

TEACHER'S GUIDE

Ag Mag: PROTECTING OUR ENVIRONMENT-AGRICULTURAL STEWARDSHIP

NEBRASKA STATE EDUCATION CONTENT STANDARDS CONNECTION

Ag Mag can be utilized to support Nebraska Academic Standards including:

- LA 4.15.b** Apply context clues (e.g. word, phrase, and sentence, and paragraph clues) and text features to infer meaning of unknown words.
- LA 4.15.c** Acquire new academic and content-specific grade-level vocabulary, relate to prior knowledge, and apply in new situations.
- LA 4.16.d** Summarize a literary text and/or media, using key details to identify the theme.
- LA 4.16.e** Determine main ideas and supporting details from informational text and/or media.
- LA 4.16.o** Demonstrate an understanding of text via multiple mediums (e.g., writing, artistic representation, video, other media).
- SS 4.3.5.c** Classify resources as renewable or nonrenewable resources.
- SS 4.3.5.d** Describe environmental issues in Nebraska (e.g., soil conservation, water stewardship, contour farming, minimum tillage, air quality, solid waste).
- SS 4.3.5.e** Describe human adaptations to the physical environment (e.g., use of air conditioning, irrigation, agricultural activities).
- SS 4.2.12.b** Discuss how technology has affected the specialization of Nebraska's economy and surrounding states.
- MA 4.1.2.e** Use drawings, words, and symbols to explain the meaning of addition and subtraction of fractions with like denominators.

AG MAG INTEGRATION IDEAS

READING CENTER IDEAS & RESOURCES FOR AG MAG

Close Reading

Use the worksheets and bookmarks attached to this guide to find the main idea of the text, evidence that supports the main idea and a place to share the students' thoughts and opinions. The close reading bookmarks include text marking symbols for close reading.

Making Connections

How does the text relate to you? Have students read AgMag to search for three ways they connect to the text. Use the worksheet attached to lead discussion.

PROTECTING OUR ENVIRONMENT-AGRICULTURAL STEWARDSHIP - PAGE 1

- 1. Prior to distributing AgMag to students, pose/post: "What do you know about the term 'stewardship?' What do you believe it means?"**
 - Have students share verbal responses and record on writing surface or have them write down their response on post-it note and post on board/wall.
 - Lead class discussion around responses. What led you to that response? Why did you think that? How do you think stewardship relates/connects to agriculture?
 - Provide a copy of AgMag to each student and read through page 1 together.
- 2. What does it mean to be a steward?**
 - Answers: All responses are YES
 - What are other good stewardship practices farmers and ranchers might use? Examples may include (and are not limited to): make sure all animals have plenty of feed and water; rotate the crops that are grown to make sure soil is healthy and has proper nutrients; keep watch when cows/ewes/sows/does are having babies to make sure they are well cared for; work with veterinarian to provide vaccinations for animals to prevent illness.
- 3. For even MORE on how stewardship relates to consumption, conservation, and preservation, check out this activity: Earth's Resources**
(<https://www.nefbfoundation.org/images/FOUndation/Educators/Enriching-Activities/Earths-Resources.pdf>)
Understand the difference between consumption, conservation, and preservation of Earth's resources in our environment and agriculture.

WHY SHOULD WE CARE? - PAGE 2

1. What have you eaten, worn, or used today that came from a plant or animal?

- Students share examples—capture on writing surface.
- Review the definitions of “renewable” and “Nonrenewable” on page 2. Ask students to identify which of the items they listed are renewable and nonrenewable. Record next to examples on writing surface.
- Two teacher resource sites with some examples:
 - i. <https://study.com/academy/lesson/renewable-non-renewable-resources-definition-differences.html>
 - ii. <https://greentumble.com/10-examples-of-renewable-and-non-renewable-resources/>
- Why is it important to know the difference between renewable and nonrenewable resources? We need to know so that we are aware how we use resources each day. We should always look to conserve and not be wasteful

