Science

Candy Core Sampling

Grade Level
4-6

Length of Lesson
45 minutes

Objective
By the end of this lesson, students will understand the different layers of the soil and how they differ in different locations.

Materials
- Student Worksheets (1 per student)
  Mini/bite sized candy bars (assorted)
- Large clear plastic straws
- Colored pencils
- Plates or paper towels

Standards
NGSS
4-ESS1-1, 4-ESS2-1, 4ESS2-2, 5-LS2-1, 5-ESS3-1, MS-LS2-4, MS-ESS3-3

Lesson Summary
This lesson is designed to teach students about soil horizons and how soil is typically formed into layers. Students will take core samples from candy bars to see how layers can differ in different geographical locations.

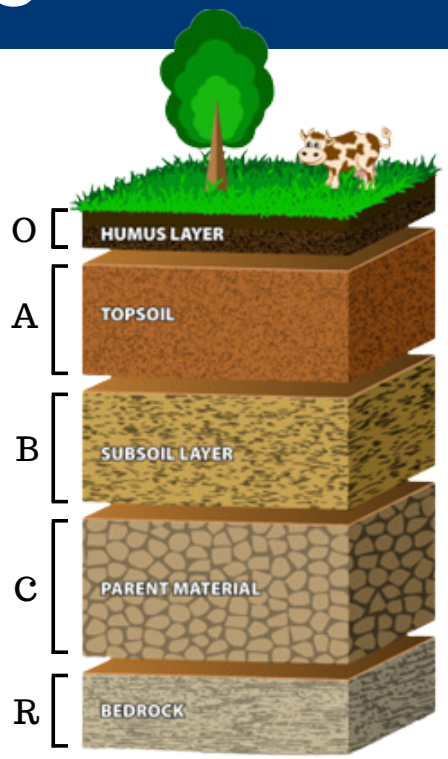
Suggested Sequence of Events:
1. Set Up: Purchase an assorted bag of mini/bite sized candy bars as well as large clear plastic straws. Cut the straws in half. Set the candy bars out so they are at or just slightly above room temperature so students can easily poke a straw through them.
2. Read a book or two from our Scoop on Soil Recommended Reading list to gain students' interest.
3. Read through the IAITC Soil Ag Mag to learn more about soil! Interactive online versions can be found on our website.
4. Complete the activity following the procedures:
   - Give each student 3-4 different types of candy bars and half of a plastic straw.
   - Have students unwrap a candy bar and carefully poke a straw through the top of it. Make sure they poke all the way through the bottom of the candy bar. They may have to twist or wiggle it to get it all the way through.
   - Gently pull the straw back out of the candy bar and use a damp paper towel to wipe off the outside of the straw.
   - Use scissors to cut the straw just above the candy inside.
   - Have students record their results using colored pencils and the Student Worksheet. In this step, they will be examining the layers that came from their candy bar.
   - Repeat steps for all the candy bars they have.
5. Whole class discussion and reflection of activity.

TEACHER RESOURCES

Soil Horizons Background Information

Soil is organized into layers, called horizons.

- O Horizon: Humus Layer. Top layer of decomposing organic matter.
- A Horizon: Topsoil. This layer is made up of mineral particles (sand, silt, and clay) along with organic matter.
- B Horizon: Subsoil. This layer is rich in minerals that have moved down from the layers above it.
- C Horizon: Parent Material. This layer is made up of the rock from which the soil originally formed.
- R Horizon: Bedrock. This is a layer of unweathered rock, such as granite, basalt, quartzite, limestone or sandstone.



Candy Core Sample Examples

Snickers **3 Musketeers** **Milky Way** **Milky Way Midnight**

Disclaimer

- Not all candy bars work well for this activity. For example, Twix are too tough to push a straw through. We recommend the candy bars above, but feel free to experiment!
- Many candy bars contain common allergens like peanuts, wheat, and dairy. Ensure that your group of students will be able to safely complete this activity. Alternative lesson: Play-Doh Core Sampling

Extension Ideas

- Give each student different kinds of candy bars. After they have sampled, have them try to guess which candy bar other students' core samples came from.
- Allow students to predict what their core sample would look like before they sample, using their previous knowledge about ingredients in their favorite candy bars.
- If you have difficulty taking core samples with the plastic straws, you can cut the candy bars in half with a knife and view their cross-sections to see the layers.
- Complete IAITC lesson Play-Doh Core Sampling to learn more about how humans can impact soil horizons and the depths of their individual layers, even making the soil profile different in the same field.
- Go to agintheclassroom.org to contact your County Ag Literacy Coordinator for free classroom sets of our Ag Mags!

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Candy Core Sampling

Student Worksheet

Directions

1. Label the boxes below with the type of candy bar you have taken a core sample from.
2. Using your colored pencils, draw the core sample from each candy bar.
3. To the best of your ability, label the layers of candy.

