DIG IN!

Uncovering the Secrets of Iowa's Veggie Farms

BY EMILY STARR

Curriculum Guide

About the Book

DEER DANCE PARTIES. TOMATOES ON TRIAL. GOLD BENEATH OUR FEET?!
Amp up your knowledge about agriculture and dig into the surprising world of Iowa's vegetable farms! From soil secrets and smart growing strategies to creative problem-solving in the face of weather, pests, and limited spaces, Iowa specialty crop farmers share how they turn challenges into success.

Put your problem-solving skills to the test as you explore ingenious ideas used on real farms and see if you have what it takes to outsmart little green invaders (no, not boogers!), protect crops from hungry critters, and even grow lettuce in the middle of a snowstorm. Along the way, you just might discover a new favorite veggie and a whole new appreciation for the farmers who grow our food.

About IALF

The Iowa Agriculture Literacy Foundation's mission is to educate Iowans with a focus on youth regarding the breadth and global significance of agriculture.

IALF serves as a central resource for all pre-K-12 educators to inspire teaching through the lens of agriculture. As the leading producer of agricultural products, it is important for all Iowans to understand the essential role agriculture has in their lives.

About the Author

For over two decades, Emily has worked with experts, authors, and educators to develop science curriculum and professional learning resources for elementary educators. As a former fourth-grade teacher with a Masters in Children's Literature, her specialty is helping educators bring more science and engineering into daily classroom routines - especially with nonfiction books.

Emily favorite thing to do is read and write STEM-themed nonfiction for children. Emily lives in Iowa where she enjoys exploring nature with her two boys and eating tomatoes from her garden which she struggles to keep weed-free. Learn more about Emily's work at StarrMatica.com

A "How-To" for You!

Welcome, Fellow Educator!

Are you ready to help your students DIG IN to Iowa specialty crop farming with a pinch of STEM problem solving, a dash of agriculture ideas, and a bunch of healthy eating tips? Let's get started!

Why Use DIG IN

DIG IN was written to connect *your students to* Iowa agricultural careers; deepen their science, ag, and healthy eating knowledge; and help them practice STEM problem solving. It was designed to help *you* make authentic cross-curricular connections and to meet the Iowa ELA, Math, and Science standards listed on pages 27-32.

How to Use DIG IN

DIG IN chapters are designed to be self-contained, so students can feel the accomplishment of reading a single chapter and have time to engage with its ideas in a meaningful way.

The book works equally well as a whole-class read aloud, a small-group guided reading text, or an independent reading assignment.

How to Use This Curriculum Guide

This guide provides chapter by chapter suggestions for helping your students engage with the entertaining text. Shared resources were intentionally chosen to support research-based high quality instruction. You will find:

- Phenomena examples that invite students to notice and wonder
  - Supports high quality science instructional routines
- Real-word data to analyze and interpret
  - Supports high quality math instruction with authentic data
- Text recommendations to extend and enrich learning
  - Supports the Science of Reading and ELA standards by building background knowledge and making connections across texts
- Comprehension questions to help students think deeply about their reading
  - Supports metacognition, explicit/reflective instruction, and higher order thinking skills
- Activities to encourage cross-curricular connections between science, social studies, ELA, engineering, and art
  - Supports authentic integration

We know it isn't possible to use every suggestion in this guide. We have provided a wide-variety of options, so you can choose the ideas that best meet the needs of your curriculum and students!

Chapter One: Claim Your Problem-Solving Superpowers (And Teach Adults a Few Lessons)

Before Reading

Activate background knowledge. Two activities are included in the text. First, readers are asked to draw or describe a farm scene. Then, they are asked to brainstorm what they know about vegetables.

Students can complete these independently, or you can read the chapter aloud and ask students to share their work using one of these strategies:

- Gallery Walk
- Inside Circle, Outside Circle
- Elbow Partner
- Turn and Talk

During Reading

Ask comprehension questions.

- Now that you know a little bit about what will be shared in this book, what are you most curious about? What do you hope to learn?
- How would this chapter be different if there were no images included?
- Why do you think the title is “Dig In”? How could that title mean different things?
- Based on the first chapter, what do you think will be the tone of this book? Humorous? Serious? Sad? Or something else? Use examples from the text to support your answer.
- Research the book’s publisher, the Iowa Ag Literacy Foundation. Do you think this book will be a reliable source of information about farming? Why or why not?

After Reading

Analyze text and images. Ask students to analyze the images in these farm-themed books for younger readers. You can listen to them read aloud or scan through the video without sound to preview the images. (Each title is hyperlinked to a video read aloud.)

- *Sleep Tight Farm* by Eugenie Doyle
- *Big Red Barn* by Margaret Wise Brown
- *Farming* by Gail Gibbons

Which images are accurate based-on the information in Chapter One? Why do you think inaccurate images were used? How could you change an image to be more accurate?

***ELA (Discussion):* Farm Characteristics.** Review this slide deck of photographs from the farms included in the book. Complete this see, think, wonder chart individually or as a class. Discuss similarities and differences between the farms.

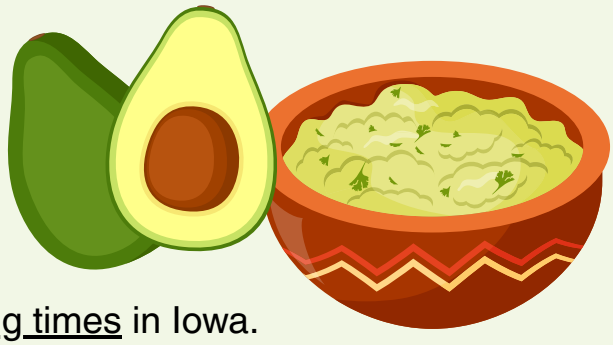
***ELA (Writing):* Vegetables.** Ask students to examine this poster of fruits and vegetables. Which vegetables have they eaten? Which have they never heard of? Which would they like to try? Why? Students can respond to the questions as a writing prompt. Or you could place each question on a piece of chart paper and ask students to respond with sticky notes.

***Ag:* Farm Tours.** Build background knowledge by exploring farms that grow greenhouse vegetables, dry beans, and potatoes with 360 degree virtual visit videos.

Explore agriculture's connection to history and geography in the Culture and Society Issue of Iowa Ag Today.

Chapter Two: Become an Agriculture Expert

Before Reading



Establish a reason to read and analyze data.

Take a look at the vegetable planting and harvesting times in Iowa.

- What do you notice and wonder?
- When is the best time of year to serve fresh vegetables for dinner in Iowa? Why?
- Why do you think we can still eat fresh vegetables in January?

This image shows the ingredients to make guacamole. Compare the ingredients to the vegetable list from the table above.

- Can you make guacamole with ingredients grown in Iowa? If not, what is missing? Why do you think it is missing?
- How do you think we can still make guacamole if we don't grow all of the ingredients in Iowa?

During Reading

Ask comprehension questions.

- According to evidence provided by the author, how would the world be different without agriculture?
- According to the text, why might an Iowan choose to eat *only* local produce in the summer months? How might that decision change what they eat?
- How are prairies and erosion related to agriculture in Iowa?
- How does the author use reasons and evidence to support the point that crops can only be grown in certain places around the world? Share at least three pieces of evidence.
- How do the sidebars in this chapter contribute to the text? Why do you think the author chose to include the information about figs and dandelions in sidebars?
- How does the environment influence the growth of plants?

After Reading

Analyze text and images. Ask students to examine these maps that show areas of tallgrass prairie historically and what remains today. How does the data in these images relate to the information in this chapter?

***Social Studies:* Agriculture History.** Invite students to notice and wonder about this map that shows the spread of farming from 9600 to 4000 BCE.

Next invite students to notice and wonder about this animated map.

- What do these maps help us understand about this history of agriculture?
- Make an inference about a location on the map based on information you learned in the text.
- How could these maps help us to make inferences about migration patterns, trade routes, and exploration?

***Social Studies:* Iowa's Global Goods.** Dive deeper into vegetable products in Iowa and challenge students to advertise Iowa products to domestic and global audiences with this lesson plan from the Iowa Ag Literacy Foundation.