2. Have students complete “Slice of Soil.” Lead discussion around questions:

- Is soil considered renewable or nonrenewable? Why? Soil is renewable—decomposition, nutrient recycling, etc. can produce new soil. The problem is that it takes hundreds of years to happen! So, we can’t afford to deplete our soil—the creation of new soil can’t keep up with the rate it is used.
- To learn more about soil and water (and do “Slice of Soil” in a different way!) check out “Our World—Soil & Water” at: <https://www.nefbfoundation.org/images/FOUndation/Educators/Enriching-Activities/Our-World.pdf>

3. Have students complete the “Who, What, Where, When, and Why About Livestock”.

- Have students share their responses as a class.
- Who: Farmers and Ranchers; What: Care for livestock; Where: All over the world and all 50 states in the U.S.; When: Every day – 365 days a year; Why: There is a big demand for animal-sourced foods.
- Lead discussion around questions: Are livestock renewable or nonrenewable? Why? Livestock is a renewable resource. Farmers breed livestock so they reproduce (have babies) to replace what is used for food and fiber. We still need to take good care of our animals so they take good care of us!

STEWARDSHIP IN NEBRASKA AGRICULTURE – PAGE 3

- 1. Nebraska produces food, fuel, and fiber for the world. The following are produced in our state: (students should draw a line from the word in to the state of Nebraska)**
 - Cattle, dry edible beans, soybeans, dairy (milk), popcorn, poultry and eggs, pigs, sheep, alfalfa hay, sugar beets, wheat, potatoes, sunflower.
 - Lead a discussion on why crops like oranges, grapefruit, sugarcane, lettuce, etc. aren't grown in Nebraska. Nebraska's climate (temperature, rainfall, etc.) and soil type isn't what those crops need.
 - Conduct research (as a class, individual, or small groups) to find out more about the crops and livestock produced in Nebraska as well as how much is produced.
 - Resources:
 - i. Nebraska Ag Facts Brochure: http://www.nda.nebraska.gov/publications/ne_ag_facts_brochure.pdf
 - ii. Nebraska Agricultural Facts Card: <http://www.nda.nebraska.gov/facts.pdf>
 - iii. Farm Flavor: <https://www.farmflavor.com/nebraska-agriculture/>
 - iv. Nebraska Interactive Map Project: <http://www.nefbmap.org/>
- 2. Request “A Glimpse of Agriculture” poster or download it to explore an infographic of Nebraska agriculture.** https://www.nefbfoundation.org/images/FOUndation/Educators/Companion-Resources/A_Glimpse_of_Agriculture.pdf
- 3. Students read information on Ogallala Aquifer. As a class, look at maps, images, and/or diagrams of the Ogallala Aquifer. Lead discussion with the class around these questions.**
 - How does rainfall impact how land is irrigated? The more rainfall an area has, the less need for irrigation. The primary concern is having enough water in the soil to support whatever plant/crop is growing. Some areas of farm ground are called “dryland,” meaning there is very little irrigation. These areas depend on yearly rainfall to supply water to crops. Irrigation requires equipment and systems in agriculture—so if a farmer doesn't have an irrigation system, he or she can't just “turn on” irrigation if there isn't enough rain!
 - What are some major concerns about the future of the Ogallala Aquifer? The depletion of water from the aquifer and how to stretch the life of the aquifer to benefit future generations of farmers.
 - Why is it important to conserve and protect our water supply? There's a certain amount of water on earth and we can't make more water. Water completes a cycle to return in one form or another—it doesn't disappear. We have a limited supply so if it becomes contaminated or misused we shorten the amount of water available for us to use. If we don't have enough water to produce crops and grow livestock we won't have enough food.

NEBRASKA FARMERS AND RANCHERS—STEWARDS EVERY DAY - PAGES 4 & 5

1. Reading Center Idea

- Students read the content about the three Nebraska farmers. Have students complete the “Four, Three, Two, One” Handout (attached to this guide).
- Lead class discussion around students’ responses to: Four Facts, Three Thoughts, Two Questions, One Opinion.

