



# Introduction to Soil Health

Presenter Name

Date

Location

# 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 in ag & 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.





Wikipedia

**“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?

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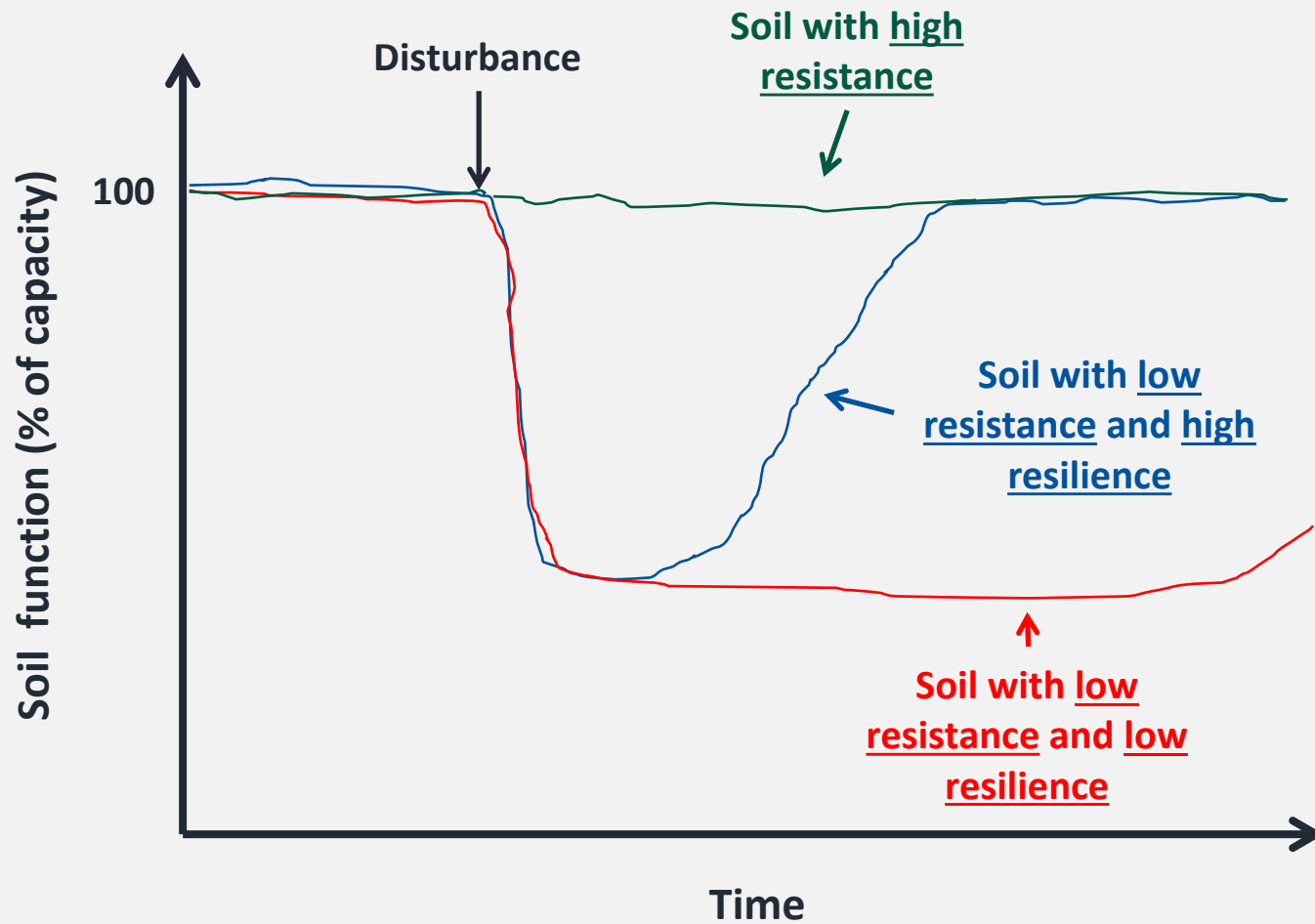
- Produce food, feed, fiber, biofuels & medicine
- Capture, filter, and store water
- Cycle and recycle nutrients
- Resilience to drought, flood & temp extremes
- Protect plants from pathogens and stress
- Detoxify pollutants
- Store C and moderate release of gases
- Resist erosive forces

