

“Helping People Understand Soils”

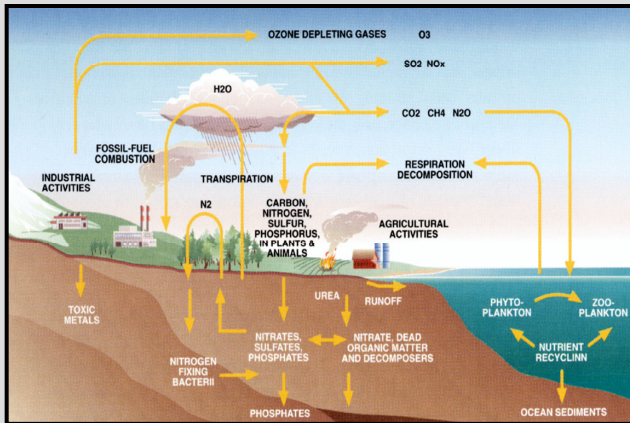
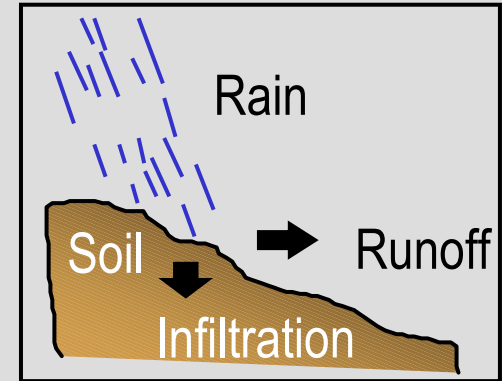
Ten Key Messages

Soils Perform Vital Functions



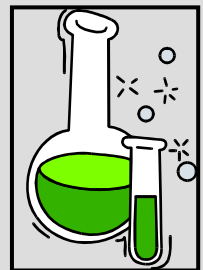
Sustaining plant and animal life below and above the surface

