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# Kansas Corn: The Dibben Family Farm Breakout Box

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This breakout is made possible with the support and content contributions of the Kansas Corn Commission.



# Kansas Corn: The Dibben Family Farm Breakout Box

## Grade Level: 5th Grade

### Overview

This lesson can be used as a standalone lesson to introduce the different aspects of a farm ecosystem, or be tied in as an informal assessment for the fifth grade lesson, Kansas Corn Lesson: World Wide Web. Lesson available at [kansascornstem.com](http://kansascornstem.com). Students will test their knowledge on ecosystems, producers, consumers, decomposers and products made from corn in order to unlock their breakout boxes. This breakout would be excellent before state testing! There is an optional assessment that is available at the end of the World Wide Web lesson.

### Next Generation Science Standards (NGSS)

#### Science

- **5-PS3-1.** Students who demonstrate understanding can use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

#### Language Arts

- **RI.5.7.** Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

### Learning Objectives

- Students will identify the roles of producers, herbivores, carnivores, omnivores, scavengers, and decomposers.
- Students will model the ways matter and energy move through a cornfield ecosystem by creating food chains and food webs.

### Materials

- The Dibben Family Farm Story
- Producers, Consumers, Decomposers Sheet
- Five Farm Ecosystems Graphics
- The Many Uses Of Corn Story
- Many Uses of Corn infographic (available at [www.kansascornstem.com](http://www.kansascornstem.com))
- Farm Ecosystems Word Find
- You're Almost Done Certificate

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### Breakout Edu Tips

If this is your first time using a Breakout Edu box, you are in for a treat. Once you've done one breakout box your students will be ready for the next time.

- You can use breakout boxes as a whole class, in addition to small group.
- You have the opportunity to give students hints. Every box comes with at least two hint cards. If you have a higher performing group, you may want to challenge them with less hints, while a different hour may need more hints.
- Having a visual timer for students while they are working is really helpful. It allows them to budget their time and when they may want to use their hints.
- As the teacher, you have the discretion to hide things wherever best fit in your room. Feel free to make adjustments! Just make sure the clues for the locks don't change, otherwise students may not be able to get in.

### Breakout Activity

#### *Game Name*

The Dibben Family Farm

#### *Game Designer*

Josh Runyan: 6th Grade, Woodrow Wilson Elementary, USD 383

Shane Fairchild: 6th Grade Social Studies, Junction City Middle School, USD 475

#### *Content Areas*

This lesson focuses on Life Science and the relationship between Earth and Sun.

#### *Recommended Ages*

4th/5th Grade

#### *Ideal Group Size*

Small groups depending on classroom needs

#### *Suggested Time*

30 minutes

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### *Story*

Sara was very excited to get home to her family farm after school one day. She was happy to learn that her family's farm was actually a diverse ecosystem made of living and nonliving parts. She learned that a cornfield is a great environment for earthworms. They help stabilize the soil for planting and allow for rain to flow to the plant roots. She even shared that her 4-H pig, Pinky, benefitted from the corn. However, when she got home, all of her work was crumpled and in disarray in her backpack. Help Sarah put her school work in order so that she can share what she learned at school.

### *Lock Combinations*

*The following codes will open the locks on the box:*

#### *3-Digit Lock - 3 Numbers*

2, 5, 4

#### *4-Digit Lock - 4 Numbers*

9, 6, 9, 5

#### *Color Lock - 5 Colors for the color Multilock*

Purple, Blue, Green, Yellow, Red

#### *Directional Lock*

Right, Up, Down, Up, Left

#### *Key Lock -*

Teacher Choice

## **Setup Instructions**

### *Steps*

1. Print off the following resources: The Dibben Family Farm Story; Producers; Consumers, Decomposers Sheet; Five Farm Ecosystems Graphics; Farm Ecosystem Word Find; You're Almost Done Certificate; Many Uses of Corn Story; and Many Uses of Corn Infographic. The resources need to be printed in color and enough copies per the number of boxes you plan on using. Most can be laminated for future use.
2. Change the locks to the appropriate lock combinations found in the lesson plan. If you are unsure on how

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to change the locks, please watch the official breakout videos on youtube titled, “Setting Breakout EDU Locks.”