***Science:* Plant Hardiness Zones.** Invite students to notice and wonder about this plant hardiness zones map. Then, take a look at these charts that show when to plant vegetables in each zone. From these two sets of data, what inferences can students make about the relationship between geography, weather, and plant needs? What inferences can they make about vegetable farming?

***Ag:* Soil Formation.** Read this article to learn what factors affect soil formation. Every state and territory in the U.S. has a state soil. Students can explore the soil each state is best known for here. They can also visit this interactive map and select *Soil Classification* to see a colorful map of soil groups around the globe.

Explore how plants and animals provide food, fiber, and fuel in the Plants and Animals Issue of Iowa Ag Today.

Chapter Three: Vegging Out in Iowa

Before Reading

Activate background knowledge. First, ask students to discuss what agricultural products they think are produced in Iowa. Record their ideas on chart paper, and after reading the chapter, go back and revise their list.

Ask students to look at the plants on page 33, discuss which they believe are fruits and which are vegetables, and explain their reasoning.

Establish a reason to read. In this chapter, students learn why it is important to eat vegetables and are given suggestions for increasing the amount of vegetables they eat. Before reading, have students analyze this graph from the BBC that shows how eating vegetables improve your health. What is this graph telling us? Why is this information important for young, healthy people?

During Reading

Ask comprehension questions.

- What clues in the text can help you figure out the meaning of the phrase "**value-added** product"?
- Can a vegetable ever be unhealthy to eat? Why or why not? Use evidence from the text to support your answer.
- Combine information from Chapter Two with this chapter's information. Why do you think Iowa's top agricultural products are what they are?
- How could you respond to someone that says Iowa only grows food, like corn? What evidence would you share with them?
- Why does the author use history to teach about science?
- If you were to tell someone what this chapter is about, what would you say in two sentences or less?

After Reading

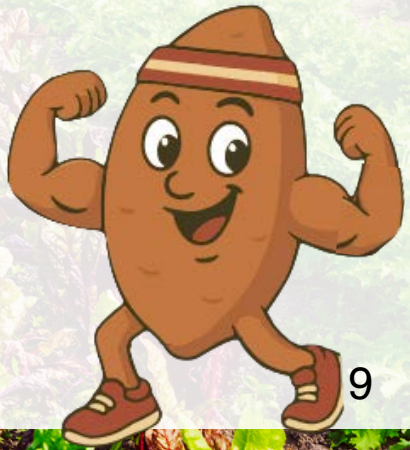
Compare multiple sources. Explore the vegetable information on MyPlate.gov. Be sure to check out the food group gallery and tips for adding vegetables to your diet. How is this information similar to and different from what is in the book?

***Art:* Edible Art.** Use Activity 3 in this lesson from the Iowa Ag Literacy Foundation and encourage students to make edible art (with or without plant part labels.) The point is to enjoy making a creative, healthy snack!

***Science:* Chemical Reactions.** Use this Ag in the classroom lesson to learn about chemical reactions with fruits and vegetables.

***Ag:* Agricultural Products.** Use the picture activity in this Iowa Ag Literacy Foundation blog post to help your students learn more about agricultural products in their daily lives.

Learn about Iowa agriculture crops in the Agriculture is Everywhere Issue of Iowa Ag Today.



Chapter Four: The Case of the Missing Market

Before Reading

Build background knowledge. Many students have not visited a Farmer's Market. Build background knowledge by watching a few minutes of this walking tour of the Seattle Farmer's Market: https://www.youtube.com/watch?v=a9wH_6h1CNc&t=9s

During the video: Ask students to write what they notice and wonder.
After the video: Ask students to share their observations and questions. Then discuss the purpose of a Farmer's Market. Compare and contrast it with a grocery store.

Establish a reason to read. In this chapter, farmers have to figure out how to sell their produce when the Des Moines Farmers' Market closes because of Covid19. Present the problem for your students to solve before they read the book's multiple choice answers.

- What would you do if you sell your produce at a Farmers Market and all Farmers Markets close? Brainstorm as many ideas as you can.

During Reading

Ask comprehension questions.

- What clues in the text can help you figure out the meaning of the word ***pandemic***?
- Why does the author say the Covid19 virus "spread like wildfire?"
- What were the main benefits of visiting the Reinhart's market during the pandemic? How do you think their market affects their community?
- What do you think would happen if a farmer growing vegetables did not practice successive planting? Use evidence from the text to support your answer.
- According to the text, are high tunnels a good farming strategy? Why or why not? What additional information would *you* need to make a decision whether or not to use them?
- If you were to tell someone about the Reinhart's problem solving skills in a few sentences, what would you say? What examples would you share to support your claim?

After Reading

Compare text and images. Share photos from the Reinhart Family Farms Facebook page. Ask students: What in the images does the author describe in the text? How is this market the same as and different from the Seattle market from the video? https://www.facebook.com/RinehartsFamilyFarm

Math: Successive Planting. In order to have produce available at the Farmers Market all summer long, some farmers practice successive planting. Instead of planting a crop all at the same time, they plant smaller batches over the course of several weeks. That way, the crops ripen at different times and can be sold throughout the summer.

Have students create a successive planting schedule using this planner.

Science: Population Limiting Factors. In the text, deer destroy a farmer's crops. Conduct this Oh Deer simulation with your class to explore factors that affect deer populations.

Ag: High Tunnels. In the text, the farmers grow tomatoes in a high tunnel.
1) Show students this virtual field trip inside a high tunnel. (You may want to preview and only show portions of the video.)
2) Ask students to read the first chapter of this informational text about high tunnels.
3) Then, have students write letters to a farmer in Iowa making a recommendation for or against using a high tunnel. Use evidence from the text to support their recommendations.

Learn more about nutrition, food processing, food safety, and agricultural careers in this Food and Nutrition Issue of Iowa Ag Today.

Chapter Five: The Case of the Disappearing Soil

Before Reading

Build background knowledge. Ask students to complete a notice and wonder about these dust bowl photographs. Build off of the students' ideas and discuss how this is an example of extreme erosion.

Establish a reason to read. In this chapter, farmers plant cover crops to prevent erosion. Present the problem for your students to solve before they read the book's multiple choice answers.

- How can I protect my soil from erosion? Brainstorm as many ideas as you can.

During Reading

Ask comprehension questions.

- What clues in the text can help you figure out the meaning of the word **exported**?
- What are two main ideas expressed in this chapter? List two key details that support each main idea.
- What reasons and evidence in the text support the use of cover crops?
- What problems did Roger and Teresa need to overcome to win the tomato race?
- Use examples from this chapter to describe how the geosphere, biosphere, hydrosphere, and atmosphere interact in farming.
- If you were to tell someone about Roger and Teresa's problem solving skills in a few sentences, what would you say? What examples would you share to support your claim?

After Reading

Compare text and images. Browse Prairie Produce's Facebook page. What information from the text is supported by images on their page?

***Social Studies:* The Dust Bowl.** Have students explore primary source photographs and documents about the Dust Bowl using this lesson plan with questions.

Alternatively, you could have students examine the modern and historical importance of soil erosion in Utah and on the Great Plains during the Dust Bowl with this lesson plan from the Iowa Ag Literacy Foundation.

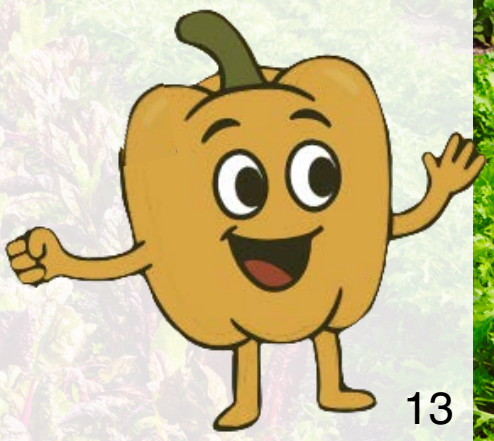
***Engineering:* Erosion Prevention.** Challenge students to use the engineering design process to create a solution that will prevent erosion using this lesson plan.

***Ag:* Cover Crops.** Choose several informational texts about cover crops from this website.

Then use the Jigsaw method and have small groups read different texts and present their findings to the class.

Finally, ask students to draw a model with labels that illustrates the benefits of cover crops.

Learn about natural resource management. in the Agriculture and the Environment Issue of Iowa Ag Today.



