

Regenerative Agriculture: A Step Towards Farming Revolution

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“We stand now where two roads diverge. But unlike the roads in Robert Frost’s familiar poem, they are not equally fair. The road we have long been travelling is deceptively easy, a smooth superhighway on which we progress with great speed, but at its end lies disaster. The other fork of the road — the one less travelled by—offers our last, our only chance to reach a destination that ensures the preservation of the earth.”

Rachel Carson.

What is Regeneration agriculture?

Regenerative agriculture is a system of farming principles that rehabilitates the entire ecosystem and enhances natural resources, rather than depleting them. It is centered on universal agronomical principles that help to protect and restore natural resources - primarily soil, as well as water and biodiversity. Regenerative agriculture aims to improve soil health and soil fertility, at the same time capturing carbon in soils and plant biomass.

Principal aim is to conserve and regain the Soil Health.

Pillars of Regeneration Agriculture.

1. **Biodiversity:** - Increase plant and animal biodiversity above and below the ground.
2. **Soil:** - Scale up farming practices that help protect soil health and increase soil organic matter.
3. **Water:** - Reduce chemical farm inputs, optimise organic fertilisation, biological pest control and irrigation techniques.
4. **Livestock:** - Integrate livestock and optimised grazing in farming systems where feasible.

Healthy Soil = Healthy Food = Healthy People

Agriculture E-mission.

Agriculture as practiced across most of the world is not yet part of the solution—it’s part of the problem. Rather than mitigating the climate crisis, it is a net producer of

greenhouse gas emissions both directly through conventional industrial farming practices, and indirectly through land-use change and the greater food system. Agriculture production accounts for around ten percent of annual emissions. The food system at large, including fertiliser and pesticide manufacture, processing, transportation, refrigeration and waste disposal, accounts for 30% or more of total annual emissions. Regenerative agriculture, with its focus on achieving positive ecosystem outcomes, can be practiced under many names: agroecology, organic, biodynamic, holistic, conservation, permaculture, management intensive grazing, agroforestry and more.

The Myth of Food Shortage

There is no global food shortage. Nor are we on a trajectory for a global food shortage. World food production has been steadily rising, currently providing 2,900 calories per person per day, 22% more than is needed. The continued use of the trope that ‘we will soon need to feed nine billion people’ as justification for seeking ever greater yields is duplicitous. Hunger and food access are not yield issues.

Over 40% of Global Harvest is Wasted Each Year Soil Carbon Sequestration

Soil carbon sequestration means maximising atmospheric carbon dioxide removal and minimising soil carbon losses. For soil carbon sequestration to occur, all of the soil organic carbon sequestered must originate from the atmospheric carbon pool and be transferred into soil organic matter through plants, plant residues, microbial residues, and other organic solids. Soil organic matter, while highly variable, is comprised of about 50% percent soil organic carbon

Workings of Carbon Sequestration.

- 1. Photosynthesis:-** During photosynthesis, plants convert carbon dioxide (a gas) into sugar (Carbohydrate molecules).
- 2. Nutrient Exchange:-** This plant-derived carbon enters the soil in the form of litter or root exudates. Soil microorganisms (fungi and bacteria) live in association with plant roots and decompose these organic compounds.
- 3. Capturing Carbon:-** Microbial necrosis (dead microbial biomass) can be stored in organa-mineral associations or micro-aggregates.
- 4. Restoring Balance:-** Increasing the number of microorganisms in the soil helps bring carbon levels back into balance, which leads to healthier soil, healthier food, and a

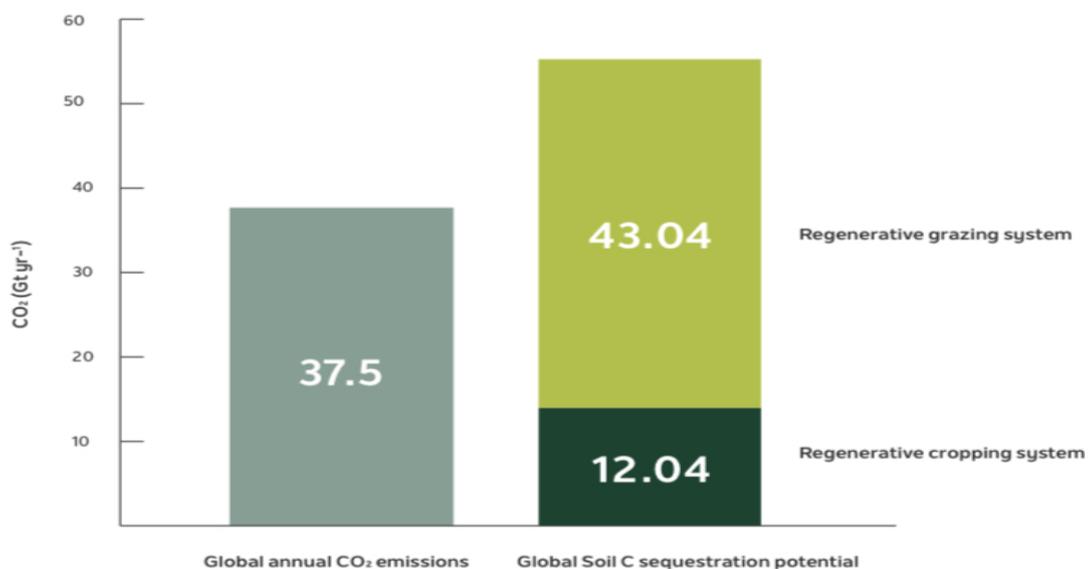
healthier planet. At a minimum, regenerative agricultural practices that support soil carbon sequestration include:

- ✚ Diversifying crop rotations
- ✚ Planting cover crops, green manures, and perennials
- ✚ Retaining crop residues
- ✚ Using natural sources of fertiliser, such as compost
- ✚ Employing highly managed grazing and/or integrating crops and livestock
- ✚ Reducing tillage frequency and depth
- ✚ Eliminating synthetic chemicals.

