Carbon180

CDR Strategies - Land

Soil Management, Forestation

Carbon180

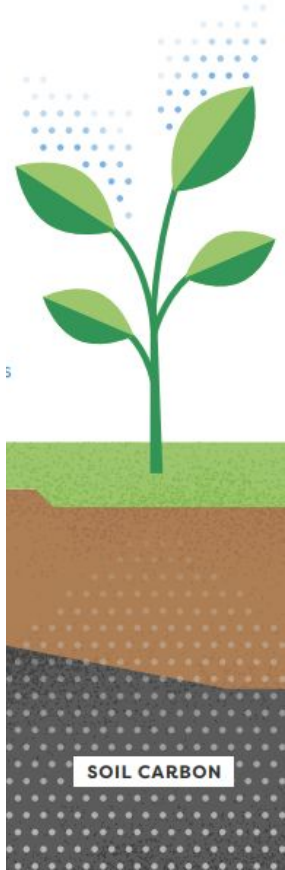
Who We Are, What We Do

We work with policymakers, entrepreneurs, and peer organizations to design policies that will bring needed carbon removal solutions to gigaton scale.

Our Values

Develop environmentally just carbon removal now, to be operated safely and sustainably in future.

- We do not accept funds from industry or groups connected to fossil fuels
- We do not support carbon removal as a tool for offsetting ongoing fossil emissions, but as a tool for addressing historic emissions



What *is* land carbon removal?

Farms

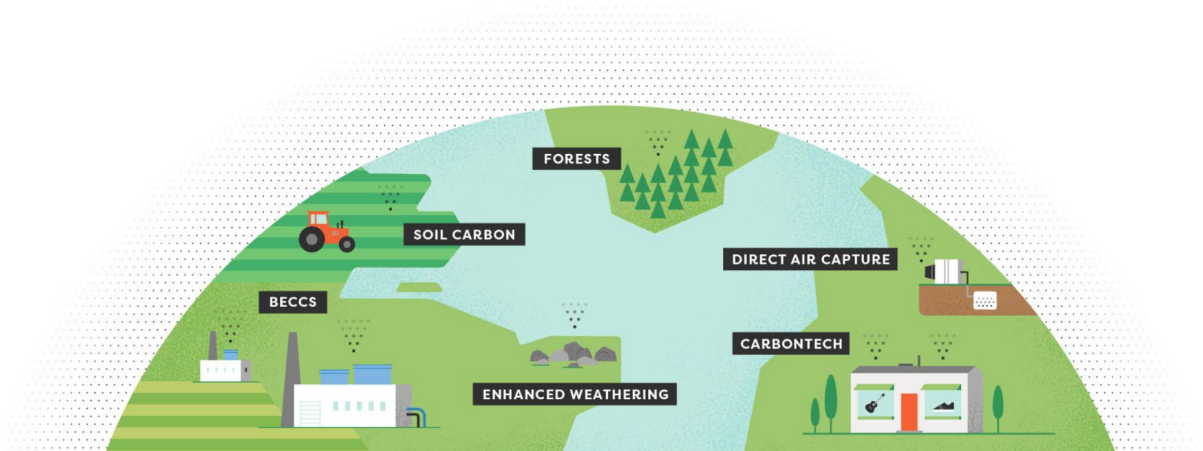
Key agricultural practices can sequester more carbon in soils

Forests

Forest conservation, management, and restoration can increase forest carbon stocks

Wildlands

Wetland restoration can increase blue carbon sinks. **Grassland** restoration can increase soil carbon storage

