

Indigenous Practices Contribute to Carbon Management and Climate Adaptation

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Why include Tribal Lands as separate Chapter in SOCCR2

- Indigenous peoples have been integral to the North American carbon cycle for thousands of years – farming, grazing, managing with fire, ecosystem stewardship...
- Traditional farming, ranching and natural resource stewardship differ significantly from agricultural monoculture practices introduced to North America by European settlers
- Indigenous land stewardship practices inherently manage carbon stocks/fluxes and can enhance climate adaptation
- 20th and 21st century fossil fuel and uranium extraction on tribal lands contributes to land degradation and carbon emissions

Traditional practices and land-use on tribal lands contributes to carbon management

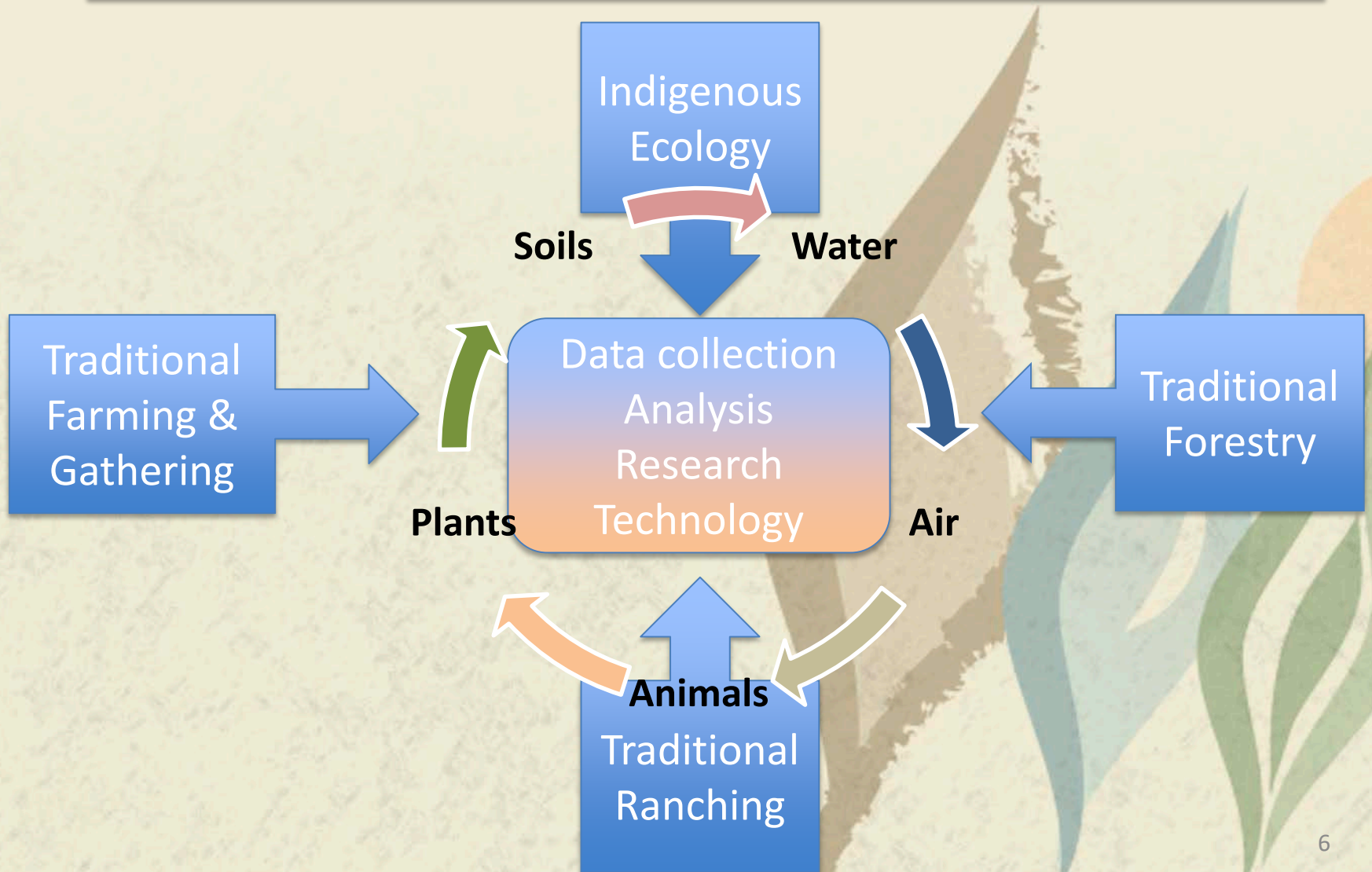
- **Key Finding 1:** Many Indigenous peoples in North America follow traditional agricultural and land-use practices that influence carbon cycling on tribal lands.
- **Key Finding 2:** Scientific data and peer-reviewed publications pertaining to carbon stocks and fluxes on Indigenous lands in North America are virtually nonexistent, which makes establishing accurate baselines for carbon cycle processes problematic.
- **Key Finding 3:** Fossil fuel extraction and uranium mining on native lands have resulted in emissions of carbon dioxide and methane from extraction, fuel burning and ecosystem degradation.

