



**Raven, Berg, Hassenzahl: Environment, 7th Edition**  
**Chapter 15 Soils**

1. Soil is formed from parent material by biological, chemical, and physical:
  - a) digestion processes
  - b) weathering processes
  - c) composting
  - d) terracing
  - e) leaching

Ans: b

Difficulty: Easy

**Response:**

Soil-Forming Factors; 15.1.1

2. Soil is composed of:
  - a) mineral particles
  - b) organic materials
  - c) air
  - d) water
  - e) all of these

Ans: e

Difficulty: Easy

**Response:**

Soil Composition; 15.1.2

3. Plants and organisms produce \_\_\_\_\_, which reacts with water to form \_\_\_\_\_.
  - a) carbon dioxide; carbonic acid
  - b) carbon dioxide; organic carbon
  - c) oxygen; hydrogen dioxide
  - d) oxygen; hydrogen peroxide

Ans: a

Difficulty: Easy

**Response:**

Soil-Forming Factors; 15.1.1



4. Which of the following may affect the mineral composition of soil?
- a) soil age
  - b) soil pH
  - c) soil organisms
  - d) parent material
  - e) all of these

Ans: e

Difficulty: Easy

**Response:**

Soil Composition; 15.1.2

5. Humus is composed of:
- a) weathered rocks
  - b) fresh leaf litter
  - c) iron and aluminum compounds
  - d) decomposed organic matter
  - e) various inorganic minerals

Ans: d

Difficulty: Easy

**Response:**

Soil Composition; 15.1.2

6. The removal of dissolved minerals from the soil as water moves downward is called:
- a) illuviation
  - b) leaching
  - c) deposition
  - d) decomposition
  - e) weathering

Ans: b

Difficulty: Easy

**Response:**

Soil Composition; 15.1.2

7. The deposition of leached material in the lower layers of the soil is called:
- a) illuviation
  - b) leaching
  - c) deposition
  - d) decomposition
  - e) decompression

Ans: a

Difficulty: Easy

**Response:**

Soil Composition; 15.1.2



8. The uppermost layer of soil that is rich in plant litter and other organic material is the:
- a) A horizon
  - b) B horizon
  - c) C horizon
  - d) O horizon
  - e) E horizon

Ans: d

Difficulty: Easy

**Response:**

Soil Horizons; 15.1.3

9. The \_\_\_\_\_ is a lighter-colored soil layer where iron and aluminum often accumulate.
- a) A horizon
  - b) B horizon
  - c) C horizon
  - d) O horizon
  - e) E horizon

Ans: b

Difficulty: Easy

**Response:**

Soil Horizons; 15.1.3

10. The \_\_\_\_\_ contains weathered pieces of rock and is found just above the solid bedrock.
- a) A horizon
  - b) B horizon
  - c) C horizon
  - d) O horizon
  - e) E horizon

Ans: c

Difficulty: Easy

**Response:**

Soil Horizons; 15.1.3

11. \_\_\_\_\_ describes the pathway of various nutrient minerals or elements from the environment through organisms and back to the environment.
- a) crop rotation
  - b) leaching and illuviation
  - c) mycorrhizae
  - d) nutrient cycling
  - e) none of these

Ans: d

Difficulty: Easy

**Response:**

Nutrient Cycling; 15.1.5

12. In soil, the smallest particles (less than .002mm) are called:
- a) sand
  - b) silt
  - c) parent material
  - d) clay
  - e) illuviation particles

Ans: d

Difficulty: Easy

**Response:**

Soil Properties and Major Soil Types; 15.2

13. Water tends to drain rapidly through soil that is high in:
- a) sand
  - b) silt
  - c) humus
  - d) clay
  - e) illuviation particles

Ans: a

Difficulty: Easy

**Response:**

Soil Properties and Major Soil Types; 15.2



14. Which of the following sequences is in the correct order from largest particle size to smallest particle size?
- a) Sand > Silt > Gravel > Clay
  - b) Sand > Gravel > Clay > Silt
  - c) Gravel > Sand > Clay > Silt
  - d) Gravel > Sand > Silt > Clay
  - e) Clay > Silt > Gravel > Sand