Chapter Six: The Case of the Fuzzy Green Invaders

Before Reading

Build background knowledge. View photographs and watch a short video illustrating cole crop planting techniques.

Then, show this leaf damage photograph and ask what students notice and wonder.

Establish a reason to read. In this chapter, farmers have to figure out how to protect their crops from hungry insects. Present the problem for your students to solve before they read the book's multiple choice answers.

- What would you do if your crops were being crunched and munched by pesky bugs? Brainstorm as many ideas as you can.

During Reading

Ask comprehension questions.

- How is the idea that the right amount of moisture is essential to farming success introduced and elaborated on?
- What evidence in the text supports the claim that accurate record keeping is essential for farming success?
- What do you think would happen if a farmer did not have an irrigation system? Use evidence from the text to support your answer.
- According to the text, are insecticides necessary? Why or why not? What additional information would *you* need to make a decision whether or not to use them?
- If you were to tell someone about the Sheltzbaum's problem solving skills in a few sentences, what would you say? What examples would you share to support your claim?

After Reading

Compare text and images.
Notice and wonder about photographs that show different types of irrigation.
Ask: How do you think these irrigation methods are both similar to and different from the Scheltzbaum's drip system?

Explore a concept further. Read a brief history of irrigation.

***Math:* Data Decisions.** Moisture meters and irrigation systems allow small-scale farmers to give their crops the optimal amount of water.
Have students cross-reference Iowa 2025 monthly rainfall data with the crop watering tables on pages 7 and 8. Choose several locations and discuss which crops needed to be watered in June, July, and or August? How much?

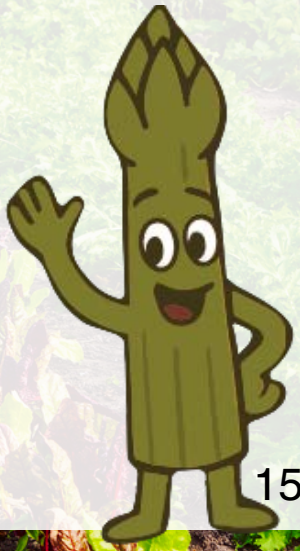
BONUS: Check out Iowa's rainfall over the last 120 years. Was this year's rainfall average? Support your claim with evidence.

***Ag:* Problems and Pests.** Students become solution sleuths with this online simulation as they diagnose what is attacking each plant and decide how to help the gardener prevent the pest from prevailing.

***Social Studies:* Irrigation Maps.** Have students notice and wonder about these world irrigation maps.
Potential questions to help students analyze map data:

- *What information is this data showing?*
- *What is most important in this data?*
- *What patterns can you identify?*
- *How did you get to that interpretation?*
- *Who would use this data? Why?*

***Engineering:* Irrigation Investigation.** Challenge students to utilize the engineering design framework to design an irrigation system with this lesson plan from the Iowa Ag Literacy Association.



Chapter Seven: The Case of the Generous Farmer

Before Reading

Build background knowledge. Ask students to bring from home a favorite recipe that includes vegetables. Share recipes as a class. Then have students brainstorm what they would do if a vegetable in their recipe wasn't available at a store. In this chapter, they'll learn about a farmer's similar experience and how she solved the problem.

Establish a reason to read. In this chapter, farmers have to figure out how to help more people access nutritious vegetables and still support a successful business. Present the problem for your students to solve before they read the book's multiple choice answers.

- How can my farm help more members of a community enjoy fresh vegetables while still making a profit? Brainstorm as many ideas as you can.

During Reading

Ask comprehension questions.

- Why do you think this chapter is titled "the generous farmer?"
- What is "community supported agriculture," and why do you think the practice was given that name?
- Describe how Mari's vermicomposting cycles matter in an ecosystem.
- What do you think are some of the main obstacles to being a successful farmer? Use evidence from the text to support your answer.
- Why might someone choose to practice organic farming? Why might someone choose *not* to farm organically?
- If you were to tell someone about Mari's problem solving skills in a few sentences, what would you say? What examples would you share to support your claim?

After Reading

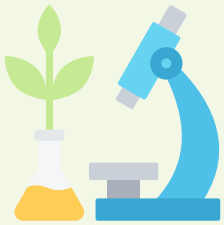
Compare text and images. Look at the comics in this chapter. How does the topic of the comics relate to the text?

Explore a concept further. Investigate whether a farm in your area offers CSA shares.

***ELA:* Opinion Essay.** Students can learn more about the pros and cons of buying organic produce with these two articles.

- Mayo Clinic: Organic Foods: Are they safer? More Nutritious?
- Nationwide Children's Pediatrician: Organic Foods: Are they safer for our kids?

Discuss why these articles are reliable sources, and why Google search results aren't all trustworthy. Then, ask students to write an opinion essay on whether or not they would personally choose to buy organic foods, citing evidence from this chapter and the articles. This organizer can help gather their thoughts before writing.



***Science:* Vermicomposting.** Create a worm compost bin with your students using these instructions and/or this lesson plan from the Iowa Ag Literacy Foundation. Donate the compost to a community garden or local specialty crop farmer.

***Ag:* Organic Farming.** Explore more deeply the pros and cons of organic farming with this lesson from the Iowa Ag Literacy Foundation. This lesson can be in conjunction with or in place of the ELA opinion essay activity shared above.

Discover what science and technology is applied in agriculture, and look at some sustainable agricultural systems for a growing population in the Science and Agriculture Issue of Iowa Ag Today.

Chapter Eight: The Case of the Urban Farmer

Before Reading

Build background knowledge. Show students these side by side photographs. Ask:

- If you wanted to be a farmer, where would you choose to live and why?
- Do you think it is possible to farm in the middle of a city? Why or why not?

(If students don't bring it up, make sure to include in the discussion a review of what plants need to grow.)

Establish a reason to read. In this chapter, farmers have to figure out how to grow vegetables in an urban area. Present the problem for your students to solve before they read the book's multiple choice answers.

- What would you do if you wanted to grow crops in the middle of a city? Brainstorm as many ideas as you can.

During Reading

Ask comprehension questions.

- How do indoor growing systems provide what plants need to grow?
- Compare and contrast indoor and outdoor growing systems. How are they similar and different?
- What are *optimal growing conditions*, and why is it hard to achieve them in outdoor farms?
- What do you think the advice to "make your plate colorful" means? Use evidence from the text to support your answer.
- Is it possible to stay healthy if you *only* eat produce grown locally in Iowa? Why or why not? If not, where do you think that might be possible?
- If you were to tell someone about the Frietag's problem solving skills in a few sentences, what would you say? What examples would you share to support your claim?

After Reading

Explore a concept further. Learn more about the nutritional value of microgreens and different ways to grow them with this slide presentation. Use one of the methods in the presentation or these directions to grow microgreens in your classroom. Here is one option for purchasing seeds online.

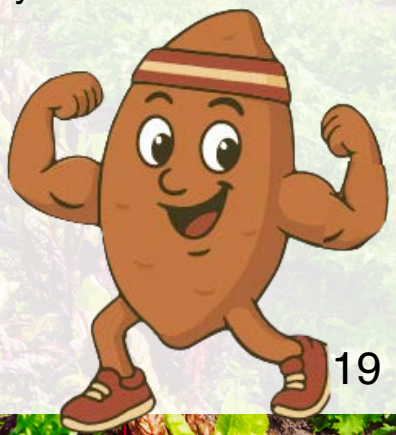
***Math:* Food Miles.** Use this lesson from the Iowa Ag Literacy Foundation to explore the economic and environmental benefits of buying locally grown food.

***Science:* Systems and System Models.** Use this lesson plan to explore why system models help us understand how complicated systems work.

***Ag:* Nutritional Value.** Ask students to keep a food journal for a day. Then research what nutrients were in their food choices using these FDA tables and where the foods may have traveled from with this interactive map.

Because some students live with food insecurity, you may want to investigate a few days of school lunches as a class. Alternatively, you could use this lesson plan from the Iowa Ag Literacy Foundation.

Explore nutrition and learn about food safety. Gather information on what the world eats and explore how agriculture relates to farm-to-table topics. Food, Health, and Lifestyle Issue of Iowa Ag Today.



