



SC Farm Bureau  
Ag in the Classroom  
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**April 2023 Monthly Book**  
**My Family's Corn Farm**  
**By Katie Olthoff**  
**Illustrated by Joe Hox**  
**Grade Levels: K-8**

**Google Slides:** [My Family's Corn Farm \(April\)](#)



**Book Summary**

- Meet Presley – a farm girl who narrates the busy life of a modern, working corn farm in this fun and informative picture book about a family growing one of the top crops of American agriculture<sup>1</sup>
- There's a lot of jobs to do on the family farm! Presley and her farm family work on planting corn, watching for pests, monitoring rainfall so plants get the right amount of water, harvesting the corn, exploring how corn is used in many products, and learning how to be more sustainable farmers.<sup>1</sup>



**Did you know? (Ag Facts)**

- Each corn plant produces one to three cobs each.<sup>6</sup>
- More than 90 million acres on earth are dedicated to producing corn.<sup>6</sup>
- Corn cobs always have an even number of rows.<sup>6</sup>
- Most countries outside of the United States call corn maize.<sup>6</sup>
- 91 gallons of water is needed to produce one pound of corn.<sup>6</sup>
- The United States produces about 1/3 of the world's corn.<sup>6</sup>

- An average ear of corn has 800 kernels, and there are approximately 72,000 kernels in one bushel of corn.<sup>11</sup>

### **Background Agricultural Connections:**

- Sweet corn should be ready for harvest about 80 to 95 days after planting, about 20 days after the first silks appear. Harvest corn when the husk is still green and the silks are dry brown. The kernels should be full size and at milk stage Sweet corn loses sugar from the kernel rapidly at high temperatures.<sup>2</sup>
- Corn and soybean prices are rising which means more South Carolina farming acres could be allocated for these commodities.<sup>3</sup>
- Stink bugs are probably the most significant economic pest of corn in South Carolina. Stink bugs are more of a problem in corn planted in no-till fields with heavy cover, corn growing in fields adjacent to wheat, in corn planted behind soybeans and in corn fields planted near woods.<sup>3</sup>
- With nearly 25,000 farms and 4.8 million acres of farmland, South Carolina is driven by agriculture. Agribusiness (agriculture + forestry) is the state's No. 1 industry, accounting for 259,215 jobs and \$51.8 billion in annual economic impact.<sup>4</sup>
- Farmers and ranchers receive only 15 cents out of every dollar spent on food at home and away from home. The rest goes for costs beyond the farm gate: wages and materials for production, processing, marketing, transportation and distribution. In 1980, farmers and ranchers received 31 cents.<sup>5</sup>

### **Book Discussion:**

- What are some ways that Presley and her family learn or show sustainable farming?
- Describe the life cycle of a corn plant.
- What are the different daily tasks of a farmer?
- Why do farmers have a very important job?
- What is the theme of this book?

### **Agricultural Vocabulary**

- acre- a common measure of area: in the U.S. and U.K., 1 acre equals 4,840 square yards (4,047 square meters) or 0.405 hectare; 640 acres equals one square mile.<sup>7</sup>
- bushel - A bushel is a unit of volume that is used for measuring agricultural produce such as corn or beans. A bushel is equivalent in volume to eight gallons (35.2 liters).<sup>7</sup>
- combine - The name combine derives from combining three separate harvesting processes. Reaping, threshing, winnowing – combining all three operations into one led to the invention of the combine harvester, simply known as the combine.<sup>8</sup>
- crops - a plant or animal or plant or animal product that can be grown and harvested extensively for profit or subsistence<sup>8</sup>
- ethanol - a colorless volatile flammable liquid C<sub>2</sub>H<sub>5</sub>OH that is the intoxicating agent in liquors and is also used as a solvent and in fuel<sup>8</sup>
- farmer - a person who cultivates land or crops or raises animals (such as livestock or fish)<sup>8</sup>
- feed - feed, also called animal feed, food grown or developed for livestock and poultry.<sup>9</sup>
- harvest - the season for gathering in agricultural crops<sup>8</sup>
- kernel - the inner softer part of a seed, fruit stone, or nut<sup>8</sup>

- livestock - animals kept or raised for use or pleasure (especially : farm animals kept for use and profit)<sup>8</sup>
- nutrients - a substance or ingredient that promotes growth, provides energy, and maintains life<sup>8</sup>
- sustainable farming - sustainable agriculture is farming in such a way to protect the environment, aid and expand natural resources and to make the best use of nonrenewable resources.<sup>10</sup>

### Activities:

#### PreK-Kindergarten

- Create a sensory bin with different parts of corn plants and corn in it. Most local farmers would be willing to help you create a sensory bin.

