Climate Solutions: Harnessing the Power of Local Agriculture

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Puja Batra, Ph.D.
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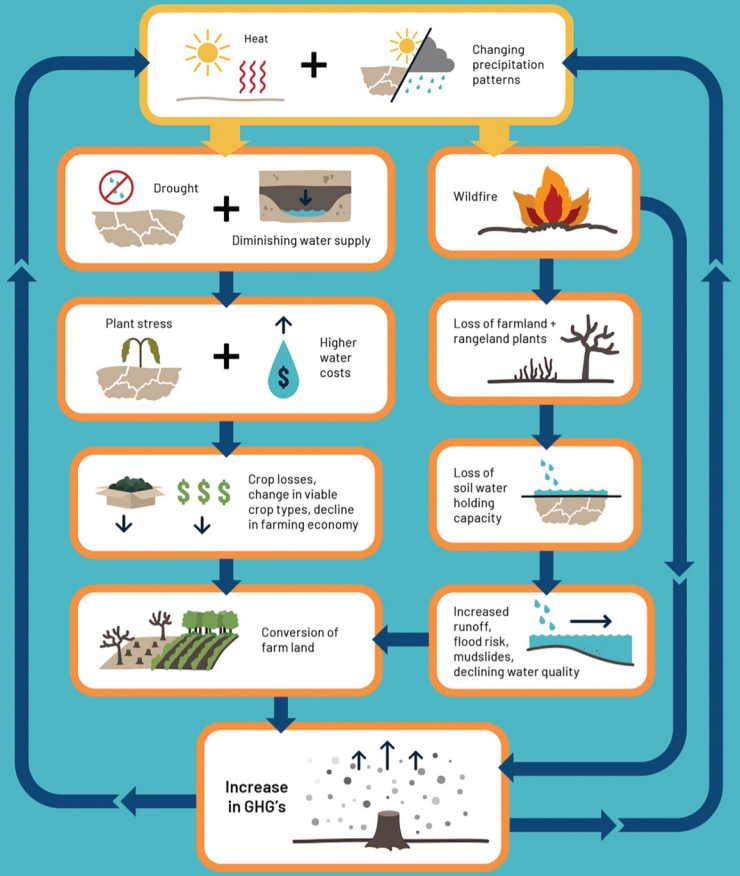
CLIMATE CHANGE CHALLENGES FOR AGRICULTURE

can lead to even greater GHG emissions.



The Bad News

In 2018 the IPCC reported that we must not exceed 1.5℃ increase in order to avoid catastrophic climate change.

We are projected to reach this level by 2030.

Thus, we must begin to bend the curve in emissions before 2030.

The Good News

One of our most important solutions lies beneath our feet.

= .4%

(figure: Minasny, et al. 2017. *Geoderma* 292: 59-86)

Global & U.S. Momentum

- The “4 per 1000” Global Initiative was launched in 2015 at the Paris Climate Summit

- California - CDFA Healthy Soils Initiative and policy synergies
- Other US states: NY, HI, MD, VT, OK, MA

A SOLUTION:

The Multiple Benefits of **Carbon Farming**

ON ONE HAND...
excessive carbon pollution in the atmosphere is causing climate change.

ON THE OTHER HAND...
carbon is the substance that all living things are made of.

CARBON FARMING

(or climate-smart agriculture)

is a set of farming and ranching practices that build soil carbon, turning carbon pollution in the atmosphere into the forms of carbon that build and nourish living things.

THERE ARE OVER 30 CARBON FARMING PRACTICES.

Examples include:

- Permanent crops such as orchard trees, bushes, and vines
- Compost application to croplands and rangelands
- Riparian restoration with perennials
- Windbreaks and hedgerows
- Mulching
- Cover cropping
- No-till or low-till row crops
- Silvo-pasture, or grazing lands that include trees

TACKLING CLIMATE CHANGE HAS 2 PARTS:

MITIGATION:

Slowing down climate change by reducing its causes

RESILIENCE:

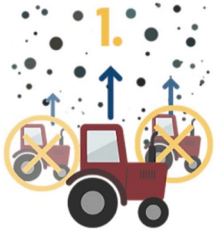
Maintaining key processes and bouncing back in the face of climate challenges

CLIMATE-SMART AGRICULTURE CAN HELP US DO BOTH.

