



Draft for Member Review and Comment

Hoosier Chapter of the Soil and Water Conservation Society

CARBON SEQUESTRATION

Position Statement

ISSUE

Carbon dioxide from the atmosphere can be “sequestered” or stored in soil as Soil Organic Matter to improve soil quality, agricultural productivity and the overall quality of life. There is a growing concern about “global climate change” and its potential impact on the environment and agricultural production. Agricultural practices can be an important method for storing carbon in the soil.

BACKGROUND

Increasing the level of organic carbon in the soil has long been known to improve soil quality and agricultural productivity. Soils with high levels of organic matter exhibit improved nutrient absorption, water retention, texture and resistance to erosion. Nutrient absorption and water holding capacity are directly related to the soil organic matter content. Therefore, increasing soil organic carbon improves water quality.

Plants extract carbon dioxide from the atmosphere during photosynthesis. Oxygen is released back into the atmosphere and the carbon is captured or sequestered in plant tissue, primarily in the roots.

Six gases are called greenhouse gases and are the components of the atmosphere that trap the heat leaving the Earth and radiate it back, keeping the average Earth temperature livable.

Carbon dioxide is the largest by volume of the six greenhouse gases. The other five gases are methane, nitrous oxide, chlorofluorocarbons, fluorinated hydrocarbons and ozone. It is thought that increasing amounts of these gases in the atmosphere causes additional heat to be radiated back to the Earth and gradually cause increases in temperatures at the Earth’s surface. This is referred to as “global warming”. Atmospheric carbon dioxide levels have risen 30% since the industrial revolution, primarily from the burning of fossil fuels.

The greenhouse gas issue and the soil organic carbon issue are separate but interrelated. Greenhouse gases are related to Earth’s livable temperature and the emerging global warming concern while carbon sequestration deals with increasing soil organic carbon or organic matter. The latter is related to reduced atmospheric levels of carbon dioxide. All growing things tie up carbon and help reduce atmospheric carbon dioxide.

When a field is plowed, air and crop residues are mixed into the soil. When this happens, soil organisms begin to break the substances down. The residue is a food source for the organism and oxygen is needed to help them function. Since crop residue is nearly 40 percent carbon, one of its breakdown products is carbon dioxide, which is free to escape into the atmosphere.

As a plant grows and matures, more carbon dioxide is captured in the stalks, leaves and grain. By not tilling (“no till”), as much of the carbon as possible is left after harvest in the remaining plant residue. Some decomposes, but much is concentrated into soil organic matter. Compared to plowing, no till reduces the amount of carbon dioxide that escapes into the atmosphere from the soil by nearly 10 times.

Farmers recognize the value of soil organic matter. In a recent Illinois study, percent organic matter was shown to have had a significant impact on land sale prices.

Percent OM	Sale Price Per Acre
1	\$2200
2	2500
3	2800
4	3100

Although agriculture is a relatively small contributor (3%) to carbon in the atmosphere, it has great potential to sequester carbon in the soil through the use of conservation practices. Carbon sequestration is the long-term storage of carbon in the soil and in living and dead vegetation, and can serve as a way to offset carbon dioxide emissions. Simply stated, if steps are taken to keep carbon from transforming into carbon dioxide, the amount of carbon dioxide released to the atmosphere can be reduced.

Therein lies the possibility of agriculture providing a service to society by storing carbon that offsets the carbon dioxide emitted by other sectors – a service that farmers, ranchers and woodlot owners could be paid for if a carbon credit market might be established. The participation of the Indiana Conservation Partnership in a soil carbon analysis will provide a tool for farmers to evaluate the existing carbon levels and the potential gains that can be made by adopting various conservation practices.

POSITION

The Hoosier Chapter of the Soil and Water Conservation Society believes that there can be substantial ecological and agricultural benefits to the sequestration of carbon and subsequent reduction of carbon releases in to the atmosphere. Therefore, in order to assist in the pursuit of that concept, the Chapter:

- Encourages farmers
 - to adopt no-till on all soil types in Indiana
 - to plant cover crops and utilize crop rotation
 - to plant trees
 - to plant conservation buffers
 - to plant permanent vegetation for hay and pasture
- Encourage developers
 - to preserve wetlands
 - to preserve trees and green space
- Encourages municipal governments
 - to plant trees and buffers
 - to practice urban forestry management
 - to carry out urban conservation practices that sequesters carbon
- Encourages the research community
 - to determine the best ways to use vegetation for energy production
 - to develop new conservation practices for carbon sequestration
 - to improve carbon sequestration potential of current conservation practices
- Encourages policy makers
 - to carry out an extensive education program to explain the benefits of increasing and maintaining soil carbon levels
 - to use massively rooted native plants for bio fuel production
 - to use the carbon storage project information in program ranking and selection of priority areas
 - to use carbon sequestration concepts as part of the green ticket approach in the 2002 Farm Bill

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Please send comments/changes to Bob Eddleman (Taskforce Chair) at 8729 Chapel Glen Drive, Indianapolis, Indiana 46234 or email to RLEddleman@aol.com not later than October 19, 2001. This position statement will be recommended for approval at the November 8th Chapter Business meeting.