

Farm to Periodic Table

Suggested Grade Level: 6-8

Time: 2-3 1hr class periods

Subject: Science, Matter, Periodic Table, Family and Consumer Science, Nutrition, Consumer Awareness, English Language Arts, Informational Reading, Research, Presenting, Agriculture, Local Food Systems, Food Production

Overview: In this lesson, created by Nebraska teacher Liz Odle, students explore fruits and vegetables grown in Kansas by researching one item and making a single-slide Google Slides presentation. The class will compile these slides into a “Periodic Table of Kansas Produce” to display and discuss. Through this activity, students learn about local food systems, the benefits of seasonal eating, and the importance of supporting local agriculture.

Objectives:

1. Identify Kansas-grown fruits and vegetables.
2. Explain how to obtain Kansas-grown products.
3. Create a Google Slides presentation about one Kansas-grown fruit or vegetable.

Background Information:

In recent years, the Farm-to-Fork or Farm-to-Table movement has gained momentum, particularly since the COVID-19 pandemic emerged. Consumers want to know where their food comes from, its safety, and its nutritional value. The cost of food is increasing due to rising production and transportation costs. The USDA's March Food Price Outlook for 2022 predicted a 4.5% to 5% rise in food prices over the next year. The Consumer Price Index (CPI) for all food showed an increase from 6.5% to 7.5% in 2022 compared to 2021. This is the most significant rise in food prices since 1981. Additionally, restaurant prices increased from 6% to 7% in 2022 (Sweitzer). The shorter the distance from production to the consumer, the lower the cost and the fresher the product will be. Consumers are also concerned about their health and nutrition. Many people prefer organic products that are produced without the use of pesticides or fungicides. Therefore, farmers' markets and farm-to-table restaurants are gaining popularity. The number of farmers' markets has grown exponentially over the years. In 1994, there were just 1,755 farmers' markets in the U.S. In 2004, there were 3,706. In 2014, there were about 8,284 farmers' markets, which continue to grow yearly (Vogel). Farmers' markets allow small farmers and businesses to sell their products. They help

meet the growing demand for locally produced food. Obtaining food from a farmer's market will provide fresher food for a family at a lower cost. It is a way to support local farmers and decrease the ecological footprint. The Kansas Department of Agriculture Food Safety and Lodging Program employs local inspectors to complete random food inspections at farmers' markets. They check for proper licensing, temperature control, and labeling.

Kansas Industry Information:

Farmers' markets offer valuable opportunities for small farmers and local businesses to sell their products directly to consumers. These markets help meet the increasing demand for locally grown and produced food, which is often fresher and more affordable than food transported long distances. As transportation and production costs continue to rise, farmers' markets provide a cost-effective way for families to access healthy, seasonal foods. Supporting local farmers also helps strengthen the local economy and reduce the environmental impact, or ecological footprint, associated with long-distance food transport. In Kansas, websites such as "From the Land of Kansas" and "Shop Kansas Farms" help consumers locate local products. To protect public health, food sold directly to consumers must be produced and processed in accordance with government regulations. The state of Kansas enforces these rules to ensure food safety and maintain consumer confidence in local agricultural products.

Materials:

- iPads or laptops
- Printer access
- Tape for hanging the periodic table
- Periodic Table Template Slideshow

https://docs.google.com/presentation/u/0/d/1_jpXNRLrpNf8AFaOqHpvZDq0bJU3V_G-bfqpJrLGXuo/edit

Instructional Format:

1. Review background information
2. Conduct engagement exercise
3. Complete the activity
4. Conduct assessment exercise

Engagement:

Introduction: Begin the lesson by showing students the *Seasonal and Simple* website <https://seasonalandsimple.info/tabs/produce> or app. Ask them to name a fruit grown in Kansas, then use the "Produce" section to look it up together and read what the site says. Students can follow along on their iPads or computers. Repeat this with a vegetable grown in Kansas. Next, go to the "In Season" section and share what fruits

and vegetables are currently in season in Kansas, using the same method. Explain that students will use this site to choose and research one fruit or vegetable grown in Kansas. Then, visit the *Farmer's Market* website, search for 'Kansas,' and show students a list of Kansas farmers' markets—reminding them that the list is not comprehensive. Discuss what a farmers' market is and what they already know about them, emphasizing that these are common places to find Kansas-grown produce. Finally, explain that students will each create a Google Slides presentation about a fruit or vegetable they researched. Their slides will be printed and displayed in a similar format to a periodic table. Since some students may not know what a periodic table is, show an example from the Periodic Table Template Slideshow, along with the sample slide and template, which can be shared on Google Classroom.