3. Grab the small breakout box. If you are planning on a breakout reward (a TWIZZLER is a fun corn based product to use) set it in the box before placing the key lock. The TEACHER keeps the key to give to the students after they unlock the BIG Breakout Box.
4. Place the now locked small breakout box and the resource titled, “You’re Almost Done” inside the larger breakout box. Once complete, place the multi-lock mechanism on the bigger breakout box.
5. Once you have placed the multi-lock mechanism on the larger breakout box you are ready to start placing the locks associated with the lesson. It is always a good idea to double check your locks before beginning the lesson.
6. Place the Five Farm Ecosystem Graphics that represent the direction lock around the room in easily accessible areas. Make sure to place them in an order that will not give away the answer.
7. Students should be handed the following resources:
  - The Dibben Family Farm Sheet
  - Producers, Consumers, Decomposers Sheet
  - Farm Ecosystems Word Find
  - The Many Uses of Corn Story
  - Many Uses of Corn Infographic
8. Begin. We have found it to be helpful for a visual representation of the breakout timer to be running in the background. This can be found on youtube by searching, Breakout EDU Timer.

## Resources

Visit [www.kansascornstem.com](http://www.kansascornstem.com) for updated resources, free lessons and supplies.

## Reflection and Conclusion

At the completion of this breakout, your students should be able to identify the roles of producers, herbivores, carnivores, omnivores, scavengers, and decomposers. They should also be able to model the ways matter and energy move through a cornfield ecosystem by creating food chains and food webs. Feel free to give students the following questions as an exit ticket or knowledge check at the end of the breakout. If you have groups that do not breakout, it is always nice to go over the information and/or clues that would have led to the last locks coming off.

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### Questions

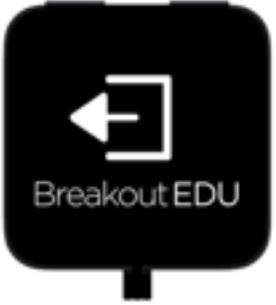
1. Where does the energy come from for organisms to live? If you wanted to plant corn plants, what part of the plant would you plant?
2. What is an ecosystem?
3. Could the whole exist without the parts?
4. How do humans impact food webs in a Kansas corn field?
5. Can a consumer, producer or decomposer ever switch roles?

### Assessment

This lesson has an optional POST assessment by using the Producers Consumer Decomposer Worksheet found in the fifth grade lesson, Kansas Corn Lesson: World Wide Web. Lesson available at [kansascornstem.com](http://kansascornstem.com).

Any educator electing to perform demonstrations is expected to follow *NSTA Minimum Safety Practices and Regulations for Demonstrations, Experiments, and Workshops*, which are available at <http://static.nsta.org/pdfs/MinimumSafetyPracticesAndRegulations.pdf>, as well as all school policies and rules and all state and federal laws, regulations, codes and professional standards. Educators are under a duty of care to make laboratories and demonstrations in and out of the classroom as safe as possible. If in doubt, do not perform the demonstrations.

