HARVEST OF THE MONTH - MARCH / PORK

Grades 9-12

KANSAS STATE DEPARTMENT OF EDUCATION

Kansas leads the world in the success of each student.

JULY 17, 2025

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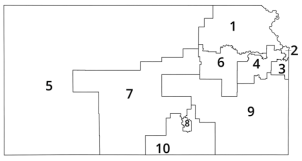

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SUCCESS DEFINED

A successful Kansas high school graduate has the

- Academic preparation,
- Cognitive preparation,
- Technical skills,
- Employability skills and
- Civic engagement

to be successful in postsecondary education, in the attainment of an industry recognized certification or in the workforce, without the need for remediation.

OUTCOMES

- Social-emotional growth
- Kindergarten readiness
- Individual Plan of Study
- Civic engagement
- Academically prepared for postsecondary
- High school graduation
- Postsecondary success

Kansans CAN

MISSION

To prepare Kansas students for lifelong success through rigorous, quality academic instruction, career training and character development according to each student's gifts and talents.

VISION

Kansas leads the world in the success of each student.

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Kansans Can

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Kansas leads the world in the success of each student.

July 1, 2025

HARVEST OF THE MONTH

March / Pork

INTRODUCTION

Over the next few weeks, we will be learning about a kind of food that we harvest in Kansas. I'm going to give you some clues to see if you can guess what this food is.

- This food is a vegetable that grows underground in the soil.
- They are a good source of Vitamin A which helps keep our eyes and immune system healthy. They are also good for our hearts and blood pressure. They are also a good source of Vitamin C and fiber which help with digestion.
- They are oval shaped, and their skin can be tan, brown, or purplish red and their insides can be white, orange, or purple.
- They are sweet and even have sweet in their name!
- They can be eaten raw, baked, mashed, and as an ingredient in pies and casseroles. Many of us eat them with marshmallow melted on top around Thanksgiving.

Can you guess what food I'm talking about? We will be learning about Sweet Potatoes!

VOCABULARY

Virus: A submicroscopic agent that may cause various important diseases in humans, animals and plants

Infection: The presence of a virus or germ inside a living organism

Outbreak: A sudden increase in the occurrence of a disease

Foodborne: An illness contracted through the consumption of contaminated water or food

GENERAL RESOURCES

United States Department of Agriculture[1]

Centers for Disease Control [2]

National Library of Medicine[3]

ENGAGE

Since humans have a little to no pre-existing immunity to viruses that are normally found in domesticated or farmed animals, it is important to manage disease outbreaks to protect humans and maintain the supply chain. In this lesson, students will explore how viruses found in pig populations are spread and possible ways to mitigate and prevent outbreaks.

To get students thinking about the connection between eating pork or exposure to pigs, and outbreaks that occur, have students view the graph published by the Foodborne Diseases Outbreak Surveillance System[4] that compares the number of outbreaks contributed to pork and the total number of foodborne outbreaks.

Have students analyze the graph and record their observations using a notice/wonder chart in their science notebooks. Have students pay attention to the overall trends and the difference between the scales.

EXPLORE

During this stage of the lesson, students will conduct an investigation of case studies and articles that explain past instances of disease outbreaks to identify patterns and common factors that contribute to the outbreaks. It is suggested to use a cooperative learning strategy called a "Jigsaw." In a Jigsaw discussion[5], students will become experts in 1 of a few pre-determined topics, and then share their findings in a meaningful, purposeful way.

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1 https://www.usda.gov/

2 https://www.cdc.gov/index.html

3 https://www.nlm.nih.gov/

4 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6739826/figure/fig01

5 https://www.adlit.org/in-the-classroom/strategies/jigsaw#:~:text=The%20Jigsaw%20strategy%20divides%20large,a%20fun%20way%20to%20

- CDC Control and Prevention "Outbreak of Listeria Infections Linked to Pork Products[6]"
- CDC Reports Two Human Infections with Flu Viruses From Pigs[7]
- Rising Monkey and Pig Populations Pose Human Disease Risk[8]
- Pig Pandemics and Other "Epizootic" Threats[9]

EXPLAIN

At this point in the lesson, students will follow the Jigsaw procedure to "teach" their group members what they've learned. Students will need to listen closely to the information shared by their partners regarding the patterns and common factors they noticed in the reading. Students will then make a claim based on evidence [10]that explains ways to mitigate and prevent disease outbreaks.

Additionally a High School Template[11] may be used.

