

Regenerative Agriculture

Definition of Regenerative Agriculture

Regenerative agriculture is farming in synchrony with nature to repair, rebuild, restore, and revitalize ecosystem function, starting with all life in the soil and expanding to all life above the soil. Regenerative agriculture describes holistic farming systems that, among other benefits, improve soil, water, and air quality; enhance ecosystem biodiversity; produces nutrient-dense food; and stores carbon to help mitigate the effects of climate change. These farm systems are designed to work in harmony with nature, while also maintaining and improving economic viability.

Diversifying farming systems is an essential component in today's regenerative agriculture movement, but this concept is not new. Indigenous communities farmed with the Three Sisters system of planting corn, squash, and beans together. Corn provided the support for the beans, which provided the nitrogen fertilizer, and squash provided cover, suppressing weeds, while helping maintain soil moisture. George Washington Carver's research on crop rotation to reduce pests and planting peanuts, a legume which fixes nitrogen from the atmosphere, to restore soils depleted after years of growing cotton is another example of regenerative agriculture. Regenerative agriculture's deep roots in farming culture and history provide a strong foundation for the future of food production in the Chesapeake Bay watershed.



Cows graze at Nice Farms Creamery in Federalsburg, Maryland.

HANS KEFAUVER, NRCS



Clover used as a cover crop provides nitrogen to the soil and is healthier than applying chemical fertilizer.

Regenerative agriculture focuses on working with soil biology as there are over six billion microorganisms in a teaspoon of healthy soils. There is a symbiotic relation between soil microbes and plants where plants provide the liquid-carbon food to microbes through photosynthesis and the microbes in return provide the plants with essential nutrients and micronutrients for plant and human health. Soil microbes also create a microbial glue to form soil aggregates, which allow water to infiltrate and air spaces for roots to grow. To have healthy soils there are five principles that are critical and all impact soil biology.

The Top Five Principles of Regenerative Agriculture:

- Minimize negative disturbance—tillage, pesticides, and herbicides impact soil biology and structure.
- Keep the soil always covered—prevents erosion, maintains moisture and soil temperature, and reduces weeds.
- Plant diversity—diversity of plants results in diversity of soil microbes and reduced fertilizer needs.
- Keep roots living as long possible—maintains photosynthesis, sequesters carbon, and feeds soil biology, a symbiotic relationship.
- Add livestock/rotational grazing—good soil disturbance, manure is probiotic, cattle graze grass, encouraging root to grow deeper in soil.



Benefits of Regenerative Agriculture:

Ecological	Social	Economic
Improve soil health, biology, and fertility. Increase the land’s ability to filter, infiltrate, and retain water. Reduce erosion and polluted runoff. Improve wildlife habitat and ecosystem biodiversity and resilience. Capture substantial amounts of carbon from the air and store it in the soil while reducing nitrous oxide emissions, a potent greenhouse gas.	Produce nutrient-dense foods that are free from chemical contaminants. Make farms and communities more resilient to drought and floods. Maintain baseflow to streams during dry periods as the soil’s sponge releases water, extending periods for recreational use and sustaining drinking water supply. Restoring soils for the next generation of farmers.	Increased farm productivity. Improved crop yields and forage quality. Reduced risk due to increased resiliency. Cost savings from reduced irrigation needs and inputs: synthetic fertilizers, herbicides, and feed purchase.

Regenerative agriculture can include a suite of practices catered to fit the unique aspects of each farm. Some of those practices include:

