



REGENERATIVE AGRICULTURE FREQUENTLY ASKED QUESTIONS

What are regenerative agriculture practices?

The principles of regenerative agriculture remain consistent across countries and farm types. However, the implementation of soil-building practices varies widely between geographies, crop types, and farmer context. Regenerative agriculture necessarily requires a localized and farm-specific approach.

Typically, regenerative practices include the following principles:

- > Maximize ground cover through the use of cover crops, mulch, and intercropping;
- > Minimize soil disturbance through conservation tillage and rotational grazing;
- > Increase on-farm diversity through crop rotations and incorporating livestock;
- > Reduce the use of external inputs such as fertilizers or pesticides;
- > Promote whole-farm health by viewing the land as an ecosystem and working with instead of against nature.

What are the benefits of regenerative agriculture?

"... [R]egenerative agriculture is one of the greatest opportunities to address human and climate health, along with the financial well-being of farmers."

--Project Drawdown,

Today's global agricultural industry is resource-intensive and incurs high environmental costs – such as drinking up 70% of global freshwater use¹ and contributing more than a quarter of greenhouse gas emissions². Farmers are now facing increasing challenges due to

the effects of climate change and legacy impacts of degenerative farming practices. Historic patterns of topsoil loss due to practices such as intensive tillage and monocropping have led to declining productivity and forcing farmers to increase the use of costly inputs.

Regenerative agriculture provides solutions to stall and reverse these trends by rebuilding topsoil, soil fertility, and farm resilience against unpredictable conditions. Increasing soil carbon and soil organic matter, key outcomes of regenerative practices, can help soil absorb and store water to better withstand both flooding and drought conditions. By sequestering carbon in the soil rather than releasing it, regenerative agriculture also presents a viable climate change mitigation strategy that could be applied on a wide scale. By some estimates, applying regenerative carbon-storing practices on the world's farm and pasturelands could sequester more than 100% of global annual emissions.³

How did the regenerative movement start?

The term "regenerative agriculture" was first coined in the late 20th century by Robert Rodale, son of American organic pioneer J.I. Rodale and founder of the Pennsylvania-based farming research center the Rodale Institute. The practices and principles of regenerative agriculture were initially proposed by Rodale out of a concern for creating healthy soil in order to 'produce healthy food for healthy people'.

The movement has gained a renewed traction in recent years as the growing body of science on the impacts of conventional farming practices, combined with the importance of soil health, has strengthened the case for changing the way food is grown. Regenerative agriculture is also becoming popular with brands as way to tackle climate change commitments, improve resiliency in agricultural supply chains and ensure the fair treatment of farm workers.

1: Water for Sustainable Food and Agriculture, FAO 2017 <http://www.fao.org/3/a-i7959e.pdf>
2: [IPCC Special Report: Climate Change and Land, 2019 <https://www.ipcc.ch/srccl/>]
3: [Regenerative Organic Agriculture and Climate Change, Rodale Institute]



How does regenerative agriculture offer solutions that respond to the argument that conventional practices like monocropping, GMOs, and chemical interventions are necessary for farm economics and high yields?

Through a focus on soil health and diversity, regenerative farming practices have the potential to support increased resilience and financial well-being for farmers. Regenerative practices have been shown to improve profits by as much as 78% over conventional farming¹, largely due to reduction in inputs. While yields of monoculture crops may be lower without the intensive interventions that are typical in today's conventional farming industry - often to compensate for lost soil fertility - regenerative practices emphasize diversity to increasing whole-farm yield, and farmer incomes, in the long-term.

Regenerative practices serve as a way to "future-proof" farms and reduce risks. As the effects of climate change exacerbate the innate challenges of farming, creating and keeping healthy soil is essential to maintain viable harvests and better weather unpredictable conditions. While more science is needed to understand the full potential of regenerative farming in the long-term, it is clear that other approaches are needed in order to reverse the soil loss and declining crop yields seen in the agriculture industry today.