Candy Bar 1:

Core Sample **Layers**

Candy Bar 2:

Core Sample **Layers**

Candy Bar 3:

Core Sample **Layers**

Candy Bar 4:

Core Sample **Layers**

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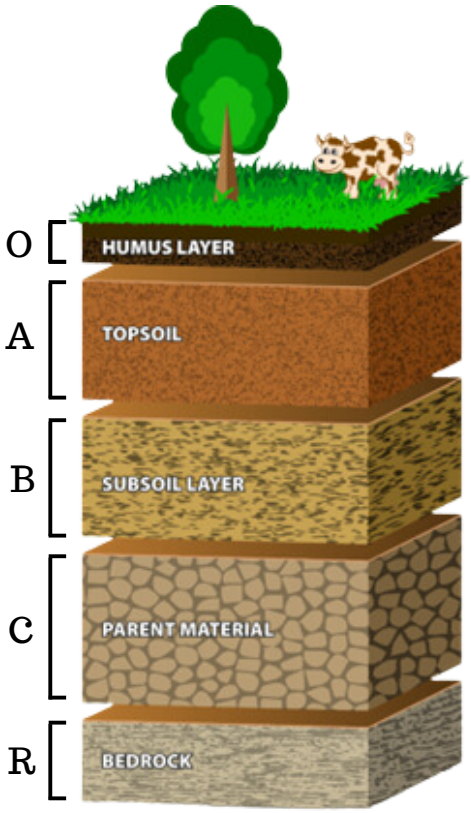
Candy Core Sampling

Student Worksheet

Directions

1. Take a look at the diagram to the right. This diagram shows a typical Illinois soil horizon, which is organized into layers. Like you just did with your candy bars, soil scientists often take soil core samples which show these layers.
2. Choose the candy core sample from the previous page with the most defined layers. In the table below, identify which layers of candy would represent which soil horizons, if any. Try to explain why!

note: you may not have every horizon!



Candy Bar:

Candy Layers	Candy Core Sample	Soil Layers & WHY

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Candy Core Sampling

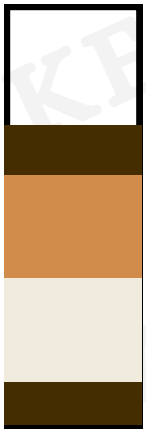
Answer Key

Directions

1. Label the boxes below with the type of candy bar you have taken a core sample from.
2. Using your colored pencils, draw the core sample from each candy bar.
3. To the best of your ability, label the layers of candy.

Candy Bar 1: Milky Way Midnight

Core Sample **Layers**



Dark Chocolate

Caramel

Nougat

Dark Chocolate

Candy Bar 2:

Core Sample **Layers**

Candy Bar 3:

Core Sample **Layers**

Candy Bar 4:

Core Sample **Layers**

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Answer Key

Directions

1. Take a look at the diagram to the right. This diagram shows a typical Illinois soil horizon, which is organized into layers. Like you just did with your candy bars, soil scientists often take soil core samples which show these layers.
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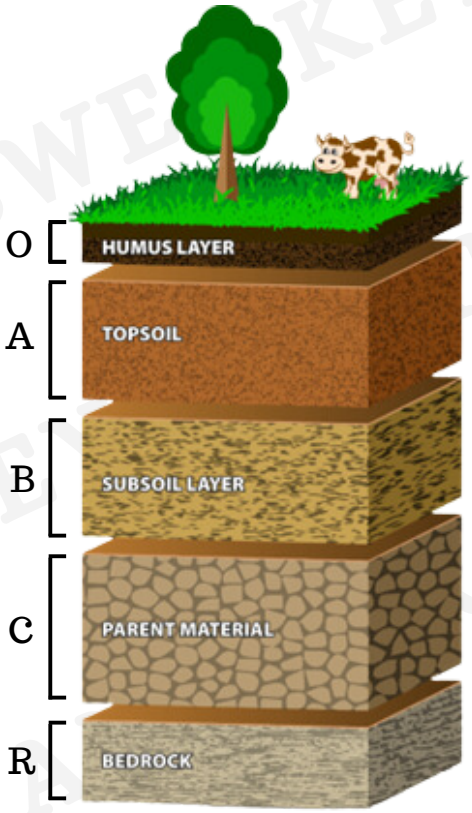
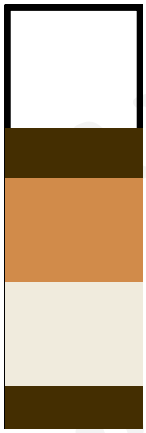


Candy Bar: EXAMPLE: Milky Way Midnight

Candy Layers	Candy Core Sample	Soil Layers & WHY
Dark Chocolate		O Horizon: thin top layer
Caramel		A Horizon (Topsoil): thick darker second layer
Nougat		B Horizon (Subsoil): lighter in color than A
Dark Chocolate		R Horizon (*maybe? - answers may vary)*