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ATTENTION!

READ THE NOTES FOR EACH SLIDE!!!

The notes section will indicate if a slide can be adapted for local/regional conditions. If no indication is given for modifying a slide, DO NOT CHANGE.

Follow these instructions.

Download and save this file to your local computer before altering!!!!

Do not alter until a local save has been completed

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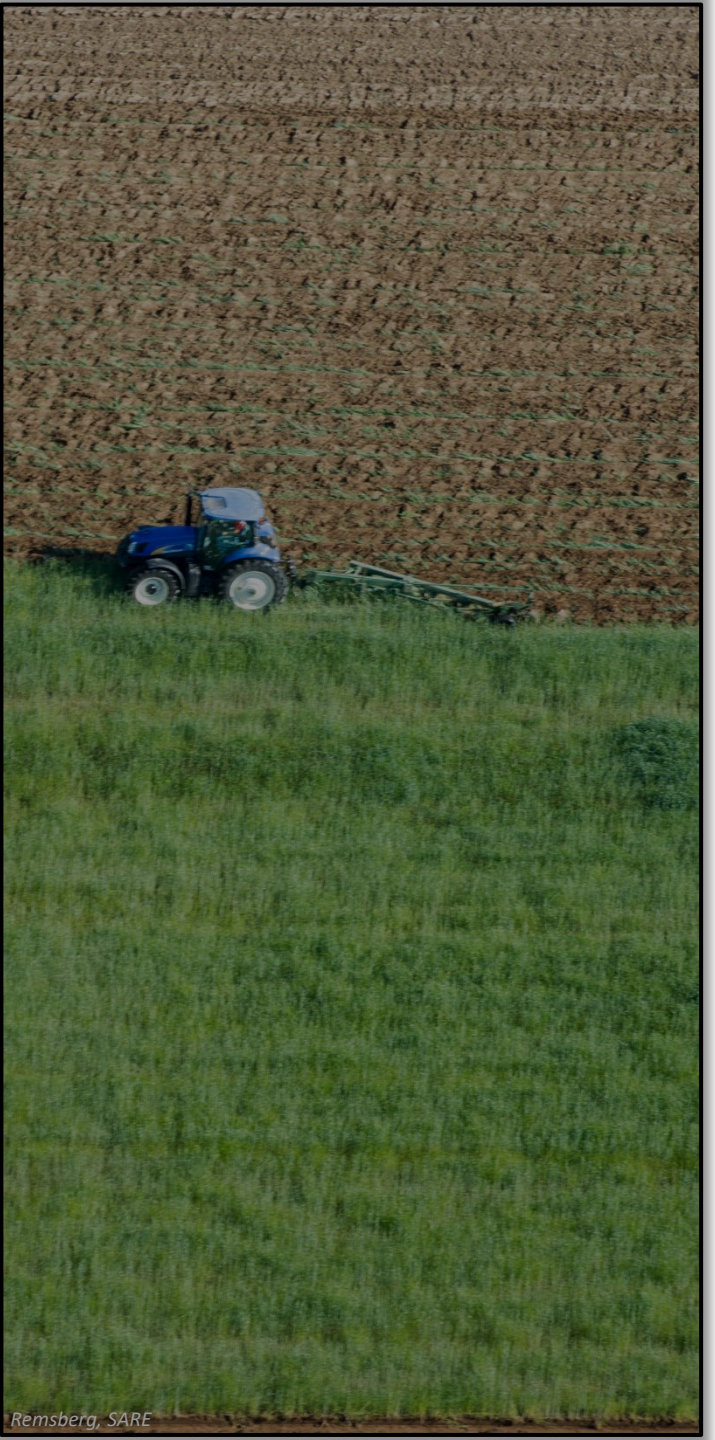
Soil Health Principles

Objectives

1. List and explain the soil health principles
2. Identify and explain how conservation practices address soil health principles
3. Identify *core* soil health practices in your region

