

# Dirty Monday - Soils and Land Use Challenge

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\* Required

Take the "Natural Challenge" with this quiz for the Soils and Land Use Station, brought to you by the Pennsylvania Envirothon!



Please enter your name: \*

Your answer

Please enter your school name: \*

Your answer

Please enter the county you would have represented at this year's Envirothon: \*

Your answer



I certify that I will uphold honesty and integrity for this online challenge by not using internet, print, or any other outside resource to answer these questions. \* 0 points

I will

1. Sand, silt, and clay refer to what property of soil particles?

5 points

- Particle size
- Parent material
- Soil color
- Chemical makeup of the particles

2. Which soil horizon designates the area of partially weathered parent material between well-developed soil and unweathered bedrock?

5 points

- "A" horizon
- "C" horizon
- "R" horizon
- "O" horizon



3. Which of the following terms describes the condition of a soil that is saturated, flooded, or ponded long enough during the growing season so that soil micro-organisms use up the available oxygen? 5 points

- Anisotropic
- Xeric
- Anaerobic
- Aerobic

4. The community of living organisms and their interaction in the soil is referred to as what? 5 points

- Arthropods
- Decomposition
- Micro-organisms
- Soil food web

5. Soils develop as a result of five basic soil-forming factors. Parent material, topography, climate and vegetation are four of them. What is the one remaining soil-forming factor? 5 points

- Texture
- Erosion
- Water
- Time



6. Which one of the following statements about the Dust Bowl is NOT true? 5 points

- The Dust Bowl took place in the 1830's.
- Airborne dust during the Dust Bowl years caused pneumonia and lung infections.
- Smaller dust storms still take place today.
- Some major causes of the Dust Bowl were a reduction in native grass cover, drought, and strong winds.

7. What is the subsurface soil layer called that is exceptionally dense, somewhat brittle when moist, relatively impermeable, and often found in colluvial and sometimes glacial soils? 5 points

- Glacial till
- Residuum
- Colluvium
- Fragipan

8. When trying to grow crops, why should a farmer test the pH of his/her soil? 5 points

- Cation exchange capacity (CEC) influences soil pH levels.
- Increasing soil pH increases soil fertility.
- Decreasing soil pH reduces nutrient leaching.
- Soil pH levels influence the availability of nutrients.



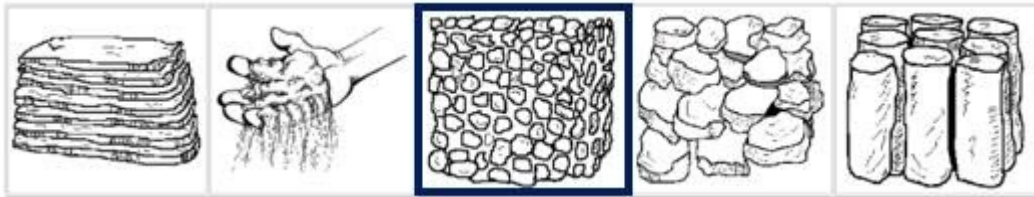
9. Select one characteristic of hydric soils.

5 points

- Grey and orange mottles
- Productive cropland if drained
- Form under aerobic conditions
- High density of earthworms

10. What kind of soil structure is shown in the black square in the below image?

5 points



- Granular
- Single grain
- Porous
- Subangular blocky

11. When nitrogen is applied to the soil, microorganisms convert it to the plant available form, nitrate ( $\text{NO}_3^-$ ). Nitrate is not water soluble and is immobile in the soil.

5 points

- True
- False



12. If drinking water is contaminated with nitrate ( $\text{NO}_3^-$ ), infants can develop a condition called 'Blue Baby Syndrome'.

5 points

- True
- False

13. Which soil texture has a gritty feel, can be seen with the naked eye, and if hand sampling, leaves no residue on hand and or in pores?

5 points

- Clay
- Sand
- Silt

14. Which soil texture has a dry powdery smooth feel; wet creamy slick, slippery feel; no sticky or plastic feel; can be seen with a hand lens or microscope; and if hand sampling, coats hand, able to brush off, and remains in pores?

