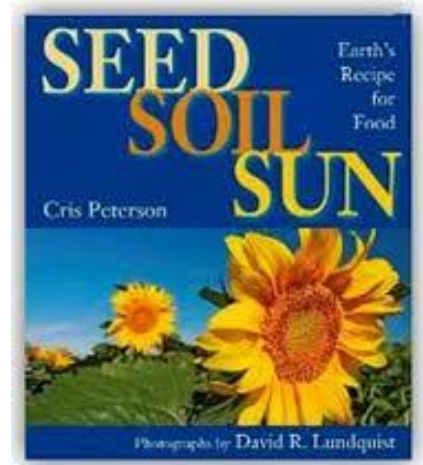


February 2015 Book of the Month
Seed, Soil, Sun: Earth's Recipe for Food
By: Chris Peterson

Seed, soil and sun - with these simple ingredients, nature creates our food. Once again, noted author Cris Peterson brings both wonder and clarity to the subject of agriculture, celebrating the cycle of growth, harvest, and renewal. Using the corn plant as an example, she takes the reader through the story of germination and growth of a tiny corn seed into a giant plant reaching high into the air, with roots extending over six feet into the ground. This **American Farm Bureau Foundation's Agriculture Book of the Year** also discusses the make-up of soil and the amazing creatures that live there.



Main ideas to share with students:

1. Soil, sunshine, rain, air and seeds are needed to produce our food.
2. Most food comes from seeds planted in the soil.
3. Crops provide food for people and food for animals that provide us with meat, milk and eggs.
4. More corn is planted in the U.S. than any other seed.
5. Soil provides nutrients for plants.
6. Earthworms enrich the soil by providing tunnels to allow air and water to help plants breathe.
7. Plant needs combine sunlight, carbon dioxide and water to create sugar that allows the plant to grow and produce oxygen (photosynthesis).
8. Plants store extra energy in their parts (leaves, roots, stems, flowers, seeds) which provide our food. Plants also provide food for animals which produce food (milk, meat, eggs) for us to eat.
9. Harvested plants provide seeds for the growing process to begin again.

Fun Facts from the Book:

1. Almost all plants on Earth grow from seeds.
2. Millions and millions of seeds are planted by farmers each spring.

3. More corn seeds are planted each year in the United States than any other kind of seed.
4. Soil is an ingredient needed to make food.
5. Each handful of soil contains more living organisms than all the human beings on Earth.
6. The way plants turn sunlight, water and carbon dioxide into sugar is called photosynthesis.

Activities

Seed Sort:

Provide students with many different kinds of seeds (corn, soybeans, wheat, melons, sunflowers – a variety of shapes and colors or buy a bag of 15 bean soup mix). Students can sort the seeds and create a bar graph with the data they collect OR they could list the properties of each seed (color, shape, texture). Math can also be incorporated by weighing the same number or amount of seeds and comparing the weights. **Ex.** Measure 1 cup of soybeans and 1 cup of sunflower seeds, which weighed more or less and why?

Let's Eat a Plant:

Tell the students they are going to eat some fruits or vegetables that represent different parts of a plant. Have them brainstorm what types of fruits and vegetables could represent the different parts of a plant. Examples include (and found in text of the book) eating a leaf: lettuce, eating a stem: celery, eating a flower bud: broccoli, and eating the fruit of the plant: an apple or tomato. Have students construct a plant with the different foods and have a taste test. Then have students write about the different parts of the plant.

Fruit Investigations:

Some fruits can be cut open to show the variety of seeds and the number of seeds in each fruit. Bring in a variety of fruits for students to observe and compare/contrast. Examples include apples, cantaloupes, strawberries and oranges. Be sure to have students carefully

examine the strawberry. They are the only fruit where seeds grow on the outside instead of the inside.

Is that Corn?