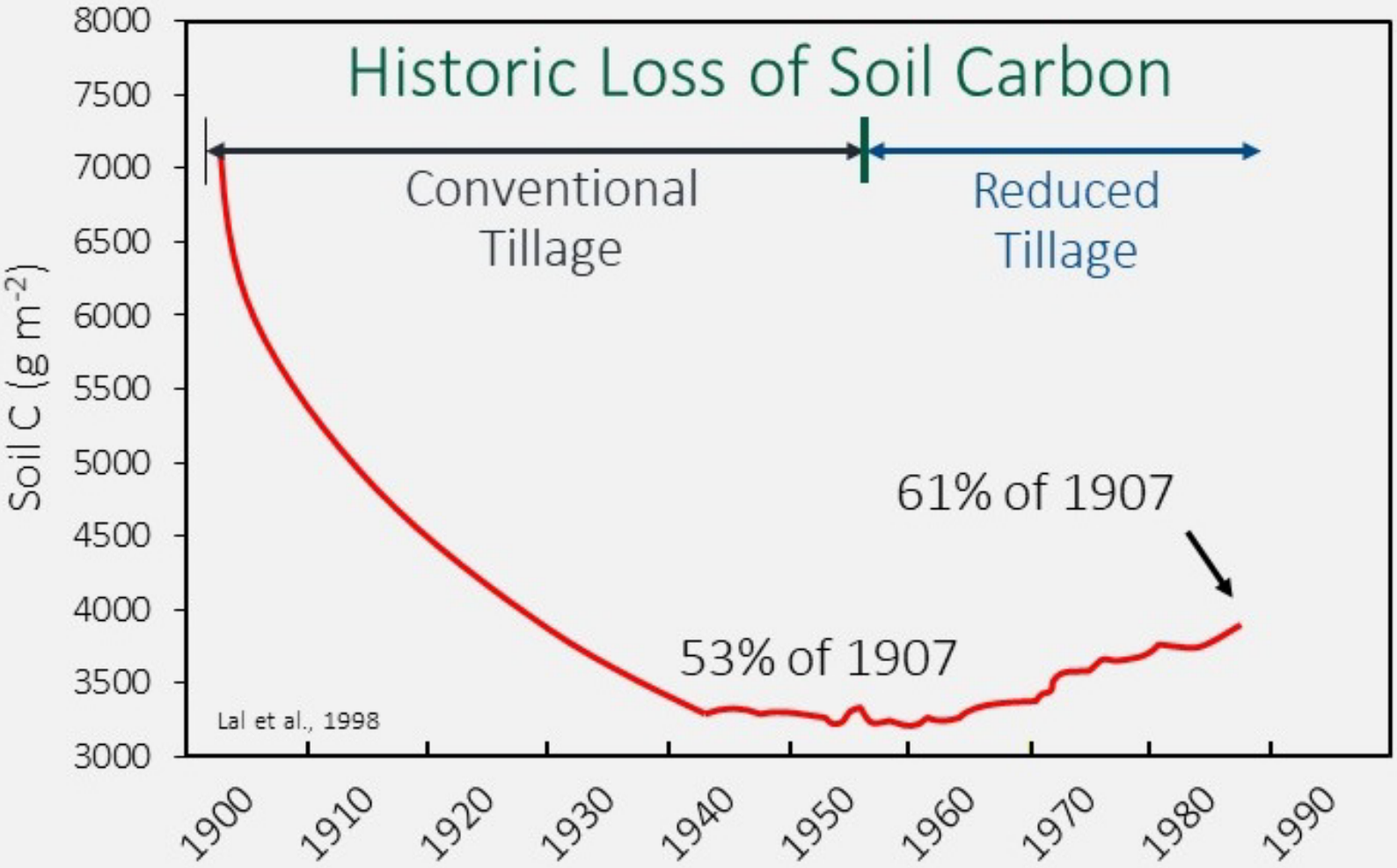


What are General Characteristics of Cultivated/Disturbed Soils?

