



Mission Multiplier: The Cross-Cutting Case for Food Waste Reduction

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Regenerative Agriculture

Regenerative agriculture works to restore soil health, rebuild biodiversity, and strengthen ecosystem resilience while keeping farms productive. However, transitioning to regenerative practices can be challenging for farmers due to financial barriers, knowledge gaps, and more. Food waste is a structural inefficiency that exacerbates both soil degradation and the transition to regenerative agriculture, but addressing it is an important part of the solution. Food waste reduction can support soil health, improve farm economics during the transition, and build a more circular food system.

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About the Series

Whether your mission is centered on economic resilience, public health, climate, biodiversity, or other areas, progress often depends on addressing challenges that cut across systems—especially those shaped by the global food system. As that system has grown more complex to feed a growing population, it has placed mounting pressure on natural resources and supply chains, with cascading effects on people, animals, the planet, and the economy.

One of the most overlooked ways to ease that pressure—and to accelerate progress across multiple goals at once—is addressing the roughly one-third of all food produced but never sold or eaten. Wasted food also means wasted land, water, labor, dollars, energy, and nutrients, with ripple effects across affordability, animal welfare, biodiversity, public health, regenerative agriculture, and super-pollutant mitigation. Yet food systems receive [under 3%](#) of public climate finance—and less than 6% of that targets loss and waste. For philanthropic funders and mission-driven investors, that gap is a powerful, underutilized opportunity to advance core priorities faster while relieving pressure on the broader food system.

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Introduction

Modern agricultural systems are increasingly strained by soil degradation, climate volatility, and economic pressure on farmers, threatening long-term productivity and resilience. Today, nearly **one-third** of the world's soils are degraded, undermining crop yields, ecosystem health, and food security. Increasing climate volatility is already reducing agricultural productivity and raising risk: each 1°C rise in global temperatures is projected to reduce global staple crop production by roughly **120 calories per person per day**, even after accounting for farmer adaptation. These impacts are disproportionately borne by smallholder farmers, who are more exposed to extreme weather and have fewer resources to adapt.

That exposure compounds an already precarious economic reality. Globally, many of the 510 million smallholder farmers live on **less than \$2 per day**. In the U.S., **median farm income is negative**, and income remains **volatile** year to year.

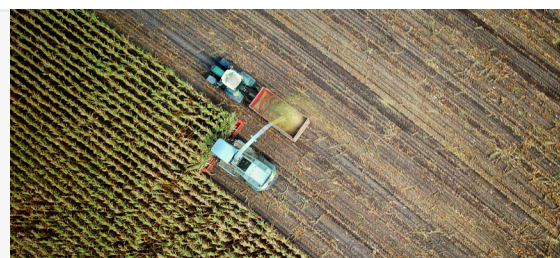


Regenerative agriculture has emerged as a response, **focusing on** restoring soil health, enhancing biodiversity, and strengthening ecosystem resilience while sustaining agricultural productivity. Yet **adoption remains uneven**, constrained by farmers' economic risk, the challenge of financing transition costs, a lack of cost-effective technology solutions that support the shift, and a knowledge gap in moving away from industrial farming practices.

A structural inefficiency contributing to this difficult transition is food loss on farm and beyond, and waste at the consumer level. The one-third of food produced globally that is never eaten inflates production in two distinct ways. First, the system must grow more than people actually consume simply to offset these losses. That surplus is grown, but it serves no nutritional purpose. Second, because so much is wasted on farms and beyond, the system never sees a true signal of how much food is actually needed. Demand appears higher than it is, and production targets, contracts, and capacity are all set against that inflated figure year after year, keeping the pressure to overproduce locked in place. The result is more land farmed, more soil exhausted, and more water and inputs used than food consumption actually requires—conditions that run directly counter to regenerative goals.



Taken together, this demonstrates that advancing regenerative agriculture requires not only on-farm practice change, but also system-level interventions that reduce resource waste, improve farmer economics, and create a more circular food system.



How Food Waste Reduction Enables Impact

Food waste reduction creates three enabling conditions that are critical to the success and scalability of regenerative agriculture.

Regenerating soil systems through circular nutrient flows

Recycling food waste from across the supply chain through composting and anaerobic digestion transforms organic waste into nutrient-rich soil amendments, including biofertilizers, which are critical inputs for rebuilding soil organic matter, improving water retention, and reducing reliance on synthetic fertilizers—all central to regenerative agriculture. Material processed off-farm can also return as biochar, a stable form of carbon that improves soil health by holding water and nutrients and providing habitat for microbial life. Improving water retention in this way can lower irrigation costs and promote the growth of healthier, higher-quality crops.