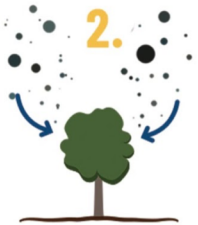
Mitigation Benefits of Carbon Farming

Carbon farming practices reduce levels of GHG's in the atmosphere.

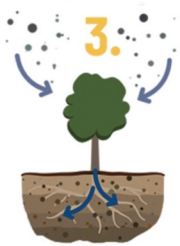
They do this in 3 ways:



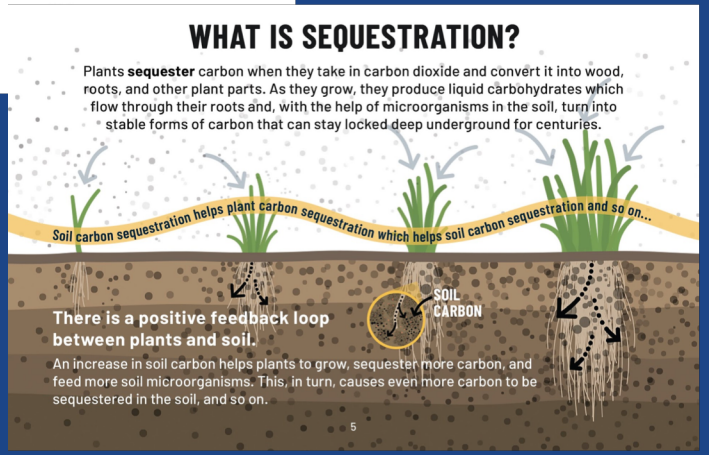
They reduce activities that cause GHG emissions, such as tilling, or using synthetic fertilizer.



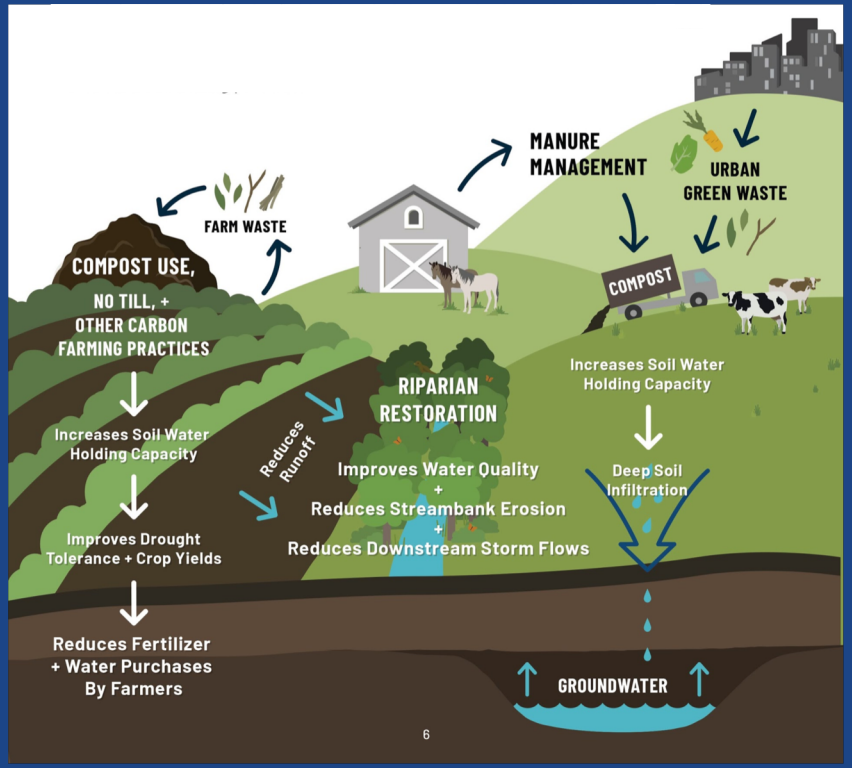
They help plants grow, which locks in, or **sequesters** carbon for the lifetime of the plant.