Ans: d

Difficulty: Easy

**Response:**

Soil Properties and Major Soil Types; 15.2

15. Clay content is particularly important in soil because high-clay soils:
- a) provide excellent drainage
  - b) have large surface areas that can “hold” mineral ions for plant use
  - c) contain abundant oxygen
  - d) are ideal for most agricultural crops
  - e) are easy to till for agriculture

Ans: b

Difficulty: Easy

**Response:**

Soil Properties and Major Soil Types; 15.2

16. Loam:
- a) contains about 40% each of sand and silt
  - b) is an ideal agricultural soil
  - c) has good aeration and drainage
  - d) has a medium ability to hold nutrients and water
  - e) all of these

Ans: e

Difficulty: Easy

**Response:**

Soil Properties and Major Soil Types; 15.2



17. A(n) \_\_\_\_\_ is a type of soil that usually forms in colder climates beneath coniferous forests and makes poor farm land because it is often too acidic and nutrient poor.
- a) mollisol
  - b) oxisol
  - c) aridisol
  - d) alfisol
  - e) spodosol

Ans: e

Difficulty: Easy

**Response:**

Major Soil Groups; 15.2.2

18. A(n) \_\_\_\_\_ is a type of soil that forms in temperate deciduous forests, has a highly leached A-horizon, and must be fertilized if cleared for farmland.
- a) mollisol
  - b) oxisol
  - c) aridisol
  - d) alfisol
  - e) spodosol

Ans: d

Difficulty: Easy

**Response:**

Major Soil Groups; 15.2.2

19. A(n) \_\_\_\_\_ is a type of soil that forms in tropical and subtropical regions where organic material decomposes so fast there is very little A-horizon.
- a) mollisol
  - b) oxisol
  - c) aridisol
  - d) alfisol
  - e) spodosol

Ans: b

Difficulty: Easy

**Response:**

Major Soil Groups; 15.2.2



20. The most extensive damage during the American Dust Bowl of the 1930s occurred in:
- a) Colorado, Kansas, Oklahoma, and Texas
  - b) Nebraska, Wyoming, and South Dakota
  - c) Arizona, New Mexico, Utah, and Colorado
  - d) Arkansas, Louisiana, and Mississippi
  - e) Nebraska, Iowa, Missouri, and Kansas

Ans: a

Difficulty: Easy

**Response:**

Soil Problems; Case in Point (American Dust Bowl); 15.3.2

21. The soils of tropical rain forests tend to be nutrient-poor due to:
- a) extensive wind erosion
  - b) the fact that nutrient minerals are stored primarily in the vegetation
  - c) removal of native plants, largely grasses, depleting the nutrient minerals
  - d) sediment washing into streams from intact forests
  - e) poor crop rotation practices in slash-and-burn agriculture

Ans: b

Difficulty: Easy

**Response:**

Nutrient Mineral Depletion; 15.3.3

22. Worldwide, 75 billion metric tons (83 billion tons) of topsoil is lost annually, primarily due to:
- a) poor agricultural practices
  - b) global warming
  - c) ozone depletion
  - d) the soil rustler's black market
  - e) conservation tillage

Ans: a

Difficulty: Easy

**Response:**

Soil Erosion; 15.3.1



23. Desertification can be caused by:

- a) overgrazing
- b) overcultivation
- c) periodic droughts
- d) soil erosion
- e) all of these

Ans: e

Difficulty: Easy

**Response:**

Desertification; 15.3.5

24. Which of the following is not true of conservation tiling?

- a) a method of cultivation in which residues from previous crops are left in the soil
- b) residues are partially covering soil and helping it to hold seeds
- c) there are several types including no tilling
- d) over 70% of US farmland was planted using conservation tilling in the early 2000s
- e) all of these are false

