

Unit 3: Soils

Unit Summary: This unit is intended to provide students with an overview of the soil. While its level is introductory, teachers without any background in soils (primarily science educators) have found additional background was necessary for them to effectively teach this unit. This unit is intended to provide the basis or understanding the role of the soil in the production process. Special emphasis is placed on the retention of soils in the production process.

Teaching Time: It is anticipated that this unit and its related activities will take a minimum of five 50-minute class periods to complete. Depending on the number of readings utilized, this could be longer. Also the depth of utilization of the laboratory activities and the desired level of student mastery of texturing soil can add considerable time to the length of the unit. Several teachers reported using this unit for three full weeks of their semester, but included additional activities related to the judging of soils.

Audience: 9-12 Science & Agriculture Students

Unit's placement in the overall course: This unit is a foundational unit which the units focused on water, carbon, and nitrogen build upon. Critical to understanding the carbon and nitrogen cycles role in climate changes is a knowledge of the soil and its immense capacity to store and release carbon,

Goals: Students will explore the soil, its creation, composition, and transportation.

Description of the unit: This unit contains a PowerPoint, several lab activities, and an extensive list of possible readings. Teachers are encouraged to sort through the list of readings and find those most aligned to their interests and their students' needs related to understanding the soil. If student have had a basic unit on soils prior to this unit, the PowerPoint may move quickly and teachers can focus on the active investigation of the soil provided through the laboratory activities. Teacher notes are supplied with most slides to help guide class discussion.

Using this unit: Within the PowerPoint for this unit are hidden slides. On these slides are embedded Microsoft Word Documents. These documents provide the additional resources needed to deliver this unit. A standards document is provided which includes the relevant Next Generation Science Standards, Common Core State Standards for Math and ELA, and Agriculture, Food, & Natural Resources Standards. The standards included may be only introduced through this curriculum, and the teacher will need to decide the level at which they want to augment the provided instruction in relation to these standards. Readings associated with the unit are in a separate zipped PDF file. This document includes all the readings in one zipped file so teachers can select those readings most appropriate for their classrooms.

Related Readings for Meeting CCSS in ELA: These readings are not overly technical, however teachers reported some difficulty using them with students on IEP's. To accommodate these

students it is recommended teachers choose a portion of the readings and run it through an application like <http://www.rewordify.com> which can adjust the reading levels as needed.

Required Supplies by Activity:

Activity 1: Using the Textural Triangle:

- A. Handouts
- B. Colored Pencils

Activity 2: Determine soil textural class by feel:

- A. Spray bottle filled with water
- B. Sink (to wash hands, do not put soil in the sink)
- C. Paper towels
- D. A variety of soil samples (student supplied from various locations, or your own)

Activity 3: Google Earth Soil Conservation Practices (Slide 41)

- A. Computers, 1 per student preferred