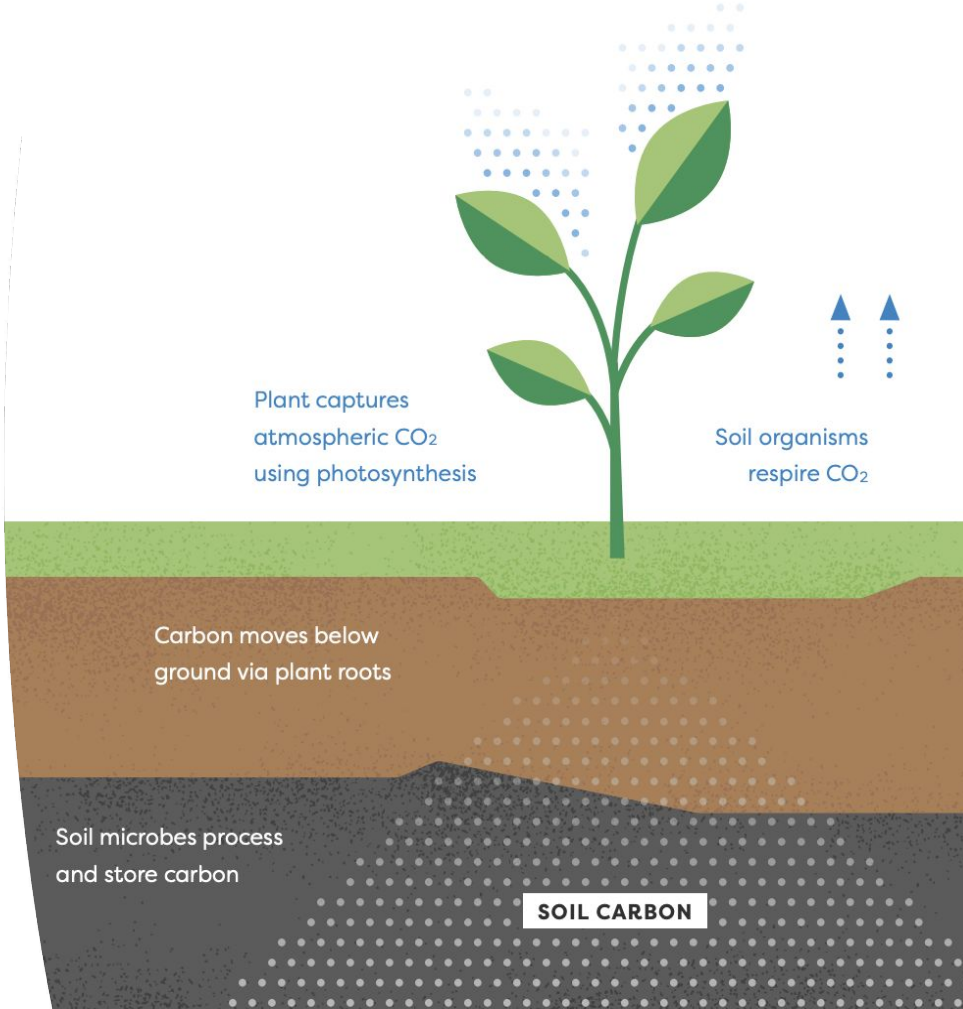


Removing through Farms

How does it work?

- Carbon is naturally stored in soils over time
- Over the past few centuries, agriculture and land-use change have depleted soil carbon globally and in the United States.
- Better stewardship of U.S. soils can be a powerful tool for addressing climate change, with the potential to store as much as **13% of domestic greenhouse gases***

** with some big ifs*



Removing through Farms

Methods of increasing carbon in soils

ADDING SOIL AMENDMENTS:

Incorporating compost, mulch, or biochar into soil to increase its organic carbon levels and ensure that crops receive key nutrients.

ROTATIONAL/ IMPROVED GRAZING:

Continuously moving animals to help aerate the soil and distribute manure prevents overgrazing, and increases the amount of carbon stored.

REDUCING EROSION:

The addition of windbreaks, trees or shrubs planted at the edge of fields, slows wind, maintains the ground covered, and minimizes soil disturbance, fostering greater carbon storage.

INCREASING CROP DIVERSITY:

Bringing in different species, companion, or cover crops to support carbon cycling, nitrogen fixation, and favorable habitats for microbes and beneficial insects. Increased plant diversity leads to accelerated carbon storage rates.

AGROFORESTRY:

Planting trees in cropland or pasture to increase the above-ground carbon stock of farms.