Regulating and partitioning water and solute flow



Filtering, buffering, degrading, immobilizing, and detoxifying

Storing and cycling nutrients

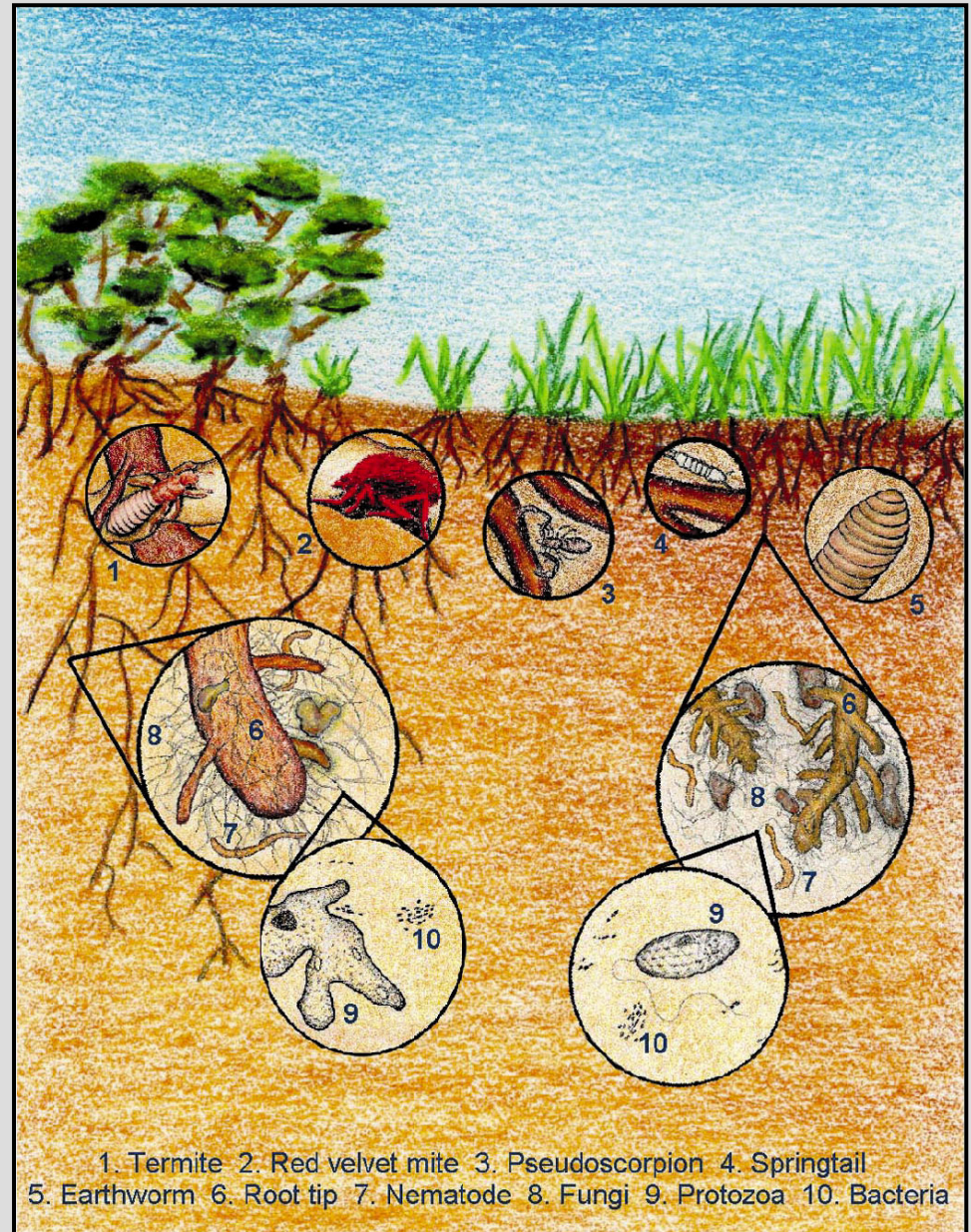


Providing support to structures



Soil is the Basis of the Ecosystem

The living systems occurring above and below the ground surface are determined by the properties of the soil. We often ignore the soil because it is hard to observe.



Soils Support Life

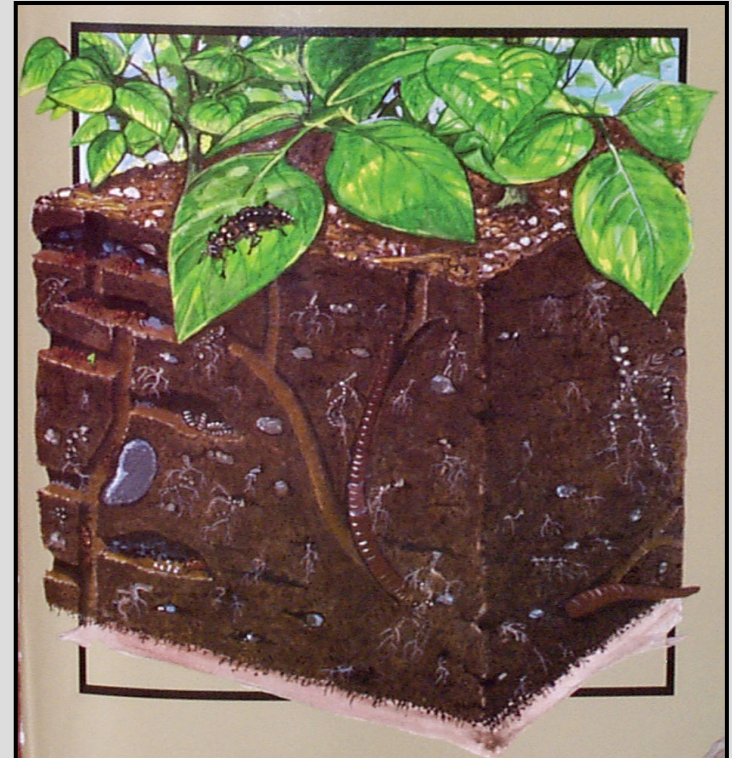


Organism Types

bacteria
fungi
protozoa
nematodes
arthropods
earthworms

Roles & Benefits

decomposition
release nutrients
create pores
stabilize soils

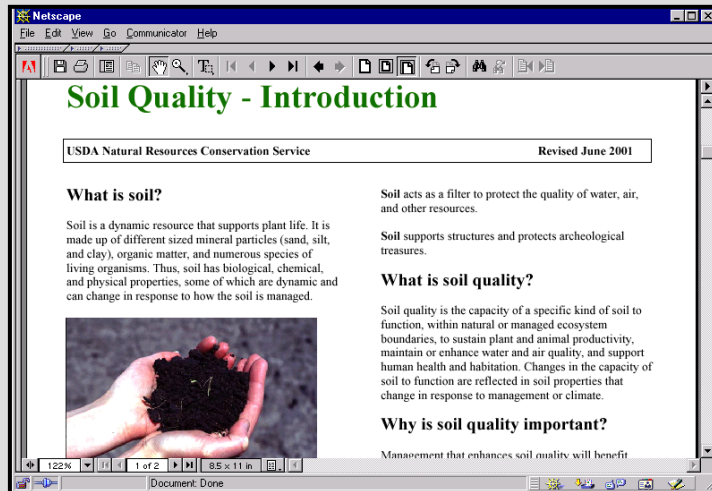


Soil Management Affects Soil Quality

Soil Quality

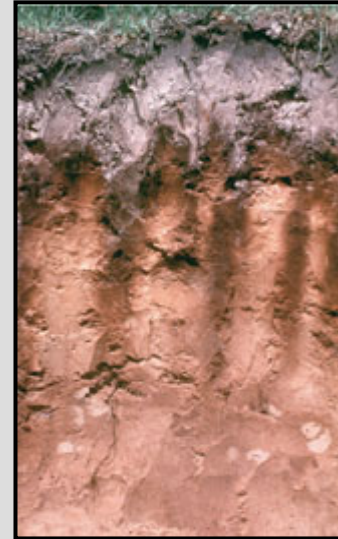
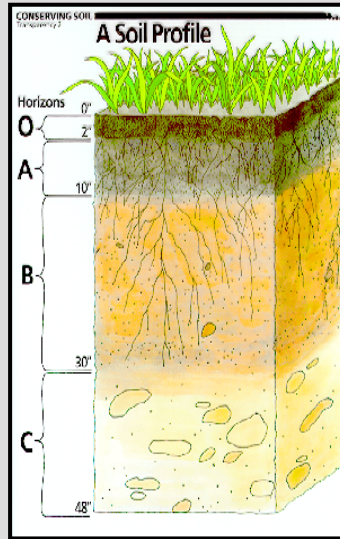
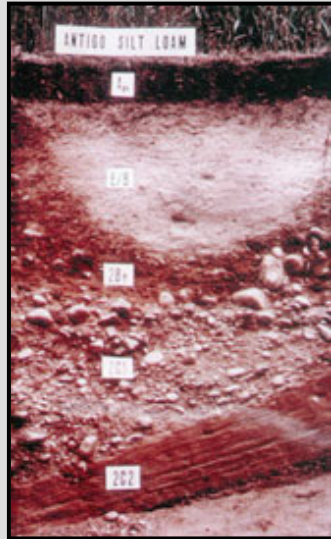


Soil Test Kit



Soils Have Unique Physical, Chemical, and Biological Properties Important to Their Use

color
texture
structure
consistence
roots
pores
other features



Soil is a natural body of solids, liquid, and gases, with either horizons, or layers or the ability to support rooted plants.