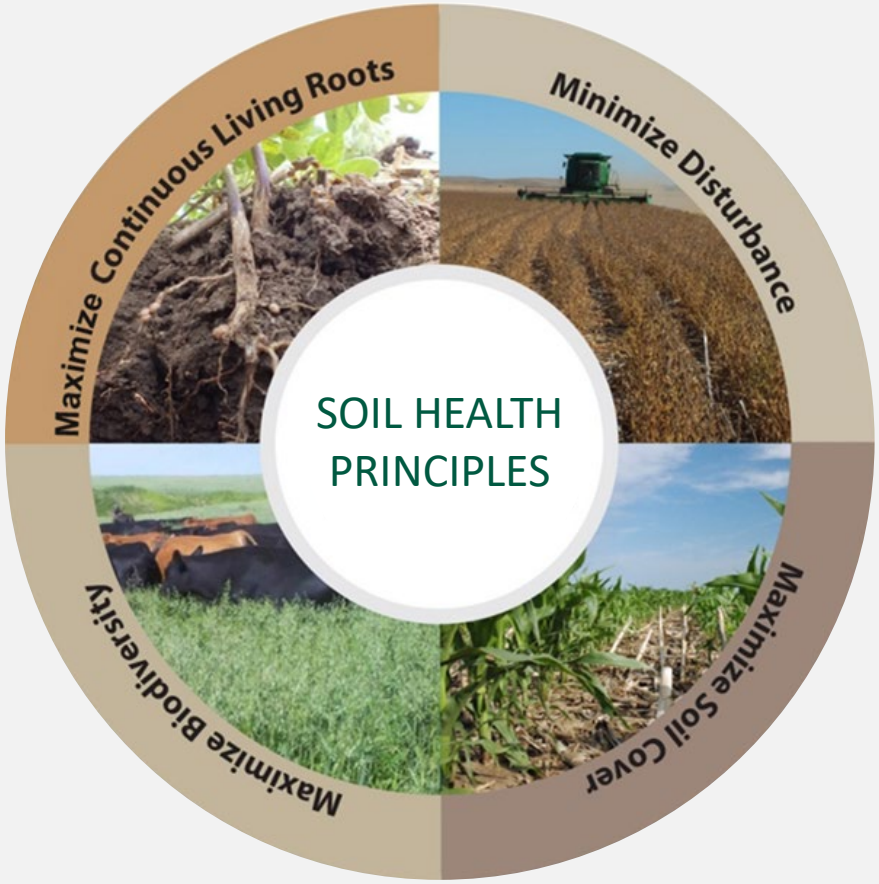
- ↓ H_2O Infiltration & Storage
- ↓ Biological Activity
- ↓ Biological Diversity
- ↓ Efficient Nutrient Cycling
- ↑ Summer Temps
- ↓ Contribution to Vigor
- ↑ Erosion Potential
- ↑ Evaporation
- ↓ Aggregation

The productivity of conventional agricultural systems are maintained with increased technology, labor, fuel, nutrients, pesticides, water…

The Challenge



The Principles that Conserve the Soil Ecosystem



- Minimize Disturbance
- Maximize Cover
- Maximize Biodiversity
- Maximize Continuous Living Roots

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List the most common practices that are used in your area.

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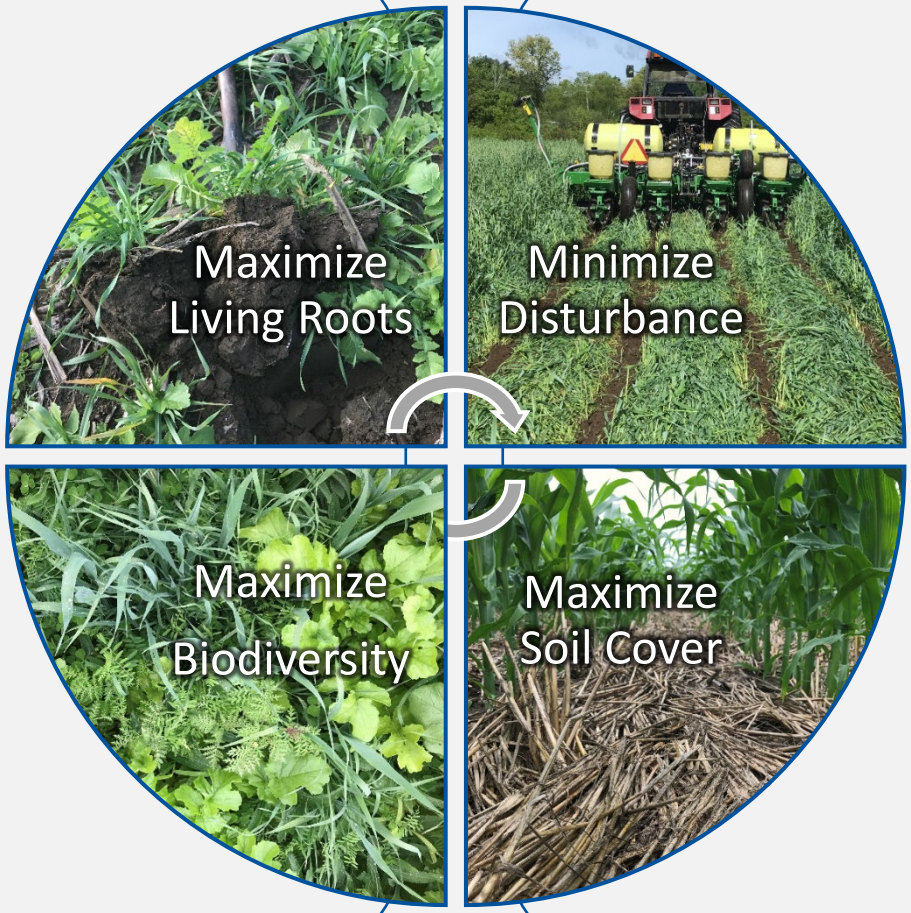
Soil Health Principles to Support High Functioning Soils