5 points

- Clay
- Sand
- Silt

15. Loamy soil is a mix of sand, silt, and clay that optimizes agricultural productivity.

5 points

- True
- False



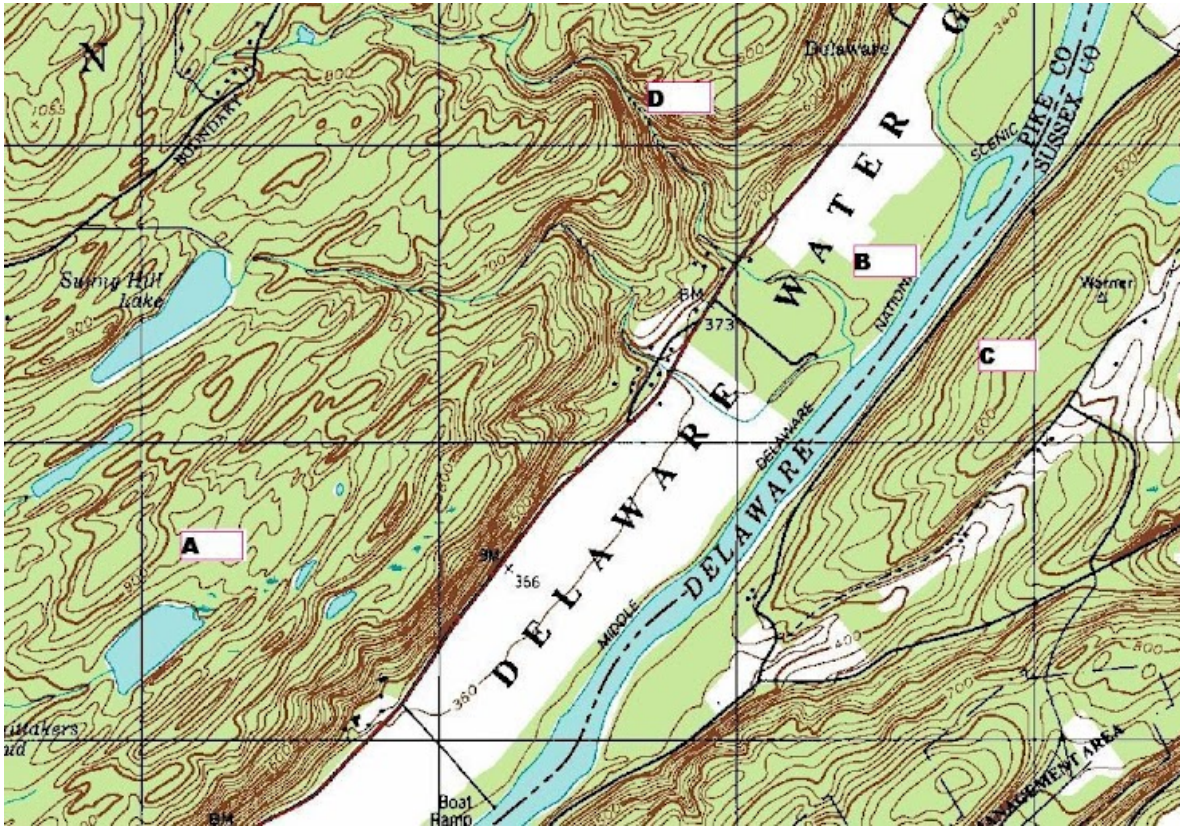
16. Tillage destroys “aggregation” or the soil’s structure, which is the habitat soil microorganisms depend upon to ensure critical soil functions like \_\_\_\_\_.

5 points

- Carbon cycling
- Crop cycling
- Nutrient cycling



17. When looking at the topographic map of a section of the Delaware Water Gap National Recreation Area located in Pike County, PA, which of the below statements is false for box B? 5 points



- The elevation at box B is less than 400 feet.
- Box B is located on a steep and hilly landscape.
- The soils underlying box B probably developed on flood plain sediments.
- Box B is located on nearly level ground.





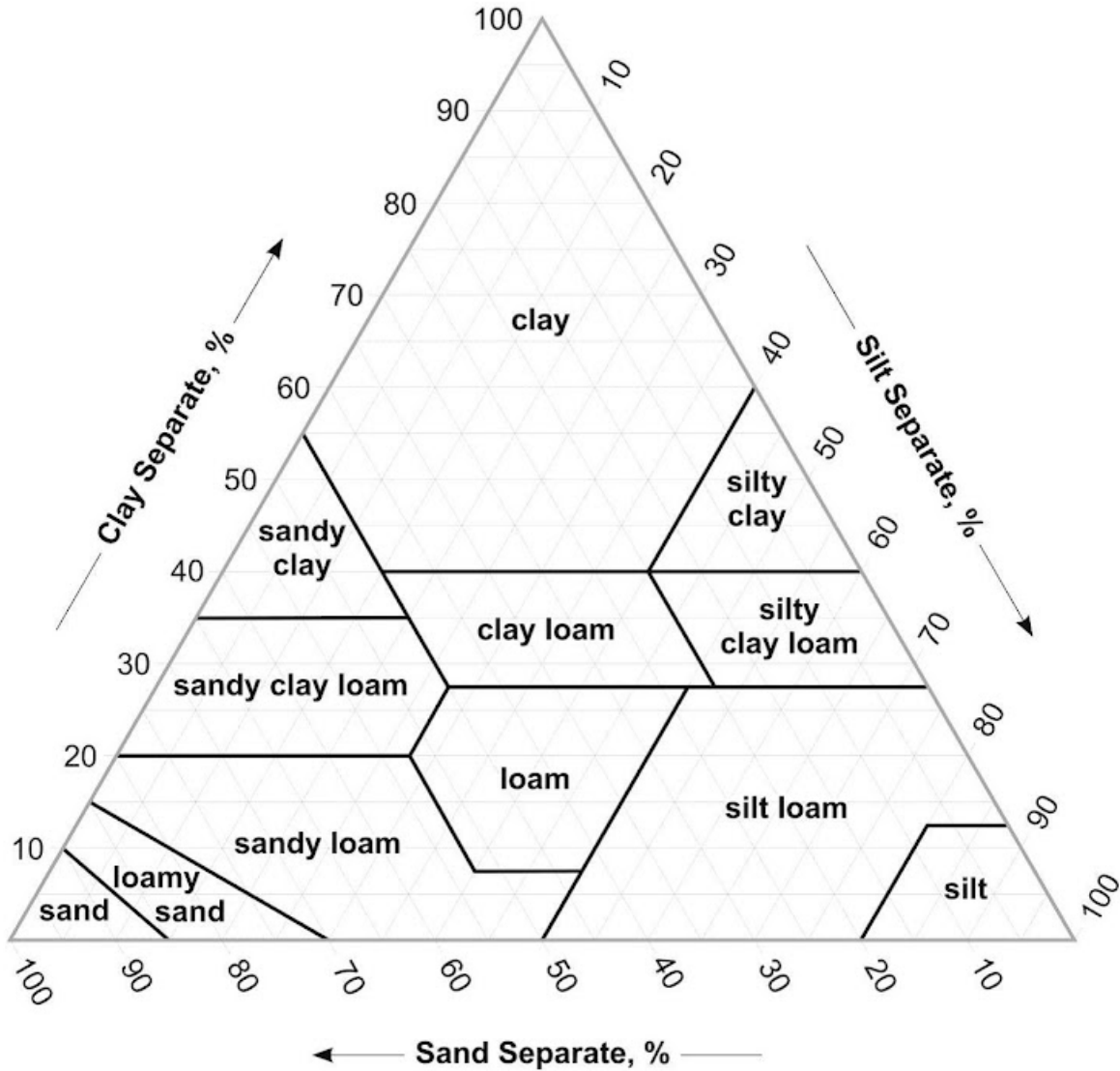
18. If the pH of the surface horizon is 7.9, this soil would be considered to be what? 5 points