#### Kindergarten - First Grade

- Modify this idea to best suit your grade level standards.
  - Count corn kernels.
  - Add and subtract using kernels
- You can use the add and subtracting slide from the slide deck to make this a smart board activity. There are an infinite number of kernels to explore problems with.

#### First Grade - Third Grade

##### Life Cycle of a Corn Plant

- Create a foldable of the lifecycle of a corn plant and have students color pictures of each stage.
- Idea: <https://www.etsy.com/listing/1221642056/life-cycle-of-a-corn-plant-foldable>
  - You do not have to use this template - folded printer paper is an easy modification



### **Corn Plant Life Cycle Option B:**<sup>14</sup>

- Have students build the life cycle and describe the different parts of the cycle.
- Build the life cycle together on a poster. Use the life cycle image down below to cut and paste onto poster board or anchor chart paper.
- Make a copy of the corn plant life cycle page and have students cut it into pieces, mix them up and then put it back together again. (also included in the Educator's Guide<sup>14</sup>)
- Teach about the different parts of the plant using the slide deck (vocabulary slides).
- Discussion Questions: What was the most difficult part to place? What was the easiest part to place?
  - Challenge: Arrange the life cycle of the corn plant silently!

### **Growing Conditions Exploration**<sup>14</sup>

- Discuss with the class the different growing conditions and weather patterns Presley mentions in the story - muddy fields from too much rain, drought, strong winds, lots of sun, and nutrients in the soil for roots to gather.
- Take notes of good and bad growing conditions.
  - Lots of sun, nutrients in the soil, adding fertilizer or livestock manure to the soil, water
  - Muddy fields, heavy rain, strong winds, hailstorms, drought, not enough nutrients in the soil.
- Students will now act as a group of farmers who have chosen to grow 1 acre of corn. Their goal is to make the best choices with the information they have to grow corn. After they make their decisions, you will share with them what ends up happening during the growing season.
  - Groups will work together to make decisions for their 1 acre of corn
  - Each team member will predict how they think the crop will do during the growing season
  - The teacher will then read what happens during the growing season, and the teams will find out how well their acre of corn will fare before harvest.
  - Read a few of the scenario cards from the sheet provided below. (You could even mix up groups between rounds)
  - Play for as long as time allows.
  - Discussion question: What conditions are the most important when it comes to growing corn? (lots of sunlight, enough water - but not too much that the soil is muddy, nutrients in the soil)

### **Recipe Collection**

- Have students bring in recipes that involve/use corn in different ways. Students can compare and contrast the recipes or try to write their own recipe to their favorite corn snack/meal.

### **Third Grade - Fifth Grade**

#### **A Brief History of Corn**<sup>12</sup>

- [United States Map](#)
- [A Brief History of Corn](#) information sheet
- [A Golden Nugget](#) slideshow
- [360° Farm Tour: Harvesting the Corn](#)

Begin: Engage Students<sup>12</sup>

1. Provide each student with the [Corn/Corn-Free Product List](#) and project the [photograph](#) of the corn and corn-free products on the classroom screen. Explain that every item on the list is shown in the photograph. Ask the students to circle each item on the list that they think contains corn.
2. After the students have finished circling the items, tell them that only one of the items does not contain corn. Ask the students to tell you which item they think does not contain corn.
3. Reveal to the class that the only item on the list that does not contain corn is the pasta. It contains wheat flour, not corn flour. Refer to the list below to explain what form of corn each remaining item contains.

