

## READING GUIDE\*

### Processes of Soil Formation III: Translocations and Horizonation Processes

see Buol et al. (2011), Chapter 5, p. 169-179

**OBJECTIVE:** *To understand the pedogenic processes that create and destroy horizons within the soil, know the morphologies that they produce, and recognize the soil environmental conditions that promote these processes.*

1. What is *haploidization*? What is *pedoturbation*? How do these processes influence profile morphology?
2. What are the eight different kinds of pedoturbation? What causes the mixing in each? **Which may be rapid? Which are slow? Which effect large volumes of soil? Which effect only small volumes of soil?**
3. What two soil orders are strongly influenced by pedoturbation processes? What type of pedoturbation is important in each?
4. What are the four general processes that lead to the development of recognizable horizons within the soil?
5. What are *eluviation* and *illuviation*? What soil morphologies are produced by these processes?
6. What are *calcification* and *decalcification*? What soil environmental conditions promote these processes?
7. What are *salinization* and *desalinization*? What soil environmental conditions promote these processes? What types of salts generally occur in soils?
8. What are *alkalization* and *dealkalization*? What soil environmental conditions promote these processes?
9. What is *lessivage*? What soil morphologies are produced by this process?
10. What is *podzolization*? What forms of iron are eluviated? What forms of iron are illuviated? What soil morphologies are produced by this process?
11. What are *desilication* and *resilication*? What soil environmental conditions promote these processes? What types of salts generally occur in soils? How does desilication lead to *allitization* and *ferritization*? **How do these various processes influence the mineralogy of soil materials?**
12. What are *melanization* and *leucinization*? What soil morphologies are produced by these processes?
13. What are *littering* and *humification*? What soil morphologies are produced by these processes? What is *mineralization*?
14. What is *paludization (paludification)*? What soil morphologies are produced by this process? What soil environmental conditions promote this process?
15. What are *braunification*, *rubification*, and *ferrugination*?
16. What is *gleization*? What soil environmental conditions promote this process? What soil morphologies are produced by this process?
17. What structural types are most commonly found in the subsoil? What processes lead to the development of subsoil structure?
18. Are structural cracks persistent or transient? Explain your answer.
19. What conditions favor the development of prismatic structure? **Why do surface horizons usually have granular structure?**

**SYNTHESIS:**

20. Consider the various processes of soil formation that may occur in soils. Which are most important in West Virginia soils? In what environments across the state are each of these processes most likely to occur?

\* Questions in plain type represent basic facts and concepts. Questions in **bold** type are those that are answered in the text but require more careful consideration. The Synthesis questions at the end help you apply the facts and concepts to a relevant issue.