

## READING GUIDE\*

### Soil Macromorphology

see Buol et al. (2011), Chapter 2, p. 35-45

**OBJECTIVE:** *To understand the morphological properties of texture, color, structure, and consistence as used when describing horizons within a soil profile, and to recognize the significance of these properties.*

1. What is *soil morphology*? How does *macromorphology* differ from *micromorphology*? What are some examples of soil properties used in the field to describe soil morphology?
2. How is soil macromorphology best examined? What (general) methods are employed?
3. What is a *soil horizon*? What properties may be used to distinguish among soil horizons?
4. What are the three measurable variables used when describing soil color? Define and describe each.  
**Which is darker, value = 2/ or value = 8/ ? Which is duller (grayer), chroma = /2 or chroma = /6?**
5. **What properties influence the color of soils?**
6. What is *mottling*? What variables are used to describe mottling? Why is it useful to note the spatial arrangement of mottling patterns?
7. What is *soil texture*? What are the three soil size separates used by the USDA and the size limits of each?
8. **Using a textural triangle determine the textural class of a soil material with 20% sand, 50% silt, and 30% clay.**
9. When is a rock fragment modifier used before the textural class of a soil material? What are the rock fragment classes used by the USDA and the size limits of each?
10. What percent of organic carbon in a soil material is the minimum to be classed as an *organic soil*? What terms are used to identify different levels of decomposition of these organic soil materials?
11. What is *soil structure*? What are *peds*? What are the two recognized forms of a structureless condition?
12. What three aspects of soil structure are commonly described? What are the six recognized structural shapes?
13. What is structural grade? How are weak, moderate, and strong grades distinguished?
14. What is *consistence*? **How does moisture content influence consistence?**
15. What is *stickiness*? How is it evaluated? What is *plasticity*? How is it evaluated? What is *rupture resistance*? How is it evaluated?
16. What characteristics of roots are described for each horizon?
17. What characteristics of horizon boundaries are described for each horizon? What terms are used to describe each of these characteristics?
18. What other features may sometimes be recorded when describing a soil horizon?
19. Why is it important to collect and record all of this information about soil horizons?

#### SYNTHESIS:

20. Consider each of the soil morphological properties discussed above. For each give examples of how the morphological features may reveal something about how the soil formed. For each give examples of how the morphological features may reveal something about how the soil may be used or managed.

\* 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.