Lock Type	Lock Combination	How will they know the combo?	Where will it lead?
 <p>4-Digit Lock</p>	<p>9, 6, 9, 5</p>	<p>Using the Farm Ecosystems Word Find and the Dibben Family Farm Story answer to the locks are the number of letters in each line. 9 for “Are Made Of” etc. The answer to the puzzle is found in the story introduction.</p>	<p>By unlocking this lock they are one step closer to opening all of the combination in the larger breakout box.</p>
 <p>3-Digit Lock</p>	<p>2, 5, 4</p>	<p>Using the Producers, Consumers and Decomposers sheet, the combo can be figured out by counting the number of Producers, Consumers and Decomposers. The sequence is in that same order.</p>	<p>By unlocking this lock they are one step closer to opening all of the combination in the larger breakout box.</p>
 <p>Directional Multi-lock</p>	<p><i>Right</i> <i>Up</i> <i>Down</i> <i>Up</i> <i>Left</i></p>	<p>Using the Firve Farm Ecosystem Graphic, the combo can be figured out by placing the five farm ecosystem graphics in the correct order (our opinion) in farm ecosystem relationship. Worm, Four Images of Seed, Rain/Sun, Field, Hog</p>	<p>By unlocking this lock they are one step closer to opening all of the combination in the larger breakout box.</p>
 <p>Color Multi-lock</p>	<p><i>Magenta</i> <i>Blue</i> <i>Green</i> <i>Yellow</i> <i>Red</i></p>	<p>The combo can be figured out by tying the infographic titled, “The Many Uses of Corn” to the story with the same title. The story talks about the different uses of corn and each paragraph represents a color on the graphic.</p>	<p>By unlocking this lock they are one step closer to opening all of the combination in the larger breakout box.</p>

<i>Item Type</i>	<i>Combination Purpose</i>	<i>What will they do with it?</i>	<i>Where will it lead?</i>
 <p>Key</p>	<p>Key</p>	<p>This is the final lock. Teachers can place this at their discretion or keep it in their possession.</p>	<p>Students are finished with the breakout out when they unlock the final box.</p>
 <p>Large Lock Box</p>	<p>The purpose of this box is to conceal the smaller lock box that requires a key to unlock.</p>	<p>They will unlock the locks on the multi-lock mechanism in order to breakout of large and find the "You're Almost Done" certificate</p>	<p>Unlocking this box leads to the final clue to get the key to breakout.</p>
 <p>Smaller Lock Box</p>	<p>This box is concealed in the larger box with the key lock on it. It is teachers discretion how to hide the final key.</p>	<p>Unlock to complete the activity.</p>	<p>Completion</p>

## **The Dibben Family Farm**

Sara was very excited to get home to her family farm after school one day. She was happy to learn that her family's farm was actually a diverse ecosystem made of living and non-living parts. She learned that a cornfield is a great environment for earth worms. They help stabilize the soil for planting and allow for rain to flow to the plant roots. She even shared that her 4-H pig, Pinky, benefitted from the corn. However, when she got home, all of her work was crumpled and in disarray in her backpack. Help Sara put her school work in order so that she can share what she learned at school.

## Many Uses of Corn

It is a wonderful day on the farm. The Dibben family is waking up to a bright and shiny day, but also a very busy day of work and play. Before they head out Dad heads into the baby room to change little Billie's diaper while Mom is getting herself ready by putting on her makeup.

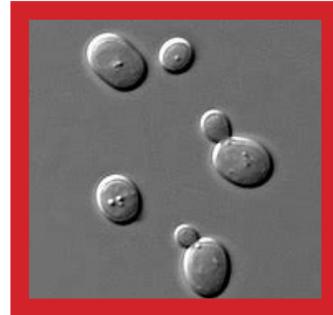
Sister Sara and brother Josh are famished when they wake up so they decide it is time for breakfast. Josh sets Corn Flakes and Corn Crunch on the table while Sara opens the baby food for Billie. Mom and Dad grab snacks while Sara sneaks bubble gum.

Mom realizes they are running late so the whole family rushes to the SUV. As they are leaving Dad notices the tank is on E. They are driving a flex fuel vehicle that uses a blended fuel of gas and Ethanol. Their local gas station sells E-85 which is a blend of 80% Ethanol and 15% gasoline. They fill up and hit the road.

Next stop is the local COOP where they are picking up corn to feed their farm animals. They use corn to feed their 4-H steers, pig and chickens. Plus they sell meat from their livestock at the local farmers market.

The day on the farm will end in a fun time. Dad is grilling burgers while Sara and Josh get the fireworks ready to celebrate July the 4th. As night falls the whole family sits down to watch the celebration.