Ans: d

Difficulty: Easy

**Response:**

Conservation Tillage; 15.4.1

25. A major problem with conservation tillage is:

- a) the soil becomes compact
- b) soil erosion increases
- c) it increases insect populations
- d) it requires greater use of herbicides to control weeds
- e) the soil contains less organic matter

Ans: d

Difficulty: Easy

**Response:**

Conservation Tillage; 15.4.1



26. An important plant to use in crop rotation because it provides nutrients to crops in subsequent years is:
- a) corn
  - b) wheat
  - c) oats
  - d) alfalfa
  - e) potatoes

Ans: d

Difficulty: Easy

**Response:**

Crop Rotation; 15.4.2

27. Legume plants, like soybeans, add which of the following to the soil?
- a) sulfur
  - b) nitrogen
  - c) trace minerals
  - d) phosphorus
  - e) potassium

Ans: b

Difficulty: Easy

**Response:**

Crop Rotation; 15.4.2

28. Planting the same crop year after year:
- a) increases the likelihood of damage by insects and disease
  - b) decreases soil erosion
  - c) provides essential nutrients to the soil
  - d) slowly increases crop yields
  - e) is a new and innovative agricultural practice

Ans: a

Difficulty: Easy

**Response:**

Crop Rotation; 15.4.2



29. Organic fertilizers:
- a) have nutrients immediately available to plants
  - b) can consist of manure, crop residues, or bone meal
  - c) are quickly leached out of the soil by rain
  - d) are manufactured
  - e) have minimal effect on the production of a given crop

Ans: b

Difficulty: Easy

**Response:**

Preserving Soil Fertility; 15.4.4

30. Which of the following authorized the formation of the Soil Conservation Service (now called the Natural Resources Conservation Service)?
- a) Hugh H. Bennett
  - b) Soil Conservation Act of 1935
  - c) Food Security Act (Farm Bill) of 1985
  - d) The Conservation Reserve Program
  - e) Federal Agriculture Improvement and Reform Act (Farm Bill) of 1996

Ans: b

Difficulty: Easy

**Response:**

Soil Conservation Policies in the United States; 15.4.7

31. Mulch:
- a) helps to control weeds
  - b) reduces evaporation
  - c) extends the growing season
  - d) decreases soil erosion
  - e) all of these

Ans: e

Difficulty: Easy

**Response:**

Soil Conservation and Regeneration; 15.4

32. Compost is:

- a) a natural fertilizer
- b) used to minimize soil erosion
- c) placed on the soil surface when used
- d) used to minimize water loss from the soil
- e) used to control weeds

Ans: a

Difficulty: Easy

**Response:**

Soil Conservation and Regeneration; 15.4

33. Scientists know relatively little about the roles of most soil organisms because:

- a) very few soil organisms have been identified
- b) it is hard to study them in a natural environment
- c) they are too small to see, even with high-powered microscopes
- d) they do not affect soil much and are not worth studying
- e) none of these; scientists have a good understanding of most soil organisms

Ans: b

Difficulty: Medium

**Response:**

Soil Organisms; 15.1.4

34. Which of the following statements about minerals in soil is true?

- a) There are only two mineral ions, potassium and magnesium, that are essential for plant growth.
- b) Negatively charged mineral ions are often washed out of the root zone.
- c) Clay minerals in soil help provide good drainage.
- d) Clay minerals very rarely have charged ions.
- e) Sand particles may "hold" mineral ions in the soil and prevent their use by plants.