2. Lead discussion around the Digging Deeper questions.

- Why is it important for farmers to be good stewards of their soil? Soil produces the plants that humans and animals eat. Only a small fraction of the soil in the world can actually be used for food production. If farmers don’t care for the soil, there won’t be enough food raised to feed the world.
- Why is it important for farmers and ranchers to be good stewards of livestock? Animals provide food (think hamburger, bacon, etc.) for us to eat and fiber (think wool, leather, etc.) for us to wear and use. If farmers don’t take good care of the animals, there won’t be enough food for the world to eat or things for us to use and wear.

3. After reading content, have the student think about: “What else would I like to know?”

- Students should review the articles and write additional questions for each farmer—like they could ask during an interview. Have student share the questions they generated and capture on a writing surface.
- Brainstorm with the class on ways they could get answers to their questions. Ask a farmer in your area, research on the internet, etc. If time and resources allow, seek answers to student questions.

4. Have the students as an individual or with a partner, create a poem or write a song about how these individuals/families are stewards in what they do. Poem or song should be at least eight lines long. Be creative in rhyming. Share or perform with their classmates.

FARMERS CARE ABOUT SOIL & WATER - PAGE 6

- 1. Have students read content about soil and water. Post the following instructions on a writing surface and have students complete as they read. Underline topic sentences, circle important words, put a star next to important ideas. When completed, ask students to share their work and lead a class discussion.**
- 2. Answers to Nebraska Soybeans:**
 1. 5th
 2. Gage
 3. Spring/Fall
 4. Seeds
 5. 5.70 million
- 3. As a class, explore the Interactive Map Project, and specifically learn about Nebraska soybeans.**

<http://www.nefbmap.org>

On the left hand column, click Maps, and then type "soybeans" in the filter. There are three maps:

 - i. Soybeans-1924 Soybeans-Production, Measured in Bu;
 - ii. Soybeans-1965 Soybeans-Production, Measured in Bu;
 - iii. Soybeans, Soybeans-Production, Measured in Bu.
 - Start by clicking on "Soybeans-Production, Measured in Bu. This provides an overview of soybean production in the United States and includes facts and a legend.
 - Click on the state of Nebraska. This provides county specific soybean information.
 - Click on any of the counties to learn more.
 - Click on the "Video: growing and using soybeans" sponsored by the Nebraska Soybean Board. The video provides foundational information about soybeans.
- 4. Request a "Soybeans A to Z" Poster or download it to learn more about soybean products.**

https://www.nefbfoundation.org/images/FOUndation/Educators/Companion-Resources/Soybean_A-Z.pdf
- 5. Download the book "Why the Brown Bean Was Blue."** <https://www.nefbfoundation.org/images/FOUndation/Educators/Lesson-Booklets/Soybean.pdf>. **And the teacher's guide with activities:**
https://www.nefbfoundation.org/images/FOUndation/Educators/Lesson-Booklets/Soybean_Guide.pdf
- 6. For more great information on soybeans, check out:** <http://nebraskasoybeans.org>. **And for labs, hands-on lessons, e-learning modules and videos, go to IdeaBin at:** <http://ideabing.org/resources>.

CAREER SPOTLIGHT - PAGE 7

- 1. Students read the career spotlights and respond to the questions at the conclusion of each. Lead the class discussion based on student responses.**

- How are each of these careers related to stewardship? Each career helps farmers and ranchers use less natural resources to produce more crops on the land without depleting the resources we use.
- How does CropMetrics use technology to help farmers be good stewards? Soil probes.
- How is Chafik's career import in agriculture? Technology is important to help manage yields, drones, and finances.

- Have students research a career in agriculture. Have them choose a career they don't know much about—it does not need to be directly related to technology. Write 2-3 paragraphs about the career. Include:**

- Job responsibilities and/or duties
- Education needed
- Why that job is important for agriculture
- In what ways is someone in this career a steward?
- Share what is learned with the class.