*Aspirin – cornstarch*

*Baking Powder –  
cornstarch*

*Batteries – cornstarch (insulation)*

*Bubble Gum – corn  
syrup*

*Coke – corn syrup*

*Corn Tortillas – corn  
flour*

*Crayons – corn oil*

*Crunch Berries – corn  
syrup*

*Diaper – cornstarch*

*Gain Detergent –  
cornstarch*

*Matches – cornstarch (match head)*

*Pasta – does not  
contain corn*

*Shoelaces – cornstarch (for smooth  
tying)*

*Snickers Bar – corn  
syrup*

4. Show students the [Corn Information Sheet](#). Explain that corn is not only used in food products but also in many non-food items we use every day.

### Explore and Explain<sup>12</sup>

#### Activity: A Brief History of Corn<sup>12</sup>

1. Provide each student with a copy of the [A Brief History of Corn](#) handout. Have students do a close reading of the text. For more information about the close reading strategy, refer to the resource guide [Supporting Students in Close Reading](#).
  2. Using the [map of the United States](#), have students identify and highlight the states that are part of the Corn Belt—Iowa, Illinois, Nebraska, Minnesota, Indiana, Wisconsin, Michigan, South Dakota, Kansas, Missouri, Kentucky, and Ohio. Explain to the students that the warm, rainy summers and deep, fertile soils in this region of the United States are particularly well suited for growing corn.
  3. Use the [A Golden Nugget](#) PowerPoint slides to discuss the different types of corn plants and their uses, the structure of a corn kernel, and the functions of each part of the kernel.
  4. Show the [360° Farm Tour: Harvesting the Corn](#) video to take a tour through the seasons of planting, growing, and harvesting corn.
- Using the information from the *Background Agricultural Connections*, discuss the uses of corn. Use the following questions to guide the discussion:
    - Who used corn in ancient times?
    - What are some of the ways corn is used today?
    - Where is most of the corn grown in the United States?

- How have the uses of corn changed over time?
- What are the parts of the corn kernel called, and how are these parts useful?

### Additional Exploration:<sup>12</sup>

- Read Issue 5 of *Ag Today* titled *Agriculture in Society*. This reader can be printed or accessed digitally. Students will learn the term sustainability and what that means to farmers who need to produce 60% more food with the same amount of land in order to feed a growing world population. Learn what byproducts are and how they are used, how food packaging has decreased waste, and how farmers use technology such as various tools, robots, and hand-held devices to improve their efficiency.
- Watch the 3-minute "How Stuff Works" video clip about [Corn Plastic](#).



### Grade 5

#### Coordinate Graphing<sup>14</sup>

- Ask the class what they remember the book said about how GPS is used in farming. (The global positioning system (GPS) in the tractor helps him (Presley's father) put fertilizer or livestock manure in all the right places.)
- Today you are going to help Presley's father apply fertilizer to the cornfield while also locating weeds in the field that need to be pulled, using different sets of coordinates.
- Class discussion: Have you ever heard of the term coordinates? (Coordinates are a set of numbers that help determine where something is located in a specific area.)
- Display a coordinate graph (only the first quadrant and then introduce them to all four quadrants) and introduce the terms that they need to know (origin, x-axis and y-axis)
- Practice locating a few points on the graph:
  - (3,1), (5,6), (1,7), (6,2)
- Use the worksheet pages from the educators guide OR have students practice on the smart board.

### Grades K-6

#### When I Grow Up...<sup>14</sup>

- **Ask: What career Presley wants to have when she grows up? (Farmer or Scientist)**
- **Hand out: Career profiles**
  - Read the different profile descriptions in groups or independently
  - Guess the name of the careers that are being described
  - Share out ideas - use the key to inform students of some of the different careers in agriculture
  - Explain the importance of why having a career is important when they grow up and some steps that they can take now.
  - See career slides in the teacher slidedeck



## Grades 6-8

### Growing America<sup>13</sup>

Lesson: Students determine corn anatomy and function of plant parts, identify stages of plant development in corn, and research how temperature plays a role in corn growth as they calculate growing degree units (GDUs) for a region. [Grades 6-8](#)<sup>13</sup>

#### Materials Needed

##### Engage:

- [Phenomenal Corn](#) student handout, 1 copy per student or student group
- [Corn Comparison image](#), digital display

