

READING GUIDE*

Vertisols

see Buol et al. (2011), Chapter 19, p. 389-395

OBJECTIVE: *To understand the nature and properties of soils classified as Vertisols, to know the potential uses and limitations of these soils, and to recognize the taxa associated with Vertisols in Soil Taxonomy.*

1. What is the central concept for soils classified as Vertisols?
2. What percentage of the land area of the planet is occupied by Vertisols?
3. What environmental condition is common to soils classified as Vertisols?
4. What is *gilgai*? **What are its characteristics? How does it form?**
5. In what soil forming environments are Vertisols most commonly found?
6. Explain why Vertisols are found in each of the following settings. Be sure to specify the pedogenic processes that occur (or do not occur) to promote the occurrence of Vertisols. (a) alkaline parent materials, (b) level to gently sloping landscapes, (c) marine clay deposits, (d) arid to semiarid climates
7. What is *argillipedoturbation*?
8. What type of clay mineral produces the characteristic shrinking and swelling in Vertisols?
9. Explain the “self-swallowing model” as it is used to account for the observed soil properties common to Vertisols. Be specific. What are the shortcomings of the model?
10. What are *slickensides*?
11. Explain the “soil mechanics model” as it is used to account for the observed soil properties common to Vertisols. Be specific. How does it differ from the “self-swallowing model”?
12. What types of land use problems may be associated with soils classified as Vertisols? Explain why land use practices may be limited. Be specific.
13. What land use practices are commonly supported by soils classified as Vertisols?
14. What suborders are identified for soils classified as Vertisols? What are the diagnostic properties of each?
15. What properties are used to distinguish the great groups of soils classified as Vertisols?
16. How are “torric,” “xeric,” “ustic,” and “udic” used to define the different suborders of Vertisols? (Note: They do not refer to the soil moisture regime.)

SYNTHESIS:

17. What are possible means to cope with the highly expansive nature of Vertisols? Explain your answer. Provide both agricultural and non-agricultural examples.

* 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.