HOW ARE YOU A STEWARD? - PAGE 8

- 1. Review the definition of steward. Remind the students that not just farmers and ranchers are stewards—each one of us are stewards in our lives.**
 - Have students complete the checklist. All items should be checked.
 - Have students share responses to “three other ways you can be a good steward.”
- 2. Create a class “Action Plan to Be Good Stewards.”**
 - Review the list on page 8 and the students' responses.
 - Together, identify 5 to 10 actions/steps the students will commit to practicing each day as a class. May also include an accountability plan—how will students help each other remember to be good stewards, etc.
 - Make a printed list, on paper or poster board, have the students sign it (to indicate their commitment) and post in the classroom.

Nebraska Agriculture in the Classroom is a program of the Nebraska Farm Bureau Foundation whose mission is to engage youth, educators, and the general public to promote an understanding of the vital importance of agriculture in the lives of all Nebraskans. To learn more or access an electronic version of this publication, visit us at www.nefbfoundation.org or contact the Nebraska Farm Bureau Foundation.

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CLOSE READING

NAME: _____

DATE: _____

ARTICLE TITLE: _____

Checklist

READING NO. 1

- Think about what this article is mostly about.
- Share your thoughts and ideas about the article with a classmate.

READING NO. 2

- Highlight the headings.
- Underline the topic sentences.
- Circle important words.
- Put a star next to any important ideas.

READING NO. 3

While reading, determine and record the following:

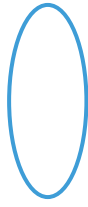
- What is the main idea?
- What evidence supports the main idea?
- What are your own thoughts and opinions about this article?

WHAT IS THE MAIN IDEA OF THIS ARTICLE?

WHAT EVIDENCE SUPPORTS THE MAIN IDEA?

WHAT ARE YOUR OWN THOUGHTS AND OPINIONS?

TEXT MARKING
SYMBOLS FOR
CLOSE READING



Important Words



Topic Sentences or
Main Ideas



Important Details



Confusing Parts

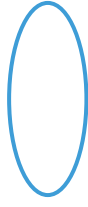


Connections



Favorite or Most
Interesting Parts

TEXT MARKING
SYMBOLS FOR
CLOSE READING



Important Words



Topic Sentences or
Main Ideas



Important Details



Confusing Parts

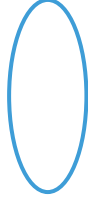


Connections



Favorite or Most
Interesting Parts

TEXT MARKING
SYMBOLS FOR
CLOSE READING



Important Words



Topic Sentences or
Main Ideas



Important Details



Confusing Parts

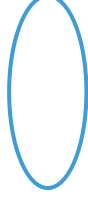


Connections



Favorite or Most
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TEXT MARKING
SYMBOLS FOR
CLOSE READING



Important Words



Topic Sentences or
Main Ideas



Important Details



Confusing Parts



Connections



Favorite or Most
Interesting Parts

FOUR, THREE, TWO, ONE...

NAME: _____

ARTICLE: _____

4 FACTS

Blank space for writing 4 facts.

3 THOUGHTS

Blank space for writing 3 thoughts.

2 QUESTIONS

Blank space for writing 2 questions.

1 OPINION

Blank space for writing 1 opinion.

MAKING CONNECTIONS

NAME: _____

ARTICLE: _____

When making connections, first state what the text says, then state your connection. You may use the following to write your connections:

THIS REMINDS ME OF... THIS MADE ME THINK OF... THIS IS SIMILAR TO ___ BECAUSE...

I CAN RELATE TO ___ BECAUSE...

I UNDERSTAND ___ BECAUSE...

<p>THE TEXT STATED...</p> <hr/> <hr/> <hr/> <hr/>	<p>MY CONNECTION:</p> <hr/> <hr/> <hr/> <hr/>
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<p>THE TEXT STATED...</p> <hr/> <hr/> <hr/> <hr/>	<p>MY CONNECTION:</p> <hr/> <hr/> <hr/> <hr/>
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