##### Activity 1: Explore an Ear of Corn

- [Explore an Ear of Corn](#) student handout, 1 copy per student
- Corn plant to observe. Choose from the following:
  - Mature corn plant from a garden or field
  - Image of a mature corn plant

##### Activity 2: Corn Dissection

- [Corn Dissection](#) student handout, 1 copy per student or student group
- Heavy-duty scissors (dissecting/kitchen shears) or utility knife
- Cutting boards/table protector
- Corn plants, 1 or 2 per student group

##### Activity 3: Growing Degree Days

- [Growing Degree Days](#) student handout, 1 copy per student or student group
- Device with internet access
- Corn plant (from *Activity 2*)

See AG Lesson Plan for Additional Details :

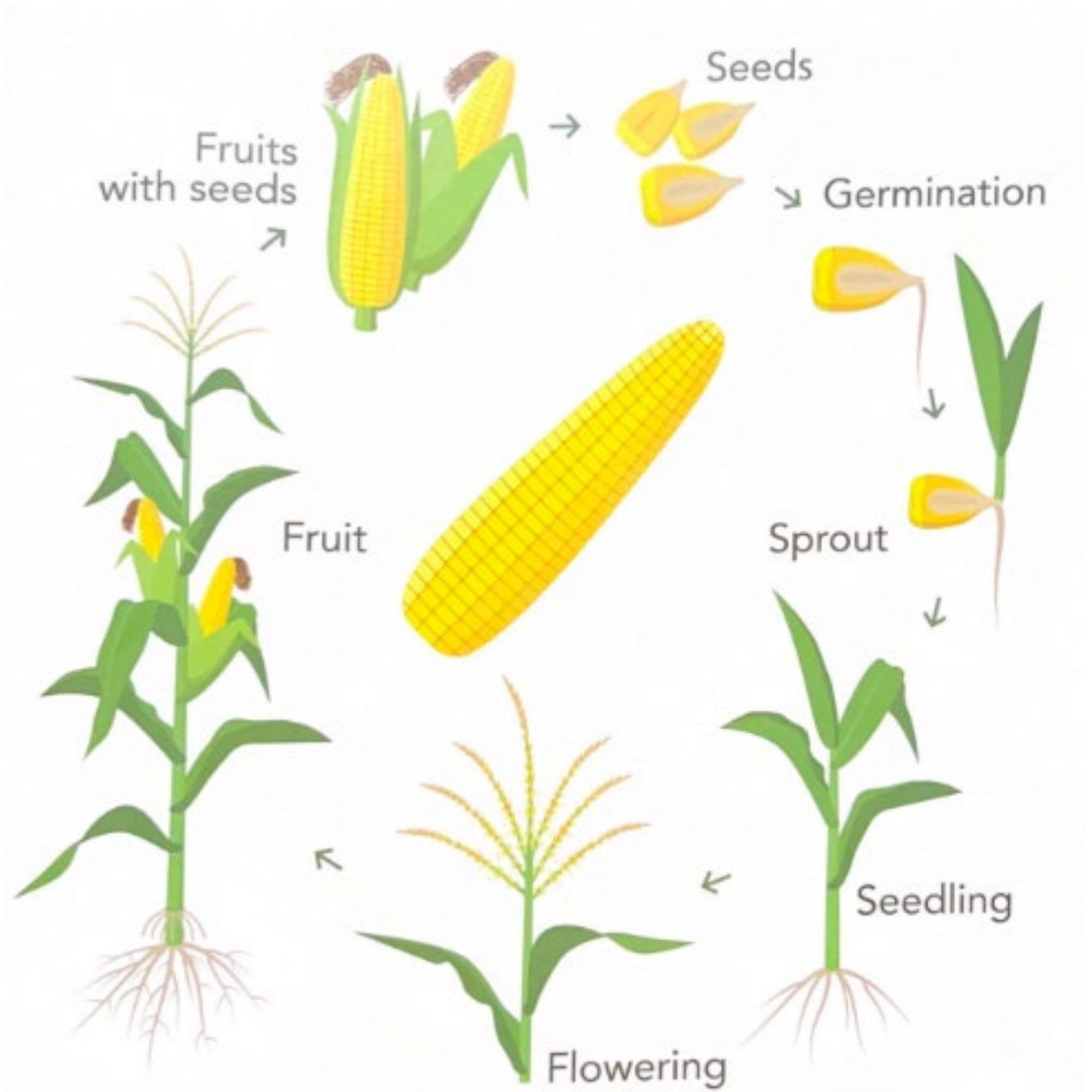
<https://southcarolinamatrix.agclassroom.org/matrix/lesson/803/>