Feed

Fuel Soil Biology
Improve Resilience
Improve SOM



Protect

Soil Aggregates
Organism Habitat
SOM

How Soil Health Principles Support Soil function – PROTECT

- Maintain stable aggregates
- Manage erosion
- Buffer temperature
- Reduce evaporation
- Maintain soil organic matter

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Minimize Disturbance

Excessive (chronic) Disturbance can:

- ↓Habitat for soil organisms
- Destroy soil structure

What Types of Disturbance are Common in Agriculture?

- Physical (tillage)
- Chemical (fertilizer, pesticides, soil amendments)
- Biological (grazing, non grazing, fallow systems, monoculture community)

Dr. Don Reicosky

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Minimize Disturbance

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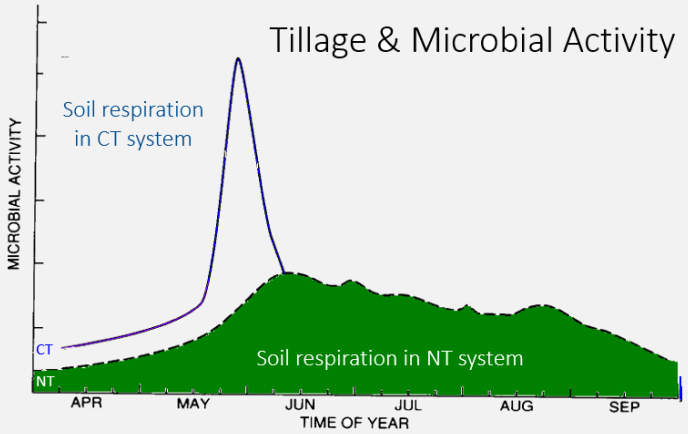
What Practices Minimize Disturbance?

Photo: Echo –Y Farms



- Residue & Tillage Mgmt. (329/345)
- Conservation Cover (327)
- Pasture Hayland Planting (512)
- Nutrient Mgmt. (590)
- IPM (595)
- Prescribed Grazing (528)
- Roads, Trails and Landings (561)
- Fence (382)

Why Maximize Soil Cover?

- ↓ Erosion
- ↑ Infiltration
- ↓ Evaporation
- Moderate Soil Temp
- Habitat for Soil Organisms ↑
- Food for Biota ↑
- Mitigate Compaction from Machines & Livestock

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What Practices Maximize Soil Cover?

- Cover Crop (340)
- Residue & Tillage Mgmt. (329/345)
- Conservation Cover (327)
- Mulching (484)
- Controlled Traffic (334)
- Pasture Hayland Planting (512)
- Wildlife Habitat Planting (420)
- Prescribed Grazing (528)

