of water and organic matter. In a wider social context, compost producers provide a service to their community through the added value of a high-quality, local nutrient source for their land.

These SARE projects also help demonstrate that from a financial perspective, not only does using compost reduce producers’ outlays on fertilizer and similar external inputs, but also composting professionally can provide another economic opportunity for growers, who benefit from diversifying beyond just farm production in today’s day and age.

**SARE Funding for Compost-Related Projects by Year, 2016-2022**

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount</th>
<th>Percentage of total funding dedicated to compost-related projects</th>
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</thead>
<tbody>
<tr>
<td>2016</td>
<td>$33,573</td>
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<td>2022</td>
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**WHAT NEXT?**

If you are a producer who is curious about the SARE program, visit their [website](#), which offers a complete database of funded projects, further history and background of the program, rich educational resources, and contact information for program leaders.

If you have a project idea and are wondering whether it is eligible for a SARE grant, or if you would like to learn about the application process for a SARE grant, visit the [Grants](#) page of the site to select your region and access application instructions. There are two notable restrictions on the use of SARE grant monies, the first of which is that SARE grants cannot be used to start a farm. The second rule is that SARE funding can only be used to buy land, equipment, farming materials, and animals if it is a small percentage of overall funding: “SARE funding may be used to purchase the materials required to conduct a research or education project, but generally SARE funding cannot be used to make large purchases for land, equipment or capital investment.” Each SARE region has more specific guidelines on those rules, too.

**Author Bio**

Laurel Cohen received her Master’s of Environmental Management from Duke University’s Nicholas School of the Environment, concentrating in environmental economics and policy. Laurel is passionate about food and agriculture and appreciates the incredible ability of compost to transform waste into rich, useful products and materials. Laurel got her B.A. in Economics from Yale University and grew up in Central Florida, where she enjoyed gardening all seasons of the year.