

HARVEST OF THE MONTH - JUNE / CUCUMBERS

Grades 9-12

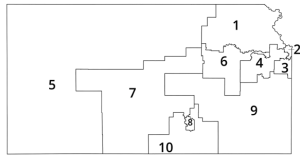


Kansas leads the world in the success of each student.

JULY 17, 2025



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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



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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

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MOTTO

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July 1, 2025

HARVEST OF THE MONTH

June / Cucumbers

INTRODUCTION

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

- This vegetable grows on long creeping vines.
- They have fuzzy leaves
- They are green on the outside and white on the inside
- They contain a lot of water and are a good snack to keep you hydrated
- Their skins contain vitamins A and C
- People eat this vegetable raw in slices or in salads.
- They can also be made into pickles.
- Show picture.

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

Optional: You could also place a cucumber in a brown paper bag and let the children reach in and feel it without peeking to see if they can guess what it might be as you give the clues.



VOCABULARY

Cucurbitacin

Abiotic factors

Biotic factors

Bitter

Gene

Alleles

Inheritance

GENERAL RESOURCES

National Institutes of Health¹

ENGAGE

Plants have unique characteristics that serve as adaptations for survival. Recently, researchers have been working to identify the specific genes responsible to produce cucurbitacin which cause the bitterness in cucumber fruit and foliage. To engage students with the idea of bitterness, present students with two cucumber slices one from a regular cucumber and one from a bitter cucumber. Ask students to make observations and describe the differences. Possible prompts could include:

- How might this trait be passed down through generations of cucumber plants?
- Could the bitterness serve a purpose for the plant?

Students might wonder about the evolution of the trait, the origin of the trait, or how it is inherited.

EXPLORE

In this step, students will collect information from a variety of sources to complete their scavenger hunt. This can be done virtually with a slide deck, or stations could be set-up around the room for students to rotate through. Each station (or slide) will contain fact sheets or articles for students to quickly and efficiently build some background knowledge regarding the inheritance of the gene, and factors that influence it. Have students track their findings using a graphic organizer. If your students are 1-1 with iPads or other devices, you could provide QR codes for each of these resources.

1 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8495254/>

Nebraska Institution of Agriculture and Natural Resources²

Purdue University Consumer Horticulture ³

University of New Hampshire College of Life Sciences and Agriculture⁴

EXPLAIN

At this stage in the lesson, students should be able to develop an initial or basic understanding of the mechanisms that are responsible for cucurbitacin production and maintenance in the cucumber population. Have students individually create an initial model of their understanding. For more information on how to develop and use student models, visit the Sadler Science website⁵. Elicit student thinking by encouraging models to have images, arrows, text, and explanations visible. Next partner two or more students to come up with a collaborative model to explain their findings.

ELABORATE

Have students display their collaborative models in a gallery walk fashion. Then have students create a consensus model based on what they've learned. Use checklists or other graphic organizers for students to critique models and ask them to update their own model with the information they gained. For more information on how to move from an initial model to a consensus model use this helpful video from Philadelphia's Office of Teaching and Learning.⁶

KANSAS SCIENCE STANDARDS ADDRESSED

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 Standards⁷

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

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

2 <https://extension.unl.edu/statewide/dodge/cucumber-bitterness/#:~:text=lf%20pollen%20is%20moved%20from,planted%20in%20taste%20and%20texture>

3 <https://www.purdue.edu/hla/sites/yardandgarden/cucumbers-bitter-during-hot-dry-weather/>

4 <https://colsa.unh.edu/blog/2023/12/cucurbit-research-advances-unlocking-secrets-gourd-genetics>

5 <https://sadlerscience.com/developing-and-using-models/>

6 <https://www.philasd.org/etvl/2022/02/22/initial-to-consensus-model/>

7 [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](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)

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