

**Soil Health:
It's Role in Today's Orchard Systems**

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Thank You!

Soil Health: Its Role in Today's Orchard Systems

Introduction

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Welcome!

Today's questions:

- Does organic matter matter?
- How do we measure 'soil health'?
- How does management influence soil health and orchard performance?



“Take home”:

- Some of what we know and don't know
- Help identify areas for research, extension
- Are there some key principles, practices to work with?

SOIL HEALTH

Definition

“Capacity of a soil to function...to:

- sustain biological **productivity**
- Maintain **environmental** quality
- promote plant and animal **health.**”

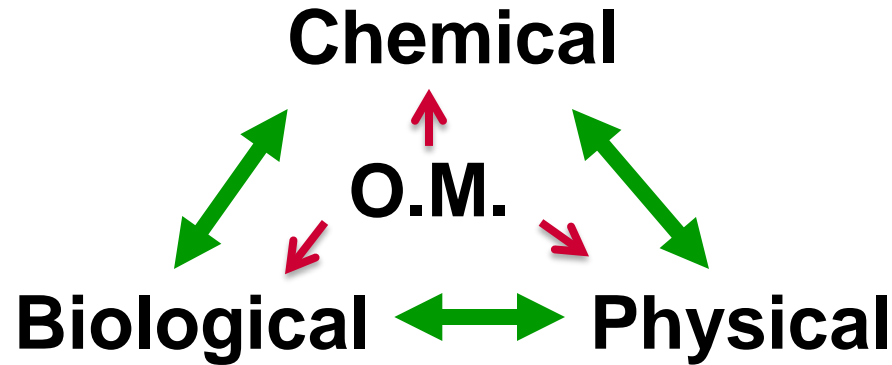
Not a soil property, but an evaluation based on human needs.