## Producers, Consumers, Decomposers



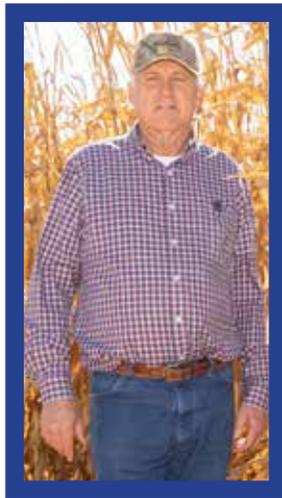
### 3 Lock Digit Answer Key

1st Number    2nd Number    3rd Number  
↓                    ↓                    ↓  
Producers, Consumers, Decomposers

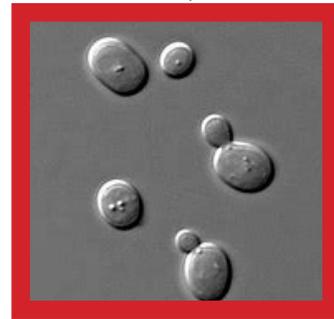
Consumer



Consumer



Decomposer



Producer



Consumer



Decomposer



Decomposer



Decomposer



Consumer



Consumer



Producer



# Farm Ecosystems

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**&**

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\_\_\_\_\_

# Farm Ecosystems (ANSWER)

A R E M A D E O F 9

L I V I N G 6

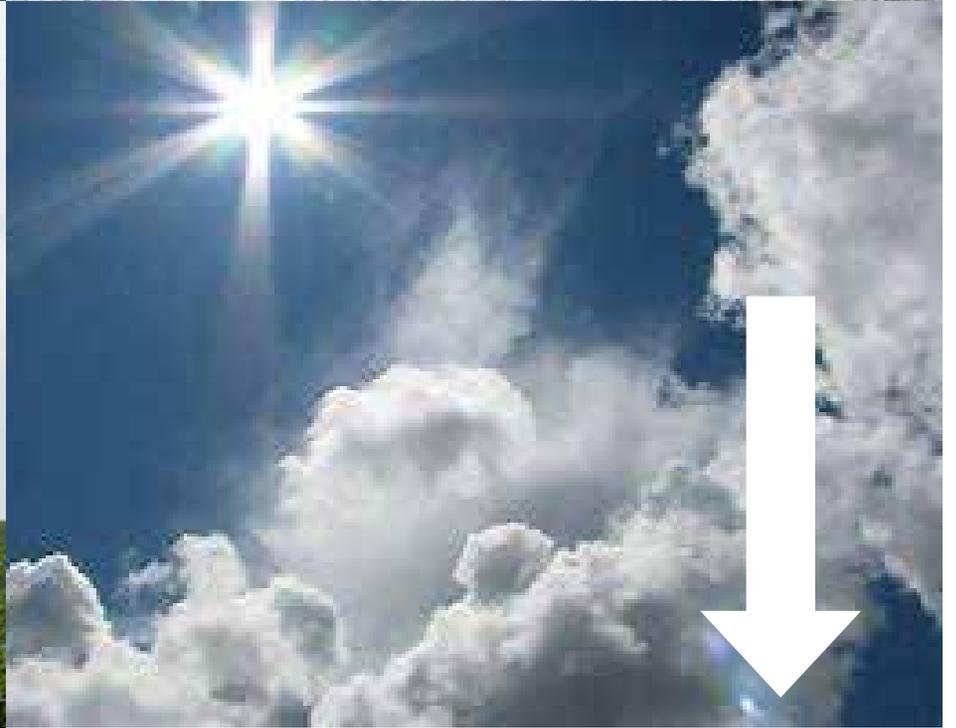
&

N O N L I V I N G 9

P A R T S 5





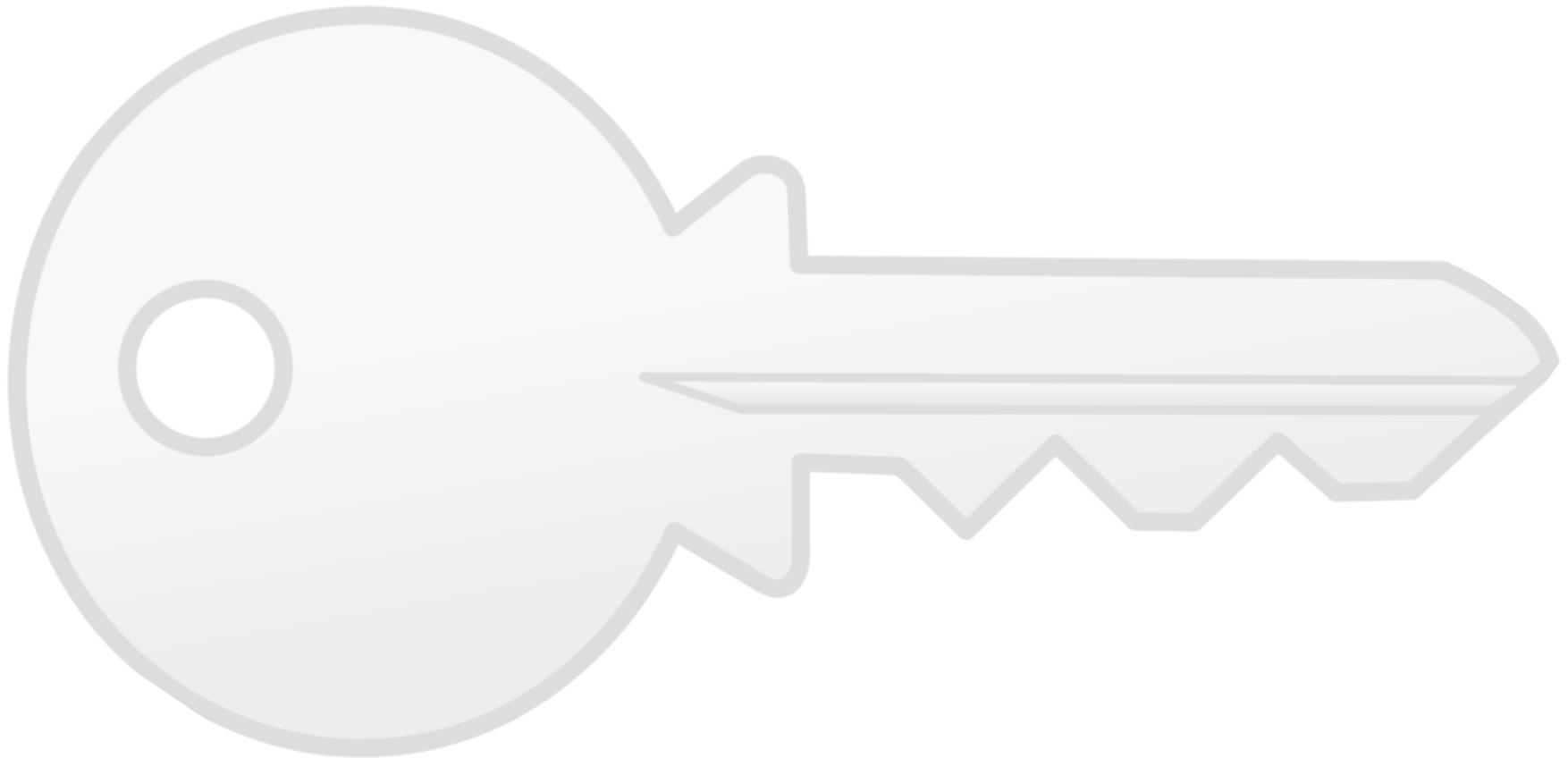






# You're Almost Done!

*Take this to your teacher for the KEY to your reward.*



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