They **sequester** carbon in the soil in forms such as



Resilience Benefits of Carbon Farming



Snapshot of San Diego Agriculture

The average age of a San Diego County farmer is 62 years old. Younger farmers are largely **FIRST-TIME FARMERS,** learning the skills of a new profession.

San Diego Carbon Farming Opportunity Analysis:

Linking Climate-Friendly Farming Practices to San Diego County's Climate Action Plan: An Opportunity Analysis of Carbon Farming in the Unincorporated County

- Highlight a potential "ecosystem services" relationship between San Diego County and San Diego agriculture
- Highlight the strengths and challenges of San Diego's agricultural economy
- Identify synergies that could help fund incentives to implement CAP activities

Initial Questions

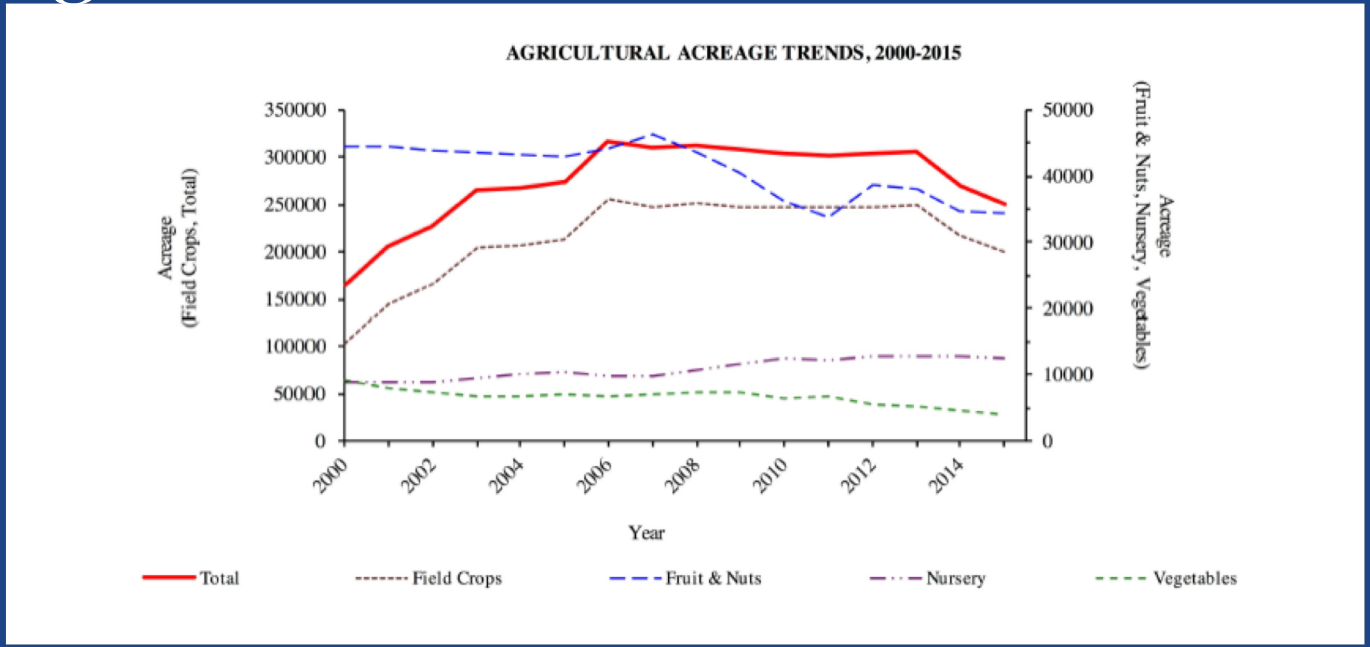
- How much net GHG reduction can be achieved through carbon farming in San Diego County?