Cochrane, NRCS

How Soil Health Principles Support Soil Function – FEED

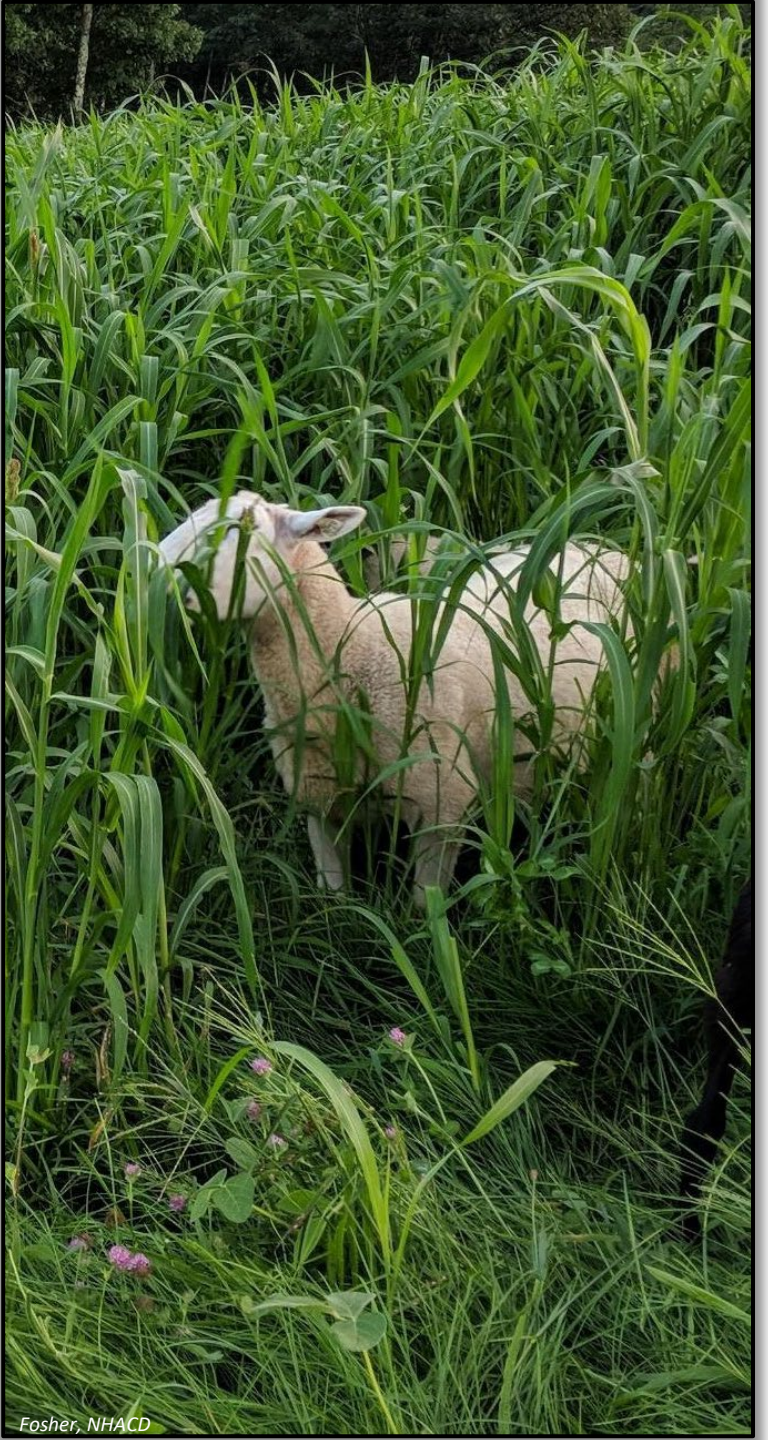
- Stimulate below-ground diversity
- Increase SOM
- Improve nutrient cycling
- Enhance plant growth
- Break pest cycles
- Increase predator & pollinator populations

How Do We Maximize Living Roots?

- Avoid fallow & ↓ re-cropping interval
- ↑ time in perennial crops
- Manage rotations & forage height
- Maximize plant spacing i.e. range, forest

What Practices?

- Conservation Crop Rotation (328)
- Conservation Cover (327)
- Cover Crop (340)
- Pasture Hayland Planting (512)
- Prescribed Grazing (528)
- Tree and Shrub Estb. (612)
- Wildlife Habitat Plantings (420)



How Do We Maximize Biodiversity?

- Grow diverse cover crops: grasses, forbs & legumes
- ↑ diversity of crop rotations
- Integrate livestock & graze cover crops
- ↑ time in diverse perennials
- Thinning to promote open space and plant diversity

What Practices?

- Conservation Crop Rotation (328)
- Conservation Cover (327)
- Cover Crop (340)
- Pasture Hayland Planting (512)
- IPM (595)
- Prescribed Grazing (528)
- Wildlife Habitat Plantings (420)

Core Practice Review

Cons. Crop Rotation (328)

Principles Addressed

- ☐ Disturbance
- ☑ Cover
- ☑ Diversity
- ☑ Roots

Flax / Chickpeas added to wheat rotation

Conservation Cover (327)

Principles Addressed

- ☑ Disturbance
- ☑ Cover
- ☑ Diversity
- ☑ Roots

Cover Crop (340)

Principles Addressed

- ☐ Disturbance
- ☑ Cover
- ☑ Diversity
- ☑ Roots

Core Practice Review

Residue/Tillage Management (329, 345)