# 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.*

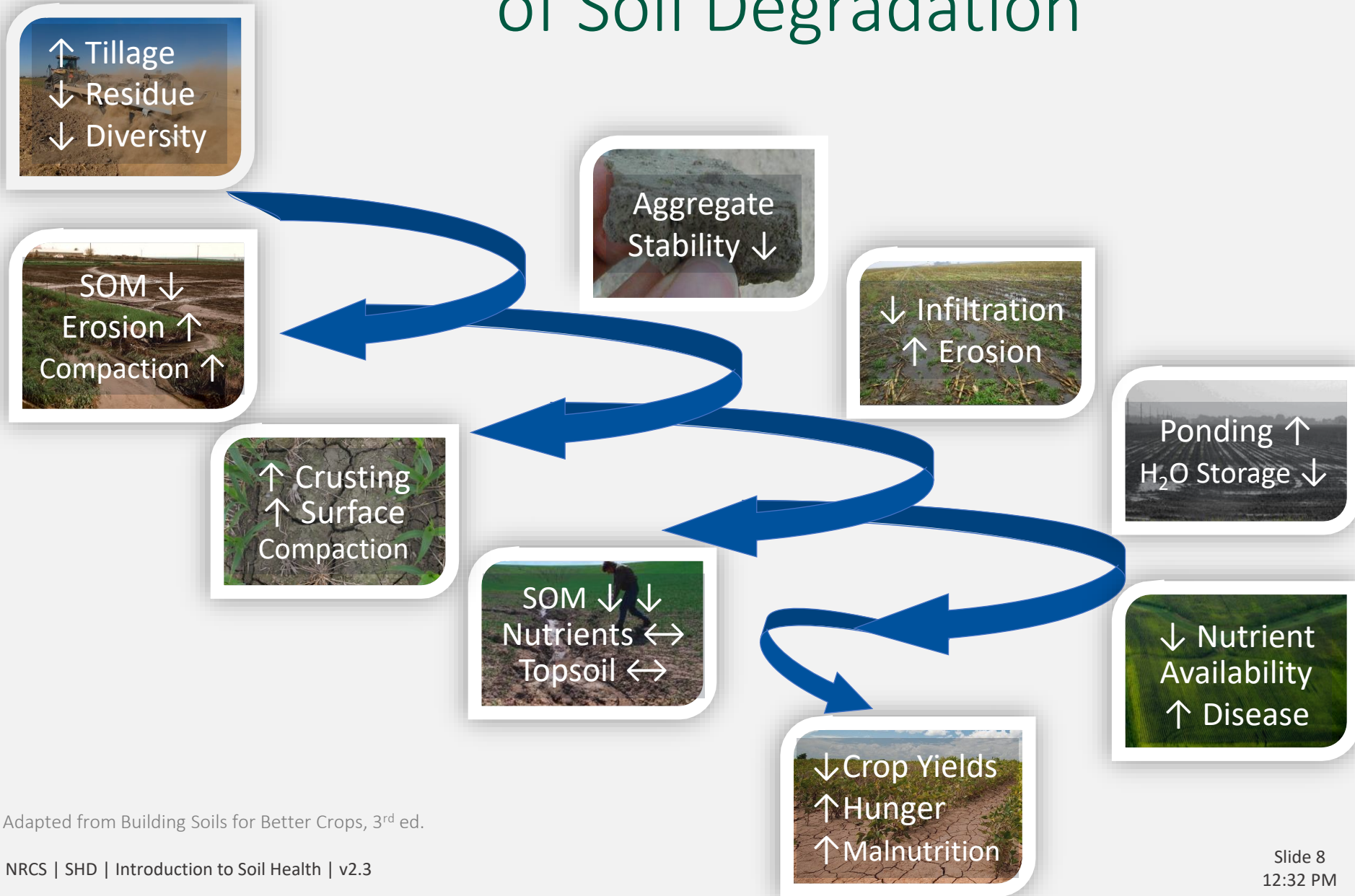


# Soil Health and Function



Adapted from Brady & Weil, 2008