Procedures:

Activity

1. Assign each student a Kansas-grown fruit or vegetable by handing out labeled popsicle sticks or slips of paper as they enter the room.
2. Have students open the Periodic Table Template Slideshow in Google Slides and make a personal copy. Show the sample slide to help them understand how to format their information, ensuring everything is kept on one slide. Remind students to use only school-appropriate images.
3. Give students approximately 45 minutes to research their assigned fruit or vegetable using the *Seasonal and Simple* website and complete their slide.
4. Once slides are finished, print each one and display them together as a “Kansas Fruit and Vegetable Elements” board, styled like a periodic table.
5. For early finishers, direct them to explore the *Shop Kansas Farms* website (<https://shopkansasfarms.com/farms-map>) and the From the Land of Kansas website (<https://shop.fromthelandofkansas.com/>) to discover more local products and producers.
6. Ask students to present their slide to the class by briefly reading aloud what they learned about their fruit or vegetable. Use this time to discuss any interesting or surprising facts.
7. Introduce the concept of organic produce and suggest students compare organic and non-organic options the next time they visit a store.
8. Introduce the Career Information. Explain that the fruit or vegetable each student is researching has likely been studied, improved, or selectively bred by horticulturists—plant scientists who help crops grow better, resist disease, and adapt to local conditions.
9. Review the vocabulary terms and write/display them somewhere visible.
10. Optional: To extend the lesson, consider bringing in samples of less familiar Kansas-grown fruits and vegetables for students to taste.

Vocabulary:

- **Farmer's market:** A farmers' market is a public and recurring group of farmers or their representatives selling the food that they produce directly to consumers.
- **Organic:** food produced without the use of chemical fertilizers, pesticides, or other artificial agents.
- **Periodic Table:** a table of the chemical elements arranged in order of atomic number, usually in rows, so that elements with similar atomic structure and properties appear in vertical columns.

Kansas Standards:

Next Generation Science Standards

Matter and Its Interactions

MS-PS1-1: Develop models to describe the atomic composition of simple molecules and extended structures.

Family and Consumer Science

3.0 Personal Resource Management

Practice foundational personal management, consumer, and personal finance skills to meet personal goals

3.1. Apply leadership and cooperative learning skills to achieve personal goals.

3.2. Practice personal management skills in a variety of settings.

3.3. Distinguish the difference between needs and wants.

3.4. Analyze impact of personal financial decisions on the family, community and the environment.

3.5. Identify the basics of financial planning.

3.6. Investigate basic roles and responsibilities of the consumer.

3.7. Identify and apply wise consumer practices.

5.0 Nutrition, Wellness and Food Preparation

Demonstrate foundational nutrition, wellness and food preparation knowledge and skills to enhance individual and family well-being.

5.1. Apply nutrition basics in making healthy food choices.

8.0 FCS Career Awareness

Demonstrate foundational skills in Family and Consumer Sciences careers.

8.1. Identify careers that are part of the Family and Consumer Sciences family.

Language Arts

6th Grade

Writing

Research to Build and Present Knowledge

W.6.7 Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.

W.6.8 Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources.

Speaking and Listening

Comprehension and Collaboration

SL.6.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups and teacher-led) with diverse partners on sixth grade topics, texts and issues, building on others' ideas and expressing their own clearly.

SL.6.2 Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text or issue under study.

Presentation of Knowledge and Ideas

SL.6.4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume and clear pronunciation.

SL.6.5 Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.

7th Grade

Writing

Research to Build and Present Knowledge

W.7.7 Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation.

W.7.8 Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

Speaking and Listening

Comprehension and Collaboration

SL.7.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups and teacher-led) with diverse partners on seventh grade topics, texts and issues, building on others' ideas and expressing their own clearly.

SL.7.2 Analyze the main ideas and supporting details presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how the ideas clarify a topic, text or issue under study.

Presentation of Knowledge and Ideas

SL.7.5 Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.

8th Grade

Writing

Text Types and Details

W.8.6 Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas efficiently as well as to interact and collaborate with others.

Research to Build and Present Knowledge

W.8.7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

W.8.9 Draw evidence from literary or informational texts to support analysis, reflection and research.

Speaking and Listening

Comprehension and Collaboration

SL.8.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups and teacher-led) with diverse partners on eighth-grade topics, texts and issues, building on others' ideas and expressing their own clearly.

SL.8.2 Analyze the purpose of information presented in diverse media and formats (e.g., visually, quantitatively, orally) and evaluate the motives (e.g., social, commercial, political) behind its presentation.

Presentation of Knowledge and Ideas

SL.8.5 Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence and add interest.

National Agricultural Literacy Standards

Agriculture and the Environment

- Discuss the comparative environmental pros and cons of populations relying on their local and regional resources versus tapping into a global marketplace (T1.6-8 e.)
- 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.)

