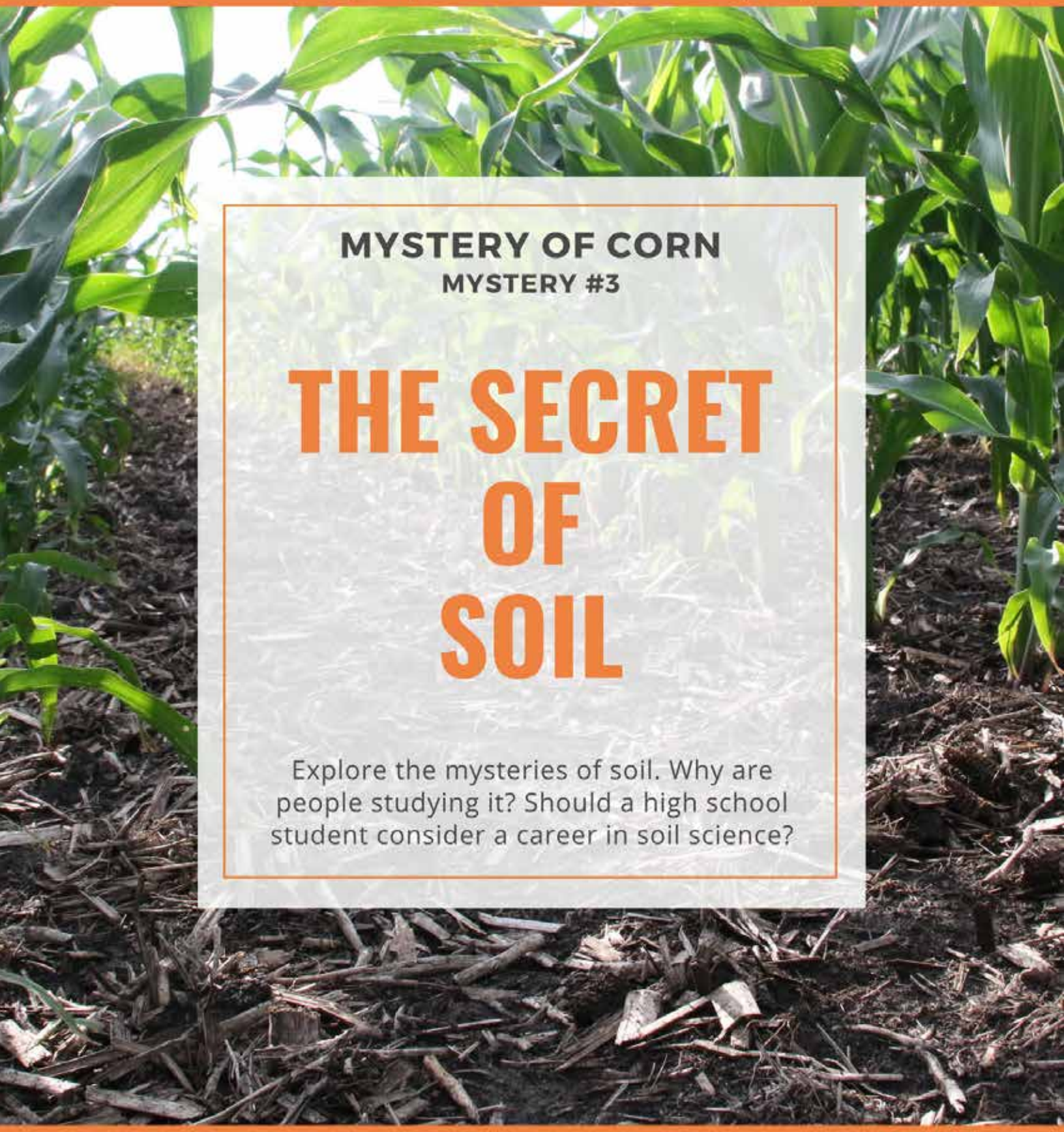
Could soil be in your future? Learn about soil and the people who work in it every day.



MYSTERY OF CORN
MYSTERY #3

THE SECRET OF SOIL

Explore the mysteries of soil. Why are people studying it? Should a high school student consider a career in soil science?

SOIL HEALTH | WORMS | BIOTURBATION

Soil health is incredibly important in the production of a healthy crop. There are many ways to test and evaluate soil. There are also key factors needed in soil to sustain life. Complete your "Soil Health Research" to discover more ways to have and choose a successful soil.

1. **Get your copy of the research questions from your teacher**

2. **Read & Watch:** Soils are constantly manipulated by weather, erosion, people, water, and animals as well as other organisms that live inside of soil. We define the reworkings of soil and sediments by plants and animals as bioturbation. This is a key component of keeping soils populated with organic matter. Watch this video to see how three earthworms make this process happen.

3. **Respond:** Having watched the video, what are some positive and negative effects bioturbation can have on soil health?