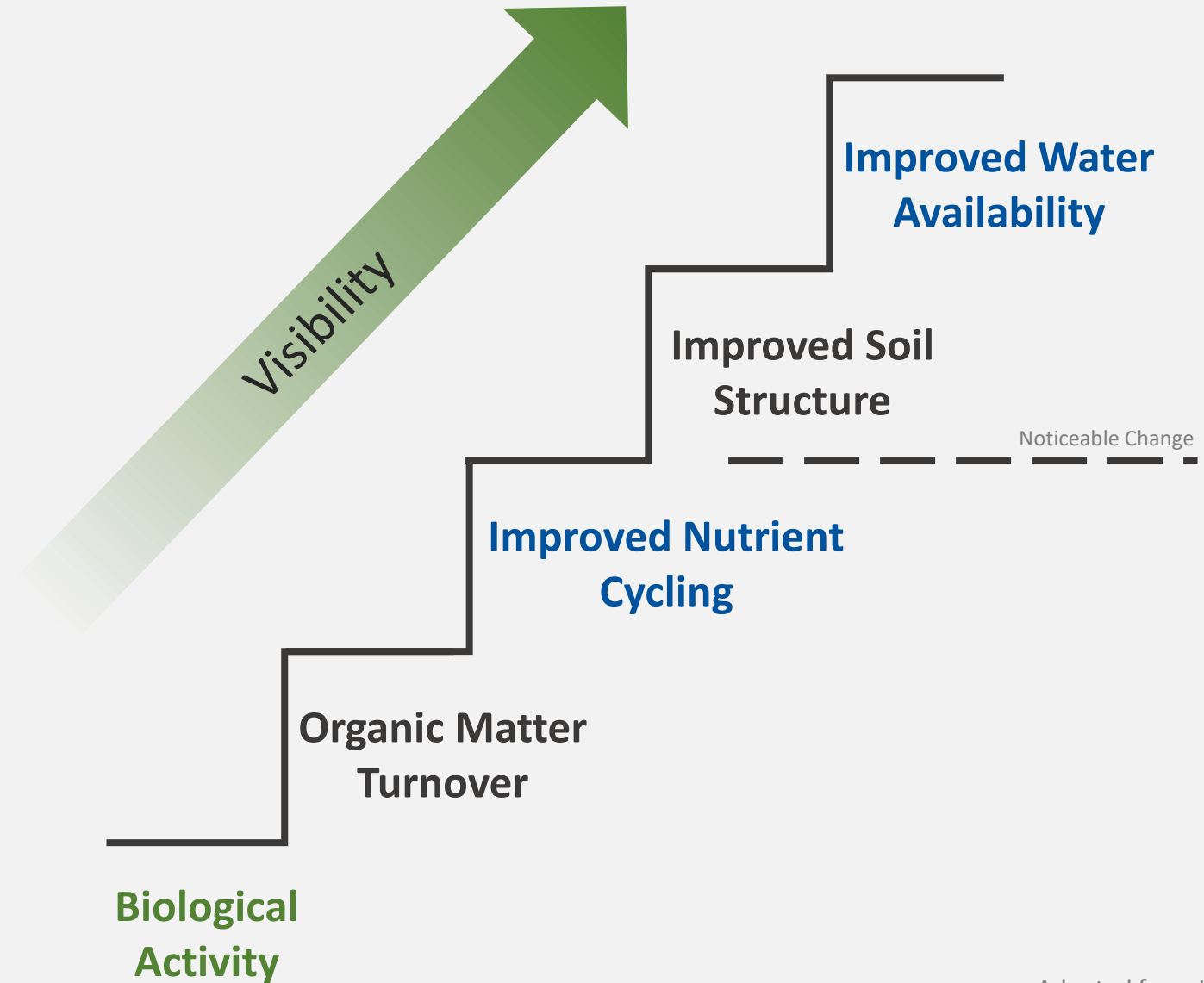
# Downward Spiral of Soil Degradation



Adapted from Building Soils for Better Crops, 3<sup>rd</sup> ed.