ELABORATE

Students can explore existing plans that are in place to compare and contrast the important steps of their plan to the Kansas Secure Pork supply plan.[12]

Additionally, students could dig deeper into how climate change will affect the transmission of diseases globally, and it's impact on various animal and plant populations by visiting the National Academies article "Does climate change increase the spread of infectious disease?[13]"

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6 https://archive.cdc.gov/#/details?q=outbreak%20of%20listeria%20linked%20to%20pork%20products&start=0&rows=10&url=https://www.cdc.gov/listeria/outbreaks/porkproducts-11-18/index.html

7 https://www.cdc.gov/swine-flu/comm-resources/two-human-infection-swine-flu.html?CDC_AAref_Val=https://www.cdc.gov/flu/swineflu/spotlights/two-human-infection-swine-flu.htm

8 https://drive.google.com/file/d/10togHG_Hw047s63R24SsBVjAHsOTyFxw/view?usp=sharing

9 https://www.thinkglobalhealth.org/article/pig-pandemics-and-other-epizootic-threats

10 https://www.edutopia.org/blog/science-inquiry-claim-evidence-reasoning-eric-brunsell

11 https://ambitiousscienceteaching.org/claim-evidence-reasoning-template-high-school/

12 https://agriculture.ks.gov/divisions-programs/division-of-animal-health/secure-food-supply/kansas-secure-pork-supply-plan

13 https://www.nationalacademies.org/based-on-science/does-climate-change-increase-the-spread-of-infectious-diseases

KANSAS SCIENCE STANDARDS ADDRESSED

HS. Ecosystems: Interactions, Energy, and Dynamics

Students who demonstrate understanding can:

HS-LS2-8

Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce

Clarification Statement:

Emphasis is on:
(1) distinguishing between group and individual behavior
(2) identifying evidence supporting the outcomes of group behavior, and
(3) developing logical and reasonable arguments based on evidence. Examples of group behaviors could include flocking, schooling, herding, and cooperative behaviors such as hunting, migrating, and swarming.]

The performance expectations above were developed using the following elements from the NRC document A Framework for K-12 Science Education.

Science and Engineering Practices

Engaging in Argument from Evidence
Engaging in argument from evidence in 9–12 builds on K–8 experiences and progresses to using appropriate and sufficient evidence and scientific reasoning to defend and critique claims and explanations about the natural and designed world(s). Arguments may also come from current scientific or historical episodes in science.

- Evaluate the evidence behind currently accepted explanations to determine the merits of arguments.

Connections to Nature of Science
Scientific Knowledge is Open to Revision in Light of New Evidence

- Scientific argumentation is a mode of logical discourse used to clarify the strength of relationships between ideas and evidence that may result in revision of an explanation.

Disciplinary Core Ideas

LS2.D: Social Interactions and Group Behavior

- Group behavior has evolved because membership can increase the chances of survival for individuals and their genetic relatives.

Crosscutting Concepts

Cause and Effect

- Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects.

HS-LS2-4

Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem

Clarification Statement:

Emphasis is on using a mathematical model of stored energy in biomass to describe the transfer of energy from one trophic level to another and that matter and energy are conserved as matter cycles and energy flows through ecosystems. Emphasis is on atoms and molecules such as carbon, oxygen, hydrogen and nitrogen being conserved as they move through an ecosystem.

Assessment Boundary:
Assessment is limited to proportional reasoning to describe the cycling of matter and flow of energy

Science and Engineering Practices

Engaging in Argument from Evidence
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- Evaluate the evidence behind currently accepted explanations to determine the merits of arguments.

Disciplinary Core Ideas

LS4.C: Adaptation

- Changes in the physical environment, whether naturally occurring or human induced, have thus contributed to the expansion of some species, the emergence of new distinct species as populations diverge under different conditions, and the decline–and sometimes the extinction–of some species
- Species become extinct because they can no longer surv iv e and reproduce in their altered env ironment. If members cannot adjust to change that is too fast or drastic, the opportunity for the species' evolution is lost.

Crosscutting Concepts

Cause and Effect

- Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects.

A sample of Kansas ELA Standards addressed in this unit are listed below. For details and specific grade level standard alignment, see Kansas 2023 English Language Arts Standards.[14]

Reading Foundations: Standard 3; using grade level phonics and word reading skills

14 https://www.ksde.gov/Portals/0/CSAS/Content%20Area%20(A-E)/English_Language_Arts/Kansas%20Standards%20for%20English%20Language%20Arts.pdf?ver=2023-05-17-150345-123

GRADES 9-12

Reading Literature: Standard 1; asking and answering questions about a text

Reading Literature: Standard 4; word meaning/ word choice

Reading Information: Standard 3; Describe relationship between historical events, scientific ideas or concepts

Reading Information: Standard 12; word meaning/ nuances

Writing: Standard 3; writing effective narratives to share experiences/ information with effective word choice and relevant details

Speaking and Listening: Standard 4; effectively presenting ideas and detailed/ sequenced descriptions with others

Research to Build and Present Knowledge: Standard 7,8,9

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