Emerging land carbon solutions: innovative soil amendments

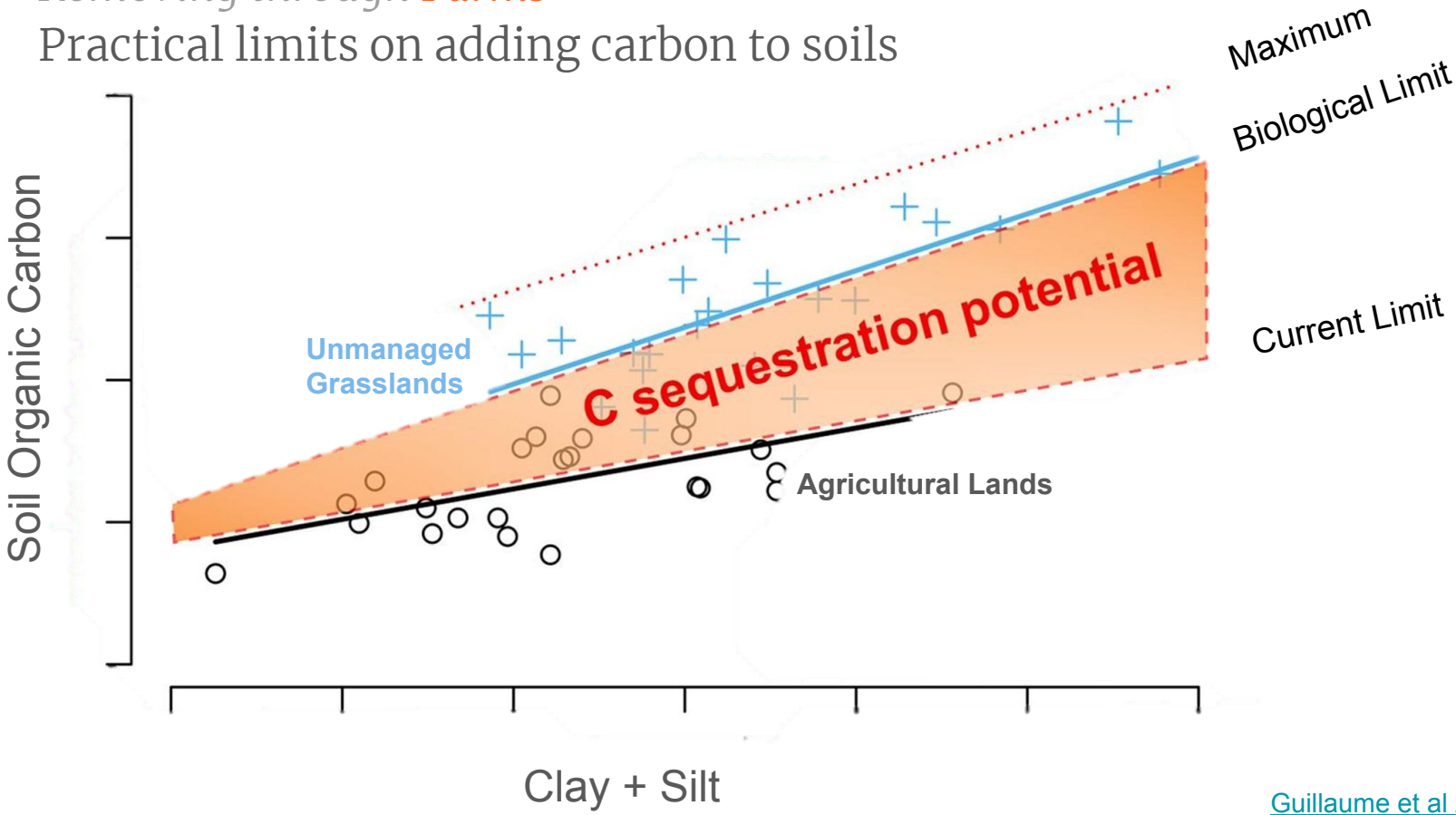
BIOCHAR

A charcoal-like substance made from burning biomass

- Retains carbon from biomass used
- As a soil amendment, biochar can increase soil carbon and water retention.
- Biochar may also offer other co-benefits depending on the application method, type of biomass used, and other environmental factors — research is still needed to understand the conditions that contribute to these co-benefits.

