

Sorghum: Nature's Super Grain

Grade Level: K-2

Time: 60 minutes/1hour

Subject: Science, English Language Arts, Social Studies, Geography

Overview: Students will explore the history and uses of sorghum (milo) through observation, discussion, and a craft activity in which they will make a plastic apron.

Objectives:

1. List multiple uses for sorghum
2. Complete a creative cape project using facts learned
3. Explain why sorghum is an environmentally friendly crop
4. Demonstrate understanding of sorghum by creating a project that illustrates key facts about the the characteristics, uses, and importance of sorghum

Background Information:

Sorghum, also known as milo, was first introduced to the United States in the 1700s by Benjamin Franklin. A member of the grass family, sorghum is a hardy crop that can withstand heat and drought. Sorghum is a tall plant, reaching heights of three to six feet (sometimes up to sixteen feet) (Masats). There is a wide variety of sorghum. Sorghum has a round, starchy seed that is tolerant of heat and drought. Grain Sorghum is important as a forage, hay, and silage crop. It can also be used in feed for livestock and pets, and as ethanol for cars. Some varieties of sorghum are used in cereals, snack foods, baking products, and in the brewing industry. Sorghum is also gluten-free, making it an excellent substitute for wheat flour. Beyond food, sorghum can even be used to make wallboard and biodegradable packaging materials, demonstrating its versatility and sustainability.

Kansas Connections:

Kansas produces 50% of the United States' grain sorghum (Kansas Foundation). Kansas produces \$1.2 billion in sorghum annually. The grain sorghum industry employs almost 5,000 Kansans, and Kansas produces more grain sorghum than any other state in the country. Farmers plant approximately 2.6 million acres of sorghum each year, which is used for flour, biofuels, pasta, baked goods, molasses, syrup, and as a popped snack (Kansas Grain).

In Kansas, grain sorghum is harvested in the fall, between September and the end of November. However, the plant remains green and alive after producing grain until it is killed by freezing temperatures, tillage, or chemical spray. Although grain sorghum is the predominant sorghum grown in Kansas, the state also produces other types of sorghum. Grassy sorghums, like sudangrass, are grown for feed and hay. Sweet sorghums are also grown to make sorghum syrup and molasses. Another type of

sorghum, broomcorn, is grown for the branches and fibers of the seed clusters. It differs from other sorghums in that it produces heads with fibrous seed branches that may be as much as 36 in. long, which can be used to make whisk brooms.

Materials:

Engagement

- Sorghum-based products (like sorghum flour, popped sorghum, and donuts made with sorghum flour) or images of sorghum-based products
- Live sorghum plants from a local farmer (or fake sorghum from a craft store)
- Sorghum seeds from a local farmer (or order online: [Sorghum Seeds - Martin Milo](#) or Amazon) divided into 25 jewelry bags
- Chart paper, Post-It notes
- Magnifying lens (optional)
- Plastic gloves (pair) and goggles for each student. *Note: Sorghum may cause allergic reactions; have students wear gloves and goggles when handling live sorghum plants.*
- Sorghum Kids Connection Magazine

Activity

- Plastic tablecloths of various light colors (white, yellow, pink, or orange), 1 per teacher and 1 per every seven students. Directions for cutting the capes can be found on YouTube: [Super EASY and CHEAP DIY SuperHero Cape \(\\$0.13 each!\)](#)
Note: Pre-make the capes before the lesson.
- Cape decorating materials: plain white copy paper, Sharpies, tape/glue

Instructional Format

1. Review background information
2. Conduct an engagement exercise
3. Lead a class discussion
4. Complete the activities
5. Conduct an assessment exercise

Start Teaching Here

Engagement:

Introduction: Show kids the sorghum-based products or images of sorghum-based products. Explain that grains grown in Kansas are used to make these products. “Most people think of wheat and corn when we talk about grains used to make things we eat, but there is another crop that grows in Kansas that we can use to make food. Let’s explore what it could be.”