Interactive Soil Health Lab

Ready to try your luck with soil health and conservation? Use this link to test different erosion rates of soil based off your management practices.

Farmer Bill's Soil Videos

See how soil is formed and learn how farmers can improve their soil.

How Soil Is Created

Improving Soil

Did you know?

Soil coloring alone can tell a lot about soil and its potential health. The red color in much of the soil in Oklahoma is caused by a high iron content, like the color of a rusty pipe. This soil coloration is similar to the surface of what other rocky planet?

Soil Matters! Learn More!

As you have learned so far, good **soil** is a key factor in healthy plant growth. **Topsoil**, the first 5-10 inches of soil, is nutrient-rich and must be conserved to produce a healthy crop. **Nutrients** are substances that provides nourishment essential for growth and the maintenance of life. They are just as important for plants as they are for humans. Soil is essential to our survival as well as for nearly every organism on Earth.

Soil is created slowly by the **weathering** of rocks and decomposition of living matter. You may hear scientists refer to rocks as inorganic matter, while decaying plant and animal matter would be considered organic. Both inorganic and organic material are needed to support plant growth. It is important to remember not all soil is the same quality. The type of soil depends on the types of weathered rocks, amount of **organic matter**, time, and other factors.

Soils can be classified into three main categories – clay, silt, and sand. These terms can also be used to describe the texture of the soil, or the way the soil feels to the touch. The ideal soil for agriculture is loam. This type of soil is abundant in the Midwest region of the United States, making it an ideal place for growing crops, especially corn. Loam soil is "airy" which allows the roots breathing space.

CAREERS IN CORN

- **Agronomist**
- Soil Conservationist
- Soil Scientist
- Watershed Technician
- Crop Production Specialist

Find more careers in soil here!

Matalyn Stark: Kansas soil scientist at USDA's Natural Resource Conservation Service

JOB CONNECTIONS

SOIL SCIENTIST JOB SEARCH

You are looking to be hired as a soil scientist. Use these links and a resume template to create a resume for a soil science position.

Soil Science Society of America

AgExplorer

U.S. Office of Personnel Management

FIND THE VOCAB WORDS! Soil, Bioturbation, Topsoil, Agronomist, Organic Matter, Nutrients, Weathering

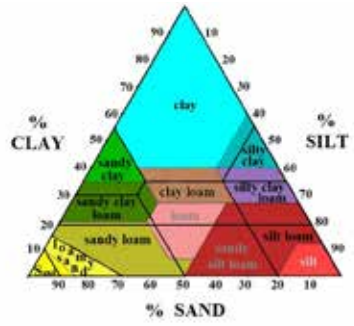
CSI CORN SCIENCE INVESTIGATION

Soil and forensic studies might have more in common than you think. Detectives collect evidence to support what happened at a crime scene. Agronomists, farmers and others also collect evidence like soil samples to understand what might be taking place in a certain area. In this lab you will receive four soil samples. Three samples were collected from different areas, and one was collected from the "crime scene." Conduct your investigation and create conclusions to determine which soil sample matches the soil found at the crime scene.

MATERIALS

- (3) different soil samples collected from different locations
- (1) soil sample from the crime scene
- (4) 400 mL beakers
- (1) 100 mL graduated cylinder
- (1) 20 mL graduated cylinder
- (1) digital scale
- (1) microscope or hand lens
- (1) glass stirring rod
- (1) small bottle of dish soap

Watch the Soil Jar Test Video Here:



Soil Texture Triangle and Soil Table provided in handout

Soil Table

Table 1

Sample	Mass	Volume	Density	Grain drawing	Color	% clay	% silt	% sand	Soil Type
CS									
A									
B									
C									

PROCEDURE

1. Receive four labeled soil samples. They should be labeled A, B, C and CS (crime scene).
2. Using a 20 mL graduated cylinder and digital scale, determine the density of each of the 4 samples and record data for mass, volume and density. Remember: mass/volume = density.
3. Place a small amount of soil under a microscope or hand lens. Take note of the soil's color and grain sizes. Record this data in the table. Repeat the steps with the 3 additional soil samples.
4. Label 400 mL beakers with A, B, C and CS then add 300 mL of water to each beaker.
5. Place 100 mL of soil in each beaker, add two small drops of dish soap and use a stirring rod to mix for approximately 20-30 seconds. Do not aggressively mix to prevent creating soap bubbles in your sample.
6. Let soil settle for 15 minutes, then estimate the % clay, % silt and % sand in each beaker based on the resulting layers. * Note the smaller particles in these containers will settle last.
7. Use the textural triangle to determine the soil name of each sample and record in the table.
8. Using the data in the table, compare the three unknown soil samples (A, B, C) to the soil sample found at the crime scene (CS). Circle or highlight the evidence from your table that match the crime scene sample.

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