# HEAL *thy* SOIL

*Soil is an amazing and complex ecosystem that is one of our planet's most valuable natural resources. It's a mix of inorganic minerals, water, air, organic matter from dead and decaying plants and animals, and an incredible array of living organisms, ranging in size from microscopic bacteria and fungi to earthworms, moles, and shrews.*

**Soil Health** is the continued capacity of a soil to function as a vital, living ecosystem that sustains plants, animals, and humans.

## SOIL HEALTH PRINCIPLES

### MAXIMIZE Soil Cover

*Keeping the soil covered with growing plants or residue provides a type of armor on the soil*

Keeping the soil covered protects soil from erosion, adds organic matter, reduces water evaporation rates and maintains moderate soil temperatures

To maximize soil cover year-round:
Plant cover crops • Use organic mulch
Leave plant residue

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### MINIMIZE Disturbance

*Minimize physical, chemical, and biological disturbance as much as possible*

Living roots reduce soil erosion and provide food for organisms like earthworms and microbes that cycle the nutrients that plants need

To minimize disturbance of your soil:
Use no-till or reduced tillage farming practices
Optimize chemical input • Rotate livestock

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### MAXIMIZE Presence of Living Roots

*Keep plants growing throughout the year to feed the soil*

Living roots reduce soil erosion and provide food for organisms like earthworms and microbes that cycle the nutrients that plants need

To maximize the presence of living roots:
Plant cover crops • Use diverse crop rotations
Establish perennial grasses

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### MAXIMIZE Biodiversity

*Grow a variety of plants to diversify soil biology*

Increasing diversity can interrupt pest and disease cycles, stimulate plant growth, and provide habitat for pollinators and organisms living in the soil

To maximize the biodiversity in your soil:
Use diverse crop rotations
Plant a diverse mix of cover crops

## SOIL HEALTH BENEFITS

- Increase organic matter in the soil
- Increase microbiological activity
- Improve nutrient cycling
- Increase soil's capacity to hold water
- Improve water quality
- Reduce plant stress and disease
- Improve pollinator habitat
- Improve farm profitability and resiliency
- Reduce energy use
- Provide good aeration to promote plant root growth

## SOIL HEALTH RELATED CONSERVATION PRACTICES ...

**Cover Crop**: A crop used to add organic matter to the soil, control weeds and pests, and protect local streams from sediment and nutrient runoff, planted when a field may otherwise be fallow

**Conservation Crop Rotation**: Growing a diverse number of crops in a planned sequence in order to increase soil organic matter and biodiversity in the soil

**Mulching**: Applying or leaving plant residues or other suitable materials on the soil surface; reduces evaporation, regulates soil temperature, and helps protect the soil from erosion

**No-till**: A way to plant and grow crops without disturbing the soil through tillage (plowing, roto-tilling or hoeing)

**Nutrient Management**: Managing soil nutrients to meet crop needs while minimizing the impact on the environment and the soil

## DID YOU KNOW?

Many nutrients taken up by plant roots are first cycled through a soil organism before becoming available to the plant

Healthy soils provide greater water infiltration, allowing farmers to keep more water on their land – storing water for when their growing crops need it

Every 1% increase in organic matter results in as much as 25,000 gallons of available water per acre

The burrowing and feeding activity of earthworms provides improved water infiltration and soil aeration

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