Plants and Animals for Food, Fiber & Energy Outcomes

- Identify farm practices for plant protection (e.g., using a pesticide, integrated pest management, cultural practices) and the harvest of safe products for consumers. (T2.6-8 c.)

Food, Health, & Lifestyle

- Evaluate serving size related to nutritional needs (T3.6-8 c.)
- Explain how factors, such as culture, convenience, access, and marketing affect food choices locally, regionally, and globally (T3.6-8 d.)
- Identify agricultural products (foods) that provide valuable nutrients for a balanced diet (T3.6-8 g.)
- Identify forms and sources of food contamination relative to personal health and safety (T3.6-8 h.)
- Identify sources of agricultural products that provide food, fuel, clothing, shelter, medical, and other non-food products for their community, state, and/or nation (T3.6-8 i.)
- Identify the careers in food production, processing, and nutrition that are essential for a healthy food supply (T3.6-8 j.)

Science, Technology, Engineering & Mathematics

- Identify science careers related to both producers and consumers of agricultural products (T4.6-8 g.)

Supporting Resources:

K-State Research and Extension: Foods Sold Direct to Consumers in Kansas, ksre.k-state.edu/kvafl/doc/MF3138_rev_2024.pdf

K-State Extension Food Safety: Food Safety at Farmer's Markets and Direct to Consumer Sales, <https://www.ksre.k-state.edu/foodsafety/topics/market>

National Agriculture in the Classroom: Science in Your Shopping Cart <https://heyzine.com/flip-book/dfa4da8474.html#page/32> discusses agricultural innovations; pages 1-8 focus on fruits and vegetables.

Career Information: Horticulturalist

A horticulturist is a professional who studies and cultivates fruits, vegetables, flowers, and other plants. Their work supports agriculture by improving plant growth, health, and productivity through research. Horticulturists contribute to the development and sustainability of Kansas-grown produce. They may work in laboratories, greenhouses, farms, or educational institutions. Becoming a horticulturist typically requires a bachelor's degree in horticulture, plant science, or a related field, along with practical experience in agricultural or plant-based settings.

Assessment: Students participate in a gallery walk to discuss what they have learned from the periodic table. An alternative is for students to fill in the information about each fruit or vegetable on their Gallery Walk form.

Author: adapted by Amy Benz, retired middle school technology teacher from St. Marys, KS, from a lesson by Liz Odle, Nebraska Family and Consumer Science Teacher, and edited by Marissa Cook, Secondary Education Major at KSU, KFAC intern.

References:

K.Graybill. (2018, April 27). Periodic Table of Fruits and Vegetables.

FamilyConsumerSciences.com.

<https://www.familyconsumersciences.com/2018/04/periodic-table-of-fruits-vegetables/>

Sweitzer, M., & Davidenko, V. (2025, January 24). *Food Price Outlook - Summary Findings*. Economic Research Service; United States Department of Agriculture.

<https://www.ers.usda.gov/data-products/food-price-outlook/summary-findings>

Vogel, S. (2014, August 4). *The number of U.S. farmer's markets continues to rise*. Economic Research Service; United States Department of Agriculture.

<https://www.ers.usda.gov/data-products/charts-of-note/chart-detail?chartId=776>

Kansas Grown Fruits and Vegetables

Apples	Elderberry	Plums
Apricots	Fennel	Popcorn
Arugula	Garlic	Potatoes
Asparagus	Gooseberries	Pumpkin
Basil	Gourds	Radish
Beans (lentil)	Grapes	Rhubarb
Beans (snap)	Honey	Rutabaga
Beets	Horseradish	Salsify
Bitter Melon	Kale	Scallions
Blackberries	Kohlrabi	Shallots
Blueberries	Leeks	Spinach
Bok Choy	Lettuce	Squash (winter)
Broccoli	Melons	Strawberries
Brussel Sprouts	Mushrooms	Sweet Corn
Cabbage	Nectarines	Sweet Potatoes
Carrots	Okra	Tomatoes
Cauliflower	Onions	Turnips
Cherries	Paw-Paws	Watermelon
Chestnuts	Peaches	Zucchini
Collards	Pears	Source: Buying Guide for Kansas- Grown Fruits and Vegetables Kansas State University Extension https://bookstore.ksre.ksu.edu/pubs/buying-guide-for-kansas-grown-fruits-and-vegetables_MF2647.pdf
Cucumbers	Peas	
Eggplant	Peppers	

Gallery Walk

Walk around the Kansas Fruit and Vegetable Periodic Table.

Choose four products that you are less familiar with and complete the following chart.

Food	Hand draw	Have you eaten this?	Origin	Most grown	Serving size	Calories per serving	Rank 1-5 (1 worst, 5 best)
Apple		Yes	Asia	China	One medium	95	4/5