Principles Addressed

- ☑ Disturbance
- ☑ Cover
- ☑ Diversity
- ☐ Roots

Mulching (484)

Principles Addressed

- ☑ Disturbance
- ☑ Cover
- ☑ Diversity
- ☐ Roots

Nutrient Management (590)

Principles Addressed

- ☑ Disturbance
- ☐ Cover
- ☐ Diversity
- ☐ Roots

Core Practice Review

Prescribed Grazing (528)

Principles Addressed

- ☑ Disturbance
- ☑ Cover
- ☑ Diversity
- ☑ Roots

Pasture and Hayland Planting (512)

Principles Addressed

- ☑ Disturbance
- ☑ Cover
- ☑ Diversity
- ☑ Roots

The Ohio State University

Integrated Pest Management (595)

Principles Addressed

- ☑ Disturbance
- ☐ Cover
- ☑ Diversity
- ☐ Roots

Strips of flowering cover crops in potato field

Core Practice Review

Forest Trails and Landings (655)

Principles Addressed

- ☑ Disturbance
- ☑ Cover
- ☐ Diversity
- ☐ Roots

Picture of this here

Soil Carbon Amendment (336)

Principles Addressed

- ☐ Disturbance
- ☐ Cover
- ☑ Diversity
- ☐ Roots

Wildlife Habitat Planting (420)

Principles Addressed

- ☐ Disturbance
- ☑ Cover
- ☑ Diversity
- ☑ Roots

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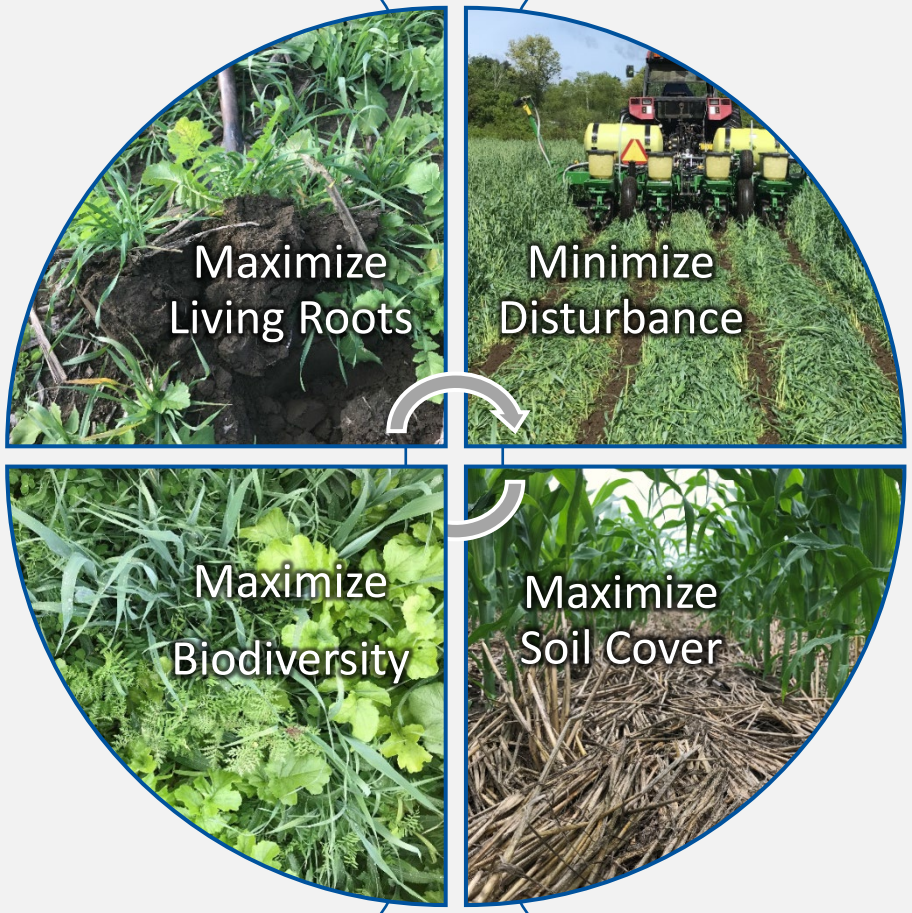
Discuss Practices in Your Area That Address the Principles

Soil Health Principles to Support High Functioning Soils



Feed

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