# Soil Aggradation Climb



Adapted from Hatfield *et.al.*

# Characteristics of Soil Function Loss



Lynn Betts, USDA-NRCS



Lynn Betts, USDA-NRCS



Bob Nichols, USDA



University of Tennessee



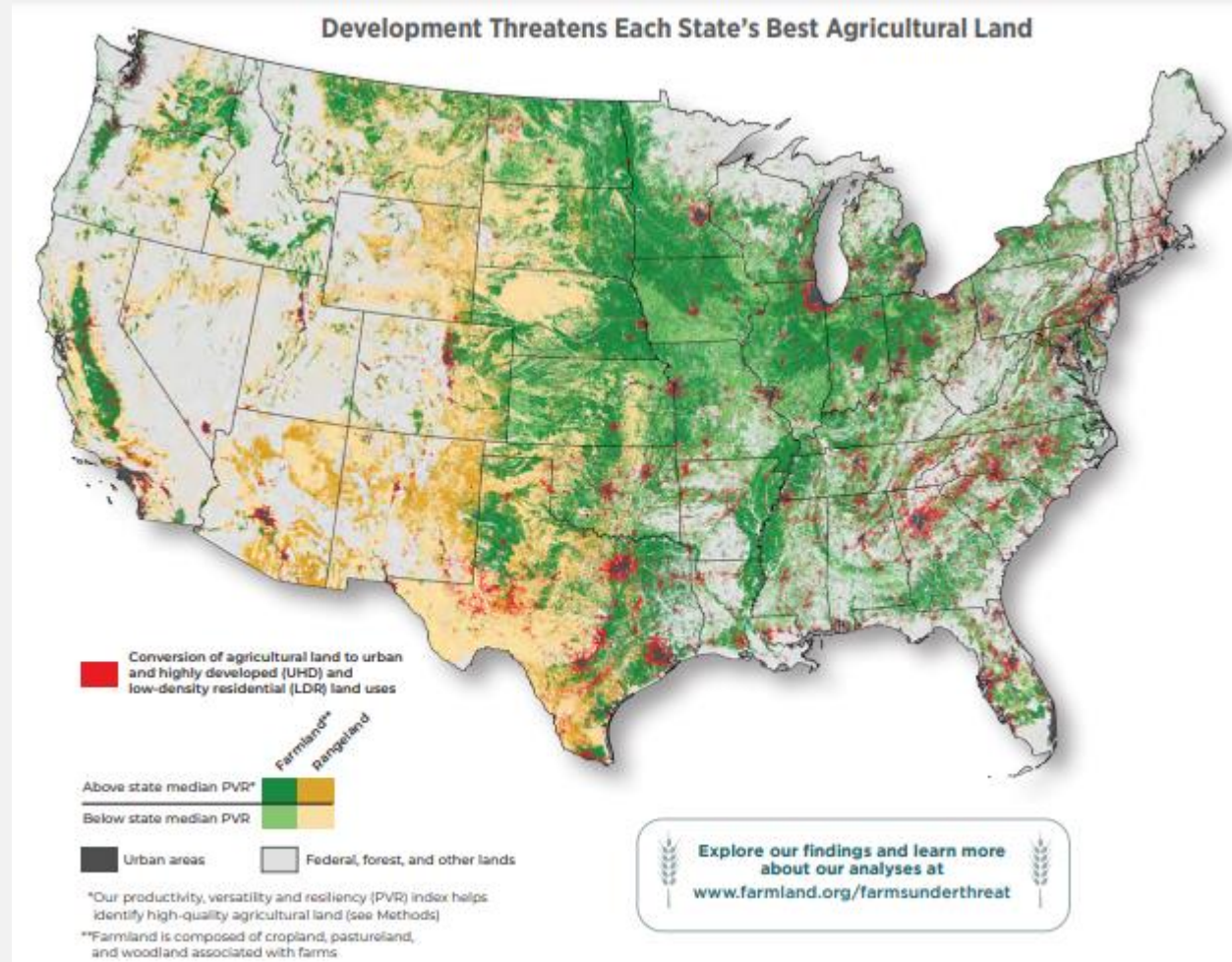
Inflation Solutions



Case IH

# 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



# Soil Health in Popular Press



REGENERATIVE AGRICULTURE

## Healthy Soil: Good for the Farmer, Good for the Planet

By [Regeneration International](#) | May 02, 2018 08:28AM EST



CSR News

[in](#) [t](#) [f](#) [g+](#) [e](#) [Print](#) [Alerts](#)

## Soil Health Institute Selects Seven Scientists, Begins Sampling Phase of North American Project to Evaluate Soil Health Measurements

The project will assess 31 indicators of soil health, partnering with teams from long-term research sites and scientific laboratories across Canada, the United States, and Mexico.

Submitted by: [The Soil Health Institute](#)  
Categories: Environment, Research, Reports & Publications  
Posted: Jan 22, 2019 - 09:05 AM EST



**SOIL HEALTH INSTITUTE**

RESEARCH TRIANGLE PARK, N.C., Jan. 22 /CSRwire/ - The Soil Health Institute



ies Ph.D., Gregory Macfarland Bean Cope Ph.D., Paul Tracy Ph.D., Kelsey



## Secrets of Life in the Soil

built a career on overturning assumptions about underground ecosy she is seeking to protect this endangered world

By Rachel Cernansky, Nature magazine on September 13, 2016

## How cover crops help keep soil healthy and productive



ies Ph.D., Gregory Macfarland Bean Cope Ph.D., Paul Tracy Ph.D., Kelsey

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## BIG FOOD TAKES SOIL HEALTH SERIOUSLY

FROM SOIL HEALTH SUMMIT, MCDONALD'S SUSTAINABILITY DIRECTOR TALKS INVESTING IN SUSTAINABILITY PROGRAMS.

By [Bill Spiegel](#)  
1/23/2019

## Minnesota Farmers Use Buried Underwear to Test Soil Health

Some southern Minnesota farmers are using underwear as a creative way to test soil health.

By [Associated Press, Wire Service Content](#) Sept. 29, 2018, at 10:28 a.m.



# Current Books Promoting Soil Health



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



David Daigle, Ragley, LA



The Durands, St. Martin Parish, LA



Robert Coker, Yazoo City, MS



The Andres, Lafayette, LA



Robby Bevis, Scott, AR



The Taylors, Helena, AR