Terrestrial Sequestration

Terrestrial (or biologic) sequestration means using plants to capture CO₂ from the atmosphere and then storing it as carbon in the stems and roots of the plants as well as in the soil. In photosynthesis, plants take in CO₂ and give off the oxygen to the atmosphere as a waste gas. The plants retain and use the carbon to live and grow. When the plant winters or dies, part of the carbon from the plant is preserved (stored) in the soil. Terrestrial sequestration is a set of land management practices that maximizes the amount of carbon that remains stored in the soil and plant material for the long term. No-till farming, wetland management, rangeland management, and reforestation are examples of terrestrial sequestration practices that are already in use.

Benefits of terrestrial storage may include improved soil and water quality, reduced erosion, reduced evaporative water loss, reduced pest problems, and overall ecosystem improvement.

Steady State
Soil can only take in and store a limited amount of carbon. On average, after a 50- to 100-year time frame, the soils will have reached equilibrium and not accept any more carbon. Once this “steady state” has been reached, the carbon will remain stored in the soil as long as the land is undisturbed and conservation land management practices are continued.

Mechanisms for Terrestrial Storage
Promising land and water management practices that can enhance the terrestrial storage of carbon include the following:

- Conservation tillage
- Reducing soil erosion and minimizing soil disturbance
- Using buffer strips along waterways
- Enrolling land in conservation programs
- Restoring and better managing wetlands and degraded soils
- Eliminating summer fallow
- Using perennial grasses and winter cover crops
- Fostering an increase in forests

Links:
- Sequestration Potential in Our Region
- Field Projects

Carbon – Not CO₂
It is important to remember that terrestrial storage does not store CO₂ as a gas but stores the carbon portion of the CO₂. If the soil is disturbed and the soil carbon comes in contact with oxygen in the air, the exposed soil carbon can combine with O₂ to form CO₂ gas and reenter the atmosphere, reducing the amount of carbon in storage.
References:


Last updated 6/9/2016