

Agricultural Science II

Curriculum Guide: *Soil Science*

Unit Objective:

Students will demonstrate an understanding of soil science by analyzing how soil composition relates to fertility and soil management and recording their findings in a table.

Show-Me Standards: 1.3, CA4

References:

Missouri Department of Conservation. Accessed April 24, 2003, from www.mdc.state.mo.us.

Missouri Department of Natural Resources. Accessed April 24, 2003, from www.dnr.state.mo.us.

Soil Science. University of Missouri-Columbia, Instructional Materials Laboratory, 1995.

Instructional Strategies/Activities:

- Students will engage in study questions in lessons 1 through 13.
- Students will complete AS 4.1, Soil Texture; and AS 9.1, Soil Sampling and Interpreting Soil Test Results.
- Additional activities that relate to the unit objective can be found under the heading "Other Activities" in the following locations: p. 4, p. 33, p. 42, p. 61, p. 88, and p. 113.

Performance-Based Assessment:

Working in pairs, students will be assigned to take three soil samples from varied topographies. Students will do a field estimate of the physical properties and then categorize the type of soil for each sample. Based on the physical and chemical properties of the soil samples and research relating to the needs of specific crops, students will recommend appropriate crops and soil management for each soil sample. Their findings will be recorded in a table they create.

Students will be assessed on the accuracy and thoroughness of the table and recommendations. Spelling, grammar, punctuation, and capitalization will also be assessed.

**Soil Science
Instructor Guide**

The instructor should assign the performance-based assessment activity at the beginning of the unit. Students will work toward completing the activity as they progress through the unit lessons. The assessment activity will be due at the completion of the unit.

1. Divide students into pairs and assign each pair to collect three soil samples, each from a different topography.
2. Have students design a table in which they will record the following information.
 - Description of the location where each sample was taken
 - Physical properties (color, texture, structure, and permeability) of the soil and soil categorization
 - Interpretation of physical properties and categorization
 - Interpretation of the chemical analysis report
 - Recommended crops and management plan for each sample
3. Students will bring the soil samples to class and prepare them for analysis.
4. When the physical properties are determined, have the students interpret the results and record them in their tables.
5. Students will be assessed on the accuracy and thoroughness of the table and recommendations. Spelling, grammar, punctuation, and capitalization will also be assessed.

**Soil Science
Student Handout**

1. You will work with a fellow classmate to collect three soil samples, each from a different topography.
2. Your team will design a table to record the following information.
 - Description of the location where each sample was taken
 - Physical properties (color, texture, structure, and permeability) of the soil and soil categorization
 - Interpretation of physical properties and categorization
 - Interpretation of the chemical analysis report
 - Recommended crops and management plan for each sample
3. Your team will bring the soil samples to class and prepare them for analysis.
4. When the soil test results are complete, you will interpret the results and record them in your table.
5. You will be assessed on the accuracy and thoroughness of the table and recommendations. Spelling, grammar, punctuation, and capitalization will also be assessed.

Agricultural Science II

Soil Science Scoring Guide

Name _____

Assessment Area	Criteria	0 Points	1 Point	2 Points	3 Points	4 Points	Weight	Total
Content of Table	<input type="checkbox"/> Organized <input type="checkbox"/> Neat <input type="checkbox"/> All areas are covered <input type="checkbox"/> Detailed	0 criteria met	1 criterion met	2 criteria met	3 criteria met	All 4 criteria met	X 10	
Recommendations for Soil	<input type="checkbox"/> Well organized <input type="checkbox"/> Detailed <input type="checkbox"/> Accurate information <input type="checkbox"/> Covers all three soil samples	0 criteria met	1 criterion met	2 criteria met	3 criteria met	All 4 criteria met	X 10	
Technical Considerations	<input type="checkbox"/> Spelling <input type="checkbox"/> Grammar <input type="checkbox"/> Punctuation <input type="checkbox"/> Capitalization	0 criteria met	1 criterion met	2 criteria met	3 criteria met	All 4 criteria met	X 5	
TOTAL								

Final Assessment Total _____/100 pts.

Comments:

