


To complete this worksheet, see the instructions in the textbook (Chapter 16 Investigation).

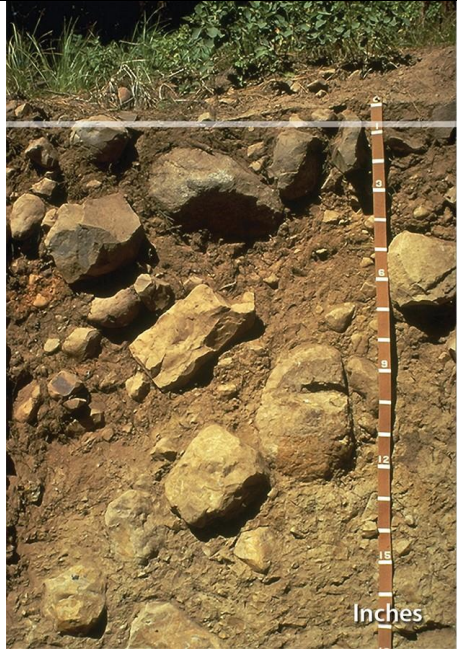
Table 1. Observations and Interpretations of Soil profiles

The photographs below show six soil profiles, each of which is shown and described in the textbook. For each soil profile, complete the following steps:

- In the space next to the profile, make observations of each soil horizon and indicate in parentheses over what depth range that horizon is estimated to be present.
- Propose the soil-horizon letter (e.g., B, or C) that should be applied to the horizon, and write the letter in the Horizon column after your description.
- In the space below the soil profile, propose the soil order (e.g. Andisols) for that soil.

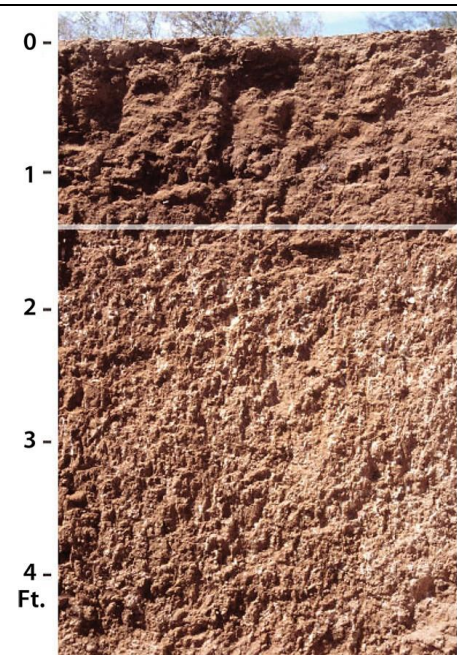
Soil Profile 1	Descriptions and Interpretations	Horizon
		
Soil Order:		

In the profile above, leaching/eluviation is most evident at which of these depths (in feet)?
 a) 0.5; b) 1; c) 2; d) 3.

Soil Profile 2	Descriptions and Interpretations	Horizon
		
Soil Order:		

The boulders in the profile above are a tell-tale sign of the presence of which horizon?

- a) A; b) B; c) C; d) O; e) E.

Soil Profile 3	Descriptions and Interpretations	Horizon
		
Soil Order:		

The climate at which this profile was found was most likely

- a) polar; b) tropical; c) arid; d) humid and temperate.

Soil Profile 4

Descriptions and Interpretations

Horizon



(tape is in centimeters)

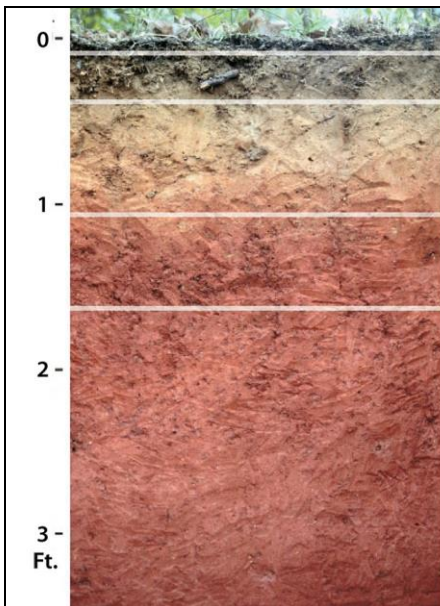
Soil Order:

In the profile above, the absence of well-defined horizons is likely because: a) the profile is often frozen; b) the area was covered by an ocean in the recent geologic past; c) abundant leaf litter covered the surface; d) a volcano recently erupted in this area, melting the soil.