At the farm level, producers can convert unsold or unharvested crops into compost, reducing input costs or creating an additional revenue stream where selling compost is economically viable, or direct unused crops to local composters who turn them into compost off-farm. This closes nutrient loops and supports a more circular agricultural system, where waste is reintegrated as a productive input rather than lost. Using the whole crop this way is not new; it echoes Indigenous food systems, where nothing was wasted—a principle at the heart of regenerative practice.

Keeping farms economically viable during transition

Adoption of regenerative agriculture is often expensive and constrained by farmers' tight margins and short-term financial risk. Food waste reduction helps address this by maximizing the value of what's produced during the transition. Solutions that optimize yield—such as imperfect and secondary markets, field pre-cooling units, and expanding buyer specifications—enable farmers to sell more of their crops and livestock, reducing losses and improving margins. This matters especially during transition periods, when farmers are balancing new practices against uncertain returns.

Beyond selling more of the fresh crop, there's value in what can't be sold fresh, including B-grade and secondary streams. These streams are often perishable, so much of this material is stranded today, and most high-value recovery happens where product is already aggregated at processing plants rather than on farms themselves. Farmers who can stabilize this material on or near the farm—through chilling, freezing, or dehydrating—and pair that with regional aggregation and value-added processing can turn stranded product into income during the costly transition years. This is particularly effective when focused on higher-value premium crops rather than commodities. Finally, depending on how projects are structured, producing biochar can generate carbon-credit revenue that flows back to the farmer as an additional income stream.

Easing pressure on land and natural resources

Food that is never eaten requires almost [one-third of the world's agricultural land](#) to grow—an area [larger than the Indian subcontinent](#). Reducing food waste by better aligning production with actual demand, rather than the inefficient and inaccurate market signals that drive overproduction, may ease pressure on land and other precious natural resources. That, in turn, could enable a shift toward more regenerative production models, including those that require greater land flexibility or lower stocking densities, such as regenerative livestock systems. There is currently no strong evidence for this pathway in practice since global land use has only increased over time, but it remains a plausible outcome, particularly with financial incentives for regenerative agriculture, land protection, and rewilding from governments or funders.

Funding Food Waste Reduction to Support Regenerative Agriculture

Food waste reduction strengthens the underlying conditions on which regenerative agriculture depends, making it a high-leverage, complementary investment strategy for funders in this space. Funding opportunities include the following:

Composting, anaerobic digestion, and organic waste logistics

Investments in this infrastructure help return nutrients to soil. [Table to Farm Compost](#), a residential and commercial compost service in Durango, CO, helped launch the La Plata Healthy Soils program to fund regenerative agriculture aimed at boosting soil health and sequestering carbon, and was a ReFED Catalytic Grant Fund (CGF) finalist. [Noblehurst Green Energy](#), also a Grant Fund finalist, addresses complex food waste recycling through on-farm anaerobic digestion. And the [Extension Foundation](#), a nonprofit that manages the Food Recovery for the Future program, employs evidence-based training, hands-on action, and trusted local networks to turn fragmented efforts into a coordinated national movement—among other goals, expanding composting and food recycling infrastructure.



Reducing on-farm loss to capture more value from what's produced

Solutions that reduce food loss on farm help farmers capture more value from what they grow, derisking transition financing in the process and making it more feasible for farmers to access capital for adopting regenerative practices. [Matriark Foods](#) upcycles farm surplus and fresh-cut remnants into products for food service, retail, and emergency food distribution, diverting food loss while giving farmers a new market for imperfect vegetables. [Nutri8](#), a CGF grantee, is a regenerative and upcycled ingredients processor that uses mobile, on- or near-site cryogenic chilling and freezing to capture and stabilize perishable material for upcycling into higher-value ingredients; its model is built around the whole crop—a farmer's primary harvest plus the side streams and surplus that would otherwise be wasted—and is designed to pay growers for that material while sharing profits back with them. [HerdDogg](#), an AI-powered health tracker, generates real-time alerts that let ranchers isolate and treat cattle more precisely and earlier, reducing mortality.

A force multiplier for existing regenerative agriculture portfolios

For funders already investing in regenerative agriculture, food waste reduction acts as a force multiplier: it enhances soil outcomes through greater availability of organic inputs, reduces the inefficiencies that drive overproduction and resource depletion, and strengthens the financial case for farmer adoption. Rather than competing for capital, these investments increase the effectiveness and durability of regenerative agriculture portfolios already in place.



