

The Rise of Regenerative Agriculture

Modern farming with sustainable roots







Imagine a world in which industrial crop production supports healthier air, water and soil; a time when rural communities thrive thanks to their local farms; a world where foods are rife with nutrients and the future of agriculture is a thing of beauty and promise ...

This is the vision that grows within **regenerative agriculture**—a practice of farming, based on ecological principles, that builds soil health and recaptures carbon emissions from the atmosphere. Regenerative agriculture is building on the principles and practices of organic to help communities and soil thrive.

“There is an international movement

afoot today that says it’s time to take things a step further,” says industry veteran Tom Newmark, founder and chair of Carbon Underground—a nonprofit dedicated to restoring soil health and helping to address climate issues.

Regenerative Agriculture is that step, according to Newmark and a growing number of vocal advocates.



STORIES OF THE SOIL

Many modern farming systems, which often include the use of heavy machinery, excessive tilling and harmful chemicals, disrupt the organic matter in the soil. Once the carbon molecules in the soil get exposed to the air, they combine with oxygen to create carbon dioxide, turning a natural carbon exchange system from healthy and fertile soil into a toxic atmospheric gas.

These unnatural processes have sickened the living systems within the soil, and in many cases have cut off vitality completely—ruining the health and sustainability in all too many agricultural ecosystems.



The healthy side of dirt

In her recent book, *The Soil Will Save Us* (Rodale Press, Inc., 2014), author Kristin Ohlson writes about the relationship that plants have with microorganisms in the soil, and the impact that disturbing the soil through unnatural, modern methods is having on our food, our climate, our local communities and our future as a whole.

In a teaspoon of healthy soil, Ohlson says, there are billions and billions of microorganisms, all interacting with plants in a “complex and crucial” ecosystem. “Because it’s not visible to the naked eye, humans have only sort of become aware in the last couple of decades what’s going on down there,” she explains.

Organic carbon in soil is a reservoir for plant nutrients—those that are essential to the health of humans that consume them, as well as the ecosystem they are meant to thrive within. These nutrients include calcium, nitrogen, phosphorous, magnesium and micro-nutrients, which are released in the decomposition through microbial processes.

Carbon in the soil ensures these processes become a vital part of nutrient storage, soil structure, microbial activity, water retention, soil temperature and biodiversity—all elements that contribute to nutrient-rich soil and foods from that soil and the living ecosystem they sustain.

Known by scientists as agro-ecological farming, the principles of regenerative agriculture create healthy farms through practices such as crop rotation, cover cropping, composting and reduced tillage. Healthy farms can be just as productive, if not more productive, than industrial farms, but are much better for the environment, the economy and the people who plant, harvest and eat the food.



WHAT IS REGENERATIVE AGRICULTURE?

It’s a phrase describing farming systems that not only protect existing soil from prohibited chemicals and other inputs, but also promote soil regeneration, **cultivating healthy soil.**

The science around regenerative agriculture is growing every day, but experts and farmers have already begun to create a common framework using effective and sustainable methodologies.





“One of the things that I did not understand at all when I first started writing the book was how incredibly alive our planet is,” Ohlson shares. “I had heard people talk about how soil is so alive, and I kinda figured that they meant earthworms and bugs and things like that, but I then learned about this incredible life that’s in the soil.”



Farming today

Most international farming operations have a long way to go in cleaning up their practices—and ultimately creating positive change.

Miguel Altieri is a professor of agro-ecology at the University of California, Berkeley, and has been studying sustainable agricultural systems for more than 40 years. “The systems that I have been studying are the transitional systems in the third world,” shares Altieri, “because if you want to find regenerative or sustainable agriculture, you have to look at the systems that have stood the test of time.”

These sustainable systems, he explains, have been in place for 5,000 years—since the beginning of agriculture. He studies those systems and sees how they are based on ecological principles, and then applies those principles to modern agriculture for farmers to implement.



SONGS OF THE LAND

Farms like Singing Frogs Farm in Sonoma County, California, are following the world's time-tested ecological principles.

Singing Frogs says it is a "small farm with a big name," and that's because it is well known for its integrity of farm management, which follows three basic principles:

The no-till practices have proven to be highly productive and profitable. Singing Frogs has increased its soil organic matter by 400 percent in six years, without nutrient leaching, while almost tripling the total microbial life in its soils, creating

more nutrient-dense food for consumers.

It has also increased native bird and native bee populations and diversity, as well as native perennial plant diversity and density. As for resources? The farm reduced water usage per crop and is producing about \$100,000 in vegetables sales per crop acre per year. What's more: More than half of that revenue is paying the year-round employees' salaries.

3 BASIC PRINCIPLES

1. Disturb the soil as little as possible.
2. Keep a diversity of living plants in the ground as often as possible.
3. Keep the soil covered and protected as often as possible.