#### Extension Activities:<sup>12</sup>

- [A True Book: Corn](#)
- [Better Paper, Plastics with Starch](#)
- [Carlos and the Cornfield](#)
- [Corn](#)
- [Corn in the Story of Agriculture](#)
- [Crazy About Corn](#)
- [Evolution of Corn](#)
- [Farming in a Glove \(Corn Seeds\)](#)
- [How It's Made: Corn Tortillas](#)

- **How Stuff Works: Corn Plastic**
- **Popcorn Country: The Story of America's Favorite Snack**
- **Popcorn on the Cob**
- **Popcorn!**
- **Popped Secret: The Mysterious Origin of Corn**





**\*Educator's Guide: My Family's Corn Farm**

**Seeds**

**Germination**

**Sprout**

**Seedling**

**Flowering**

**Fruit**

**Fruit with  
Seeds**



## Activity 2: Grow Corn Grow! WORKSHEET #1

As a group of farmers, you have chosen to grow 1 acre of corn. Choose one option from each row below to see how your crop will grow before harvest.

1	Install sprinklers.	Use rainwater.
2	Plant the corn seed on schedule.	Plant corn seed based on weather.
3	Test the soil and apply added nutrients with fertilizer or manure where needed throughout the field.	Apply added nutrients with fertilizer or manure to the entire field.
4	Install shade cloth over the rows of corn to protect the corn from the sun.	Don't install shade cloth and leave the corn plants exposed to the sunlight.
5	After harvest, plant cover crops in the fields between now and the next growing season.	After harvest, have the cattle eat the leftover stalks, husks, and cobs and wait till the next growing season.

How does each farmer in your group predict the corn crop will grow based on the choices made?

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After hearing how the growing season went from your teacher, how well did the corn crop grow?

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### Scenario 1:

The county you are growing in is experiencing a drought, a long period without rainfall, so all farmers who did install sprinklers get 1 point. And since the fields aren't muddy from heavy rain, you can plant the corn seed on schedule. If you chose to either wait or not wait to plant your seed, you get 1 point. Due to the dry weather, the soil needs nutrients now more than ever to help the corn grow. However, without sprinklers, too many nutrients in the soil will have a negative effect on corn growth. If you installed sprinklers and added nutrients where needed, you get 1 point. Even in a drought, corn plants need lots of sunlight to grow. If you chose not to install shade cloth, you get 1 point. Harvest time! You will soon know how well your crop grew, but before knowing, you should think ahead to the next growing season. If you chose to plant a cover crop, add 1 more point to your total.

**5 pts**

Even in the drought, you had a perfect growing season!

**4 pts**

You just got by in the drought but still had a good growing season!

**3 pts >**

Your crop did not grow in the drought, and you didn't have enough corn to harvest.

### Scenario 2:

The growing season is going to plan! With only light rain and sunny conditions, you have been able to plant on time. Whether you chose to plant according to your schedule or to wait and plant with the weather, you get 1 point. However, you still have to irrigate because the rain has been light. If you chose to install sprinklers, you get 1 point. Even in good weather conditions, certain areas of the cornfield soil need nutrient help, and thanks to the light rain that continues through the season, there is less chance of having too many nutrients in the soil even without sprinklers. If you chose to test the soil and add nutrients where needed, you get 1 point. Just like Presley told us, corn needs lots of sunlight to grow. If you chose not to install shade cloth, you get 1 point. Harvest time! You will soon know how well your crop grew, but before knowing, you should think ahead to the next growing season. If you chose to plant a cover crop, add 1 more point to your total.

**5 pts**

You had a perfect growing season!

**4 pts**

You had a good growing season; one choice would have made it great!

**3 pts >**

Your crop did not grow even in the good season, and you didn't have enough corn to harvest.