- Acid
- Neutral
- Alkaline
- Sodic



19. Using the Soil Texture Triangle, what is the texture of a soil that has 35% clay and 30% sand? 5 points

### Soil Textural Triangle

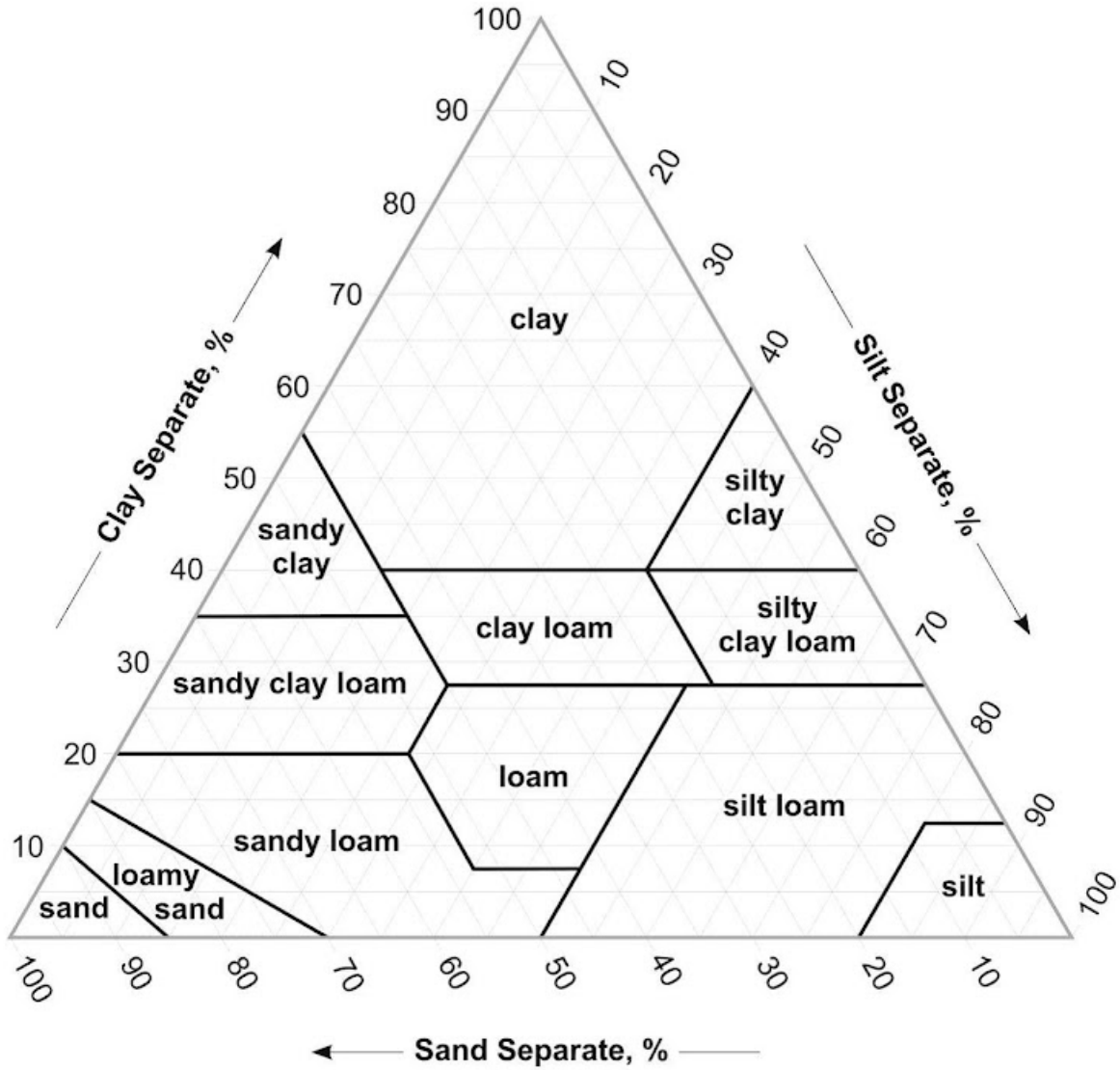


- Clay loam
- Sandy clay loam
- Sandy clay
- Silty clay loam



20. Using the Soil Texture Triangle, what is the percentage of silt for the above soil that has 35% clay and 30% sand? 5 points

### Soil Textural Triangle



- 25% (or 25% silt)
- 30% (or 30% silt)
- 35% (or 35% silt)
- 40% (or 40% silt)



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