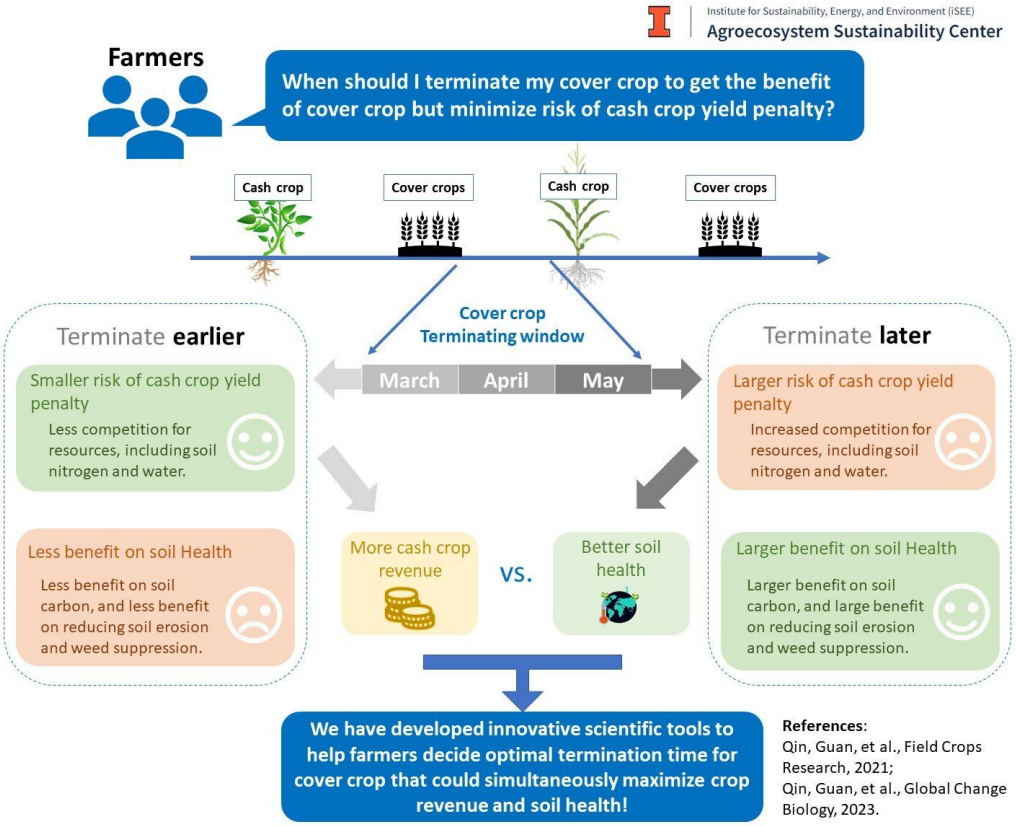
Removing through Farms

Practical limits on adding carbon to soils



Guillaume et al 2022, Geoderma

Removing through Farms
Taking Yields into Account



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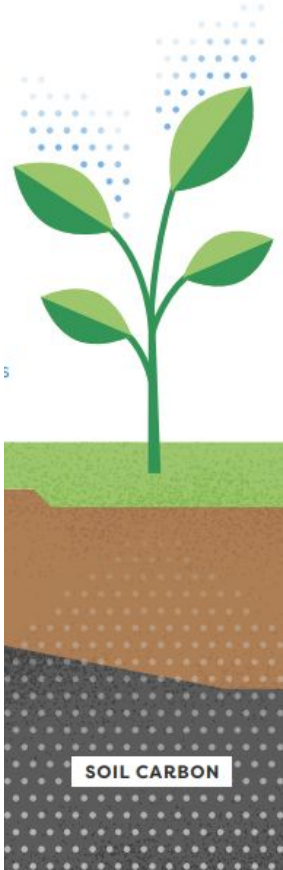

Taking Action for Soils

Make measuring soil carbon more transparent, accurate, and accountable to climate benefits

OUR REPORTS

LEADING WITH SOIL

On-the-ground with partners & producers
Uncovering barriers to practice adoption

SOIL CARBON MOONSHOT

Honing in on science and research
Scaling soil carbon MRV through policy

EDUCATION

Technical assistance and education resources are critical for farmers and ranchers to implement new practices and capitalize on the value of soil health.

SCIENCE

Practices need to be linked with soil health and soil carbon outcomes in an accessible and reproducible way.

INCENTIVES

New financial incentives and tweaks to existing incentives can reduce barriers to adoption and encourage durable carbon storage.

