

Introduction to Soil Science
Final Exam Study Guide

Chapter 8 Acidic Soils

1. Know three factors that contribute to acidic soils. What are the two most common ions that contribute to soil acidity? What is the origin of hydrogen ions in the soil?
2. Why do plants grow poorly in acidic soils?
3. What common substances are used for liming in raising acidity? Which is most often used? Which is cheapest? What should you do prior to liming? What size particles are best in overall operation of lime? What is reserve acidity?
4. Be able to name plants that are acid tolerant? do best in neutral soils? in alkaline soils?
5. What are five benefits of adding lime to acidic soils?
6. What are the methods for applying lime to the soil?
7. If wishing to acidify a soil, what would you use?

Chapter 10: N, P and K

1. List the 16 elements that are needed by plants. Which of these are considered macro-elements? Which are considered micro-elements?
2. Give two uses for N, P and K by plants. Know the deficiency symptoms of each.
3. Be able to describe the basic steps in the nitrogen cycle. Mineralization -basic organic matter to ammonium form; nitrification – oxidation of ammonium to nitrate; nitrogen fixation - N_2 to nitrate)
4. How do most nutrients enter the plant roots?
5. What common nitrogen fertilizers are used by landowners? Advantages of commercial over animal manure? Advantages of animal manure over commercial?
6. How is nitrogen lost from the soil? How is it replaced?
7. What common phosphorus fertilizers are used? What symbiotic relationship exists between mycorrhizae and plants? What is best pH for phosphorus uptake?
8. What is commonly used as K fertilizer? What plants use a lot of potassium?

Chapter 11: Ca, Mg, S and Micronutrients

1. Know the uses of Ca, Mg, S and Micronutrients in plant growth? Also, know the deficiency symptoms.
2. Give at least one use of B, Fe, Zn, Mn, Cu, Mo, Cl.
3. Which elements are considered beneficial elements but not necessarily are called essential?

Chapter 12: Soil Fertility Management

1. Know how to read a Soil Test.
2. Be able to give the main steps involved in taking a good soil sample?
3. To whom do you take the sample for a free analysis?
4. What health problems are related to high nitrogen values in the soil?
5. What environmental problems arise in having too high phosphorus in soil?
6. Review three ways of applying fertilizer.
7. What is a BMP? Be able to name three practices that qualify as BMPs.

Chapter 14: Soil Erosion

1. Define soil erosion? Is it still a problem in the United States? In NW Arkansas? Explain. What is the basic agent of erosion in NW Arkansas?
2. How does soil erosion affect your life?
3. What is the USLE? What is it used for?
4. What rate of erosion is considered tolerable (T)?
5. What ways can help toward reducing water erosion?
6. Discuss ways in which wind contributes to erosion?

Chapter 16: Wetlands and Land Drainage

1. What are five functions of wetlands? Are there values associated with drainage? What?
2. What proportion of natural wetlands have been drained in the United States?
3. What types of wetlands are present in the United States today? How many are natural? Man-made?
4. What soils support wetlands?
5. What is the legal status of wetlands in the United States today according to Section 404 of the 1977 Clean Water Act? What are the consequences?

Chapter 17: Pollution of Soil, Water and Air

1. What is pollution?
2. Review the pollution terminology given on pages 498-499.
3. What is methemoglobinemia? Who does it often affect? What does it indicate?
4. How do we discard organic wastes in Northwest Arkansas? Benefits to using human sludge? Disadvantages?
5. How large a problem is pollution of the soil by pesticides? Be able to name 5 toxins that we are often exposed to during the day.
6. What are greenhouse gases? How do we believe the excess of these affects the Earth's functioning?
7. What is desertification? Is it widespread across the globe? United States?

Chapter 18: Toward Environmental Integrity

1. Know the date of the creation of the Environmental Protection Act.
2. What are the two acts under it that pertain to water and air? When were they enacted?

3. How does Rachel Carson play a role in our attitudes toward pesticides?
4. What are some remedies for improving soil quality? First name the problem and tell in what ways it is being prevented or reduced?

Soil Survey Report - Bring your book to class for the final exam:

Know how to read the Soil Survey maps to find a location; how to determine the soils present at a location; how to read the tables to make recommendations for the soil types.