Chapter Nine: The Case of the World's Freshest Salads

Before Reading

Build background knowledge. Show students these tables comparing freshly harvested and grocery store greens. What do they notice and wonder?

Establish a reason to read. In this chapter, farmers have to figure out how to provide customers with the freshest leafy greens possible. Present the problem for your students to solve before they read the book's multiple choice answers.

- What would you do if you wanted to provide customers with freshly picked leafy greens? Brainstorm as many ideas as you can.

During Reading

Ask comprehension questions.

- What does it mean if a business is **profitable**? What context clues helped you figure out that meaning?
- What can you infer are two reasons customers would visit Clayton's restaurant instead of a different fast food drive through?
- What evidence from the text to supports the claim that Clayton is knowledgeable about farming and business?
- How are the Swansons and Clayton's farms both similar and different?
- If you were to tell someone about Clayton's problem solving skills in a few sentences, what would you say? What examples would you share to support your claim?

After Reading

Compare different sources. Browse the Clayton Farms Salads website. What information was included in the text? What information is new to you?

Explore culinary creativity. Clayton gathers customer feedback to refine his menu. Create a new salad for his menu. Why do you think customers will buy it?

***Science:* Aquaponics.** Watch this PBS video about aquaponics. How is it similar to and different from the hydroponics used by Clayton and the Frietags?

***Engineering:* Engineering Design Process**. Watch this video about the engineering design process. Then, read three articles that discuss the process of designing a self-watering garden. Where is each step in the process represented in the articles?

- Watering Your Garden on Vacation
- Two Ways to Solve a Problem
- Testing Prototypes

***Ag:* High Tech Farming.** Use this lesson from the Iowa Ag Literacy Foundation to help students discover technologies that are used on farms to increase efficiency and yields while decreasing costs and environmental impact.

How can science and technology help increase food production? How are farmers helping produce safe and abundant food supply? Find out in the Science, Technology, Engineering & Math Issue of Iowa Ag Today.

Chapter Ten: The Case of the The Math That Doesn't Add Up

Before Reading

Build background knowledge. Ask students to review this table showing planting and harvesting times for Iowa. Given these constraints, what would a farmer need to do to operate a business that makes a profit?

Next, share this aerial view of Dog Patch Urban Gardens. How does a space constraint impact the amount of money a farmer can make?

Establish a reason to read. In this chapter, farmers have to increase their revenue without increasing the amount of land available for growing crops. Present the problem for your students to solve before they read the book's multiple choice answers.

- How can you increase the amount of money your farm makes without increasing the number of crops you grow? Brainstorm as many ideas as you can.

During Reading

Ask comprehension questions.

- To **diversify** your business means having several products to sell. How did Jenny reduce what she sells and diversify her business at the same time?
- Why do you think the author chose to include the Victory Gardens sidebar in this specific chapter?
- What evidence from the text to supports the claim that farmers need to use math in order to be successful?
- What is the main idea of this chapter?
- How do the photographs on page 142 help the reader to understand how Jenny solved the flooding problem?
- If you were to tell someone about Jenny's problem solving skills in a few sentences, what would you say? What examples would you share to support your claim?

After Reading

Compare text and images. Scroll through the Dog Patch Urban Gardens Photo Gallery. What information was included in the text? What information is new to you?

Explore a concept further. View some of the videos on Dog Patch's YouTube Channel. Discuss: Why did Jenny take the time to create these videos? How do videos on YouTube help a business?

***ELA/Art:* Flyer Design.** This chapter talks about the importance of marketing your produce. Challenge students to design a flyer that promotes one of the specialty crop farms from this book. Students could use a free Canva Education account or get artistic with crayons, markers, and colored pencils. They can learn more about elements of graphic design with the first five tips in this article and/or by watching this video of a flyer redesign.

***Social Studies:* Victory Gardens.** Invite students to analyze primary source documents about victory gardens, posters and photographs, using this primary source analysis tool from the Library of Congress.

Ag: Value-Added Products. Use this lesson plan from the Iowa Ag Literacy Foundation to learn how to create a value added product: grape jelly!

How has agriculture influenced the development of societies? Who were Iowa's agriculture innovators? Understand geography, global trade, and economics as they relate to agriculture in the Culture, Society, Economy & Geography Issue of Iowa Ag Today.

Chapter Eleven: Vegetable Farming and You!

Before Reading

Build background knowledge. Ask students to write the top five ideas they learned from the book on five different sticky notes. Then use the Affinity Process to group new learning into categories. What are the over arching themes from what they learned?

Establish a reason to read. In this chapter, students learn practical steps they can take to further their farming knowledge. They explore careers that support farmers, and they learn why 21st century skills are important. Ask students to agree or disagree with each statement on this anticipation guide. Discuss their answers before reading the chapter.

After Reading

Ask comprehension questions.

- Which farmer suggestion are you most likely to do? Why?
- Which 21st century skill are you the best at? Why do you think that? Which skill do you need to work on? Why do you think that?
- Which career that supports the work of farmers interests you most? Why?
- Why might the information in this book be useful to you in the future even if you don't plan to be a specialty crop farmer?
- If you were to tell someone what this book is about in a few sentences, what would you say?

After Reading

Discuss the anticipation guide again.

- Which statements did you correctly identify as true? What new learning surprised you?

Don't forget to vote for your favorite veggie!

Maybe I voted for myself, maybe not. Votes are private!

Between each chapter, a veggie took the stage (in this case, the page!) to spotlight its nutrition superpowers. As Veggie Variety Show judges, it's your students' reponsibility and privilege to vote for their favorite!

CAST YOUR VOTE HERE

VIEW ALL RESULTS HERE

Dive Deeper With Nonfiction Picture Books

Chapter One

- **Rooting for Plants: The Unstoppable Charles S. Parker, Black Botanist and Collector**
  by Janice N. Harrington
- **The Secret Garden of George Washington Carver** *by Gene Barretta*
- **Alberto Salas Plays Paka Paka Con la Papa** *by Sara Andrea Fajardo*

Chapter Two

- **Dirt the Scoop on Soil** *by Natalie M. Rosinsky*
- **A Handful of Dirt** *by Raymond Bial*
- **The Farm That Feeds Us** *by Nancy Castaldo*
- **The World That Feeds Us** *by Nancy Castaldo*
- **Sleep Tight Farm** *by Eugenie Doyle*
- **I Am Farmer: Growing an Environmental Movement in Cameroon**
  by Baptiste Paul and Miranda Paul

Chapter Three

- **Tomato on Trial** *by Lindsay H. Metcalf*
- **Fruit Bowl** *by Mark Hoffman*
- **Full of Beans: Henry Ford Grows a Car** *by Peggy Thomas*
- **Tops and Bottoms** *by Janet Stevens*
- **Seeds of Discovery: How Barbara McClintock Used Corn and Curiosity to Solve a Science Mystery and Win a Nobel Prize** *by Lori Alexander (middle grade)*

Chapter Four

- **Try It!: How Frieda Caplan Changed the Way We Eat** *by Mara Rockliff*
- **Flight of the Honeybee** *by Raymond Huber*
- **Hero For The Hungry: The Life And Work Of Norman Borlaug** *by Peggy Thomas*

Chapter Five

- **Erosion: How Hugh Bennett Saved America's Soil and Ended the Dust Bowl**
  by Darcy Pattison
- **Out of the Dust** *by Karen Hess (middle grade verse novel)*
- **This Book Stinks!: Gross Garbage, Rotten Rubbish, and the Science of Trash**
  by Sarah Flynn
- **It's Corn Picking Time!** *by Jill Esbaum*

Dive Deeper With Nonfiction Picture Books

Chapter Six

- **The Water Princess** *by Susan Verde*
- **The Boy Who Harnessed the Wind** *by Bryan Mealer and William Kamkwamba*
- **Rivers of Sunlight** *by Molly Bang and Penny Chisholm*
- **All the Water in the World** *by George Ella Lyon*
- **Small Wonders: Jean-Henri Fabre & His World of Insects** *by Matthew-Clark Smith*

Chapter Seven

- **This Is a Book To Read With a Worm** *by Jodi Wheeler Toppin*
- *Worm Makes a Sandwich by Brianne Farley*
- **Home in a Lunchbox** *by Cherry Mo*
- **Maddie's Fridge** *by Lois Brandt*
- **Saturday at the Food Pantry** *by Diane O'Neill*

Chapter Eight

- **Outdoor Farm, Indoor Farm** *by Lindsay Metcalf*
- **I Love Strawberries** *by Shannon Anderson*

Chapter Nine

- **How Did That Get in My Lunchbox?:** *The Story of Food by Chris Butterworth*
- **The Fabulous Fannie Farmer: Kitchen Scientist and America's Cook** *by Emma Bland Smith*

Chapter Ten

- **The Gardener** *by Sarah Stewart*
- **Harlem Grown: How One Big Idea Transformed a Neighborhood** *by Tony Hillery*
- **In Our Garden** *by Pat Zietlow Miller*
- **PB&J Hooray** *by Janet Nolan*

Chapter Eleven

- **Attack of the Hangries** *by Katherine Pryor*
- **Gifts from Georgia's Garden: How Georgia O'Keeffe Nourished Her Art** *by Lisa Robinson*

Third Grade Iowa Core Connections

Iowa Core standards listed below are addressed by content within the book or by activities and/or questions in the curriculum guide. Chapters in parenthesis indicate curriculum guide content alignment for that chapter.