Identifying Barriers

- Fundamental Research
- Monitoring Reporting and Verification
- Data Collection and Management
- Adoption of Soil Carbon Practices
- Real-World Demonstration Trials

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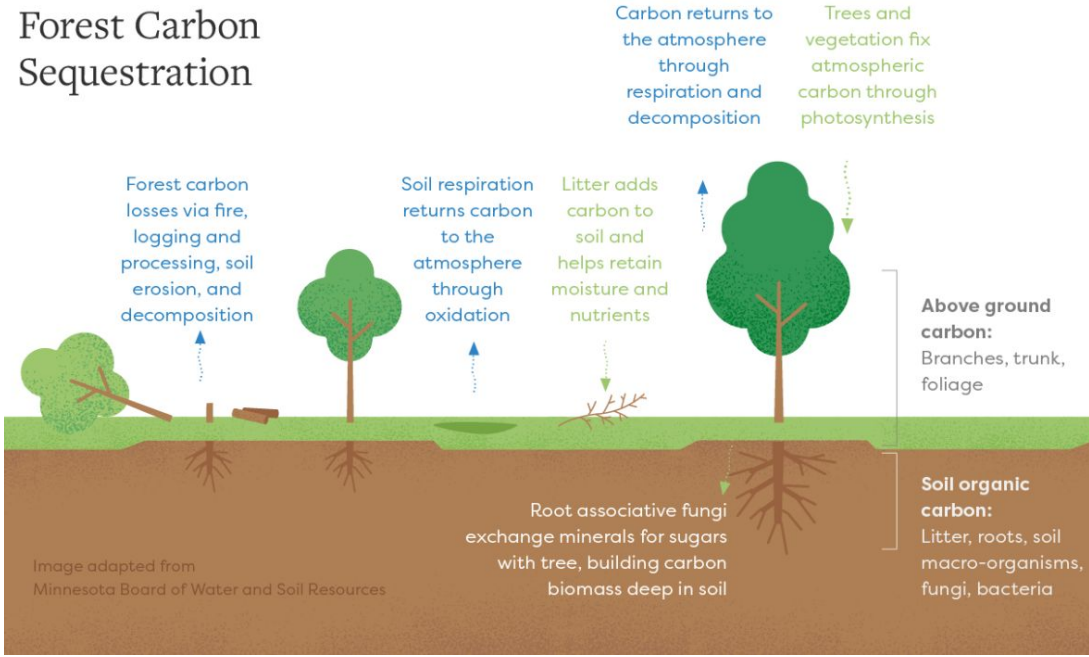
Removing through Forests

What does carbon do in soils?

- Forests face threats amplified by climate change, like severe wildfires, pests and diseases, deforestation, and land use pressure.
- If protected, restored, and managed at scale, US forests could sequester and store, **at least 10% of annual US emissions.** Actual carbon removal will vary by region and ecosystem.



Removing through Forests

Types of Management

FOREST CARBON MANAGEMENT PRACTICES

There are several forest management practices that can increase forest carbon storage and resilience, including:

Forest conservation
Protecting existing forests from land use conversion and other threats to their ecological integrity

Afforestation
Planting trees where there was never a forest

Reforestation
Planting trees where there was once a forest

Prescribed fire
A planned fire to prevent the buildup of forest debris or litter that could lead to a more severe wildfire

Pest and disease control
Identifying and treating outbreaks early to minimize forest dieback and maintain overall ecosystem health

Hazardous fuels management
Reducing the amount of forest debris or litter that could act as fuel for a wildfire