Bring in real corn seeds for students to examine. Then show the students an entire corn plant. Ask them what the two have in common. Talk about all of its different parts and/or use the cut off corn plant showing its roots and how it is left in the field to prevent erosion. Have students measure the corn stalk and find other objects that are longer or smaller than the corn stalk. Share the 3 different kinds of corn seeds: **field corn, sweet corn, popcorn**. Discuss the importance of each and products they are used to produce.

Growing Seeds:

Have students create a mini greenhouse using soil, 3 different kinds of seeds (one being corn), 2 clear plastic cups, tape, water, spray bottle, and a permanent marker.

Greenhouse Directions:

- Set the materials up in an assembly line (1-cups, 2-soil, 3-seeds, 4-water, 5-tape)
- Each student will take 2 cups (one base, one lid)
- Fill one of the cups approximately halfway with soil
- Choose 3 seeds (different) and push into the soil on the wall of the cup so they will be able to see the seed germinate (I usually tell them to push it to their second knuckle approximately one inch)
- Squirt 15 squirts of water into the cup
- This next step will be done with the teachers help
- Take the second cup and place it on top of the first cup
- I tell my students to hold the top cup and the bottom cup and I place a piece of packing tape around the seam of the two cups (approximately 1 foot of tape)
- Students will then press the tape down to make sure that it is sealed
- I have already written their names on masking tape and place this piece of tape on the top so their mini greenhouse will be easily identified

Students can mark where each of the seeds are growing to compare height. When the corn touches the top of the container, it can be transplanted to another location.

Sunflower Seeds:

Bring in several sunflower plants for students. Have them work in groups to examine the sunflower and plant parts. Have each group estimate how many seeds there are in one flower head. Have them remove the seeds and count them. Share results with the class.

Fun Sunflower Facts and Trivia:

1. Sunflowers grow quickly from a seed.
2. Sunflowers turn to follow the sun until they bloom.
3. Sunflowers grow deep roots.
4. Some sunflowers grow very tall.
5. By fall, sunflowers have dried and are ready to be harvested.
6. There are two kinds of sunflowers – striped and black. Striped sunflowers are roasted, eaten and used in other foods. Birds love them, too!
7. Black sunflowers give us yellow oil. This oil is used in cooking and in soap and paints. The part of the seed that is left over after being pressed for oil is fed to farm animals.

Trivia

- The tallest sunflower plant on record was grown in the Netherlands.
- It was 25 feet, 5 ½ inches tall.
- The largest sunflower head on record was grown in Canada. It measured 32 ½ inches in diameter.

Soil Study:

Bring in various types of soils (rich soil/hard clay) for the students to touch and feel. Describe each type and discuss why one kind may be better for growing seeds.

Wiggly Worms, or is it?

Boil spaghetti noodles, cool and rinse with water. Place the noodles in a plastic container. Put the container in a brown bag and bunch it up so students cannot see inside. Have students place their hands in the bag and describe what it feels like. They bring out real earthworms for students to observe and discuss why they are beneficial to the soil and plants. (They leave behind an underground network of tunnels that allows air and water to filter in. The air and water help the plant roots breathe and grow).

Earth's Recipe for Foods:

Have students make a recipe card for the "Earth's Recipe for Food." They can list the ingredients and draw pictures to correspond with the ingredients. Then they can write a few sentences/paragraph for the directions to the recipe. An EXAMPLE may include:

Ingredients:

Seeds

Sun

Soil

Water

Earthworms

Leaves

Farmer/Gardener

Oxygen

Water

Directions:

Plant the seeds in the soil. Make sure they have lots of sunlight and water. The earthworms will create a tunnel in the soil to enrich the soil and help the plant roots grow. When the plants are ready, the farmer will harvest them.

In Closing:

Ask students what ingredients does the earth need to provide to produce our food? Accept suggestions and write on board: seeds, soil, water and sunlight. Have students write and discuss how that relates to the "Earth's Recipe for Food."

Sources:

<http://www.ncagintheclassroom.com/Curricula.aspx>

<http://www.maefonline.com/>