Procedures:

Discussion

1. Provide sorghum stalks and give students time to examine them. (*Note: Sorghum can trigger allergies, so encourage the use of gloves and goggles when handling live plants.*)
2. Ask students about the colors they see and how the milo heads feel compared to the leaves and roots.
3. Hand out small bags of sorghum seeds and magnifying lenses for students to investigate further (you can send the seeds home with students to spark conversation).
4. Ask students what they think is in the bags. You can have them raise their hands to answer, distribute Post-it notes and write in on the board for them to copy, or ask them to write down what they think the plant is. They can write their notes on chart paper to initiate a class discussion. Steer the discussion towards sorghum.
5. Draw the following table on chart paper and let kids use markers to add to it as the lesson progresses. This activity can serve as a class discussion, and you may add to it as the lesson progresses. Have students chart on the table what they know about sorghum.

SORGHUM

Is	Has	Can

Example:

SORGHUM

Is	Has	Can
brown	round seeds	grow in hot places
a plant	green leaves	be popped
used to make dog food	a strong stem	provide habitat for wild animals
used in ethanol	long roots	be used for hay and to feed livestock

6. Read the Kids Connection Magazine “Super Sorghum”:
<https://ksagclassroom.org/resource-center/connection/>
7. As you read, instruct your students to add information to the table.
8. Next, watch this short YouTube video. [Kansas Sorghum: Rain or Shine.](https://www.youtube.com/watch?v=SaAy2YABFdg)
<https://www.youtube.com/watch?v=SaAy2YABFdg>
9. As you watch, instruct your students to add more information to the table.

Activity

1. Once the table is full, pull out the plastic tablecloth cape with the words “SUPER SORGHUM” written on it (the superhero cape) and put it on.
2. Say, “You know, I was thinking that the whole world loves superheroes. I think I would like to be SUPER SORGHUM when I grow up. Sorghum is the superhero of the crop world because it is so useful and grows in lots of places!”



3. Pass out a blank superhero cape for each student. Instruct students to add information to the cape using the table they created – either by drawing/writing on regular paper, cutting, and gluing/taping to the cape, or by using Sharpies to write/draw directly on the cape.
4. Instruct students to put on their capes and “fly” around the room, sharing their information with others. Have students pair up and take turns reading each other's capes.
5. Have students gather again as a group. Instruct them to whisper to their shoulder partner:
 - Sorghum is a supergrain because...
 - Sorghum is good for our Earth because...

Companion Resources:

[Sorghum Fun Facts Poster](#),

[Grain Sorghum Growth Stages](#),

[Grain Sorghum Plant Part Labeling](#),

[Kansas Connections Sorghum Magazine Connection](#)

[Sorghum Byproducts Poster](#)

[Sorghum Fun Facts Poster](#)

[KFAC Educators Guide - Kansas Crops pages 8-11](#)

Vocabulary

- **Sorghum (milo):** A self-pollinating plant belonging to the grass family of plants that produces strong stalks with a single head of grain at the tip of each stalk

- **Drought-tolerant:** Plants that have a low-water tolerance or can survive in arid conditions (drought: long period of dry weather).
- **Ethanol:** A flammable liquid that can be used as fuel.
- **Sustainable crop:** A crop that can be grown with a lesser impact on the environment.
- **Crop:** A plant that is grown and harvested.

Kansas Standards:

Next Generation Science Standards

Kindergarten

From Molecules to Organisms: Structures and Processes

K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.

Earth and Human Activity

K-ESS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.

1st Grade

From Molecules to Organisms: Structures and Processes

1-LS1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.

2nd Grade

2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.

Language Arts

Kindergarten

Reading: Informational

Key Ideas and Details

RI.K.1 With prompting and support, ask and answer questions about key details in a text.

Craft and Structure

RI.K.4 With prompting and support, ask and answer questions about unknown words in a text.

Language in Reading: Informational

RI.K.12 With guidance and support from adults, explore word relationships and nuances in word meanings.

Range of Reading and Text Complexity

RI.K.13 Actively engage in individual or group readings of informational text with purpose and understanding.

Writing

Research to Build and Present Knowledge

W.K.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

Language in Writing

W.K.10 Demonstrate command of the conventions of standard English grammar and usage when writing.

W.K.11 Demonstrate command of the conventions of standard English capitalization, punctuation and spelling when writing.

Speaking and Listening

Comprehension and Collaboration

SL.K.1 Participate in collaborative conversations with diverse partners about topics and texts with peers and adults in small and larger groups to expand language comprehension.

SL.K.2 Confirm sequence of events of a read aloud or media presentation by asking and answering questions about key details or requesting clarification of what is not understood.

SL.K.3 Ask and answer questions to seek help, get information or clarify what is not understood.