ELA	• Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. *(All Chapters)* • Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur). *(Chapters 1 and 10)* • Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. *(Chapter 2)* • Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently. *(Chapter 2)* • Determine the main idea of a text; recount the key details and explain how they support the main idea. *(All Chapters)* • Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence). • Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area. *(Chapters 3, 4, 5, 7, 8, 9, 10)* • Compare and contrast their own point of view and/or perspective from that of the author of a text. *(Chapter 3)* • Write opinion pieces on topics or texts, supporting a point of view with reasons. *(Chapters 4 & 7)* • Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. *(Chapters 4 & 7)*
SCIENCE	• Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. *(Chapter 2)* • Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change. *(Chapter 4)* • Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. *(Chapters 5 & 9)* • Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. *(Chapters 5 & 9)* • Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved. *(Chapters 5 & 9)*
MATH	• Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, with unknowns in all positions. *(Chapters 4 & 8)* • Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. *(Chapters 4 & 8)* • Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *(Chapters 4 & 8)* • Fluently add and subtract within 1,000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. *(Chapters 4 & 8)*

Fourth Grade Iowa Core Connections

Iowa Core standards listed below are addressed by content within the book or by activities and/or questions in the curriculum guide. Chapters in parenthesis indicate curriculum guide content alignment for that chapter.

ELA	• Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. *(All Chapters)* • Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific details from the text. *(Chapter 2)* • Explain how an author uses reasons and evidence to support particular points in a text. *(Chapters 2, 5, 6, 7. 8, 9, 10)* • Determine the main idea of a text and explain how it is supported by key details; summarize the text. *(Chapters 3, 4, 5, 6, 7, 8, 9, 10, 11)* • Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area. *(Chapters 3, 4, 5, 6, 7, 8, 9, 10)* • Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to comprehension of the text. *(Chapter 10)* • Compare and contrast their own point of view and/or perspective from that of the author of a text. *(Chapter 3)* • Write opinion pieces on topics or texts, supporting a point of view with reasons. *(Chapters 4 & 7)* • Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. *(Chapters 4 & 7)*
SCIENCE	• Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment. *(Chapter 2)* • Analyze and interpret data from maps to describe patterns of Earth's features. *(Chapter 2)* • Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. *(Chapters 5 & 9)* • Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. *(Chapters 5 & 9)* • Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved. *(Chapters 5 & 9)*
MATH	• Fluently multiply whole multi-digit numbers including using an algorithm. Algorithms may include the standard algorithm, partial products, area model. *(Chapters 4 & 8)*

Fifth Grade Iowa Core Connections

Iowa Core standards listed below are addressed by content within the book or by activities and/or questions in the curriculum guide. Chapters in parenthesis indicate curriculum guide content alignment for that chapter.

ELA	• Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific and/or technical text based on specific information in the text(s). *(Chapters 2, 8. 9, 10, 11)* • Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s). *(Chapters 2, 5, 6, 7, 8, 9, 10)* • Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area. *(Chapters 3, 4, 5, 6, 7, 8, 9, 10)* • Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text. *(Chapters 5, 11)* • Write opinion pieces on topics or texts, supporting a point of view with reasons. *(Chapters 4 & 7)* • Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. *(Chapters 4 & 7)*
SCIENCE	• Support an argument that plants get the materials they need for growth chiefly from air and water. *(Chapter 2)* • Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. *(Chapters 5 & 6)* • Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. *(Chapter 5)* • Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. *(Chapters 5 & 9)* • Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. *(Chapters 5 & 9)* • Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved. *(Chapters 5 & 9)*
MATH	• Fluently add and subtract multi-digit whole numbers up to 1,000,000 using an algorithm. Algorithms may include the standard algorithm, partial sums, partial differences, counting or adding up in increments. *(Chapters 4 & 8)* • Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Be able to illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. *(Chapters 4 & 8)*

Sixth Grade Iowa Core Connections

Iowa Core standards listed below are addressed by content within the book or by activities and/or questions in the curriculum guide. Chapters in parenthesis indicate curriculum guide content alignment for that chapter.

ELA	• Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. (All Chapters) • Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes).*(Chapters 2, 8. 9, 10, 11)* • Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s). *(Chapters 2, 5, 6, 7, 8, 9, 10* • Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments. *(Chapters 5, 11)* • Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes). • Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings. *(Chapters 3, 4, 5, 6, 7, 8, 9, 10)* • Determine an author's point of view or purpose in a text and explain how it is conveyed in the text. *(Chapter 3)* • Write arguments to support claims with clear reasons and relevant evidence. *(Chapters 4 & 7)* • Draw evidence from literary or informational texts to support analysis, reflection, and research. *(Chapters 4 & 7)*
SCIENCE	• Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. *(Chapters 2, 5, 6, & 7)* • Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms. *(Chapter 2)* • Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem. *(Chapters 2, 3, 6 & 7)* • Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem. *(Chapters 2, 3, & 7)* • Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. *(Chapters 3, 5, & 7)* • Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. *(Chapters 5 & 9)* • Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. *(Chapters 5 & 9)* • Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. *(Chapters 5 & 9)* • Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved. *(Chapters 5 & 9)*

Seventh Grade Iowa Core Connections

Iowa Core standards listed below are addressed by content within the book or by activities and/or questions in the curriculum guide. Chapters in parenthesis indicate curriculum guide content alignment for that chapter.

ELA	• Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.(All Chapters) • Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text..*(Chapters 2, 8. 9, 10, 11)* • Analyze the interactions between individuals, events, and ideas in a text (e.g., how ideas influence individuals or events, or how individuals influence ideas or events)*(Chapters 2, 5, 6, 7, 8, 9, 10* • Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of a specific word choice on meaning and tone. *(Chapters 3, 4, 5, 6, 7, 8, 9, 10)* • Determine an author's point of view or purpose in a text and analyze how the author distinguishes his or her position from that of others. *(Chapter 3)* • Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims. *(Chapters 2, 5, 6, 7, 8, 9, 10)* • Write arguments to support claims with clear reasons and relevant evidence. *(Chapters 4 & 7)* • Draw evidence from literary or informational texts to support analysis, reflection, and research. *(Chapters 4 & 7)*
SCIENCE	• Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. *(Chapters 2, 5, 6, & 7)* • Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms. *(Chapter 2)* • Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem. *(Chapters 2, 3, 6 & 7)* • Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem. *(Chapters 2, 3, & 7)* • Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. *(Chapters 3, 5, & 7)* • Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. *(Chapters 5 & 9)* • Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. *(Chapters 5 & 9)* • Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. *(Chapters 5 & 9)* • Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved. *(Chapters 5 & 9)*

