ORGANIC IS REGENERATIVE

Organic is among the most comprehensive and time-tested agricultural systems for mitigating and adapting to climate change, and it has the benefit of being enforced through a rigorous legal standard. Here are six of the aims of regenerative agriculture and how organic achieves them.

PRIORITIZE SOIL HEALTH

Organic farmers don't use toxic pesticides. Science shows all classes of pesticides widely used in conventional agriculture pose a grave threat to organisms that are critical to healthy soil and soil biodiversity (1,2). Organic farmers protect soil health by not using toxic pesticides, by law.

Organic farmers use practices that foster soil health and fertility. Organic producers are legally required to protect soils with practices such as cover cropping, crop rotations, and the application of compost, mulch, green manure, or crop residues to build fertility (3). Nearly 90% of organic farmers use cover crops, which help sequester carbon and prevent soil erosion (4).

MAKE FARMS MORE RESILIENT TO CLIMATE CHANGE

Organic farmers conserve water resources. Long-term trials show that organic fields have 30-50% greater soil aggregation (which increases water holding capacity) and ten times higher water infiltration than conventional fields (5). Water conservation allows organic farms to be more resilient to the impacts of climate change, including drought (6).

Organic farming has been shown to yield more than conventional farming in times of weather extremes (7,8). Over forty years of research from the Rodale Institute demonstrates that organic management can yield as much as conventional management, and in times of drought, organic yields are up to 40% greater than conventional yields (9). Organic farms are better prepared for an increasingly unpredictable climate.

IMPROVE SOIL CARBON SEQUESTRATION

Organic farming practices allow soil to act as a carbon sponge. It is the aliveness of soil that allows it to store carbon; plant root systems and soil organisms are critical for carbon sequestration. Organic farmers keep the soil healthy, alive, and able to soak up carbon by eliminating toxic pesticides and building fertility. Research shows that organic farms store up to 25% more carbon in soil and achieve deeper, more persistent carbon storage than farms using chemical approaches (10,11).

Organic farmers achieve greater soil carbon benefits than conventional no-till. Trials conducted by the USDA found that organic farms can sequester, on average, 400-600 more pounds of carbon per acre than conventional farms, including conventional no-till farms (12, 13).

REDUCE EMISSIONS & ENERGY USE

Organic farms typically emit fewer greenhouse gasses and use less energy than conventional farms. Land in organic production emits 43% fewer greenhouse gasses than the same amount of land in conventional production (14). In particular, organic farms emit less nitrous oxide, a greenhouse gas 298 times more potent than carbon dioxide. Conventionally managed soils release 56% more nitrous oxide on average than organically managed soils (15,16).

Organic farmers use few energy-intensive chemicals. Synthetic pesticides and fertilizers, which are prohibited in organic agriculture, are derived from fossil fuels and are extremely energy-intensive to produce (17,18). Manufacturing synthetic pesticides and fertilizers alone accounts for a staggering 40% of the total energy used to produce crops and livestock in the United States (19, 20).

PROTECT BIODIVERSITY

Organic farms are more biodiverse. On average, organic farms host 50% more organisms than conventional farms (21, 22) The increased populations of beneficial insects, birds, mammals, reptiles, and soil organisms on organic farms maintain the web of life and help ensure that we can feed ourselves and future generations (23).

Organic farmers protect pollinators. Pollinators like bees are the cornerstone of a dependable food supply – they're responsible for one of every three bites of food we eat (24). Yet pollinator populations are in decline, in part because U.S. agriculture has become 48 times more toxic to pollinators and other insects since the introduction of neonicotinoid pesticides (25). Organic farms safeguard essential pollinators by not using neonicotinoids and other toxic pesticides.

IMPROVE HUMAN HEALTH & WELLBEING

Organic farmers protect people from unhealthy exposure to toxic pesticides. Decades of data show that pesticides can disrupt the healthy functioning of our bodies. Pesticide exposure is linked to cancers, asthma, neurological and reproductive disorders, and endocrine disruption (26, 27). Organic farming protects farmworkers, communities, and consumers from these harms. Children and infants in utero are most vulnerable to pesticide exposure, and repeated studies have shown that people who eat organic food as part of their diets have dramatically lower pesticide residues in their urine compared to those who eat conventional diets (28, 29).

Organic food is highly nutritious. A growing body of research suggests that nutrients and minerals (such as potassium and iron), antioxidants, and beneficial phenolic compounds are more abundant in organic foods than conventional foods (30-38). Organic milk and meat are also frequently richer in beneficial fatty acids than conventional milk or meat (39-42).

Organic farms stimulate local economies. Counties with high levels of organic agricultural activity are known as "organic hot spots." Organic hot spots, on average, decrease county poverty rates and increase median household income (43).

ORGANIC STANDARDS INCLUDE REGENERATIVE PRACTICES

The chart below shows how the broad goals of regenerative agriculture are legal requirements for organic producers, as codified in the Code of Federal Regulations.

Practices associated with regenerative agriculture	Organic in the Code of Federal Regulations
Reduce tillage (or no-, minimal-, conservation-)	The standards state: "Tillage and cultivation practices must maintain or improve the condition of soil and minimize soil erosion" (7 CFR 205.203(a))
Use cover crops	Required (7 CFR 205.203(b))
Use crop rotations	Required (7 CFR 205.203(b))
Use compost, mulch, green manure, or crop residues	Required (7 CFR 205.203(b) and 7 CFR 205.205)
Protect/cover the soil	Required, though there is no specific requirement to keep soil covered (7 CFR 205.203(a))
Prohibit synthetic pesticides	Required (7 CFR 205.105(a))
Prohibit synthetic fertilizers	Required (7 CFR 205.203)
Prohibit genetically engineered seeds	Required (7 CFR 205.105(e))
Ecological site-specificity	The regulatory definition includes site-specificity. "Organic production" is defined as "A production system that is managed ... to respond to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity."

THE BOTTOM LINE

Organic is a leading form of ecologically regenerative agriculture

Decades of research demonstrate that organic farms build healthy soils, fight climate change, increase farms' climate resilience, and support healthy communities. Policymakers, companies, and institutions that want to invest in regenerative practices should understand that organic is a leading form of regenerative agriculture and a proven way to meet sustainability goals.

Investing in organic is a meaningful way to avoid greenwashing associated with the term regenerative

Like the term 'sustainable,' there is no set definition of regenerative agriculture. Some definitions are robust while others are weak or even meaningless. Some regenerative farms, like regenerative organic farms, are actively protecting soils, supporting biodiversity, and fighting climate change. But the term 'regenerative' is also being applied to chemical-intensive agriculture associated with high GHG emissions and use of pesticides that pose a grave threat to soil health, biodiversity, and human health. Policymakers, companies, and institutions should be aware of the greenwashing that occurs in the regenerative space and are advised to put appropriate safeguards in place.

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