Ans: b

Difficulty: Medium

**Response:**

Soil Properties and Major Soil Types; 15.2

35. Soil pH is important because:

- a) some mineral ions are leached more easily from an acidic soil
- b) plants cannot survive in soils with pH less than about 7.0
- c) extremely basic soils are ideal for plant growth
- d) plants can only absorb insoluble forms of mineral elements
- e) all of these

Ans: a

Difficulty: Medium

**Response:**

Soil Acidity; 15.2.1

36. Soil with a pH of 6.0:

- a) is slightly acidic
- b) is most likely caused by human-produced air pollution
- c) is problematic because the optimum soil pH for plant growth is 8.0 to 10.0
- d) is often associated with toxic concentrations of soluble aluminum and manganese
- e) all of these

Ans: a

Difficulty: Medium

**Response:**

Soil Acidity; 15.2.1

37. Increased soil erosion can be caused by all of the following except:

- a) construction of buildings
- b) construction of roads
- c) construction of shelterbelts
- d) clearcutting large forested areas
- e) agriculture

Ans: c

Difficulty: Medium

**Response:**

Soil Conservation and Regeneration; 15.4



38. Soil erosion:
- a) can affect water quality and fish habitats
  - b) reduces the quantity, but not the fertility, of soil
  - c) is a manmade phenomenon
  - d) can be prevented by limiting plant cover
  - e) is only a significant problem in developing countries

Ans: a

Difficulty: Medium

**Response:**

Soil Erosion; 15.3.1

39. The American Dust Bowl was caused by all of the following except:
- a) the Great Plains of North America have low annual precipitation
  - b) the extensive removal of native prairie grasses to plant crops
  - c) overgrazing
  - d) unusually severe wind and storm conditions
  - e) poor nutrient quality of the soil of the Great Plains

Ans: e

Difficulty: Medium

**Response:**

Case in Point: American Dust Bowl; 15.3.2

40. Salinization of agricultural soils is most often associated with:
- a) crop rotation
  - b) deforestation
  - c) irrigation
  - d) nutrient depletion
  - e) terracing

Ans: c

Difficulty: Medium

**Response:**

Soil Salinization; 15.3.4

41. Which of the following outlines a typical crop rotation planting schedule?
- a) corn  oats  corn  alfalfa
  - b) corn  soybean  oats  corn
  - c) soybean  corn  oats  corn
  - d) oats  soybean  oats  corn
  - e) corn  alfalfa  oats  soybean

Ans: e

Difficulty: Medium

**Response:**

Crop Rotation; 15.4.2

42. Which of the following is a type of contour plowing?

- a) strip cropping
- b) native prairie seizure
- c) grasslands reserve program
- d) sod busting
- e) crop rotation

Ans: a

Difficulty: Medium

**Response:**

Contour Plowing, Strip Cropping, and Terracing; 15.4.3

43. Agroforestry is a method designed to:

- a) prevent the spread of weeds
- b) improve the efficiency of plowing
- c) improve soil fertility
- d) prevent soil erosion
- e) make farms more visually attractive

Ans: c

Difficulty: Medium

**Response:**

Agroforestry; 15.4.6

44. The difference between compost and mulch is:

- a) compost is mixed into soil to improve fertility; mulch is placed on soil's surface to control weeds and retain moisture
- b) compost is made of inorganic materials; mulch is made of organic materials
- c) compost is used in landfills, individual property owners use mulch
- d) composting is an expensive commercial process; mulching is a do-it-yourself endeavor
- e) there is no difference; mulch and compost are synonyms

Ans: a

Difficulty: Medium

**Response:**

Soil Conservation and Regeneration; 15.4



45. Which of the following is not a benefit of conservation tillage?

- a) reduces soil erosion
- b) increases organic matter in the soil
- c) reduces fuel costs
- d) needs fewer herbicides
- e) saves time (labor)

Ans: d

Difficulty: Medium

**Response:**

Conservation Tillage; 15.4.1

46. Commercial inorganic fertilizers:

- a) are soluble and provide nutrients that are immediately available for plants
- b) rarely leach into groundwater or surface water
- c) improve the water-holding capacity of the soil
- d) can amplify microorganisms that cause plant disease
- e) require less energy to produce than organic fertilizer

Ans: a

Difficulty: Medium

**Response:**

Preserving Soil Fertility; 15.4.4

47. Which soil horizons are most prone to erosion?

- a) A and B
- b) B and C
- c) A and O
- d) A and C
- e) B and O

Ans: c

Difficulty: Medium

**Response:**

Soil Horizons; 15.1.3