“Sustainability does not need to result in a spartan, boring lifestyle of zero consumption,” as stated in the Singing Frogs Farm methodology description. “Like the cherry tree, living sustainably can mean **creating bounty and goodness in our world** by enriching our lives so that our children will have more opportunity, more resources and more fullness to their lives.”

REGENERATIVE FARMING ON BROWN'S RANCH

At its heart and soul, Brown's Ranch is regenerating landscapes for a sustainable future.

Gabe Brown purchased his farmland known as Brown's Ranch in 1991, and he and his family have since grown the operation to 5,000 acres of owned and leased land. The farm he acquired had been conventionally farmed for decades, and it was sick—not resilient enough to respond to several years of natural disasters like drought and hail.

He started to move away from conventional agricultural practices, mostly because he couldn't afford the chemicals, and he intuitively began instilling principles of regenerative agriculture.

"He is just really a brilliant and thoughtful guy," Ohlson says, "and he had stopped doing tillage, even before the four years of disaster on his land, because he just realized that all that tilling was exposing the soil to the air



and drying it out."

Then, instead of taking big, heavy equipment onto the fields to clear the ruined crops, Brown started sending his cattle in there to finish them off—another move that helps revitalize the life in the soil.

Brown stopped disturbing the soil with tillage and poisoning the soil with chemicals and he returned animals to crop lands, which increases the soil's microbial

diversity and, therefore, the nutrient density in the plants it yields.

"Animals are excellent at producing and reinforcing the microbial life that the soil needs," explains Ohlson.

Brown's grazing strategy allows most of his pastures a recovery period of more than 360 days. The strategies have improved soil health and mineral and water cycles.



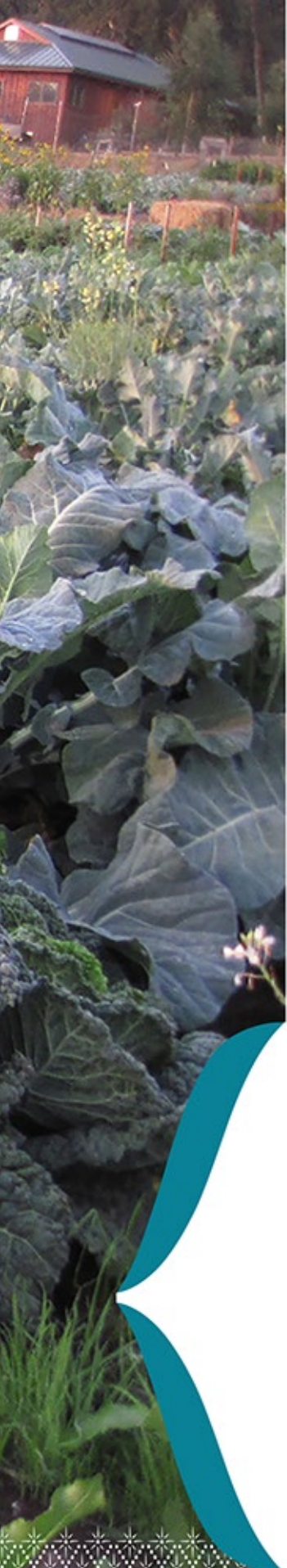
4 QUALITIES OF A HEALTHY FARM

1. It is multifunctional, recognizing that productivity, while indispensable, is not the farm's sole objective. As well as providing food, the farm also performs important social, economic and environmental functions.

2. It is regenerative, using methods that constantly improve the fertility of the soil, foster biodiversity both within and beyond the farm's boundaries and recycle essential nutrients.

3. It is biodiverse, incorporating a wide variety of crops, land use choices and options for raising livestock and poultry.

4. It is interconnected, seeing the farm as an integral part of the landscape that surrounds it, not an isolated production facility.



The dynamics of biodynamic

One form of regenerative organic agriculture is biodynamic agriculture. The practice has been around since 1924 when farmer-philosopher Rudolf Steiner (founder of the Waldorf School) presented the idea of the farm as a “living organism,” which was a counterpoint to the emerging idea of farm as factory.

In the domain of agriculture, Steiner was the first to point to the danger of synthetic fertilizers, which were just appearing in his time. He was also the first to bring the perspective of the farm as a single, self-sustaining organism that thrives through biodiversity, the integration of crops and livestock and the creation of a closed-loop system of fertility.

Biodynamic farming is much more than a method; it is a belief system—a holistic way of seeing and understanding the natural world. The perspective focuses wholly on regenerative practices, harnessing the solutions that already exist in nature. Farmers are not merely producers, they are stewards of the land, responsible for balancing science and intuition. They are the keepers of the living organism that is the farm, providing medicine for the earth and cultivating maximum expression of the land. Farmers who adhere to these principles can receive “Demeter” certification.

3 WAYS TO NURTURE A BIODYNAMIC FARM SYSTEM

- 1.** Rethink agriculture. Support methods—like keeping soil uninterrupted and cultivating biodiverse crops—that foster respect for land that produces for us.
- 2.** Familiarize yourself with cosmic rhythms. Biodynamic farming is intimately connected to the light of the sun, the phases of the moons, and the movements of celestial bodies.
- 3.** Shop biodynamic! You may find a local farmer is Demeter certified.

