



**Level 2**  
**Grades 2 - 3**

## Intro Story

Hi! Whitney the Worm here. I'm so glad you are here to learn about soils! Soil is the top layer of Earth's land surface, it's everywhere but we don't usually think about it. Soil is important to animals, plants and people.

If we didn't have soil we wouldn't be able to grow the crops that people depend on to eat and trees wouldn't have a place to grow! Soil is an important habitat and it's my favorite place! I can't wait to show you around this hidden world that's all around us.



## Did You Know?

Do you know the difference between soil and dirt? Soil contains minerals, water, air and many organisms. It's a habitat! Dirt is the stuff that might get on our hands or under our nails when we are playing outside. It doesn't have the same characteristics of soil and can't support life the way soil does.

Healthy soils are like a filter! They can help to clean the water that we depend on to survive.

There is more than one type of soil! Soil is made of layers, and soil scientists call these layers horizons. These include organic material, like decaying leaves, the topsoil, the eluviated horizon, the subsoil, parent material, and bedrock.

Many organisms are found in the soil - it's a habitat! In the soil you can find the roots of trees, animals like worms, mice, ants and moles, fungi and microscopic organisms that are too small to see with your eye!

Over 1,000,000 earthworms can be found in one acre of cropland!



## What Do You Think?

What do you think soil looks like under a microscope? Draw a picture of what you think you might find!



## Meet a Soil Health Champion!

Meet Jay, Mary, Marshall and Mead Hardwick. They live in Newellton, Louisiana and they grow cotton, corn, soybeans and wheat on their family farm. Part of their farmland is also used for timber (wood) and has features like wetlands and lakes. The Hardwicks have been recognized for their efforts to steward their land and soils.

On their land, the Hardwicks use cover crops and rotate crops to keep the soil in good condition. They also work to restore and enhance the quality of their water, air, soil and wildlife habitat. On their farmland, the Hardwicks often see local wildlife like deer, turkeys, migratory birds, turtles, alligators and even black bears!



## Healthy Soil Gives Us a Healthy Life

Where does your food come from?

Are your favorite foods grown on a farm? Raised on a ranch? Picked from a tree? No matter where your food comes from, it all has one thing in common, soil! Most of the food you eat comes from plants that grow in the soil or the animals that eat plants that grow in the soil. Plants also need sunlight and air to grow.

What are three of your favorite foods? Write them on the lines below:

- 1.
- 2.
- 3.

Write down where you think your favorite foods come from:

- 1.
- 2.
- 3.



It's me, Whitney the worm! Where do you think plants get the nutrients they need to survive? Here's another fun fact - plants get nutrients from the soil and the water they need to grow. But, plants also need air, sunlight and water to grow!

# Healthy Meals and Healthy Lives

Have you ever wondered where your food comes from? Getting food from the soil to our homes so we can have healthy meals takes a lot of hard work by many people. The food you eat has to be grown by a farmer or raised by a rancher. Food also has to be moved from fields to processing and packaging plants and finally to stores or restaurants where it can be sold.

How do you think a spaghetti dinner (with breadsticks and a salad - yum!) makes it to your table? Fill in the blanks to complete the story of a spaghetti dinner using the word bank.

CROPS  
SOIL  
BUTTER  
CHEESE  
GROCERY STORE

MEAL  
MILK  
FLOUR  
SAUCE  
FARM

VEGETABLES  
BREAD  
PASTA



Tomatoes and other vegetables are grown on a farm.

Wheat grows in the \_\_\_\_\_.



Cows eat hay. Farmers will \_\_\_\_\_ cows and milk is made into \_\_\_\_\_.

Farmers will harvest \_\_\_\_\_.



\_\_\_\_\_ are moved from farms to be processed and packaged.

Tomatoes can be made into \_\_\_\_\_. Wheat is made into \_\_\_\_\_. These items are packaged and sold at \_\_\_\_\_.



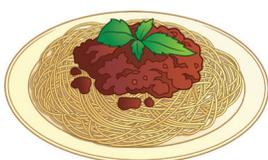
Wheat can also be turned into \_\_\_\_\_. You might use this to make \_\_\_\_\_ at home or buy it at the store.



In addition to cheese, milk can be churned to make \_\_\_\_\_.



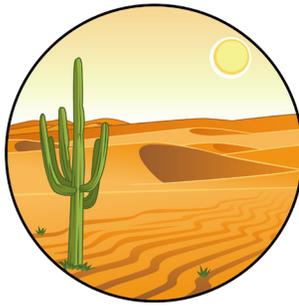
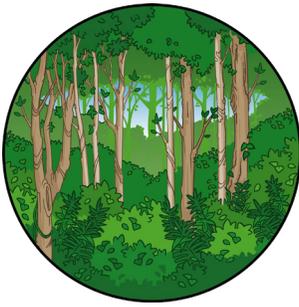
At the grocery store you can find items that were grown on a \_\_\_\_\_.



You can take all these ingredients home and turn them into a \_\_\_\_\_.

