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Active Carbon:

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Many soil properties impact soil quality, but organic matter deserves special attention. It affects several critical soil functions, can be manipulated by land management practices, and is important in most agricultural settings across the country. Because organic matter enhances water and nutrient holding capacity and improves soil structure, managing for soil carbon can enhance productivity and environmental quality, and can reduce the severity and costs of natural phenomena, such as drought, flood, and disease. In addition, increasing soil organic matter levels can reduce atmospheric CO_2 levels that contribute to climate change.

- Organic matter enhances water and nutrient holding capacity
- Improves soil structure
- Enhances productivity
- Environmental quality
- Reduce the severity and costs of natural atmospheric CO2, levels that contribute to climate change.

Questions that are asked!
How does organic matter work?
Which soil properties will change?

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How does organic matter work?

- Once a farmer or rancher begins working towards enhancing soil organic matter, a series of soil changes and environmental benefits follow.
- The rate or degree of these changes and the best farming / ranching practices being used are still dependent on soil, climate, and previous management history.

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Apply practices that enhance soil organic matter.

- Crop rotations on farming
- Grass species diversity on rangeland
- Reduced tillage
- Rotational grazing
- Prescribed grazing
- Manage traffic; livestock, equipment, vehicles.

Organic matter dynamics change

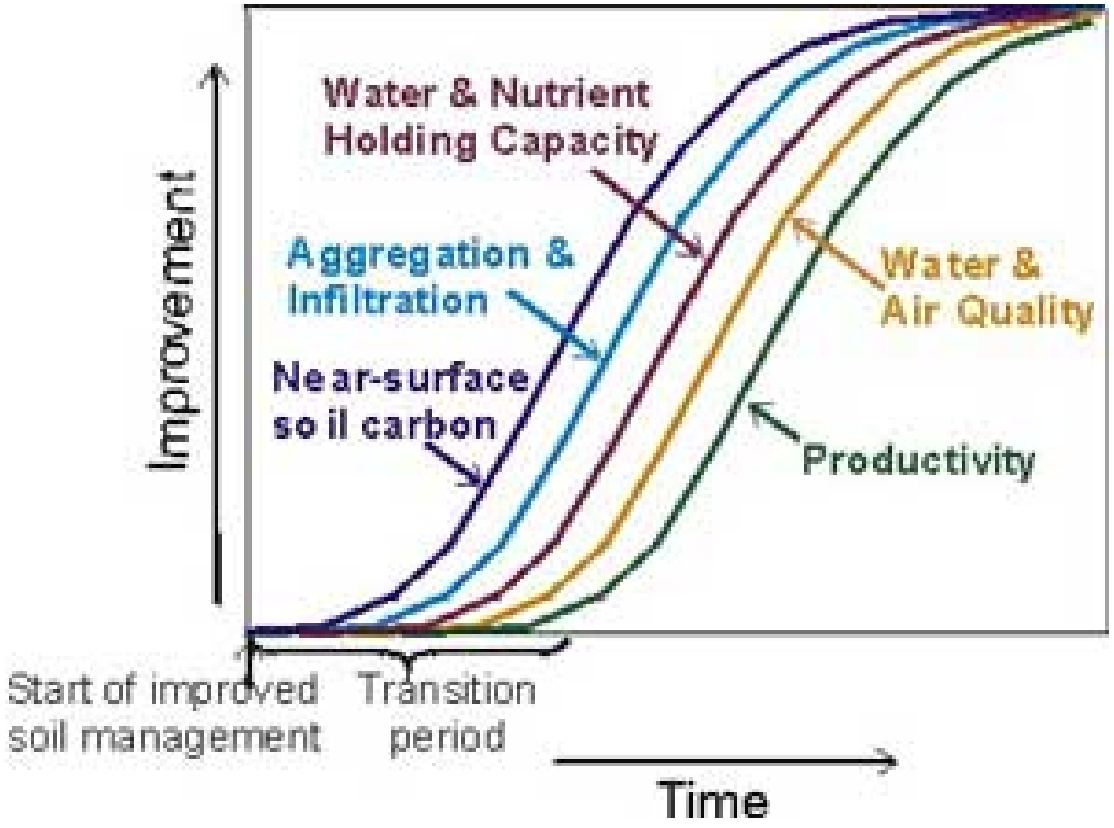
- Increase surface residue forms a physical barrier to wind and water erosion
- **Higher residue rotations and cover crops contribute more organic matter and nutrients to the soil.**
- Less soil disturbance means lower organic matter losses. Minimum till or no-till

Notice the difference in time

Notice the pore space, fine and very fine roots and the good structure. This soil has about 360 mg/kg of Active Organic Matter or a about 300? Pounds of active organic matter per acre.

What will happen when you start minimum or no tillage farming.

Initially, managing for greater soil organic matter may require higher pesticide, herbicide, or nutrient applications.



As the soil starts to build aggregate stability and soil quality increases as shown. The farmer will notice a degrease in costs related to the practices over the long term.

Managing for soil quality - Farming

- Add organic matter- Cover crops, manure, green manure, compost.
- Avoid excess tillage – it causes soil compaction
- Carefully manage fertilizer and pesticide use. Chemicals will harm microorganisms.
- Increase ground cover – reduces both wind and water erosion. Cover Crops
- Diversity across the landscape.

Cover Crops or Green Manure

Mulching or minimum tillage practices.

Eco or No Tillage seeder must be used.

Managing for soil quality - Rangeland

- Manage grazing, fire, and vehicle use.
- Increase/maintain plant species production.
- Improve plant cover and minimize bare spots.
- Promote species diversity and root diversity.
- Protect soil from water and wind erosion by plant cover.
- Use designated trails or roads; to reduce the number of trips.

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“The nation that destroys it’s soil, destroys itself.”

- Franklin D. Roosevelt

Soil on the left has good aggregate stability and moderate amounts of active organic carbon. Soil on the right has been tilled and no strong aggregates and very low active organic carbon.

Both soils are considered in the same texture class – Sandy Loam’s.
Contact the local USDA-NRCS office to collect samples for Active Carbon Testing.