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WELCOME

Soil Health and Sustainability for Field Staff

Enter Location and Date here

- Keep an open mind
- Listen to learn, not to rebut
- Question to clarify, not to corner
- Disagree without being disagreeable
- Be respectful of others
- No whining
- Return from Breaks ON TIME
- Turn your cell phone ringers off
- Use the “Parking Lot”
- Leave policies are in effect during training, if you are late or absent from class you will be charged leave

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Introduction to Soil Health

Presenter Name
Date
Location

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Objectives

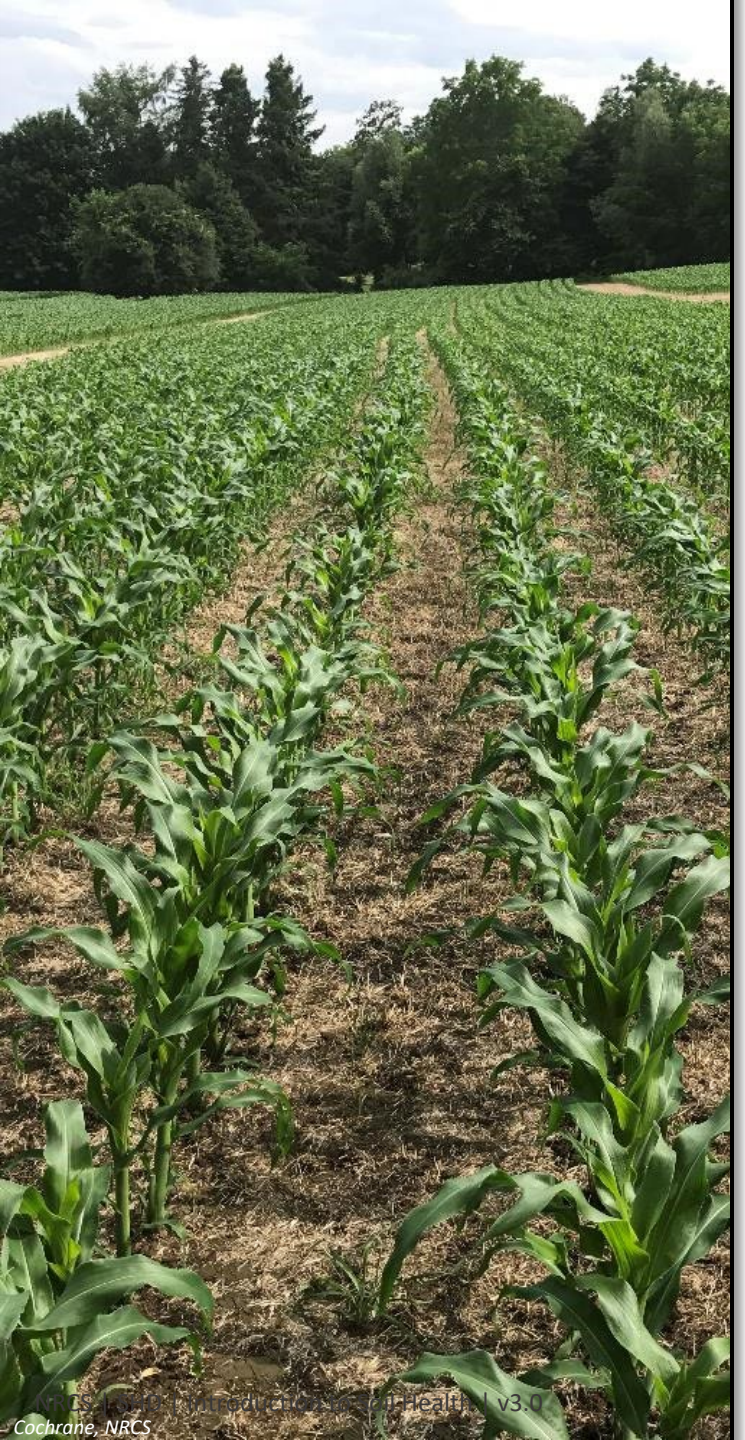
1. Define soil health and discuss why different words in the definition are important
2. List the primary functions of soil and impact on the environment or ecosystem
3. Describe importance of soil health on all land uses & society

- Our traditions in agriculture are deeply rooted.
- Early management necessitated working with natural systems.