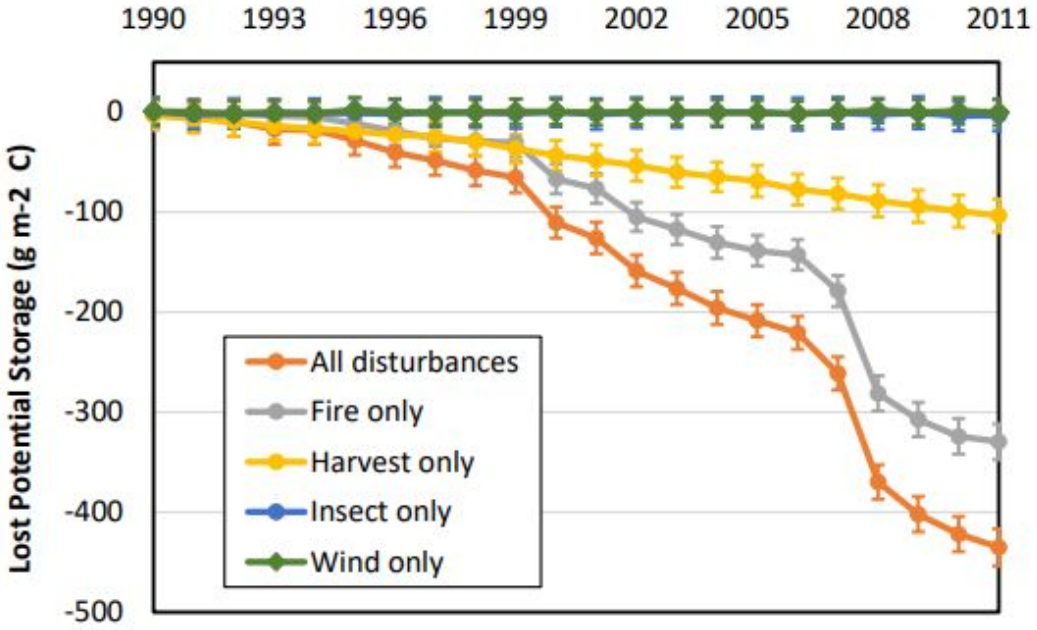
Are wood products really CDR?

- The carbon removal potential depends on carbon emissions during harvest, construction, and other processing to create the product.
- The carbon stored in the wood product **does not necessarily ensure a net carbon removal pathway**.

