

Terrestrial Sequestration

What is terrestrial carbon sequestration?

Terrestrial carbon sequestration is the process through which carbon dioxide (CO₂) from the atmosphere is absorbed by trees, plants and crops through photosynthesis and stored as carbon in biomass (tree trunks, branches, foliage and roots) and soils. Terrestrial ecosystems, such as forests, croplands, and grazing lands, are referred to as “carbon storage sinks” because of their ability to sequester carbon dioxide.



How does it work?

In Montana, there is the potential to store nearly 3 million metric tons annually of CO₂ through terrestrial activities. Cropland, rangeland, and forestry approaches provide the best opportunities for terrestrial carbon sequestration:

- *Tilling Practices:* By reducing tillage, or practicing no till farming, farmers avoid releasing organic carbon stored in the topsoil into the atmosphere.
- *Diversified crop rotation:* Changing from a monoculture crop production to a diversified crop rotation can increase the organic carbon content in soil.
- *Forestry:* Planting trees on marginal crop and pasture land (afforestation), low impact tree



harvesting, improved forest fire management practices, and preserving existing forest lands are all strategies to increase carbon storage in forested ecosystems.

Why is terrestrial carbon sequestration important?

Terrestrial carbon sequestration is a cost-effective and near-term approach in reducing atmospheric CO₂ levels. It also provides many other benefits to the landowners, including additional revenue, cost savings on fuel and labor, reduction of topsoil losses, and enhanced soil moisture content. Additionally, terrestrial sequestration practices can prevent the spread of weeds, disease and insect outbreaks.



Who could benefit?

All Montana landowners could benefit from carbon sequestration. The U.S. is in the early stages of developing legislation to create a carbon market and economic incentives for landowners involved in terrestrial sequestration activities. Storing carbon in terrestrial environments effectively “offsets” or negates carbon emissions released elsewhere into the atmosphere. In a carbon market, companies that exceed the limit of allowable carbon emissions or cap can purchase carbon credits from those who pollute less. In effect, the buyer is paying a charge for emitting CO₂ while the seller is being rewarded for having reduced carbon emissions.

What's next?

If the U.S. passes legislation to establish a cap and trade system for carbon emissions, there will be more incentive to deploy terrestrial sequestration strategies. Legislation also will help determine the price for carbon and the rules for verification, monitoring and oversight of carbon credits.