- As mechanization advanced and scale and intensity grew our management principles became focused on altering natural systems to meet our needs.

"If we are bold in our thinking, courageous in accepting new ideas, and willing to work with instead of against our land, we shall find in conservation farming an avenue to the greatest food production the world has ever known…"

-Hugh Hammond Bennett
September 18, 1943



What Functions Would We Like our Soil to Provide?

- Produce food, feed, fiber, biofuels & medicine
- Capture, filter, and store water
- Cycle and recycle nutrients
- Resilience to drought, flood & temp extremes
- Protect plants from pathogens and stress
- Detoxify pollutants
- Store carbon and moderate release of gases
- Resist erosive forces

Cochrane, NRCS

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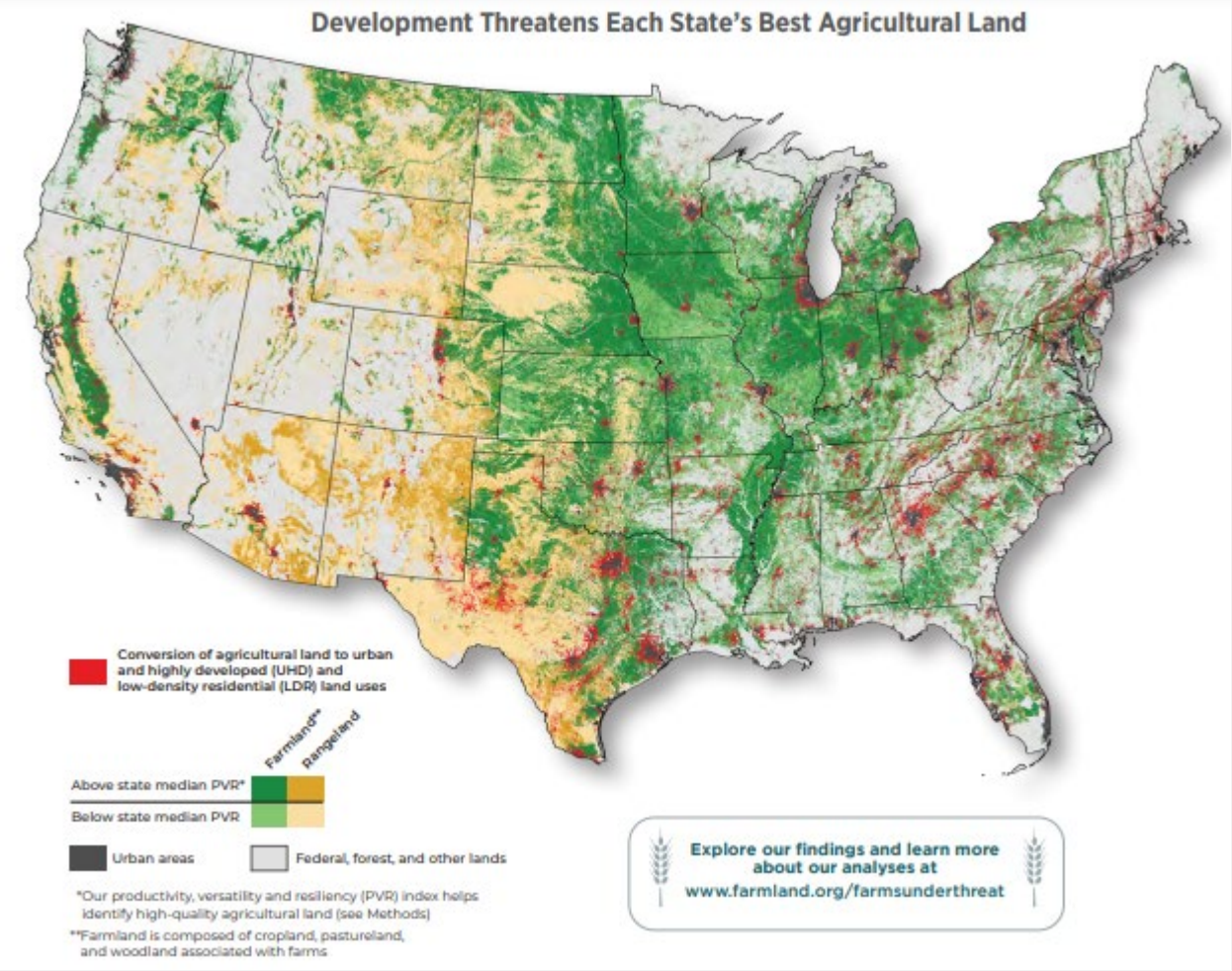
How does NRCS Define Soil Health?