FOR THE PEOPLE AND THE PLANET

ORGANIC INDIA works with thousands of small family farmers in India to cultivate tens of thousands of acres of regenerative farmland.

ORGANIC INDIA: *helping communities and farms thrive*

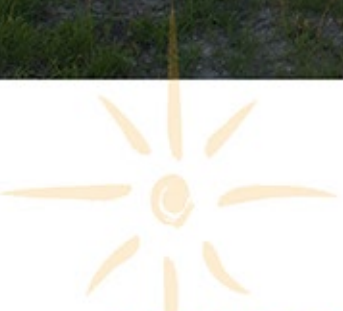
There are instances where the story of regenerative practices extends within the farm and then into the world; **ORGANIC INDIA** represents one of those. The company's farmers are educated in organic and biodynamic agricultural practices, and the company pays all the fees for farmers to acquire the necessary organic certification. **ORGANIC INDIA** then purchases the harvested crops and herbs at a premium market price.

The farmers that **ORGANIC INDIA** supports receive a sustainable income and rotate between growing crops for **ORGANIC INDIA** and cultivating food for themselves. The result? They simultaneously preserve their own health and the natural environment.





Regenerative Agriculture “typically uses cover crops and perennials so that bare soil is never exposed, and grazes animals in ways that mimic animals in nature,” *The Guardian* reported in a March 2015 article. “It also offers ecological benefits far beyond carbon storage: it stops soil erosion, remineralizes soil, protects the purity of groundwater and reduces damaging pesticide and fertilizer runoff.”



Regenerating our food system

Companies that take on regenerative practices embrace organic and biodynamic principles and develop sustainable farming systems. In doing so, they provide consumers with high-quality, nutrient-dense products and potentially with a healthier world down the road. An increasing body of research is supporting regenerative agriculture as a way to enhance nutrient density and as an antidote to climate change.





Healthy soil, healthy world

Healthy soil acts as a carbon sink, which could be the remedy this world is looking for to address global climate change.

In June 2015, scientists, business owners and farmers from 21 nations gathered at Newmark's biodynamic farm in Costa Rica for the inaugural Regenerative International Conference. The key message they took home: It's time for climate-change activists and the organic industry to come together.

"There is new science making it more and more clear that by fixing the soil and fixing the way we produce food, we can fix the climate as well," says Ronnie Cummins, director of the Organic Consumers Association.

In fact, according to a recent white paper by the Rodale Institute, if all farmland—organic and conventional—were converted to regenerative, it would sequester 40 percent of annual CO₂ emissions.

If all pastureland were managed in a regenerative manner (with animals grazing more like they do in nature), another 71 percent could be sequestered, leading to a "negative emissions scenario," the report states.

"Up until now, we have completely failed to recognize soil as the powerful carbon sink that it is," Newmark says.

“Over the last century, research suggests more than one-third of the world's topsoil has been destroyed through erosion and soil-degrading farming practices. That's a problem for the environment for two reasons," says Newmark. "When soil degrades, it emits CO₂ into the atmosphere, contributing to global warming; meanwhile, humus—the rich soil that results from the decaying of organic matter—soaks up CO₂.”

Networks of activists like Regeneration International are helping to make beautiful land available for future generations to use. Founded in 2015, its mission is to **“build a global network of farmers, scientists, businesses, activists, educators, journalists, policymakers and consumers who will promote and put into practice re-generative agriculture and land-use practices that:**



- Provide abundant, nutritious food
- Revitalize local communities
- Regenerate soil fertility and water retention capacity
- Nurture biodiversity
- Restore climate stability by reducing agricultural greenhouse gas emissions, while at the same time drawing down excess atmospheric carbon and sequestering in the soil

With its efforts, Regeneration International is:

- Mobilizing consumers, farmers, environmentalists and businesses
- Aggregating research and information
- Providing tools and resources in multiple languages for producers, land managers, scientists and governments worldwide.

“ Every pound of carbon in the soil, when it is released through deep, repeated tilling of soil, the application of synthetic nitrogen fertilizer, overgrazing or other forms of agricultural malpractice, gets converted to 3.67 pounds of CO₂ in the atmosphere,” says Newmark. “The good news is that just as quickly as it can be released into the atmosphere, it can be drawn down and put back into the soil.”





RESOURCES TO LEARN MORE ABOUT REGENERATIVE AGRICULTURE

- Regeneration International
- IFOAM Organics International
- Kiss the Ground
- Project Drawdown
- Carbon Underground Project
- Rodale Institute
- Marin Carbon Project
- Carbon Cycle Institute

Change is in the air, but there is still a long way to go to in this regenerative movement. It's hopeful to know that these ancient principles, in modern practice, will not only create the healthy land, nutrient-rich foods and sustainable resources we need, but may also help to reverse the damage we have already done to this earth.