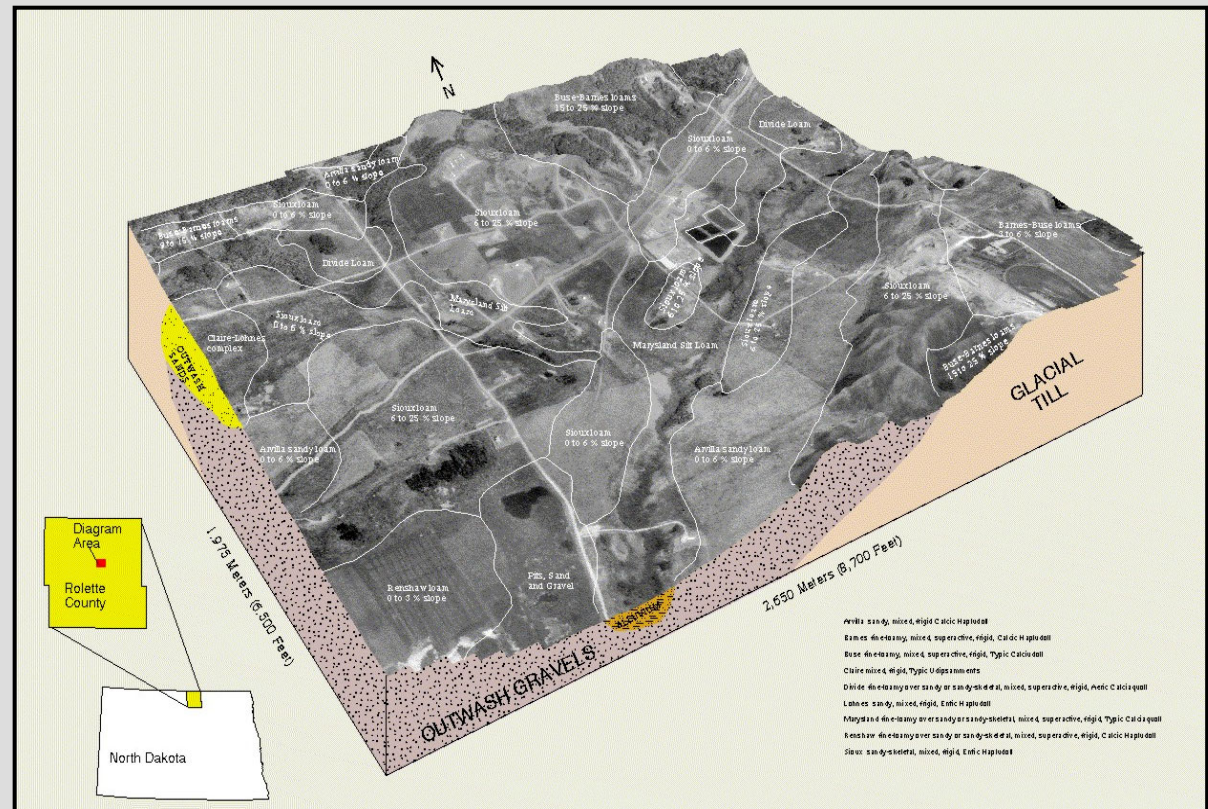
Pedology, the study of soil, is a unique discipline.

Soil-Forming Factors Determine the Location and Kind of Soil

There are 23,000 soil series in various combinations with different slopes and surface textures in the U.S.

Soil Forming Factors:

Parent Material
Climate
Living Organisms
Topography
Time



Soil Survey is a Scientifically-Based Inventory

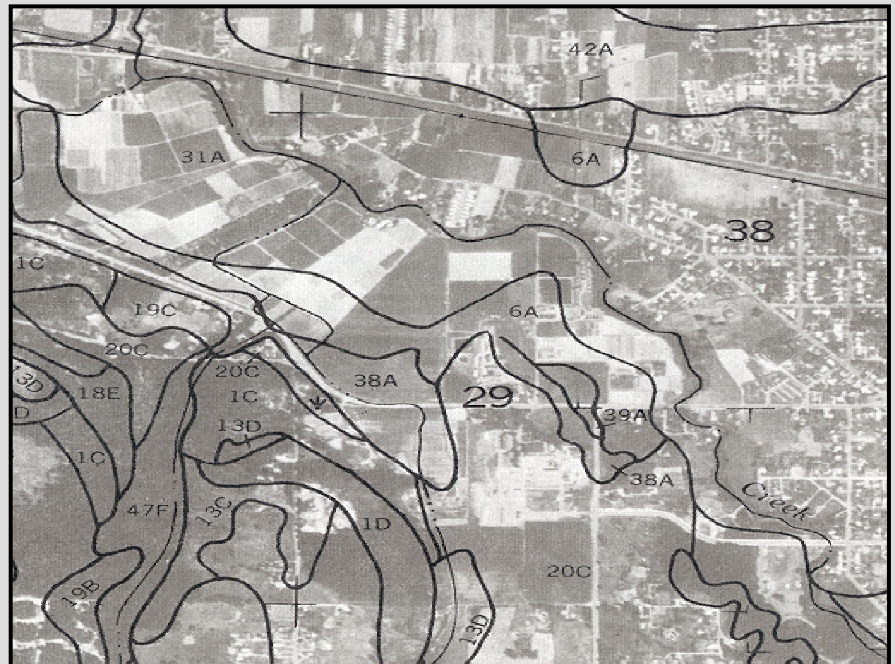
SOIL SURVEY OF Pierce County Area, Washington