The continued capacity of the soil to function as a vital living ecosystem that sustains plants, animal and humans.

Demonstrate How Management Affects Soil Function

Producing More on Fewer Acres – Development Pressure

- Between 2001 and 2016, nearly 11 million acres lost
- 2000 ac per day covered over in pavement
- 40% of all development was on prime farmland the size of New Jersey



Farms Under Threat: The State of the States, AFT

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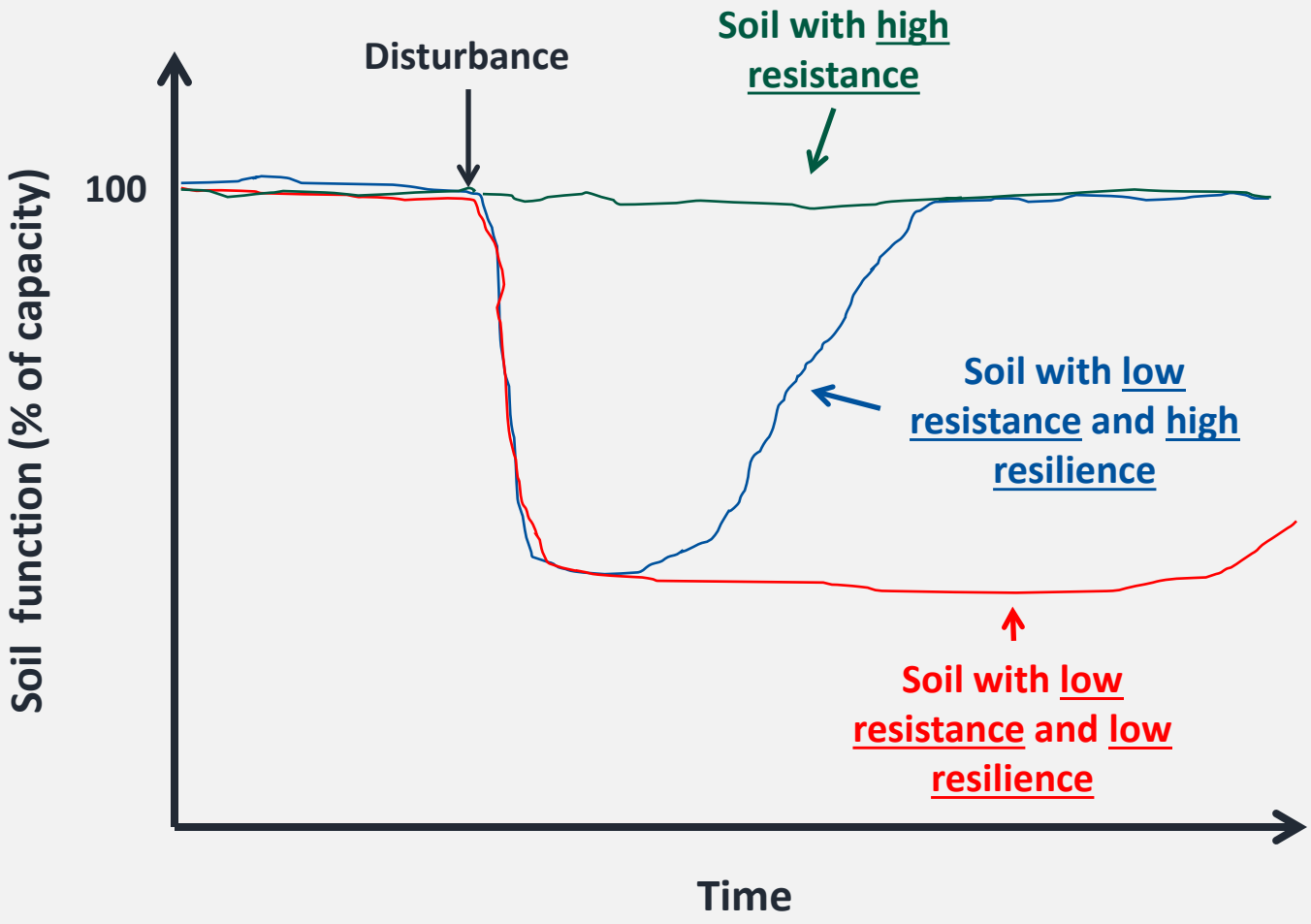
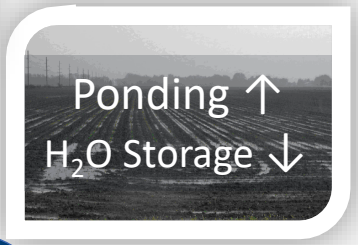
Soil Health and Function



