

Regenerative Agriculture



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What Is Regenerative Agriculture ?

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Defined

An evolution of conventional agriculture, reducing the use of water and other inputs, and preventing land degradation and deforestation (Syngenta Group)

At its core, regenerative agriculture is the process of restoring degraded soils using practices (Example: adaptive grazing, no-till planting, no or limited use of pesticides and synthetic fertilizer, etc.) based on ecological principles (Noble Research Institute)



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Defined

“Regenerative Agriculture” describes farming and grazing practices that, among other benefits, reverse climate change by rebuilding soil organic matter and restoring degraded soil biodiversity – resulting in both carbon drawdown and improving water cycle (Regeneration International)



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Syngenta Group Further Explains

Regenerative agriculture blends sustainable innovation with tradition. As the name suggests, it focuses on literal regeneration of the soil and the planet’s ecosystems.

Regenerative agriculture improves soil, delivers high productivity and high-quality food and helps fight climate change and restore lost biodiversity.



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The Opposite of Conventional Agriculture

- Plowing
- Synthetic fertilizers
- Chemical pesticides
- Mono-cropping – the opposite of polyculture
- Carbon released greater than any carbon capture



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It Is Also Not Necessarily Organic

Organic is more about a set of rules which are based in the context of "what not to do"

- Don't use synthetic fertilizers
- Don't use synthetic pesticides

Larger scale organic operations often replace synthetics with naturally derived chemicals

And some organic operations replace synthetics with more tillage and soil disruption in order to minimize volunteer plants from popping up unwanted



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Top Five Regenerative Agriculture Practices

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1. Minimize Soil Disturbances

Limited tillage or no-till practices

- This minimizes physical, biological and chemical soil disturbances

This does not mean no periodic ripping

- Some soils will benefit from such
- It would be done minimally
- With the understanding that better water retention and increased root zones are the primary benefit



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2. Soil Coverage

Keep the soil covered with vegetation and natural materials

- Mulching
- Cover crops
- Pastures
- Crop rotations
- Animal manures



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2. Soil Coverage (continued)

When synthetic and artificial fertilizers are used, they contribute to:

- Higher energy costs of production & transportation
- Chemical migration and breakdown into water and air
- Distortion of microbial communities in the soil including the diminution of methanotrophs
- Accelerated decomposition of soil's organic matter



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3. Increased Plant Diversity

This improves overall healthy soil which then contributes to:

- Better water retention
- Better nutrients in the soil
- Increases in pollinators and other wildlife



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4. Keeping Roots In The Soil As Much As Possible

Thus, the soil is never bare

Requires the planting of cover crops

Maintaining land in permanent pasture

This again helps to stabilize the soil, reduce water run-off and loss of nutrients from the land



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5. Integrate Animals Into The Farm


Manure from livestock adds soil nutrients
That reduces the need for further fertilization

Increases organic matter

Allows for carbon capture


Reduction in needed watering

Reduces pollution run-off




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Overall Goals




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Increased productivity	Improve habitat & bio-diversity in plants and wildlife
Building healthy soil & fertility	Diminish effects of climate change
Increased production of nutrient dense foods	Decrease carbon in the air
Increase the soil's ability to filter and retain water	Sustain earth's natural resources
Decrease the amount of soil, air, water pollution	Assists in achieving overall food security



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Other Items Of Note



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How Long Does It Take To Transition

It is considered to take 3 to 5 years to convert from common normal farm practices to Regenerative Agriculture

It takes time for the land to recover from past practices

Financial benefits also do not immediately accrue – they too are a 3 to 5 year project



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Does It Make Financial Sense

There is a long-term benefit to the farmer – once the overall Regenerative practices are achieved

- This according to NatGeo research

Over a 10-year period there is an increase of some 70% to 120% higher profitability to the farm

An approximate Return On Investment (ROI) of 15% to 25% over the 10-year span



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Profitability

Once established, the cost of Regenerative Agriculture is about

- \$355.05 per hectare
- Net profit of about \$530.39 per hectare

Source: Drawdown.org



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Best Crops For Regenerative Ag - When Used In Rotation Include

Wheat	Grass
Barley	Potatoes
Oats	
Rye	Many involved in this practice use companion cropping – wherein crop species are planted alongside the cash crop
Safflower	
Lupins	
Peas	
Hemp	



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Biggest Roadblocks To Adoption

New practices always require an adoption of new skills and learning

Less tilling may lead to unwanted plants

Some farmers may then feel the need to utilize more herbicides

As always – depending upon soil, crops and other local conditions – there could also be lower yields



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Thank You



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