Case Studies

Dual Impact in Action

TomKat Foundation

The [TomKat Foundation](#), which makes grants and forms partnerships focused on climate stability, a healthy and just food system, and broad financial prosperity, funded the TomKat Ranch Educational Foundation, a regenerative cattle ranch that serves as a learning laboratory, training center, and research site. Food waste reduction is woven throughout the ranch's work.

Its farming practices emphasize a circular system in which unharvested or unsold crops are converted into compost, reintegrating waste as a valuable input, closing nutrient loops, and lowering costs or generating additional revenue through compost sales.

On the livestock side, goats and cattle play a vital role in soil health, and the ranch works to maximize their value through full-carcass utilization: meat serves as food, fat is repurposed into tallow, soaps, and candles, and hides are transformed into high-quality leather goods by partners such as Range Revolution.

That same zero-waste approach carries through to the ranch's events program, where all food scraps are directed to the compost pile. Once fully processed, that compost returns to the garden to nourish the soil and grow nutrient-dense food—part of a broader goal that each visitor leaves with practices they can bring home to reduce food waste in their own communities.

Trailhead Capital

[Trailhead Capital](#), a mission-driven venture capital firm that invests in early-stage, tech-enabled companies working to expand regenerative agriculture practices and products, approaches the transition to regenerative agriculture as a value-chain-wide opportunity, and their portfolio reflects a conviction that reducing food waste across the supply chain is integral to that transition. Rather than treating food waste as a peripheral concern, some of Trailhead's earliest and most active investments are in companies that address loss at every stage from the farm gate to the consumer, with Trailhead remaining engaged as backer, follow-on investor, and advisor.

AI-enabled software has emerged as an underappreciated lever to reduce food waste and drive regenerative adoption. Trailhead Capital has three portfolio companies at this intersection. [Local Line](#) shortens the distance and friction between farmers and their buyers, reducing spoilage in transit and improving margins for producers; Trailhead has supported the company from its Seed Extension round in 2022 through its most recent Series A. [Provision Analytics](#) gives food and beverage producers the data to identify and eliminate loss on their own manufacturing lines, leading to their customers reporting a 10% reduction in food waste; Trailhead has backed the company since its 2021 Seed round and followed on in late 2024. Finally, [SWARM Engineering](#) uses agentic AI to optimize logistics and distribution so that less product is stranded or spoiled in transit; Trailhead initially invested in SWARM's Seed round and most recently participated in its Series A in June 2026. Together, these investments demonstrate how integrating food waste reduction into regenerative agriculture investing can build a more resilient ecosystem.



"Healthier soil and shorter, smarter supply chains are two sides of the same coin, as both keep more value and more food moving from farm to table rather than to the landfill."

Sarah Hovde, Head of IR & Ops, Trailhead Capital

Hawthorne Food Ventures

Hawthorne Food Ventures (HFV) invests in companies that mitigate food loss on farm and waste across the supply chain. Beyond the direct benefits of food waste reduction, the solutions in HFV's portfolio address overproduction pressures at distinct points along the chain.

Some portfolio companies focus on crop protection and pest control, preventing losses on farm before and just after harvest so more of what's grown actually reaches the market. [ClearLeaf](#), for example, is a crop-protection company whose non-toxic, silver-based broad-spectrum fungicide and bactericide, GotaBlanca, substitutes for toxic synthetics, limiting agricultural damage and slowing spoilage to address both pre- and post-harvest food loss.

Others work further downstream, preserving freshness and extending shelf life as produce moves through distribution and retail. [Strella Biotechnology](#) is a supply-chain platform that uses proprietary ethylene sensors and analytics to manage the freshness of produce like apples, pears, avocados, and bananas, giving packers and retailers data-driven recommendations that maximize sales and reduce loss across the fresh produce supply chain.

A third group of portfolio companies recovers and upcycles surplus, imperfect, or discarded food, keeping

material in the food chain and out of landfill. [Mill](#) is decentralizing organics recycling through a smart kitchen bin that turns food scraps into animal feed, diverting organic waste from landfill while keeping surplus food in the food chain; the company is now scaling a B2B model with partners including Whole Foods, Compass, Waste Management, and Google. [Barnana](#), a B Corp snack brand, upcycles imperfect organic bananas, plantains, and cassava sourced from smallholder Latin American farmers using regenerative practices, preventing edible produce from going to waste.



If you'd like to learn more about how your funding can support multiple missions, please reach out to our Capital & Innovation team.



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