- What state and local policy synergies exist that are compatible with the goals of carbon farming?

- What funding mechanisms exist for conversions to carbon farming? What financial incentives might be employed to maintain carbon farming as an economically viable activity?

“How much net GHG reduction can be achieved through carbon farming in San Diego County?”

Findings



Removal of 25% of orchard acreage has resulted in the loss of over 300,000 $MTCO_2e$ of stored carbon and foregone sequestration in the last decade.

Recommendation

Conserve the existing agricultural carbon storage and sequestration by addressing root drivers behind the decline in permanent crops.

Findings (cont'd)

- Compost application on slope-amenable crop and rangelands could result in over 225,000 $MTCO_2e$ annually
- Restoration of 25% of stream miles could result in over 7000 $MTCO_2e$ annually

“What state and local policy synergies exist that are compatible with the goals of carbon farming?”

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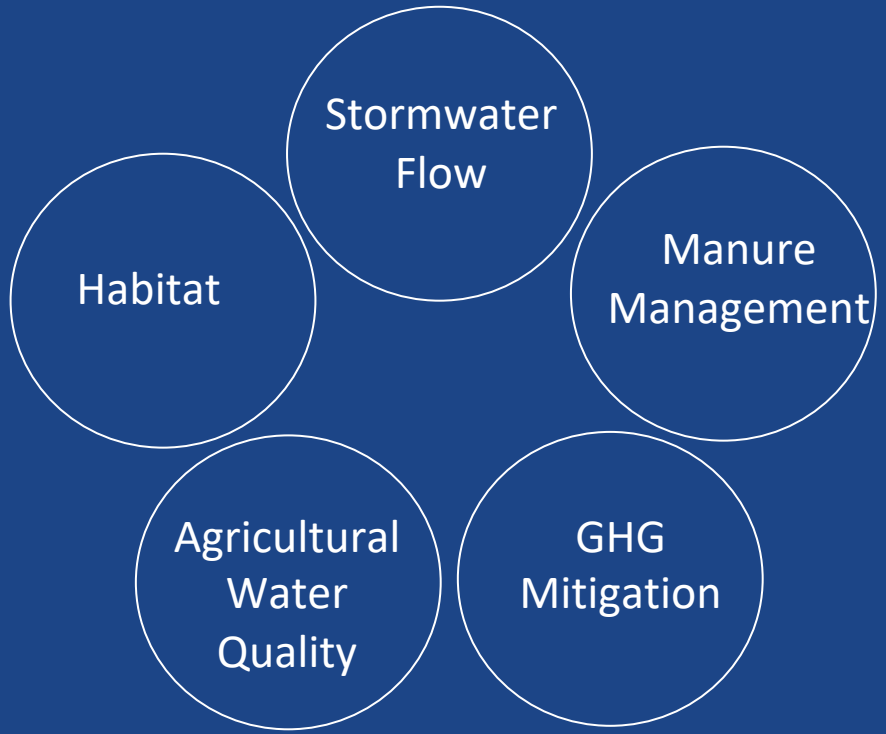
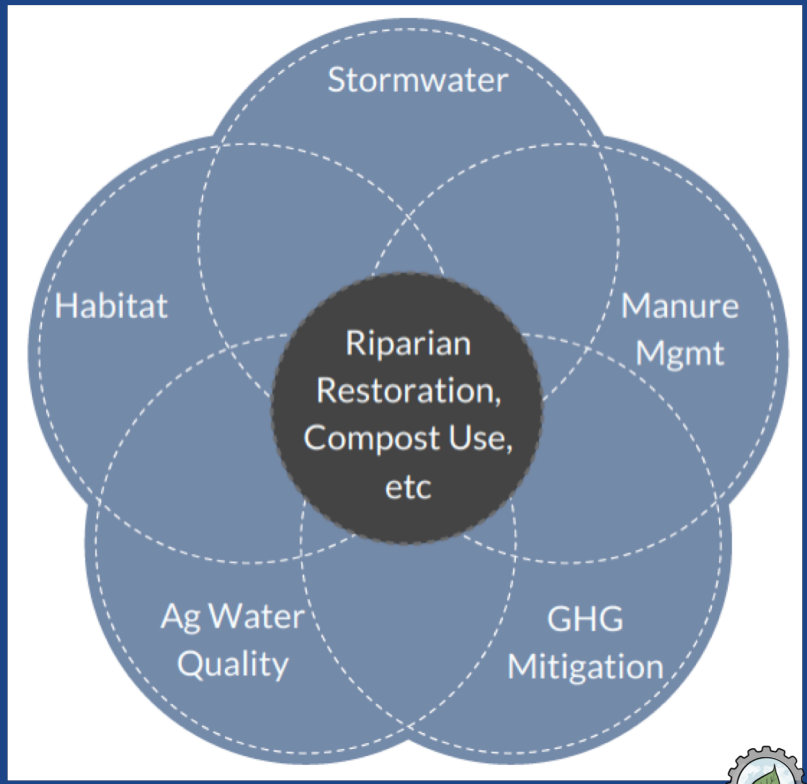
Multiple Resilience Challenges