United States Department of Agriculture
Soil Conservation Service
In cooperation with
Washington Agricultural Experiment Station

A soil survey includes maps, descriptions, properties, climate, and interpretations. These are excellent sources of information.

About 3000 counties in the United States have a soil survey.



Soils Have Limitations Which Must Be Understood

Concerns for life and properties

allergies
corrosivity
dust
flooding
gypsum dissolution
piping
rapid runoff
sand blowing
septic failure
sinkholes
soil borne disease
sulfidic materials
water tables

contaminants
crop loss
erosion
frost action
liquefaction
radon
salt build up
sedimentation
shrink-swell
slope failures
subsidence
urban hydrology



Scientific Names for Soils Reduce Ambiguity

- Like plants and animals, **soils are classified**
- The **system** is called **Soil Taxonomy**
- The **highest level** is the **soil order** (12)
- The **lowest level** is the **soil series**, often a place name



Soil Order

Alfisols

Andisols

Aridisols

Entisols

Gelisols

Histoisols

Inceptisols

Molliisols

Oxiisols

Spodoisols

Ultiisols

Vertiisols

Formative terms

Alf from combination of al (aluminum) and f (ferrous) iron

Ando from Japanese term dark referring to dark volcanic ash

Latin, aridies, dry arid

Ent meaningless, root recent

Latin gelare, to freeze

Greek, histos, tissue

Latin, incepum, beginning, inception

Latin, mollis, soft, mollify

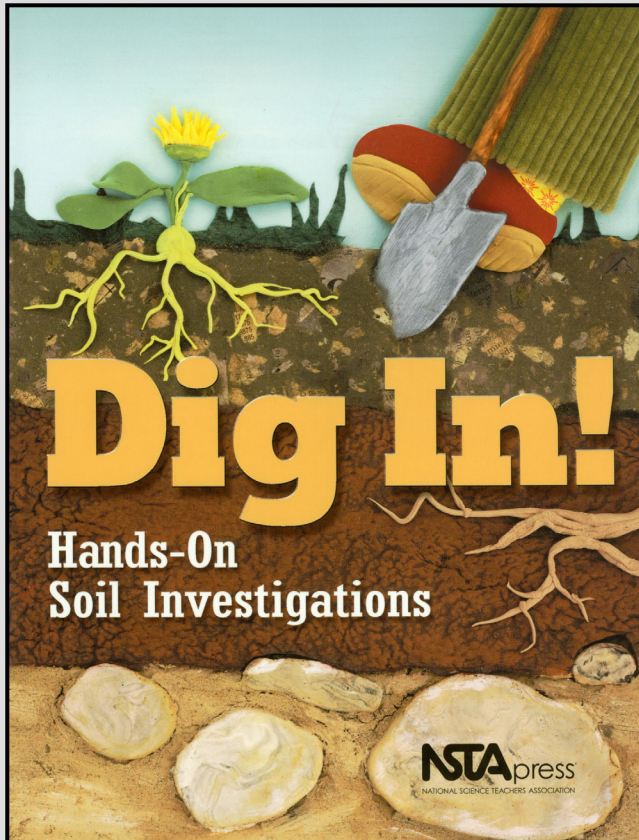
French oxide

Greek spodos, wood ash

Latin ultimus, last, ultimate

Latin verito, vertical cracking

Soil Science Can Be Usefully Incorporated Into Other Studies



Science

ecology, biology, chemistry

Social Studies

world trade, land use

Mathematics

soil loss over one hectare

History

settlement of the U.S., dust bowl

Art

soil crayons, acrylic paints