Soil **health** and **quality** are used interchangeably

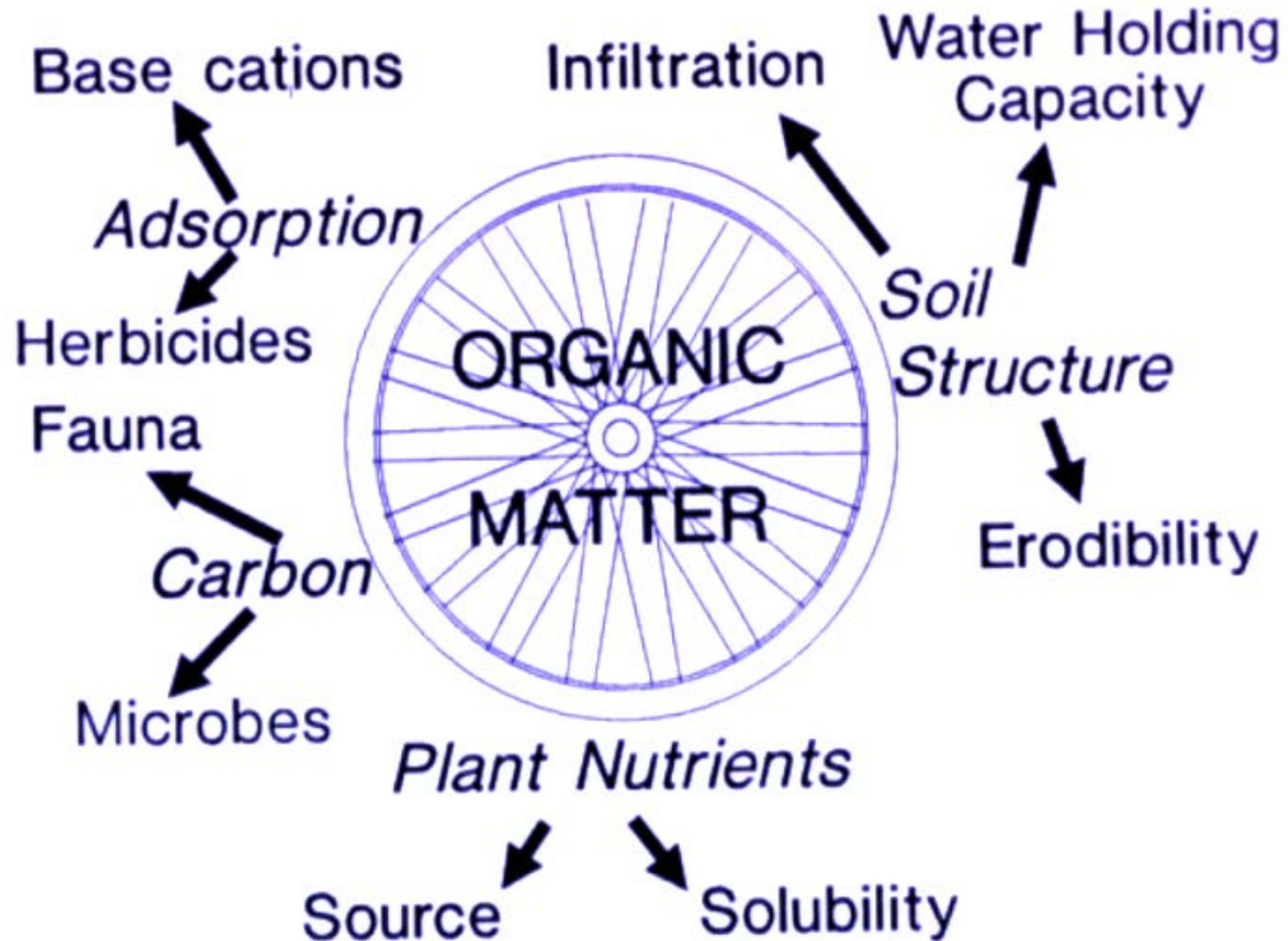
Soil Health Reference Point

<u>Current System</u>	<u>Native Ecosystem</u>	<u>Reference Point</u>
Dryland wheat (KS)	Prairie	Prairie
Rainfed corn (WI)	Temperate forest	Pasture ?
Paddy rice (Asia)	Tropical rainforest	??
Irrigated potatoes (ID)	Shrub-steppe	Pasture ?
Orchard (Yakima)	Shrub-steppe	??

Soil Health



- **Dynamic interplay of these 3 aspects**
- **Influenced by environment (climate, geology, plants)**
- **Influenced by human activity (erosion, fertilization, irrigation, plants)**



Greatest single factor determining natural soil productivity = amount & depth of SOM

Site History

- **Soil chemical changes in five orchards (12–40 years old); sprinkler irrigation and ammonium based fertilizer**

	Row	Alley
pH _w	4.2	6.7
Ca (ppm)	736	2592
Al (ppm)	621	27
Bases (%)	56	99

Mini Tatura Trellis on M.9 *Washington*



Standard System

Herbicide strip, grass alley

**'Mow and
blow' mulch**



(H. Huntley)



White Clover

Fall-planted Oriental mustard

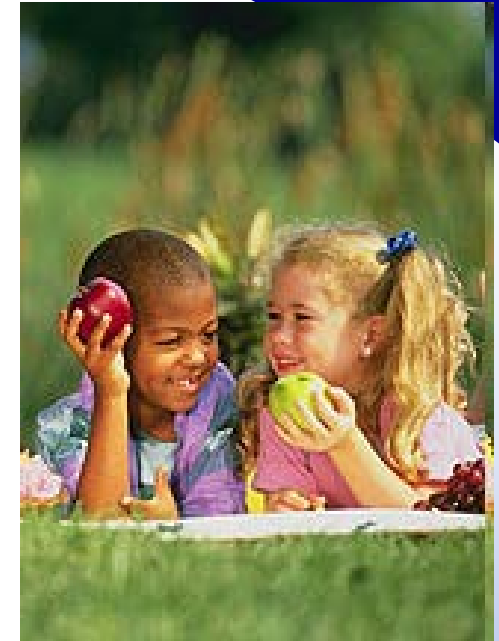
Lots of Questions



Is there an ideal soil health for tree fruits?

Is there a connection between soil quality and fruit quality?

How should we measure / monitor soil health in orchards?



(Photos: USDA-ARS)