## Activity 5: When I Grow Up... WORKSHEET #1



1. \_\_\_\_\_

**Workplace:** On a farm which includes both outside and inside in an office.

**Tools:** Tractor, power tools, computer, GPS, trucks, ATVs

**Education:** At least a high school diploma with work experience

**Interests:** Animals and/or crops, being a manager of people, animals, and/or crops, working outside with their hands, feeding the world

**Skills:** Responsibility, Decision Making, and Problem Solving

**Day in the Life:** Early mornings, including farm chores and checking in on livestock or crops. Each day holds something new with a new problem to solve!



2. \_\_\_\_\_

**Workplace:** In laboratories, in offices, and in the field

**Tools:** Beakers, test tubes, microscope, computer

**Education:** Bachelor's Degree

**Interests:** Knowing how plants and animals work at a biological level, improving agriculture practices, feeding the world

**Skills:** Research, Written and Verbal Communication, Keen Eye for Observations

**Day in the Life:** Always changing, one day in the lab testing specimens and the other out in the field doing experiments to improve plant or animal growing conditions.



3. \_\_\_\_\_

**Workplace:** In a classroom

**Tools:** Computer, books, whiteboard

**Education:** Bachelor's/Master's Degree

**Interests:** Helping people learn, learning new things, having hands-on experiences

**Skills:** Responsibility, Communication, Knowledge in Different Topics, Problem Solving

**Day in the Life:** Early mornings preparing the classroom for learning. Most of the day is filled with new problems to solve and students to help grow and learn.



4. \_\_\_\_\_

**Workplace:** Warehouses and manufacturing facilities

**Tools:** Power and hand tools, safety equipment, machines

**Education:** At least a high school diploma with work experience

**Interests:** How machines work, fixing, repairing or building machines, working with their hands, helping others

**Skills:** Safety Procedures, Problem Solving, Communication

**Day in the Life:** Getting hands dirty working on and fixing machines. Helping people with problems they can't solve by themselves.





## Activity 5: When I Grow Up... WORKSHEET #2

Teacher	Mechanic	Scientist
Farmer	Florist	Veterinarian
Truck Driver	Gardener	Welder

**SC Standards:****Math:**

**K.ATO.1** Model situations that involve addition and subtraction within 10 using objects, fingers, mental images, drawings, acting out situations, verbal explanations, expressions, and equations.

**1.ATO.6** Demonstrate: addition and subtraction through 20; fluency with addition and related subtraction facts through 10.

**2.NSBT.5** Add and subtract fluently through 99 using knowledge of place value and properties of operations.

**5.ATO.3** Investigate the relationship between numerical patterns.

**Social Studies:**

**3-5 Standard 1:** Use maps and globes to categorize places and regions by their human physical conditions.

**Science:**

**8-LSI-4.** Use arguments, based on empirical evidence and scientific reasoning, to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.

**Sources:**

1. <https://www.amazon.com/Familys-Corn-Farm-Katie-Olthoff/dp/1948898071>
2. <https://hgic.clemson.edu/factsheet/sweet-corn/>
3. <https://news.clemson.edu/south-carolina-corn-and-soybean-acreage-could-increase-if-prices-remain-high/>
4. <https://agriculture.sc.gov/about/>
5. <https://www.scfb.org/ag-education/food-farm-facts>
6. <https://www.mydadssweetcorn.com/blog/corn-facts/>
7. Merriam-Webster's Collegiate Dictionary (10th ed.). (1999).
8. <https://ironsolutions.com/a-brief-history-of-the-combine/#:~:text=The%20name%20combine%20derives%20from,simply%20kno wn%20as%20the%20combine.>
9. <https://www.britannica.com/topic/feed-agriculture>
10. <https://www.nal.usda.gov/farms-and-agricultural-production-systems/sustainable-agriculture>
11. <https://www.agintheclassroom.org/media/cdqd0zrk/corn-agmag-interactive.pdf>
12. <https://southcarolinamatrix.agclassroom.org/matrix/lesson/141/>
13. <https://southcarolinamatrix.agclassroom.org/matrix/lesson/803/>
14. Educator's Guide: My Family's Corn Farm - American Farm Bureau: Foundation for Agriculture