1st Grade

Reading: Informational

Key Ideas and Details

RI.1.1 Ask and answer questions about key details in a text.

Craft and Structure

RI.1.4 Ask and answer questions to help determine or clarify the meaning of words and phrases in a text.

Language in Reading: Informational

RI.1.12 With guidance and support from adults, demonstrate understanding of word relationships and nuances in word meanings.

Range of Reading and Text Complexity

RI.1.13 With prompting and support, read and comprehend high quality informational text of appropriate quantitative and qualitative complexity for first grade.

Writing

Production and Distribution of Writing

W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

Language in Writing

W.1.10 Demonstrate command of the conventions of standard English grammar and usage when writing.

Speaking and Listening

Comprehension and Collaboration

SL.1.1 Participate in collaborative conversations with diverse partners about topics and texts with peers and adults in small and large groups to expand language comprehension.

SL.1.2 Ask and answer questions about key details in a text read aloud, information presented orally or through media.

SL.1.3 Ask and answer questions about what a speaker says to gather additional information or clarify what is not understood.

2nd Grade

Reading: Informational

Key Ideas and Details

RI.2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

Craft and Structure

RI.2.4 Determine the meaning of words and phrases in a text relevant to a second grade topic or subject area.

Language in Reading: Informational

RI.2.12 Demonstrate understanding of word relationships and nuances in word meanings.

Writing

Research to Build or Present Knowledge

W.2.8 Recall information from experiences or gather information from provided sources to answer a question.

Language in Writing

W.2.10 Demonstrate command of the conventions of standard English grammar and usage when writing.

W.2.11 Demonstrate command of the conventions of standard English capitalization, punctuation and spelling when writing.

Speaking and Listening

Comprehension and Collaboration

SL.2.1 Participate in collaborative conversations with diverse partners about topics and texts with peers and adults in small and larger groups to expand language

comprehension.

SL.2.2 Recount or describe key ideas or details from a text read aloud, information presented orally or through media.

SL.2.3 Ask and answer questions about what a speaker says to clarify comprehension, gather additional information or deepen understanding of a topic or issue.

History, Government, and Social Studies

Standard 3: Societies are shaped by the identities, beliefs, and practices of individuals and groups

3.1 The student will recognize and evaluate how societies are shaped by the identities, beliefs, and practices of individuals and groups.

3.2 The student will analyze context and draw conclusions of how societies are shaped by the identities, beliefs, and practices of individuals and groups.

National Ag Literacy Standards:

Agriculture and the Environment

- Describe how farmers/ranchers use land to grow crops and support livestock (T1.K-2 a.)
- Describe the importance of soil and water in raising crops and livestock (T1.K-2 b.)
- Identify natural resources (T1.K-2 c.)
- Provide examples of how weather patterns affect plant and animal growth for food (T1.K-2 d.)

Plants and Animals for Food, Fiber, and Energy

- Explain how farmers/ranchers work with the lifecycle of plants and animals (planting/breeding) to harvest a crop (T2.K-2 a.)
- Identify examples of feed/food products eaten by animals and people (T2.K-2 c.)
- Identify the importance of natural resources (e.g., sun, soil, water, minerals) in farming (T2.K-2 e.)
- Identify the types of plants and animals found on farms and compare with plants and animals found in wild landscapes (T2.K-2 f.)

Food, Health, and Lifestyle

- Recognize that agriculture provides our most basic necessities: food, fiber (fabric or clothing), energy, and shelter (T3.K-2 b.)

Culture, Society, Economy, and Geography

- Identify plants and animals grown or raised locally that are used for food, clothing, shelter, and landscapes (T5.K-2 d.)
- Trace the sources of agricultural products (plant or animal) used daily (T5.K-2 f.)

References:

Kansas Foundation for Agriculture in the Classroom. (n.d.). Kansas Crops Up Close. *Exploring Plants: Kansas Crops Educator's Guide*, 46. Retrieved April 28, 2025, from <https://cdn.agclassroom.org/ks/resource/guides/plants/04crops.pdf>

Kansas Grain Sorghum. (n.d.). *About Sorghum*. Retrieved April 28, 2025, from <https://ksgrainsorghum.org/education/>

Masats, J. (Ed.). (2022, February 8). *Sorghum Plant*. Botanical-Online. <https://www.botanical-online.com/en/botany/sorghum-plant>