What is the business case for implementing regenerative agriculture in my supply chain?

The effects of climate change -- rising temperatures, increasing droughts, and the rise of disease -- threaten to wreak havoc on our agricultural systems. Conventional farming practices leave land less able to withstand changes to weather or the environment, which can lead to lower crop yields and supply chain disruption. Conversely, regenerative practices can safeguard against these risks and build resilience for long-term supply chain security.

In addition, the marketplace is seeing a growing consumer demand for food and textile products made with responsible practices. This demand presents a valuable opportunity for companies to showcase

their brand values and environmental and social commitments, while satisfying customer desires, through regeneratively sourced products.

If you want to learn more about how regenerative practices might strengthen your supply chain, NSF's experts can help you quantify impacts, assess risks and identify opportunities to understand the potential for your business.

How is 'regenerative' measured?

As a relatively new term in the marketplace, regenerative agriculture has multiple manifestations. Currently there are three third-party verified frameworks that define measurable standards for regenerative practices and/or outcomes.

- > **Regenerative Organic Certification:** The Regenerative Organic Certification (ROC) program is a holistic practice-based certification built off USDA Organic that incorporates three pillars of responsible farming: Soil Health, Animal Welfare, and Social Fairness. NSF is the Regenerative Organic Alliance's core partner in developing and managing the ROC program.
- > **Land to Market Verification:** The Savory Institute's Land to Market program is designed for holistic management of grasslands and grazing livestock. The Ecological Outcome Verification program measures quantifiable outcomes in managed lands, including biodiversity, soil health, water infiltration, and carbon sequestration.
- > **The Soil Carbon Initiative:** The Soil Carbon Initiative measures soil carbon outcomes through testing key soil health parameters. The SCI partnered with NSF to develop the standard through a consensus-based multi-stakeholder process.

Regenerative agriculture is a quickly growing movement representing diverse farmer contexts, and additional standards of measurement are sure to evolve over time. Currently, these frameworks and standards represent the leading industry guidelines for measuring the implementation of and progress towards regenerative practices.



How can I market/label products produced with regenerative practices?

The regenerative term is still new to the marketplace and at risk of being abused. Avoiding greenwashing or unsupported claims is imperative in order to build consumer trust, understanding, and support of regenerative products.

One way to lend credibility to regenerative marketing claims is through the use of third-party certifications. Several verification programs currently exist or are in progress that may be applicable to your organization. As the regenerative movement grows, other certification programs are sure to emerge to offer options for measuring regenerative practices and credibly labeling products.

What does regenerative have to do with carbon emissions and markets?

Regenerative practices offer a means to reduce and even sequester carbon emissions from farming systems. This presents an opportunity for brands, investors, and other stakeholders to meet their climate objectives by supporting and investing in regenerative agriculture. For example, some brands are incentivizing regenerative practices in their supply chains in order to meet Scope 3 emissions reduction targets. Carbon trading platforms are emerging that allow funders to pay farmers to sequester carbon in their fields. This is a quickly changing, exciting space to watch -- contact NSF to learn more and how you can get involved.

What demand is there for regenerative products?

Brands' focus on regenerative agriculture has emerged in part as a response to the growing consumer demand for sustainable practices and climate action in the food industry. This demand presents a valuable opportunity for companies looking to meet their climate targets and other corporate responsibility goals while satisfying customer expectations and values. As consumer recognition of regenerative grows in the marketplace, and certification schemes expand, more opportunities will emerge for brands to differentiate products through regenerative claims.

How do I implement regenerative practices in my supply chain?

There are many options to begin your journey to regenerative. For example:

- > Brands can provide funding directly or indirectly to their suppliers through their own programs or engaging with third-party certification schemes.
- > Farmers can seek support through state, federal, or non-profit organizations or connect with funding through emerging carbon or investment tools.

Curious what path is right for your company? NSF can help you navigate the complex and rapidly shifting landscape to begin your own road to regenerative.