Eighth Grade Iowa Core Connections

ELA	• Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.(All Chapters) • Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text. *(Chapters 2, 8. 9, 10, 11)* • Analyze how a text makes connections among and distinctions between individuals, ideas, or events (e.g., through comparisons, analogies, or categories).*(Chapters 2, 5, 6, 7, 8, 9, 10)* • Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts. *(Chapters 3, 4, 5, 6, 7, 8, 9, 10)* • Determine an author's point of view or purpose in a text and analyze how the author acknowledges and responds to conflicting evidence or viewpoints. *(Chapter 3)* • Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced. *(Chapters 2, 5, 6, 7, 8, 9, 10)* • Analyze a case in which two or more texts provide conflicting information on the same topic and identify where the texts disagree on matters of fact or interpretation. (Chapters 4 & 7) • Write arguments to support claims with clear reasons and relevant evidence. *(Chapters 4 & 7)* • Draw evidence from literary or informational texts to support analysis, reflection, and research. *(Chapters 4 & 7)*
SCIENCE	• Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. • Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms. • Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem. • Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem. • Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. • Evaluate competing design solutions for maintaining biodiversity and ecosystem services • Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. (Chapters 5 & 9) • Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. (Chapters 5 & 9) • Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. (Chapters 5 & 9) • Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved. (Chapters 5 & 9)

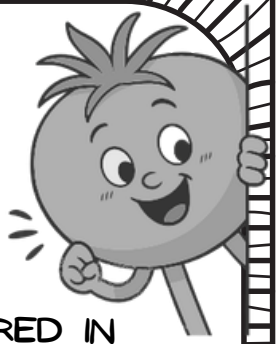
National Agriculture Literacy Outcomes
3rd - 5th grades

AGRICULTURE AND THE ENVIRONMENT	• Identify the major ecosystems and agro-ecosystems in their community or region (e.g., hardwood forests, conifers, grasslands, deserts) with agro- ecosystems (e.g., grazing areas and crop growing regions). (T1.3-5.d) (Chapter 2) • Recognize the natural resources used in agricultural practices to produce food, feed, clothing, landscaping plants, and fuel (e.g., soil, water, air, plants, animals, and minerals). (T1.3-5.e) (Chapters 2, 5, 7, 8) • Explain how the interaction of the sun, soil, water, and weather in plant and animal growth impacts agricultural production. (T1.3-5.b) (Chapter 6)
PLANTS AND ANIMALS FOR FOOD, FIBER, ADN ENERGY	• Explain how the availability of soil nutrients affects plant growth and development. (T2.3-5.c) (Chapters 2, 5, 7) • Understand the concept of stewardship and identify ways farmers/ranchers care for soil, water, plants, and animals. (T2.3-5.e) (Chapters 5, 6, 7, 8, 9, 10)
FOOD, HEALTH, AND LIFESTYLE	• Describe the necessary food components of a healthy diet using the current dietary guidelines. (T3.3-5.a) (Chapters 1, 3, 8) • Identify food sources of required food nutrients. (T3.3-5.g) (Chapters 1, 3, 7, 8) • Distinguish between processed and unprocessed food. (T3.3-5.c) (Chapter 10) • Explain the practices of safe food handling, preparation, and storage. (T3.3-5.e) (Chapters 3, 10, 11) • Identify the careers in food production, processing, and nutrition that are essential for a healthy food supply. (T3.6-8.j) (Chapter 11)
SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS	• Provide examples of science being applied in farming for food, clothing, and shelter products. (T4.3-5.d) (Chapters 3, 4, 8, 9) • Describe how technology helps farmers/ranchers increase their outputs (crop and livestock yields) with fewer inputs (less water, fertilizer, and land) while using the same amount of space. (T4.3-5.b) (Chapters 8, 9)
CULTURE, SOCIETY, ECONOMY, AND GEOGRAPHY	• Explain the value of agriculture and how it is important in daily life. (T5.3-5.d) (All chapters) • Understand the agricultural history of an individual's specific community and/or state. (T5.3-5.f) (Chapters 2, 5, 6) • Provide examples of agricultural products available, but not produced in their local area and state. (T5.3-5.e) (Chapter 2) • Describe how supply and demand impact the price of agricultural goods. (T5.3-5.a) (Chapters 4, 9) • Discover that there are many jobs in agriculture. (T5.3-5.b) (Chapter 11)

National Agriculture Literacy Outcomes
6th - 8th grades

AGRICULTURE AND THE ENVIRONMENT	• Describe benefits and challenges of using conservation practices for natural resources (e.g., soil, water, and forests), in agricultural systems which impact water, air, and soil quality. (Chapters 5, 8) • Discover how natural resources are used and conserved in agriculture (e.g., soil conservation, water conservation). (Chapters 5, 6, 8) • Recognize how climate and natural resources determine the types of crops and livestock that can be grown and raised for consumption. (T1.6-8.g) (Chapters 1, 6, 10) • Recognize the factors of an agricultural system which determine its sustainability. (T1.6-8.h) (Chapters 4, 5, 6, 7, 8, 9, 10)
PLANTS AND ANIMALS FOR FOOD, FIBER, ADN ENERGY	• Identify renewable and nonrenewable energy sources. (T2.6-8.d) (Chapter 3) • Identify farm practices for plant protection (e.g., using a pesticide, integrated pest management, cultural practices) and the harvest of safe products for consumers. (Chapter 6)
FOOD, HEALTH, AND LIFESTYLE	• Identify agricultural products (foods) that provide valuable nutrients for a balanced diet. (T3.6-8.g) (Chapters 1, 3, 8) • Evaluate serving size related to nutritional needs. (T3.6-8.c) (Chapters 3, 8) • Explain the benefits and disadvantages of food processing. (T3.6-8.e) (Chapters 5, 11)
SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS	• Discuss how technology has changed over time to help farmers/ranchers provide more food to more people. (T4.6-8.d) (Chapters 4, 8, 9, 10) • Explain how and why agricultural innovation influenced modern economic systems. (T4.6-8.e) (Chapters 8, 9, 10) • Provide examples of science and technology used in agricultural systems (e.g., GPS, artificial insemination, biotechnology, soil testing, ethanol production, etc.); explain how they meet our basic needs; and detail their social, economic, and environmental impacts. (T4.6-8.i) (Chapters 8, 9) • Identify science careers related to both producers and consumers of agricultural products. (T4.6-8.g) (Chapter 11)
CULTURE, SOCIETY, ECONOMY, AND GEOGRAPHY	• Identify agricultural products that are exported and imported. (T5.6-8.g) (Chapter 2) • Consider the economic value of agriculture in America. (T5.6-8.a) (Chapters 4, 7, 8, 9, 10) • Explain how prices for agricultural goods are determined. (T5.6-8.d) (Chapters 9, 10)

NAME_____



CHAPTER ONE

CLAIM YOUR PROBLEM-SOLVING SUPERPOWERS

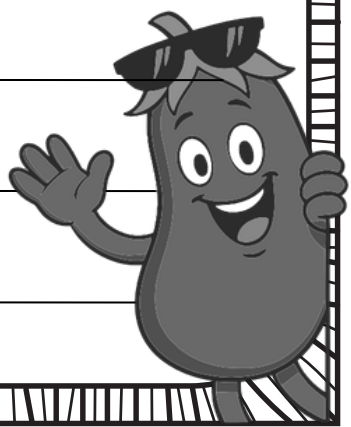
NOW THAT YOU KNOW A LITTLE BIT ABOUT WHAT WILL BE SHARED IN THIS BOOK, WHAT ARE YOU MOST CURIOUS ABOUT? WHAT DO YOU HOPE TO LEARN?

HOW WOULD THIS CHAPTER BE DIFFERENT IF THERE WERE NO IMAGES INCLUDED?

WHY DO YOU THINK THE TITLE IS "DIG IN"? HOW COULD THAT TITLE MEAN DIFFERENT THINGS?

BASED ON THE FIRST CHAPTER, WHAT DO YOU THINK WILL BE THE TONE OF THIS BOOK? HUMOROUS? SERIOUS? SAD? OR SOMETHING ELSE? USE EXAMPLES FROM THE TEXT TO SUPPORT YOUR ANSWER.

RESEARCH THE BOOK'S PUBLISHER, THE IOWA AG LITERACY FOUNDATION. DO YOU THINK THIS BOOK WILL BE A RELIABLE SOURCE OF INFORMATION ABOUT FARMING? WHY OR WHY NOT?



NAME_____

CHAPTER TWO

BECOME AN AGRICULTURE EXPERT

ACCORDING TO EVIDENCE PROVIDED BY THE AUTHOR, HOW WOULD THE WORLD BE DIFFERENT WITHOUT AGRICULTURE?