Indigenous Land Stewardship Meets European Settlement

*“For millennia, from Mexico to Montana, women have mounded up the earth and laid these **three seeds (corn, beans, and squash)** in the ground, all in the same square foot of soil. When the colonists on the Massachusetts shore first saw Indigenous gardens, they inferred that the savages did not know how to farm. To their minds, a garden meant straight rows of single species, not a three-dimensional sprawl of abundance. And yet they ate their fill and asked for more...”*

(Kimmerer 2003, “Braiding Sweetgrass”)

Carbon Management on Tribal Lands: Native Wisdom Meets Western Science



Traditional practices that contribute to managing carbon stocks and fluxes

- No-till farming (dryland and irrigated) – by necessity
- Moving domesticated livestock seasonally in accordance with forage availability
- Growing legumes and cover crops in concert with other food crops
- Raising crops and livestock native to ancestral landscapes
- Managing forests sustainably with fire, regular harvest, habitat and understory protection

**Traditional Practice
Case Studies:
Farming, Ranching,
Forestry**



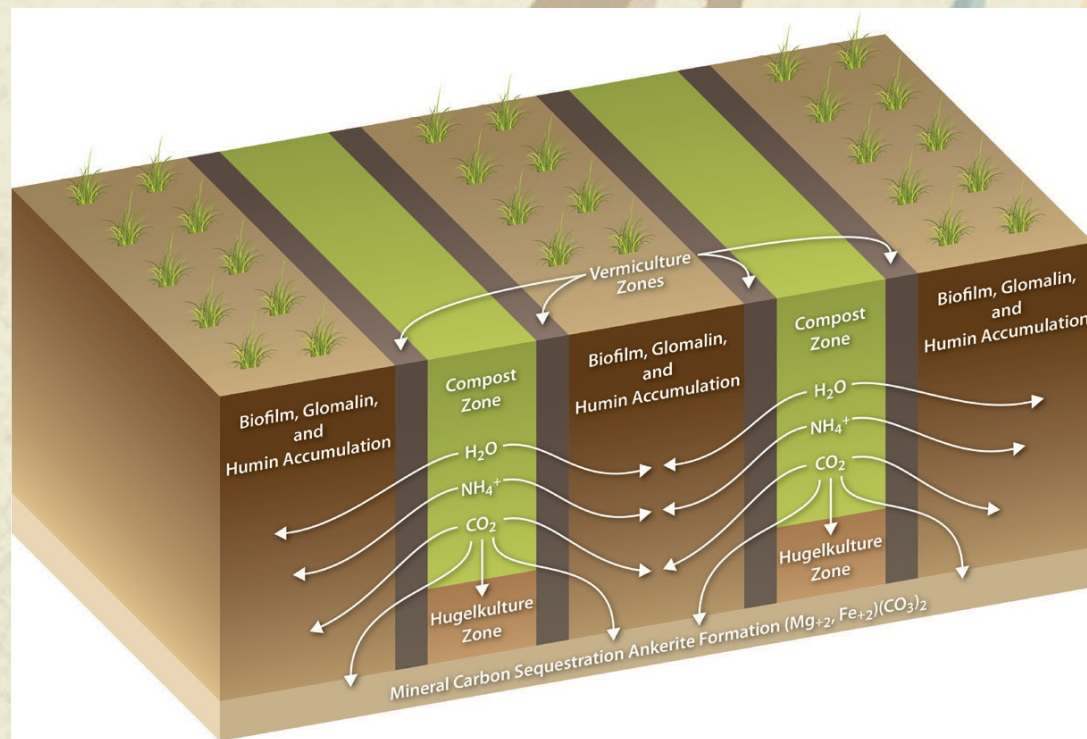
Pueblo Farming Project: Learning from generations of Hopi and Zuni dryland farmers

Archeological and contemporary measurements of drought-resistant corn strains and traditional farming practices demonstrate crop resilience and improved soil health for dryland farming on arid lands



Reproducing the Buffalo Dance to enhance soil health and crop production

Trench composting approach to growing food crops improves soil health and enhances carbon sequestration



Traditional Ranching: Reintroduction of Navajo-Churro Sheep



- Navajo-Churro sheep renowned for hardiness and adaptability to climate extremes.
- Low maintenance, disease resistant
- Grazing habits suited to desert environs
- Herds destroyed in 1860s and 1930s
- Reintroduced in 1980s

Traditional Forest Management: Sustaining perpetually productive ecosystems

“We will prescribe and implement sound silvicultural treatments to promote forest health and return forest lands to near pre-settlement, fire maintained forest structures. Our decisions will be based on Tribal social and economic needs, as well as sound scientific and ecological principles.” (CSKT Forestry Plan)



Now for the bad news...



Fossil fuel and uranium extraction extensive on tribal lands - contributing to carbon and methane emissions and ecosystem degradation

Fossil fuel and uranium energy resources beneath tribal lands in the United States and Canada are substantial, in U.S., 30% of coal reserves west of the Mississippi River, 50% of potential uranium reserves, and 20% of known oil and gas reserves, together worth nearly \$1.5 trillion.



Navajo Generating Station:
85% revenues for Hopi and 65% for Navajo
Shutting down Dec 2019 – Transition TBD

Key Takeaway Messages from SOCCR2 Tribal Lands Chapter

- Indigenous land stewardship inherently impacts carbon cycling in North America - different from Euro-centric monoculture agriculture
- Many traditional farming, ranching, forestry practices enhance soil/plant health, food production, and carbon uptake
- Data measurements of carbon cycling on tribal lands is scarce to non-existent - impacts inferred from comparing/contrasting to similar practices on non-tribal land types
- Native wisdom and western science needed to quantify carbon management benefits of traditional practices
- Fossil fuel and uranium extraction on tribal lands contributes to carbon emissions and ecosystem degradation, while also boosting tribal economies

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Questions