# Soil is a Habitat!

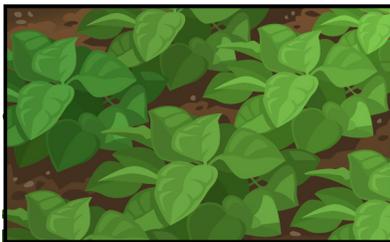
Have you ever thought about habitats? These are places where we can find living and nonliving things interacting. In the United States we have deserts, forests, mountains, prairies and wetlands. Each of these habitats includes unique plants and animals, landforms and, of course, soil! Below are a few different images of habitats and places where humans interact with the environment. What do you think the soil is like in each of these places?



## How Do Farmers Help Soils?

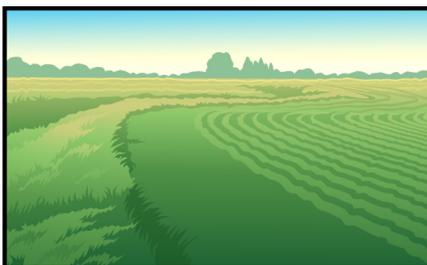
Farms and ranches are places where humans interact with the environment. We also depend on farms and ranches for food. Here are some of the ways that farmers work to protect and manage soils to keep them healthy:

1. Planting cover crops. Sounds cozy, right? Cover crops are plants that can protect and put nutrients back into the soil, they aren't grown for food. They can also help slow erosion!



2. Rotating crops. No, it's not a ride at an amusement park! This is when farmers plant different crops on the same patch of land at different times of the year. This keeps soil healthy by ensuring that soils stay nutrient rich, since not all the same nutrients are being used with each crop.

3. Keeping soil intact. Tilling is a process that breaks up the soil to make it easier for crops to grow. But, breaking up soils means that they may be washed away by rain or blown away by the wind. Keeping soil intact by having no till fields keeps soils in place and keeps moisture in the soil.



4. Using buffer zones. A buffer zone is an area of vegetation between fields that are used to grow crops. Sometimes they are also near streams and lakes. These green spaces can keep soils in place and out of bodies of water.

# How Would You Be a Soil Health Champion?

The National Association of Conservation Districts recognizes farmers and ranchers from across the nation who work to make sure the soils on their lands are healthy. It's no small task to be a Soil Health Champion! In addition to growing the crops and raising the animals we depend on for food, they also try to maintain a healthy habitat. Meet a few more of these amazing stewards!



## Meet the Eriksens!

Located in Eastern Washington State, the Eriksens' farmland is located in an area of the country that receives up to 19 inches of rainfall in fall and winter but is hot and dry in the spring. In their farming practices, they work to decrease the amount of disturbance to the soil so that it can hold more water. The Eriksens also plant a variety of crops and rotate them to maintain soil health. They also work to share what they have learned with other farmers and ranchers to help others learn how they can keep soils healthy.



## Meet the Snells!

Earl and Charisee Snell grow watermelons, peanuts, peas, squash, greens, tomatoes, and other vegetables on their small farm in Alabama. They grow their crops in a hoop house, which is similar to a greenhouse. This protects their crops from weather and insects. To ensure that their crops are healthy, the Snells work to make sure their soil is also in good shape. They do this by using compost and rotating different species of plants.



## Meet the Bednarskis!

Located in Kentucky, Jon and Sylvia Bednarski have a 2,000 acre farm where they raise grass-fed cattle. Since their farm is located near a tributary of the Ohio river, they work to protect soils from erosion. The Bednarskis planted over 400 trees near the tributary to protect the creek banks and the cattle are fenced out of the creek, pond and wooded areas, to protect the environment. They also use compost on their pastures.

## What Ideas Do You Have?

How would you design a farm to keep soils and the environment healthy?

My name is: \_\_\_\_\_

I live in: \_\_\_\_\_

On my farm I would grow or raise: \_\_\_\_\_

My farm is located near (river, urban area, etc.): \_\_\_\_\_

# Draw Your Farm!

## Soil Word Search

Find each word in the puzzle and circle it. Words can be found up, down, or in any direction.

T O S S O W T L H T T I W R V  
A S K O D J A E W R O C N P C  
T T B N I B A P E I P C N I R  
I I V N S L A C E D S N S Z O  
B U R B T K M T V E O N M Z P  
A R T H G I L N U S I L G S S  
H F Y C E I D R M R L F N F U  
B K V E G E T A B L E S O N Q  
F O O D N H T F W V B P C E C  
X B L P M G Z K A H V D U F W  
L C N D X R N U T R I E N T S  
C O W A T O O E E A L F S F X  
Y U S S S W T A R D S Q C Z D  
S N O Z I R O H M R A F K P J  
U C I K H V U T A R V Y Y I W

CROPS  
DIRT  
FARM  
FOOD  
FRUITS  
GROW  
HABITAT  
HEALTHY  
HORIZONS  
NUTRIENTS  
SOIL  
SUNLIGHT  
TOPSOIL  
VEGETABLES  
WATER