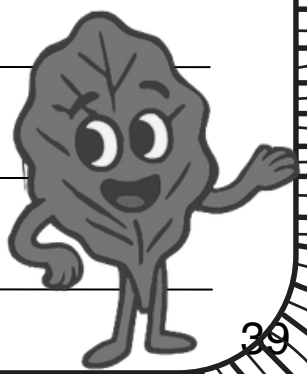
ACCORDING TO THE TEXT, WHY MIGHT AN IOWAN CHOOSE TO EAT ONLY LOCAL PRODUCE IN THE SUMMER MONTHS? HOW MIGHT THAT DECISION CHANGE WHAT THEY EAT?

HOW ARE PRAIRIES AND EROSION RELATED TO AGRICULTURE IN IOWA?

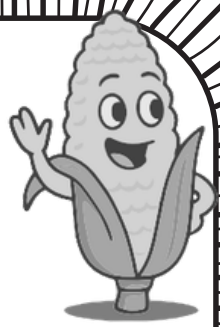
HOW DOES THE AUTHOR USE REASONS AND EVIDENCE TO SUPPORT THE POINT THAT CROPS CAN ONLY BE GROWN IN CERTAIN PLACES AROUND THE WORLD? SHARE AT LEAST THREE PIECES OF EVIDENCE.

HOW DO THE SIDEBARS IN THIS CHAPTER CONTRIBUTE TO THE TEXT? WHY DO YOU THINK THE AUTHOR CHOSE TO INCLUDE THE INFORMATION ABOUT FIGS AND DANDELIONS IN SIDEBARS?

HOW DOES THE ENVIRONMENT INFLUENCE THE GROWTH OF PLANTS?



NAME_____



CHAPTER THREE

VEGGING OUT IN IOWA

WHAT CLUES IN THE TEXT CAN HELP YOU FIGURE OUT THE MEANING OF THE PHRASE "VALUE-ADDED PRODUCT"?

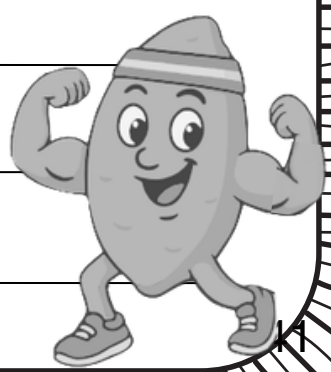
CAN A VEGETABLE EVER BE UNHEALTHY TO EAT? WHY OR WHY NOT? USE EVIDENCE FROM THE TEXT TO SUPPORT YOUR ANSWER.

COMBINE INFORMATION FROM CHAPTER TWO WITH THIS CHAPTER'S INFORMATION. WHY DO YOU THINK IOWA'S TOP AGRICULTURAL PRODUCTS ARE WHAT THEY ARE?

HOW COULD YOU RESPOND TO SOMEONE THAT SAYS IOWA ONLY GROWS FOOD, LIKE CORN? WHAT EVIDENCE WOULD YOU SHARE WITH THEM?

WHY DOES THE AUTHOR USE HISTORY TO TEACH ABOUT SCIENCE?

IF YOU WERE TO TELL SOMEONE WHAT THIS CHAPTER IS ABOUT, WHAT WOULD YOU SAY IN TWO SENTENCES OR LESS?



NAME_____

CHAPTER FOUR

THE CASE OF THE MISSING MARKET

WHAT CLUES IN THE TEXT CAN HELP YOU FIGURE OUT THE MEANING OF THE WORD PANDEMIC?

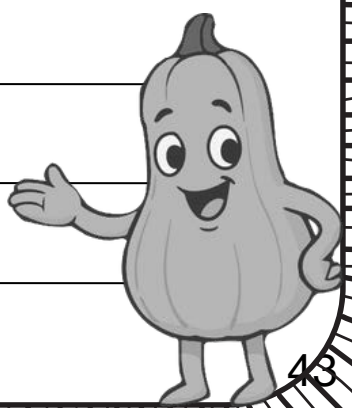
WHY DOES THE AUTHOR SAY THE COVID19 VIRUS "SPREAD LIKE WILDFIRE?"

WHAT WERE THE MAIN BENEFITS OF VISITING THE REINHART'S MARKET DURING THE PANDEMIC? HOW DO YOU THINK THEIR MARKET AFFECTS THEIR COMMUNITY?

WHAT DO YOU THINK WOULD HAPPEN IF A FARMER GROWING VEGETABLES DID NOT PRACTICE SUCCESSIVE PLANTING? USE EVIDENCE FROM THE TEXT TO SUPPORT YOUR ANSWER.

ACCORDING TO THE TEXT, ARE HIGH TUNNELS A GOOD FARMING STRATEGY? WHY OR WHY NOT? WHAT ADDITIONAL INFORMATION WOULD YOU NEED TO MAKE A DECISION WHETHER OR NOT TO USE THEM?

IF YOU WERE TO TELL SOMEONE ABOUT THE REINHART'S PROBLEM SOLVING SKILLS IN A FEW SENTENCES, WHAT WOULD YOU SAY? WHAT EXAMPLES WOULD YOU SHARE TO SUPPORT YOUR CLAIM?



NAME_____

CHAPTER FIVE

THE CASE OF THE DISAPPEARING SOIL

WHAT CLUES IN THE TEXT CAN HELP YOU FIGURE OUT THE MEANING OF THE WORD EXPORTED?

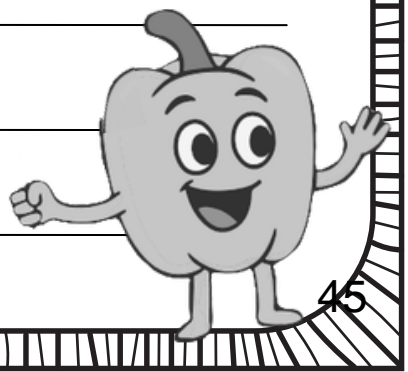
WHAT ARE TWO MAIN IDEAS EXPRESSED IN THIS CHAPTER? LIST TWO KEY DETAILS THAT SUPPORT EACH MAIN IDEA.

WHAT REASONS AND EVIDENCE IN THE TEXT SUPPORT THE USE OF COVER CROPS?

WHAT PROBLEMS DID ROGER AND TERESA NEED TO OVERCOME TO WIN THE TOMATO RACE?

USE EXAMPLES FROM THIS CHAPTER TO DESCRIBE HOW THE GEOSPHERE, BIOSPHERE, HYDROSPHERE, AND ATMOSPHERE INTERACT IN FARMING.

IF YOU WERE TO TELL SOMEONE ABOUT ROGER AND TERESA'S PROBLEM SOLVING SKILLS IN A FEW SENTENCES, WHAT WOULD YOU SAY? WHAT EXAMPLES WOULD YOU SHARE TO SUPPORT YOUR CLAIM?



NAME_____

CHAPTER SIX

THE CASE OF THE FUZZY GREEN INVADERS

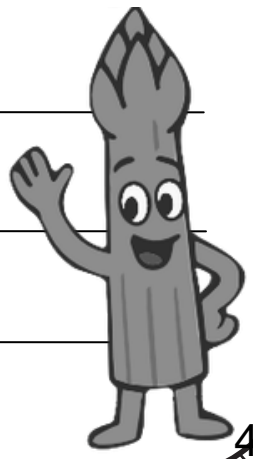
HOW IS THE IDEA THAT THE RIGHT AMOUNT OF MOISTURE IS ESSENTIAL TO FARMING SUCCESS INTRODUCED AND ELABORATED ON?

WHAT EVIDENCE IN THE TEXT SUPPORTS THE CLAIM THAT ACCURATE RECORD KEEPING IS ESSENTIAL FOR FARMING SUCCESS?

WHAT DO YOU THINK WOULD HAPPEN IF A FARMER DID NOT HAVE AN IRRIGATION SYSTEM? USE EVIDENCE FROM THE TEXT TO SUPPORT YOUR ANSWER.

ACCORDING TO THE TEXT, ARE INSECTICIDES NECESSARY? WHY OR WHY NOT? WHAT ADDITIONAL INFORMATION WOULD YOU NEED TO MAKE A DECISION WHETHER OR NOT TO USE THEM?

