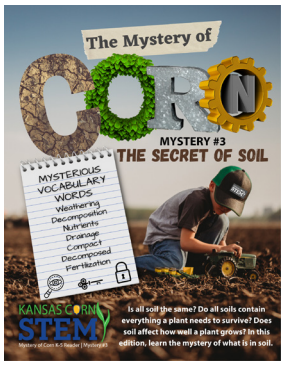

MYSTERY #3
THE SECRET OF SOIL

K - 5th Grade Teacher Guide

KANSAS CORN STEM

This teacher guide is broken into different sections with suggestions of how to use the reader in the classroom and provide ideas on how to extend the learning of your students. A PDF version of this teacher guide with active links can be found at kansascornstem.com under Mystery Corn Reader.

Reader QR Code Links

If your students are unable to use QR codes in the classroom here are the links to share the videos in alternative ways.

- How is Soil Created: https://www.youtube.com/watch?v=hpO6AGQ3wvQ
- Can a Farmer Improve their Soil: https://www.youtube.com/watch?v=bna9XR7ka8Q

Grade K-1

Teachers will use the reader to read to students. Please adapt as needed knowing that the words are above the K-1 reading level.

Outcome: Students will be able to understand there are four different types of soil that make up ideal soil for farmers. Students will also understand why different soil needs to be mixed and not just used on its own.

Types of Soil: Teachers can focus on the middle section of the reader. After reading, Types of Soil, have discussions about where they have seen the different types of soil OR how they can relate to the different types of soil.

- Example: Where have you seen sand, what does it feel like?

Activity: Students can fill out the graphic organizer, Types of Soil Worksheet, with pictures they have drawn, to show the different types of soil.

Soil Investigation Activity:

- Before this activity, make sure your class has watched Farmer Bill's video provided by the QR Code, How Soil is Created.
- Before mixing the soil with water, using the Soil Investigation Activity sheet, have students draw what the soil looks like in the clear jar. They will most likely just color it brown/black with flecks in it.
- After mixing the soil with water and letting it settle, have students draw what they see. Can they see the different layers? Help them to identify them.
- Teacher resource: For more detailed information about the activity watch Farmer Bill's video, The Soil Jar Test. We do not suggest showing this to your students but it will give you, as the teacher, more information about this activity. https://www.youtube.com/watch?v=aKoAk2ar050

Grades 2-5

This reader can be used in small groups or whole group for reading or science.

Outcome

- Students will be able to understand how soil is made and what it is made of.
- Students will have knowledge of the targeted vocabulary words.
- Students will be able to identify the different parts of soil through a hands-on investigation.
- Students will be able to name the Kansas State Soil.

Vocabulary Words

Introduce these words before you begin reading. Ask students if they have heard or recognize the words before. Then, read the definitions and talk about them as a class. Do more of the students recognize the words now? See if students can use the vocabulary words in sentences.

- Weathering: the process where rock is broken down into smaller pieces.
- Decomposition: or rotting, is what happens to organic material when it breaks down
- Nutrients: a substance that is needed for healthy growth
- Drainage: removal of water from any given area
- Compact: to press together tightly
- Decomposed: to break down into smaller and simpler parts
- Fertilization: substances added to soil to put nutrients into it

Front Cover

Allow time for students to share their thoughts on the questions that were asked. Teachers can write down their ideas on the board so it can be revisited after reading.

Inside

- When you come to a vocabulary word, take the time to stop and redefine the word.
- After reading the content, revisit what students brainstormed from the front cover question. Were any of their ideas mentioned in the reading?

Activities

- While reading about the different types of soil, students can fill in a Types of Soil Worksheet to keep track of the information they are learning. Students will write soil descriptions and draw a picture of the soil.

Soil Investigation

Before this activity, make sure your class has watched Farmer Bill's video provided by the QR Code, How Soil is Created.

- Before mixing the soil with water, using the Soil Investigation Worksheet, have students draw what the soil looks like in the clear jar. They will also write down their observations about the soil. What does it look like, what does it feel like ect.
- After mixing the soil with water and letting it settle, have students draw what they see. Can they see the different layers? Students will also need to write down their observations. Are they able to identify the different types of soil, they wrote in their graphic organizer, with this experiment?
- Teacher resource: For more detailed information about the activity watch Farmer Bill's video, The Soil Jar Test. We do not suggest showing this to your students but it will give you, as the teacher, more information about this activity. https://www.youtube.com/watch?v=aKoAk2ar050

Additional Kansas Corn STEM Resources

This reader can be used as a stand-alone activity, or you pair it with other Kansas Corn STEM offerings.

- ***Free Education Kit and Lesson*** – The best resource to pair with this reader is one of our corn lessons that comes with a free education kit. The kit contains all the supplies needed to conduct a series of lessons that meet NGSS, are inquiry-based and hands-on. No training or prior knowledge about corn is needed to teach these lessons. Request your free kits a https://kscorn.com/request-materials/

- ***Lesson Library***- With a lesson library of over 90 lessons and labs, you can find numerous resources to use. Make sure to check out our TEACH-FLEX lessons that use easy to find classroom materials. https://kscorn.com/lesson-library/

- ***Breakout Box Challenge -*** Challenge your students to learn more about corn using a breakout box. A breakout box challenge is available for each grade level, K-5 and is a great way to also assess learning. Challenges are available online or for physical breakout boxes. Check out the challenges at https://kscorn.com/topic/breakout-box/

- ***Guest Speaker*** - Request a guest speaker to visit the classroom and expand learning about ethanol and corn. https://kscorn.com/guestspeaker/