Soil Profile 5

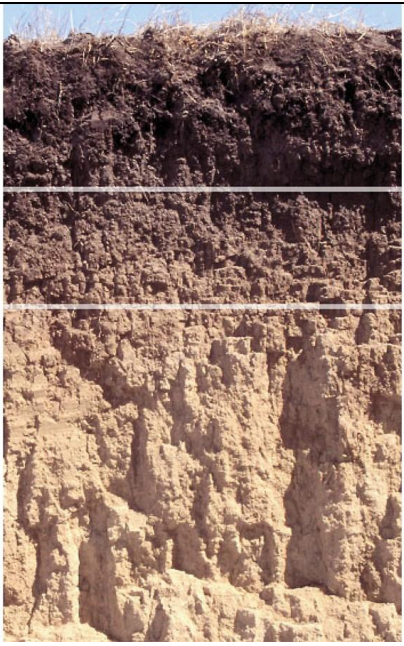
Descriptions and Interpretations

Horizon



Soil Order:

The deep red color in this soil profile suggests that a) magnesium was present and therefore the area was submerged beneath a shallow sea in the recent geologic past; b) glaciers scoured the landscape; c) iron-bearing minerals were leached downward; d) the soils have been waterlogged.

Soil Profile 6	Descriptions and Interpretations	Horizon
		
Soil Order:		

This profile is probably in an area where a) rainy conditions persist year-round; b) dry conditions persist year-round; c) conditions are neither too wet nor too dry.

Table 2. Location of Each Soil Profile

The map below shows six locations (squares), each of which represents a possible location for one of the soil profiles. A larger version of this map is in the textbook.

- Using the characteristics of the soil, especially its soil order, match each soil profile to one location. The globes for each soil order (in the textbook) can be helpful in this regard, to gauge in what type of climate each soil order forms.

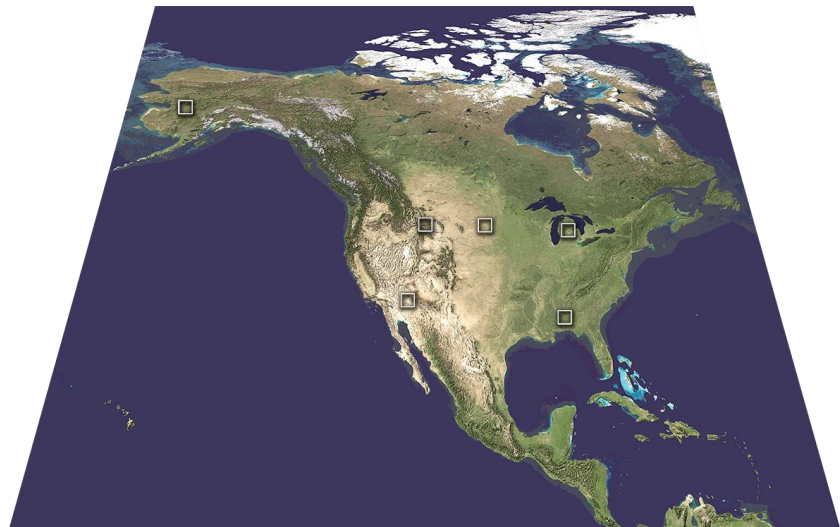


Table 3. Effect of CIORPT Variables

Each soil profile reflects the combined effects of the five CIORPT variables (Climate, Organic matter, topographic Relief, Parent material, and Time). Consider these factors and follow the instructions below.

- Write a short statement discussing how each CIORPT variable could have influenced the development of the soil profile. You may not be able to say much about some variables for a particular soil and location.

Soil Profile	Discussion of CIORPT
1	
2	
3	
4	
5	
6	

Table 4. Multiple-Choice Questions about CIORPT Variables

Question	Answers
In general, hot, humid climates allow for abundant	a) leaching of nutrients b) soil profile development c) caliche formation d) physical weathering
In general, arid climates allow for abundant	a) leaching of nutrients b) soil profile development c) caliche formation d) chemical weathering
In general, temperate climates allow for abundant	a) leaching of nutrients; b) soil profile development; c) caliche formation; d) physical weathering
Organisms would probably have the biggest impact on soil development in Soil Profiles	a) 1, 5, and 6 b) 1, 2, and 5 c) 2, 3, and 6 d) 1, 4, and 5
Which soil profile is most likely to have had the least amount of time to develop?	a) 1 b) 2 c) 5 d) 6
The soil profile that probably offers the least opportunity for use in agriculture is	a) 1 b) 2 c) 4 d) 5
The soil profile that probably would have been more productive 500 years ago than today is	a) 1 b) 2 c) 4 d) 5

Table 4. Opportunities and Challenges

A soil can present opportunities for plants or can have challenges that make plant growth more difficult or restrict the types of plants that can grow. Using the characteristics of the soil profile, order of the soil, and geographic location, complete the following:

- List whether the soil presents opportunities for plant growth, especially agriculture, or has challenges that limit plant growth.

Soil Profile	List of Opportunities and Challenges
1	
2	
3	
4	
5	
6	