BMP Synergies



Recommendation

Synergize among relevant agencies to facilitate and incentivize key carbon farming practices that have resilience co-benefits, such as composting and riparian restoration, and several others such as cover cropping, mulching, and planting of perennial vegetation.

The Future of Farming: Barriers to Entry

- Land access
- Credit & capital
- Business & marketing skills
- Water
- Training
- Cumbersome processes for government assistance programs

Recommendation

Seize the opportunity for climate mitigation that lies with new generation of farmers and ranchers by helping them to succeed in carbon farming.

Implementation of Strategies

Considerations

- Water demand increasing, becoming cost prohibitive
- Keeping farmers in business can stabilize demand for water
- Mitigation vs Resilience trade-offs: Resilience for who? How can we align interests?
    - Climate resilience strategies - perennials
    - Economic resilience strategies - annuals, ornamentals

THE STRATEGIES:

1

Slow down the loss of our climate-friendly orchards by addressing root causes.

For example, greater water demand combined with increasing water prices pose a major hurdle to the profitability of farming in San Diego County. Solutions such as voluntary interruptable supply, and recycled water provided to agriculture at lower rates than potable water can be win-win solutions that can:

Improve the economic viability of farming, and help keep our carbon sequestering food plants in the ground

Reduce demand on our limited potable water supply

Repurpose water that is otherwise treated as a waste product and flushed out to the ocean

2

Create incentives that recognize the climate services provided by farmers who practice carbon farming.

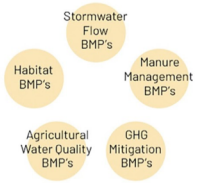
There are some state and federal programs that help with the costs of implementing carbon farming, such as NRCS EQIP cost share program, California Air Resources Board's FARMER program, and CDFA Healthy Soils Program. The County can develop further incentives by providing the educational outreach and assistance needed to learn, implement, and profit from new practices. Some examples include:

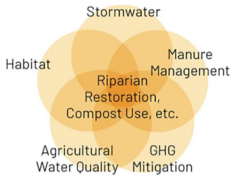
A mitigation fund or a local carbon offsets mechanism to finance carbon farming

Facilitation of small businesses for production and distribution of high quality compost

A revolving loan fund to assist with implementation of carbon farming

Alignment of regulations so that they reward carbon farming. For example, ensuring that riparian species habitat creation will result in positive outcomes for a farmer, as opposed to added regulation, could encourage implementation of this climate-smart practice, which is also a best management practice (BMP) for several other programs.





Considerations

- Compost value chain - current regulatory hurdles
- Offsets - transaction costs, social justice objections, real reductions
- Mitigation fund - perverse incentives?
- Metrics for payments for ecological services

Considerations

- Property values
  - Leasing vs owning
  - Resilience strategies may differ
- Local technical expertise
- Certification vs mainstream

Vision

San Diego County's agricultural community is a key partner in developing a resilient, climate-friendly region