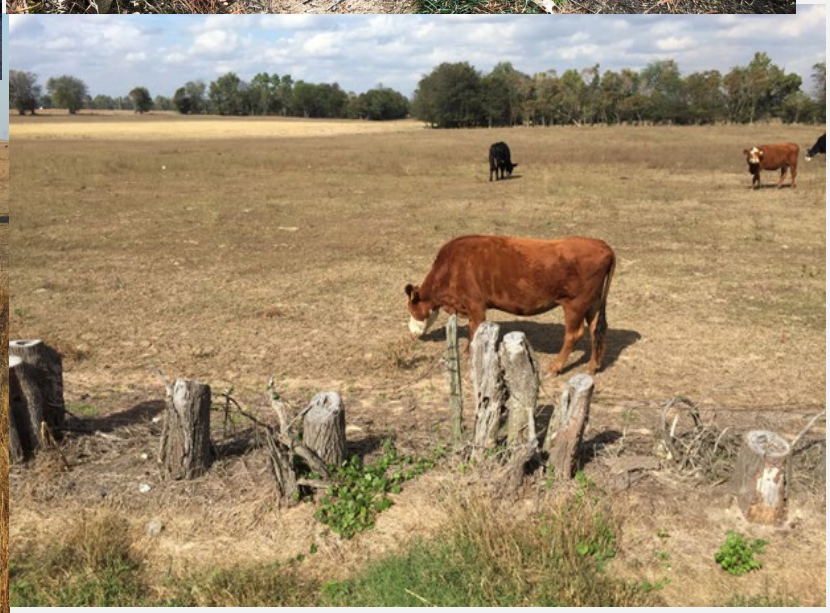
Adapted from Brady & Weil, 2008

Downward Spiral of Soil Degradation



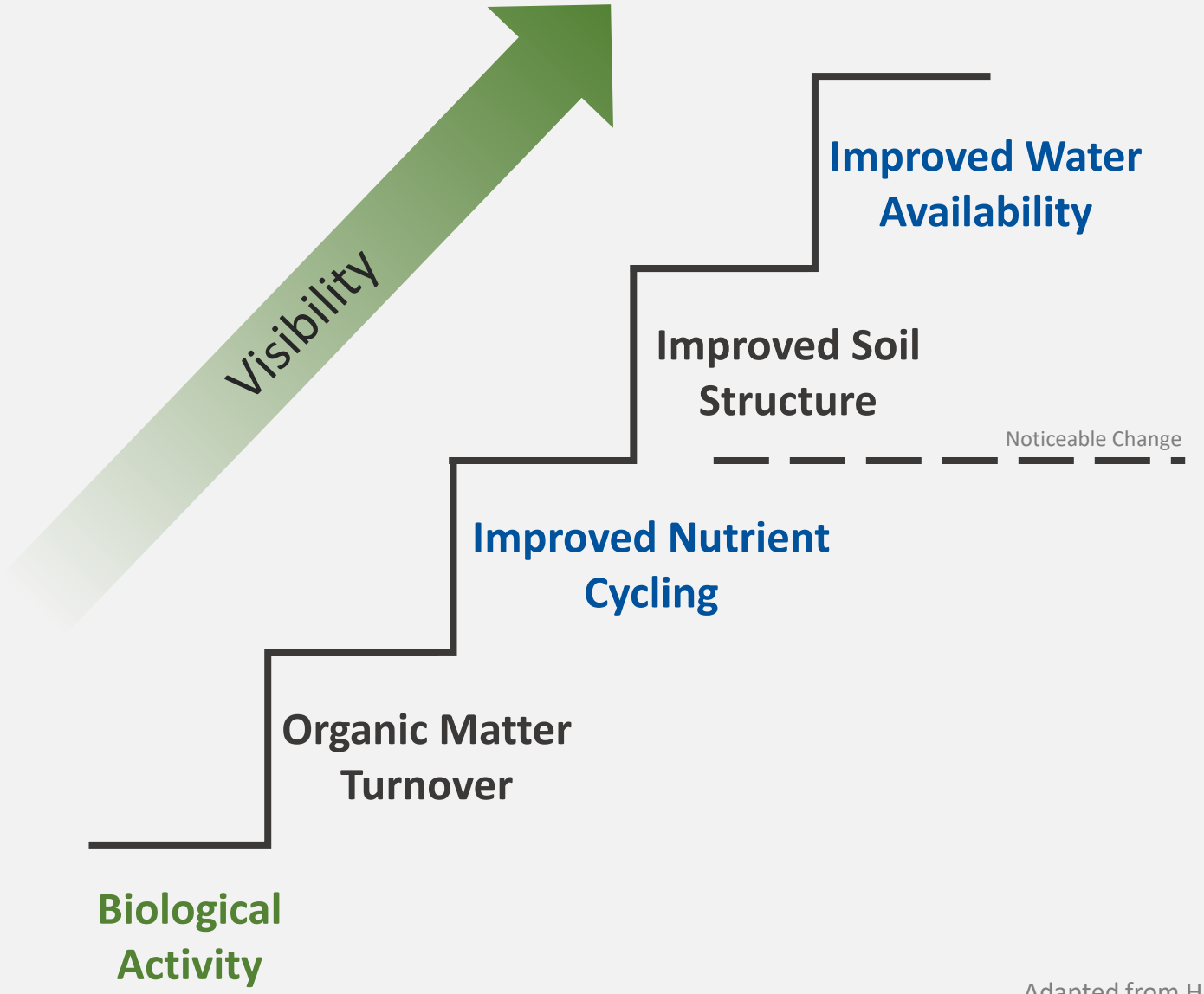
Adapted from Building Soils for Better Crops, 3rd ed.

Characteristics of Soil Function Loss



Drexel Atkisson, USDA

Soil Improvement Climb



Adapted from Hatfield *et.al.*

Rangeland

Rangeland

- Low inputs
- Low to moderate stock densities
- Three goals:
  - Proper stocking
  - Adequate recovery
  - Change season of use
- Maximizing diversity is most effective principle

Pasture

Photo RJ Dake

Pasture

- Often higher inputs
- Moderate to high stock densities
- Three goals:
  - Proper stocking
  - Adequate recovery
  - Change season of use
- Optimizing disturbance is most effective principle

Urban Agriculture

- Small-scale, intensively managed systems
- SH conservation practices can work well at small scales.
- Urban soils are highly variable. SH can be good or very poor.
- Soil contamination by heavy metals and organic compounds is a common concern.

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Forest

Photos: NRCS OR

- Low inputs
- Usually, un-grazed depends on the state
- Minimize disturbance and maximize biodiversity are the most effective principles

Other Land Uses

- Associated Ag Land
- Water
- Other land: mined land rocky, barren etc.

- Best principles of impact for these areas are maximizing cover and minimizing disturbance

Photo: SHD NRCS

Photo: IA NRCS

Current Books Promoting Soil Health

What media resources have you seen or heard?

- Building Soils for Better Crops for example...

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Farmers are Catching the Vision of Improving Soil Function through Management ***

- Potential place of champions https://www.nacdnet.org/get-involved/soil-health-champions-network/
- Add photos form your state.

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Worksheet and Scenarios

- Go over class worksheet
- Pass out scenarios and group up individuals
- First question do you need to make any assumptions about your scenario? Is there anything missing?