Priority Actions Taken For Regenerative Agriculture

- ✚ Drive soil Conservation.
- ✚ Use organic Fertilizers.
- ✚ Develop natural Habits.
- ✚ Useless chemicals.
- ✚ Protect watersheds.

FIGURE 1: Carbon sequestration potential of global adoption of regenerative agriculture



What Can Eaters Do?

- ✚ Put pressure on supply chains. We need to take away the social license for food companies to use food and fibre products and ingredients that degrade ecosystems. Tell food manufacturers that ecologically destructive supply chains are a time bomb about to explode for their brands. Let them know it's no longer ok to produce food at the expense of humanity's future. Demand food and fibre products that are sourced from farms employing regenerative practices.
- ✚ Give policymakers hope. We need to approach governmental leaders with regenerative strategies. Many of them buy into the green revolution myth that we can sustainably intensify conventional agriculture. They know the soils of their states and nations are being destroyed, but they don't see an alternative. Tell them there is a better way, show them this report and others like it. Let them know you support their actions to shift agriculture from the problem side of the climate equation to the solution side.
- ✚ Start a conversation. Ask your grocer, school, workplace, local hospital, and other institutions and organisations you frequent to carry products from farms practicing regenerative agriculture. If they can't talk to the producer directly, tell them to look for third-party verified labels like Regenerative Organic Certified, Land to Market, Real Organic Project, and the Soil Carbon Initiative.
- ✚ Buy regenerative. When possible, buy from brands who source food stocks and ingredients from regenerative farms. Let them know you appreciate their sourcing practices, or better yet, buy directly from regenerative farms. Many regenerative farms that sell to the public are proudly transparent about their practices. But remember that most farms, especially large-scale ones further from metropolitan areas, are not set up to sell directly to the public—shopping alone is not going to shift this.

What Can Farmers Do?

1. Grow the community the regenerative agriculture Movement is farmer-led; if you don't know of a group nearby, join a regional, national or international organization for farmer-to-farmer learning about organic, regenerative, agro-ecological, holistic grazing, or syntropic agroforestry, among others. If you already frequent these



circuits, consider creating a Carbon Farm Plan or becoming certified to amore stringent standard that goes beyond organic, such as Regenerative Organic Certified, Real Organic Project, Land to Market (for graziers), or Soil Carbon Initiative. You can also set up a local or regional group to regenerate at the landscape scale, organise a Regeneration Alliance, or start or join a food policy council where diverse constituents make a path for a regenerative food system that is adapted to the local context.

2. Experiment, observe, share. As a farmer-led movement, experimentation on real farms is critical. When you shift management practices based on what you are learning, observe and measure changes in soil health and biodiversity, and then share those results with others. Whether informally talking to your neighbours, hosting field-days, posting on social media, collaborating with researchers, or speaking at conferences and other meetings, when you experiment, observe and share your farm's regeneration story, you inspire others, provide data for researchers and policymakers, and enhance the benefits to your farm, community, and the greater food system.
3. Measure outcomes. Regenerative systems provide a wide host of beneficial outcomes that society values. High total farm outputs, nutrient density, resilience to extreme weather, ecosystem services like reduced runoff or fertiliser use, and job creation are a few. In addition, farms can track the buildup of soil organic matter where testing services are available and affordable. In general, 50% of soil organic matter is soil organic carbon .For some regions, testing soil carbon sequestration may be feasible in the near future with affordable soil sensors and other accurate soil carbon measurements . There are also many no-cost observations to determine soil health impacts related to management changes, including biodiversity observations, soil aggregation and water infiltration tests. You can obtain or design a soil health card to record observations and track your farm's progress.

What Can Policymakers Do?

1. Learn from constituents. Regenerative agriculture is a farmer-led and consumer-supported movement the world over, it does not have the lobbying power of industrial agribusiness. Prioritise actively building relationships with this movement. Even in unlikely places, there are passionate people workingto shift the food system from a



climate problem to a climate solution. Find these constituents; they may be regenerative farmers, natural food store and co-op buyers, sustainable agriculture organisations, or even university researchers.

2. Build the relationships that will keep you informed about regenerative agriculture locally and globally.
3. Support regenerative, organic, and regenerative organic agriculture. Policies that support regenerative agriculture recognise and reward farmers for building soil organic matter. These policies are best focused on supporting and rewarding positive outcomes. There are a wide range of policy options, from direct cost-sharing for cover crops to facilitating farmer-to-farmer peer learning, funding organic research, creating local or regional food policy councils and integrated landscape initiatives, and much more.
4. Defund soil destruction. Policymakers can shift soil destructive policies in many ways. Start by rethinking commodity-based subsidies and support, crop insurance, bio-fuel mandates, government procurement programs, government funding for chemical-intensive research, and agribusiness corporate mergers. Consider how a Healthy Soil Act might be introduced to give soil rights. Be vigilant to the global political power of industrial agribusiness corporations; their consolidation is a serious threat to shifting the food system to regenerative approaches.