Removing through Forests

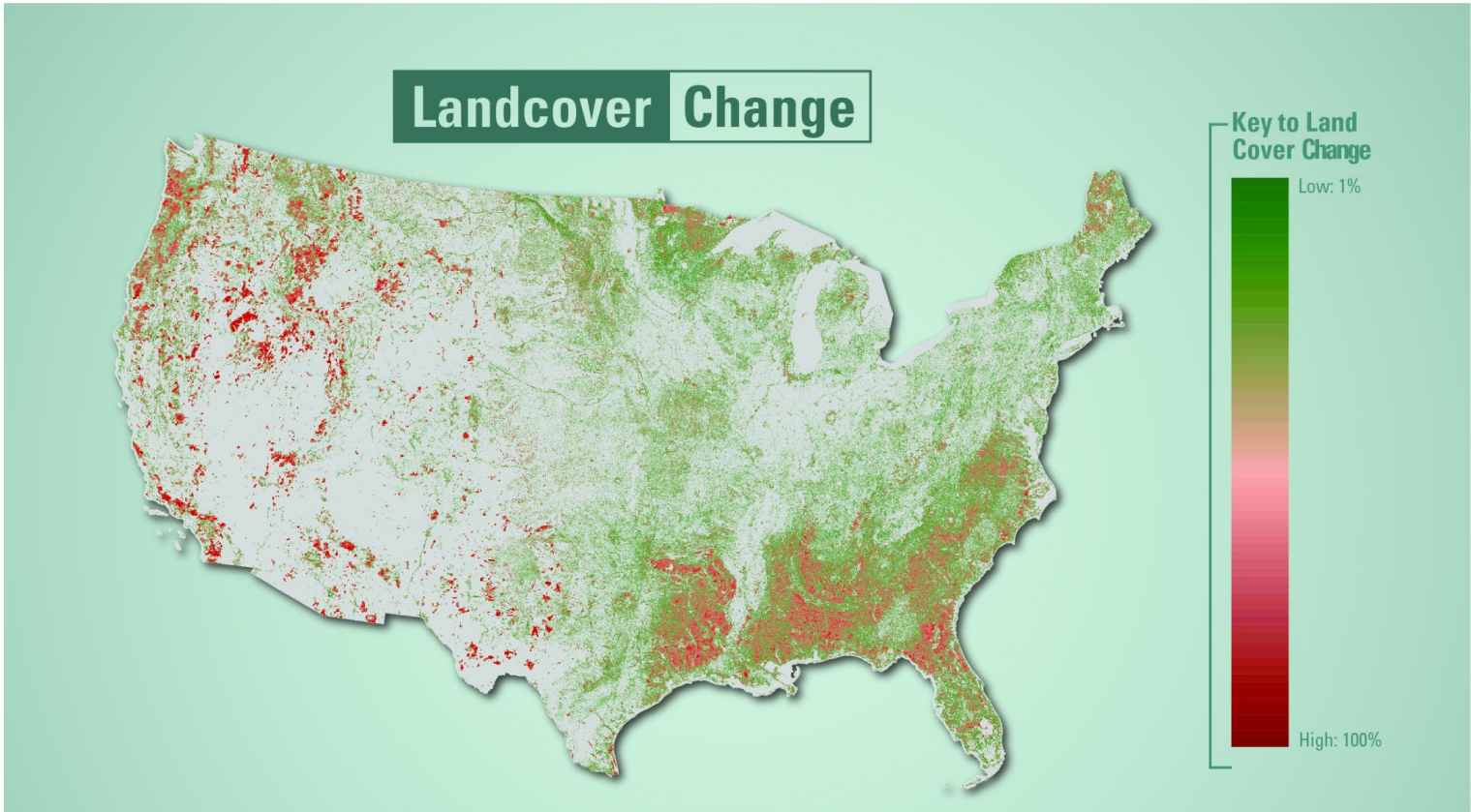
Losses due to Wildfire

Fire-resilience forest management of ~1.2 million acres of dry forests near human settlements in the West could reduce wildfire risk, abating up to 16 million metric tonnes of CO2-equivalent between 2025-2050 while helping protect homes, communities, and habitats.



Removing through Forests

Best uses of land



Managing Our Forests

Support healthy, enduring forest ecosystems that provide resources and resiliency for humans, wildlife, and the planet.

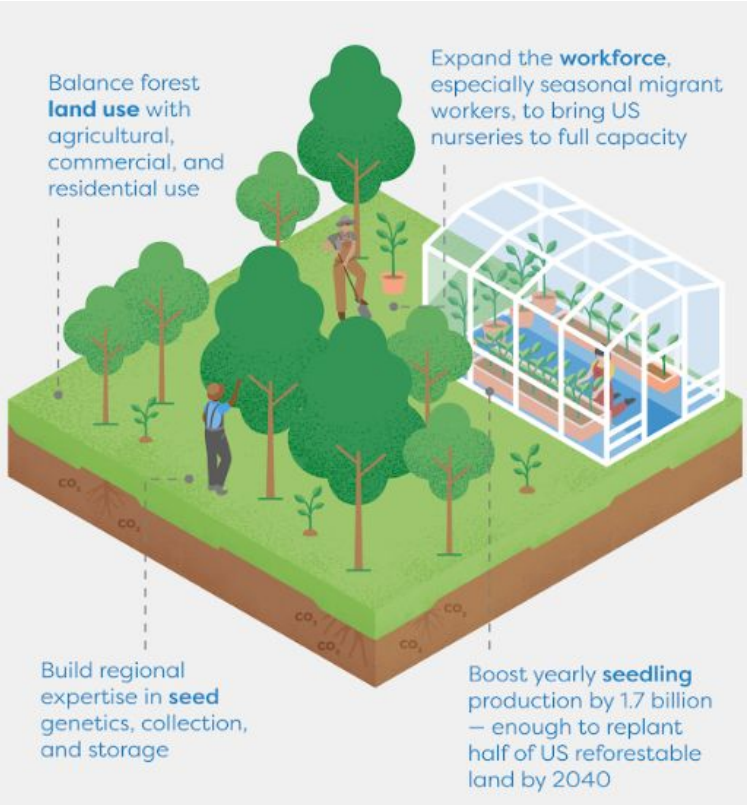
OUR WORK

BIPOC STEERING COMMITTEE on AGROFORESTRY

Direct outreach to BIPOC, historically disadvantaged farmers to identify unique barriers to adoption