IF YOU WERE TO TELL SOMEONE ABOUT THE SHELTZBAUM'S PROBLEM SOLVING SKILLS IN A FEW SENTENCES, WHAT WOULD YOU SAY? WHAT EXAMPLES WOULD YOU SHARE TO SUPPORT YOUR CLAIM?



NAME_____

CHAPTER SEVEN

THE CASE OF THE GENEROUS FARMER

WHY DO YOU THINK THIS CHAPTER IS TITLED "THE GENEROUS FARMER?"

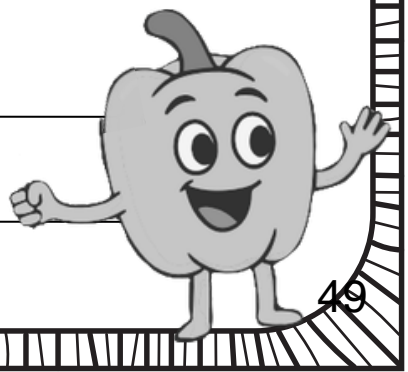
WHAT IS "COMMUNITY SUPPORTED AGRICULTURE," AND WHY DO YOU THINK THE PRACTICE WAS GIVEN THAT NAME?

DESCRIBE HOW MARI'S VERMICOMPOSING CYCLES MATTER IN AN ECOSYSTEM.

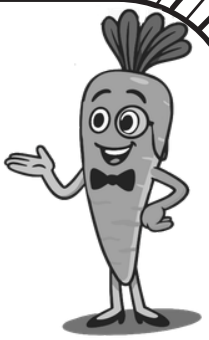
WHAT DO YOU THINK ARE SOME OF THE MAIN OBSTACLES TO BEING A SUCCESSFUL FARMER? USE EVIDENCE FROM THE TEXT TO SUPPORT YOUR ANSWER.

WHY MIGHT SOMEONE CHOOSE TO PRACTICE ORGANIC FARMING? WHY MIGHT SOMEONE CHOOSE NOT TO FARM ORGANICALLY?

IF YOU WERE TO TELL SOMEONE ABOUT MARI'S PROBLEM SOLVING SKILLS IN A FEW SENTENCES, WHAT WOULD YOU SAY? WHAT EXAMPLES WOULD YOU SHARE TO SUPPORT YOUR CLAIM?



NAME_____



CHAPTER EIGHT

THE CASE OF THE URBAN FARMER

HOW DO INDOOR GROWING SYSTEMS PROVIDE WHAT PLANTS NEED TO GROW?

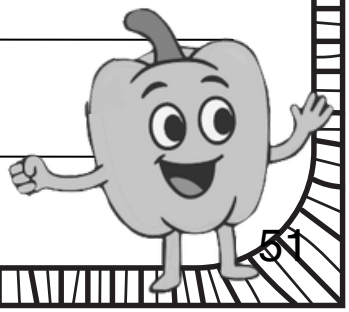
COMPARE AND CONTRAST INDOOR AND OUTDOOR GROWING SYSTEMS. HOW ARE THEY SIMILAR AND DIFFERENT?

WHAT ARE "OPTIMAL GROWING CONDITIONS", AND WHY IS IT HARD TO ACHIEVE THEM IN OUTDOOR FARMS?

WHAT DO YOU THINK THE ADVICE TO "MAKE YOUR PLATE COLORFUL" MEANS? USE EVIDENCE FROM THE TEXT TO SUPPORT YOUR ANSWER.

IS IT POSSIBLE TO STAY HEALTHY IF YOU ONLY EAT PRODUCE GROWN LOCALLY IN IOWA? WHY OR WHY NOT? IF NOT, WHERE DO YOU THINK THAT MIGHT BE POSSIBLE?

IF YOU WERE TO TELL SOMEONE ABOUT THE FRIETAG'S PROBLEM SOLVING SKILLS IN A FEW SENTENCES, WHAT WOULD YOU SAY? WHAT EXAMPLES WOULD YOU SHARE TO SUPPORT YOUR CLAIM?



NAME_____

CHAPTER NINE

THE CASE OF THE WORLD'S FRESHEST SALADS

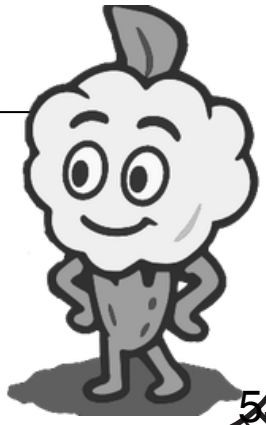
WHAT DOES IT MEAN IF A BUSINESS IS PROFITABLE? WHAT CONTEXT CLUES HELPED YOU FIGURE OUT THAT MEANING?

WHAT CAN YOU INFER ARE TWO REASONS CUSTOMERS WOULD VISIT CLAYTON'S RESTAURANT INSTEAD OF A DIFFERENT FAST FOOD DRIVE THROUGH?

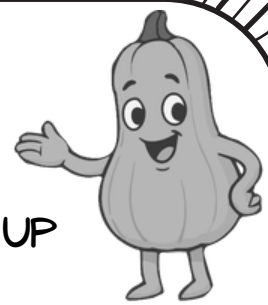
WHAT EVIDENCE FROM THE TEXT TO SUPPORTS THE CLAIM THAT CLAYTON IS KNOWLEDGEABLE ABOUT FARMING AND BUSINESS?

HOW ARE THE SWANSONS AND CLAYTON'S FARMS BOTH SIMILAR AND DIFFERENT?

IF YOU WERE TO TELL SOMEONE ABOUT CLAYTON'S PROBLEM SOLVING SKILLS IN A FEW SENTENCES, WHAT WOULD YOU SAY? WHAT EXAMPLES WOULD YOU SHARE TO SUPPORT YOUR CLAIM?



NAME_____



CHAPTER TEN

THE CASE OF THE MATH THAT DOESN'T ADD UP

TO "DIVERSIFY" YOUR BUSINESS MEANS HAVING SEVERAL PRODUCTS TO SELL. HOW DID JENNY REDUCE WHAT SHE SELLS AND DIVERSIFY HER BUSINESS AT THE SAME TIME?

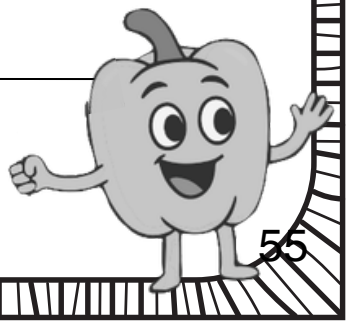
WHY DO YOU THINK THE AUTHOR CHOSE TO INCLUDE THE VICTORY GARDENS SIDEBAR IN THIS SPECIFIC CHAPTER?

WHAT EVIDENCE FROM THE TEXT TO SUPPORTS THE CLAIM THAT FARMERS NEED TO USE MATH IN ORDER TO BE SUCCESSFUL?

WHAT IS THE MAIN IDEA OF THIS CHAPTER?

HOW DO THE PHOTOGRAPHS ON PAGE 142 HELP THE READER TO UNDERSTAND HOW JENNY SOLVED THE FLOODING PROBLEM?

IF YOU WERE TO TELL SOMEONE ABOUT JENNY'S PROBLEM SOLVING SKILLS IN A FEW SENTENCES, WHAT WOULD YOU SAY? WHAT EXAMPLES WOULD YOU SHARE TO SUPPORT YOUR CLAIM?



NAME_____

CHAPTER ELEVEN

VEGETABLE FARMING AND YOU!

WHICH FARMER SUGGESTION ARE YOU MOST LIKELY TO DO? WHY?

WHICH 21ST CENTURY SKILL ARE YOU THE BEST AT? WHY DO YOU THINK THAT? WHICH SKILL DO YOU NEED TO WORK ON? WHY DO YOU THINK THAT?

WHICH CAREER THAT SUPPORTS THE WORK OF FARMERS INTERESTS YOU MOST? WHY?

WHY MIGHT THE INFORMATION IN THIS BOOK BE USEFUL TO YOU IN THE FUTURE EVEN IF YOU DON'T PLAN TO BE A SPECIALTY CROP FARMER?

IF YOU WERE TO TELL SOMEONE WHAT THIS BOOK IS ABOUT IN A FEW SENTENCES, WHAT WOULD YOU SAY?