Management Practices to Improve Soil Health

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SOIL HEALTH:

The continued capacity of the soil to function as a **VITAL LIVING ECOSYSTEM** that sustains plants, animals, and humans.
YOUR SOIL IS ALIVE!
(or should be)
POWDER IN THE 1%

Air 25%
Water 25%
Mineral Particles 45%
Organic Matter 5%
Organisms 10%
Roots 10%
Humus 80%
Four Principles to Improve Soil Health

1. Minimize Soil Disturbance
2. Keep the Soil Covered at all Times
3. Keep Living Roots in the Soil
4. Maximize Diversity
Four Principles to Improve Soil Health

1. Minimize Soil Disturbance
   • Tillage is not your soil’s friend
     • Breaks down soil structure
     • Increases soil respiration rates
     • Shifts soil biology to bacterial dominated
     • Reduces diversity
     • Eliminates living roots
     • Exposes the soil surface
Four Principles to Improve Soil Health

2. Keep the Soil Covered at all Times
   - Residues
   - Mulches
   - Live Plants

Soils that are covered are:
   - Cooler
   - Conserve moisture
   - Suppress weeds
   - Feed the soil biology
   - Support LIFE!
Four Principles to Improve Soil Health

3. Keep Living Roots in the Soil
   • Root exudates feed and stimulate soil biology
   • Active Soil = Healthy Soil = LIVING soil
Four Principles to Improve Soil Health

4. Maximize Diversity
   • Grass
   • Broadleaf
   • Legume
Soils Respond To Management

Less Stable

L. organic matter
Vulnerable to erosion
Poor infiltration
Low microbial activity
Poor nutrient cycling
High temperatures

More Stable

Building organic matter
Protected against erosion
Improved infiltration
High microbial activity
Improved nutrient cycling
Lower temperatures
Benefits of Conservation Cover

- Living cover!
- Reduce soil erosion
- Moisture conservation
- Weed suppression
- Attract beneficial insects and pollinators
- Fix nitrogen
- Add Organic Matter!!
Perennial Peanut
Bare Ground
Black Oats
Mix of Black Oats, Vetch and Peas
Benefits of Residue Management

• Reduce soil erosion
• Moisture conservation
• Weed suppression
• Add Organic Matter!!
• Keep the soil covered
• Improve access into the field
• Feed the Biology!
Coffee Conservation Cover

Perennial Peanut
Coffee Conservation

Black Oats
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Questions?

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