

Regenerative Agriculture's Critical Role in Stabilizing Our Climate



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It is no exaggeration to suggest that combating climate change has become the most important human endeavor of the 21st century. Driven by the confluence of rapid population growth and the industrialization of societies across the globe, increased levels of greenhouse gases in our atmosphere are contributing to consistently higher temperatures, melting icecaps, rising seas, and more frequent natural disasters that threaten our way of life on Earth.

[A 2021 study](#) by the World Meteorological Organization found that the number of weather-related disasters to hit the world has increased five-fold since 1970. These disasters have included hurricanes, tornadoes, floods, droughts, wildfires, and other extreme events. The collective loss of human lives, destruction of property and natural habitats, and economic impacts of the events have been staggering, and scientists have warned that things will continue to worsen before they can get better. Without swift, decisive, and coordinated action by world leaders, businesses, industries, and the public, the long-term effects of climate change could prove utterly catastrophic.

Food for Thought

When most people visualize the problem of climate change, they think of millions of gasoline-burning vehicles on the roadways, or energy plants and factories spewing pollution into the sky. But in addition to these principal offenders, there's another significant cause that has long flown under the radar of the general public – agriculture. Today's agriculture– both livestock and crop production — emits massive amounts of greenhouse gases and often degrades the soil's inherent ability to store carbon.

The good news is that, despite being part of the problem, agriculture is also a big part of the solution. “Regenerative agriculture” – farming practices aimed at removing carbon from the atmosphere and putting it back into the soil – is one of the most promising movements in the fight against climate change. In this article, we'll take a look at various sources of climate impacts in modern industrialized agriculture, the positive benefits of regenerative farming techniques, and how today's farms and ranches can do their part to help the Earth reverse course.

Climate Impacts of Industrial Agriculture

Modern agriculture, for all of its advanced abilities to sustain a planet of [8 billion people](#), is also contributing to its decline. Current practices employed by most industrialized farms are unsustainable, for various reasons, particularly when it comes to climate.

To start, farming and food production are estimated to contribute from [21-37 percent of global greenhouse gas emissions](#), depending on exactly what's being measured. Those emissions include (among others) carbon dioxide, largely from energy usage, nitrous oxide from nitrogen fertilizer use on cropped and grazed soils, and methane from livestock. Black carbon is another powerful climate pollutant, emitted from diesel-operated equipment and trucking, and agricultural burning.

In addition to climate pollutant emissions, agricultural soils have been degraded by widespread tillage practices, resulting in lower levels of carbon naturally stored in the ground. The exploding population and demand for ever-higher crop yields have contributed to this soil degradation through chemical-heavy farming techniques, as well as deforestation to clear more land.

Food waste is another facet of the problem, producing significant amounts of methane. Some studies estimate that as much as 40 percent of all food produced is wasted at some stage across its life cycle, during harvesting, food processing, transport, retail merchandising, and by businesses and consumer households.

Commercial farmers must weigh and address each of these factors as they simultaneously juggle the pressures of increasingly unpredictable weather, the evolving regulatory landscape, and the ever-changing market, including the need to deliver dependable crop production in a timely manner at competitive prices.

Becoming Purveyors of Sustainable Farming Solutions

Fortunately, there are many solutions that can help farmers straddle the sometimes conflicting business, sustainability, and food safety issues involved in production.

Adopting or supporting regenerative agriculture techniques is one important way farmers and food companies can help to mitigate climate change while still achieving excellent business results. A central tenet of regenerative agriculture is preserving the health of the soil, which makes croplands more productive and resilient, while simultaneously enhancing the land's natural ability to sequester carbon. The key principles of soil health include:

- Maintaining living roots year-round to promote an ongoing ecosystem in the soil.
- Minimizing soil disturbance by decreasing physical tillage and chemical additions.
- Keeping soil covered with crops to protect against erosion and improve water retention.
- Integrating livestock to improve soil fertility through increased microbial density and organic matter.

- Increasing diversity and biodiversity in the soil and surrounding ecosystems.

These farming techniques aren't new. In fact, they have their roots in traditional practices and principles that indigenous farmers have depended upon for thousands of years. Today, scientific and technological advancements are making regenerative agriculture techniques more precise and, importantly, easier for farmers to implement and scale to meet modern demands. For example, with tools like satellite imaging, drone monitoring, and artificial intelligence, farmers can take advantage of data analysis to make their fields more sustainable and their operations more efficient than ever before.