FARM BILL MARKER BILLS

Supporting funding for regional nurseries and seed banks



Additional Resources

Environmental Justice and Land-based CDR

- Healing Grounds
- Regenerative agriculture needs a reckoning
- Rebuilding The Homestead: How Black landowners in eastern North Carolina are recovering generational wealth lost to industry encroachment.
- Gather: The Fight to Revitalize our Native Foodways
- Pacific Northwest Tribal Agroforestry

Policy and Land-based CDR

- Soil Carbon Moonshot (Carbon180)
- Catalyzing Agroforestry in the Farm Bill
- Gaining Ground: A Report on the 2018 Farm Bill Successes for Indian Country and Opportunities for 2023
- Indigenous Stewardship Methods and NRCS Conservation Practices Guidebook
- USDA Conservation Programs: Nationally Valued and Oversubscribed

Land-based CDR Practices in Action

- CAFF Report: Understanding the Science Behind Climate Smart Agriculture in California
- Carbon Cowboys
- Economics of Soil Health Systems on 30 US Farms
- Here and Now: How Spreading Rock Dust on Farms Could be a Climate Solution (Enhanced Weathering and Coastal Blue Carbon)
- Old Forests Store More Carbon than Young Ones
- Hot? Hungry? Step Inside these Food Forests

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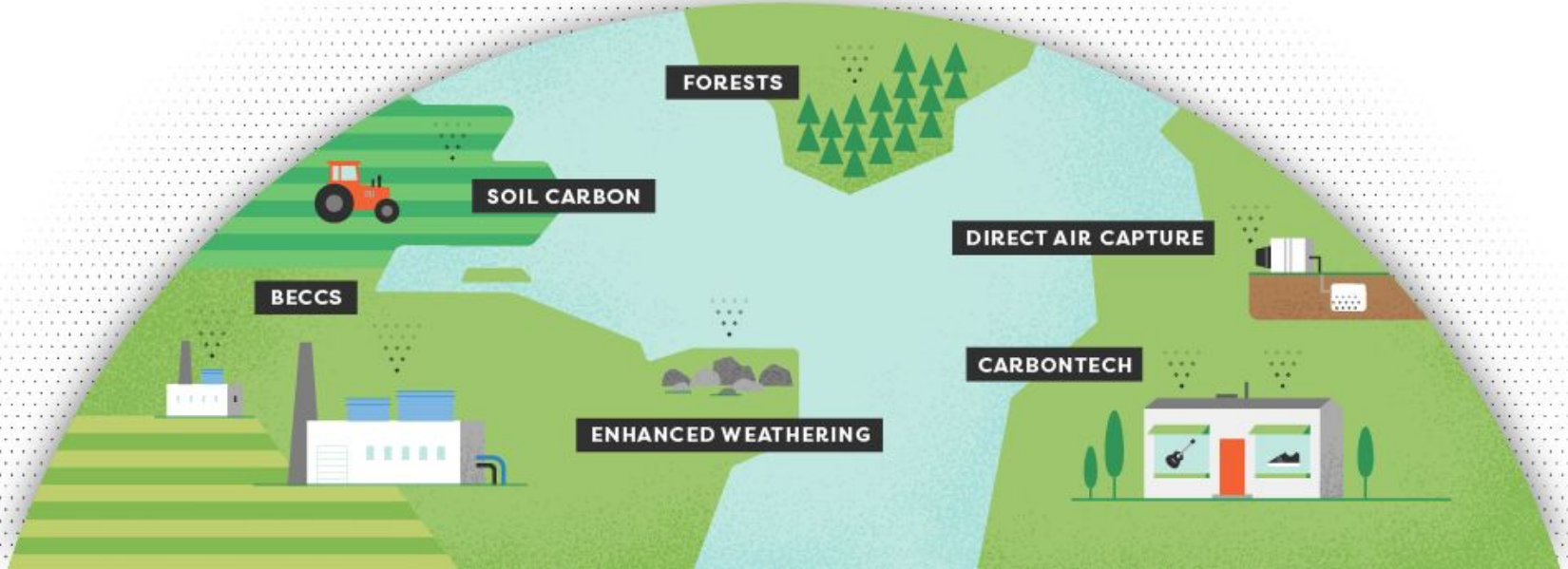
FORESTS
SOIL CARBON
DIRECT AIR CAPTURE
BECCS
CARBONTECH
ENHANCED WEATHERING