Profound Benefits of Regenerative Agriculture Practices

As farms increasingly employ regenerative techniques, the land is gradually restored to a more natural state, making possible some incredibly beneficial outcomes.

Reducing and reversing erosion, for example, is a critical component of the regenerative agenda. Most scientists agree that [it takes about 100 years to create an inch of new topsoil](#) under natural conditions, but each year billions of tons of fertile topsoil are washed away from farmlands by rain and wind. As this rate of loss continues alongside rising temperatures and prolonged droughts, many experts believe some farming regions are destined for another disastrous Dust Bowl period. However, by taking measures such as planting cover crops on fields that would otherwise sit bare between growing seasons, farmers help keep precious topsoil in place.

Beyond preventing soil from eroding, the regenerative agriculture movement is also focused on nurturing soil health. What the layperson often does not realize is that there is much more to fertile soil than just dirt; every teaspoon of soil contains millions of microorganisms that assist in the breakdown of organic matter and help plants absorb water and nutrients. Harsh chemicals and constant soil disturbance can strip the soil of these beneficial qualities and make it less productive. But strategically chosen cover crops help to preserve and return those nutrients to the soil, as do other methods such as adding compost as well as the introduction of earthworms and beneficial insects. Furthermore, the manure from grazing livestock can help build soil health with less need for chemical fertilizers.

Ultimately, as the name "regenerative" suggests, these and other techniques help the soil (and thus the farm) continue to sustain itself through an ongoing cycle of give and take. And, as an extremely important side benefit, the land becomes a more effective carbon sink. In this way, the widespread adoption of regenerative agriculture can do more than reduce greenhouse gas emissions; theoretically, it can actually *undo* some of the damage that's already been done.

Regenerative Agriculture's Positive Impacts on Farmers

Regenerative agriculture is good for the environment and a win for farmers, too. Regenerative techniques require far fewer inputs such as seed, fertilizer, and pesticides, which means farmers can reduce their operating costs dramatically. Results are mixed on whether regenerative farms see higher or lower yields, but studies have shown that even in cases where yields declined, the farms' profitability increased.

For instance, [a 2020 study](#) from the Ecdysis Foundation found that regenerative farms were, on average, 78 percent more profitable than conventional plots. This was attributable due to lower input costs, increased natural pest resilience, and higher premiums from buyers.

Longer-term, the adoption of regenerative agricultural practices should make farms more resilient against the severe weather events and rising temperatures that threaten the existence of industrialized agriculture. This resilience equates to a more predictable, dependable income stream and more assurance that the business will continue to thrive for many years to come.

In terms of on-farm waste minimization, there are many ways to help reduce this waste, feed people, and put money in farmers' pockets. Composting is one widely practiced regenerative agriculture strategy for reducing methane emissions from waste. Carefully monitored "low smoke" burns, which produce biochar that can be worked back into the soil, as well as chipping, can also reduce climate pollutant emissions as compared to open burns.

The Role and Value of Sustainable Farming Certifications

For regenerative agriculture to gain widespread adoption, farmers, food producers, and other companies need to see a return on investment. One way to communicate their efforts with consumers is to attain an appropriate certification such as [Regenerative Organic Certified™ \(ROC\)](#). By now, most consumers are familiar with organic certifications, such as USDA Certified Organic, foods, and other agricultural products like cotton and wool. ROC, a certification overseen by the [Regenerative Organic Alliance](#), starts where organic leaves off by verifying that producers meet stringent requirements for soil health, animal welfare, and social fairness. Similar to other certification standards such as SCS Global Services' Certified [Sustainably Grown](#) program and the [Soil Carbon Initiative](#), ROC takes the entire agriculture ecosystem into account.

By growing ROC-certified crops or manufacturing ROC-certified products, companies can give themselves a competitive advantage in an increasingly eco-conscious marketplace.

Regenerative Agriculture's Impact Can Start Now!

There are no silver-bullet solutions to climate change. But there are plenty of scalable, scientifically-sound solutions that offer great promise for reducing emissions, warding off catastrophe, and even returning our planet to an earlier, healthier condition. Among these options, regenerative agriculture is clearly an important tool in the toolkit. Regenerative agriculture can play a key role in mitigating climate change, reinvigorating the natural ecosystem, and supporting a vibrant farming industry. It's a mutually beneficial solution that can make a significant impact today and help support generations to come.

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