

# SORGHUM at School

## Power Up With SORGHUM!

An integrated curriculum for 7th to 12th Grades

### Lesson Overview

This lesson will introduce students to sorghum, a gluten-free whole grain which is nutrient-rich and contains unique plant-based compounds known as phytonutrients. Students will learn basic facts about sorghum, including the stages of plant growth, production in the United States, positive environmental impacts and key health and nutrition benefits.

Working in small groups, students will view and analyze product ingredient labels to discover examples of how sorghum is used in the food supply. Students will set a health-based SMART (Specific, Measurable, Attainable, Realistic, and Time-bound) goal focused on including whole grain, nutrient-rich sorghum in their diet. The lesson also gives options for tasting sorghum and creating a simple sorghum-based recipe. Students will receive the Power Up With Sorghum! handout, which includes recipes and information to share with their families.

### Objectives

The students will:

1. Recognize that sorghum is a gluten-free, nutrient-rich whole grain that provides sustained energy for growing, active adolescents, including teens pursuing excellence in academics, athletics and all kinds of activities.
2. Identify sorghum as a source of healthy plant-based compounds known as phytonutrients.
3. Be introduced to sorghum and learn about its origins, usage, positive environmental impact, and U.S. production.
4. Explore the stages of sorghum growth from seed to harvest.
5. Participate in integrated activities which feature health, nutrition, and science using a label reading activity, a goal setting exercise, a tasting activity and an optional recipe development assignment.

### Integrated Subjects

- **Nutrition** (MyPlate, grains/whole grains, energy and nutrients, phytonutrients, sports nutrition, reading ingredient labels, gluten-free)
- **Health** (the relationship between healthy behaviors and personal health, setting and tracking a personal “SMART” health goal)
- **Language Arts** (vocabulary, writing, seeking information)
- **Science** (environmental impact, plant science)

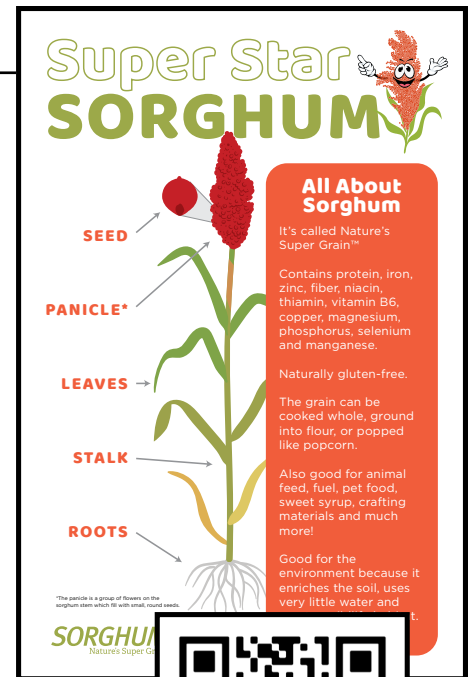
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# What You Will Need

To Teach and Supplement the Lesson:

- Educator Resource Page
- Graphic or poster of the MyPlate food guide
- United States and world maps
- Super Star Sorghum! poster
- Sorghum Growth and Development poster
- Reproducible activity sheets
  - a) Power Up With Sorghum! student handout
  - b) Student SMART goal-setting sheet
  - c) Sorghum up Close classroom activity sheet
- Package of whole grain sorghum\*



Scan the QR code for digital copies of all resources, or to request hard copies and samples.



## Materials for the Sorghum Bowl Activity

You will need:

- Small bowls or cups, spoons, napkins, serving spoons and tongs
- Cooked whole grain sorghum (make ahead or ask your foodservice director to supply)
- Suggested ingredients to layer in bowl:
  - Chopped dark greens
  - Cheese, shredded or small cubes
  - Olives, pepper strips, cherry tomatoes, mushrooms
  - Beans (kidney, navy, pinto, black, etc.)
  - Sunflower or pumpkin seeds
- Dressing suggestions:
  - Lemon juice and a drizzle of olive oil, salsa, hummus, garlic aioli, vinaigrette dressing

\*Scan the QR code to request a sample. Larger quantities are available at grocery stores or online retailers. A standard 24-oz. package should be enough for a classroom of 20 children.

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# Teaching the Lesson

1. **Review the Educator Resource Page and posters to become familiar with sorghum.**
2. **Introduce the lesson by displaying the posters and graphic of the MyPlate food guide. Lead a brief discussion with the students about sorghum.**
  - a) Pass the package of uncooked whole grain sorghum for students to view.
  - b) Lead a discussion about personal experience.
    - Ask students whether they have heard of sorghum.
    - Ask whether any of the students have eaten sorghum.
    - Encourage students to share their experience seeing or eating sorghum.
    - For students who are unfamiliar with sorghum, ask how likely they are to try this fun new food.
  - c) Sorghum is also an ingredient in many common foods, including gluten-free flours, gluten-free baked goods, baby snacks, popped snacks, breakfast cereal and other foods.
  - d) Point out that sorghum will sometimes be served in the school cafeteria this year. Encourage students to choose sorghum dishes when they are served. If possible, coordinate with school foodservice personnel for this lesson to occur on a day that sorghum is served on the school breakfast or lunch menu.
  - e) Ask the students if they have heard of a whole grain and if they can describe what that term means. Discuss that a whole grain is when the entire seed or grain is eaten (i.e. the “whole grain”). Refined grains have part of the seed removed (bran and germ) and do not provide as many nutrients as whole grains. Whole grain sorghum, popped sorghum and whole grain sorghum flour are all examples of whole grains.
  - f) Ask students if they can identify the placement of sorghum on the MyPlate food guide. Point out that grains provide energy to the body and whole grains, such as sorghum, provide nutrients including protein, fiber, vitamins and minerals to help bodies grow and stay healthy. The Power Up With Sorghum! student handout includes a list of the key nutrients in sorghum.
  - g) Explain that sorghum also contains important plant-based compounds known as phytonutrients. These compounds are known to protect cells, reduce inflammation, and may reduce the risk of heart disease and cancer.
  - h) One way to interest teens in nutrition is to address how eating well can contribute



to improved performance. Ask how many students are interested in eating for better performance in sports or physical activities. Point out that active adolescents looking for a high quality carbohydrate to fuel workouts, sports, dance or any type of endurance activity can rely on whole grain sorghum as an energy source that will provide long-lasting energy. Like other complex carbohydrates, whole grain sorghum can be included in meals eaten two to three hours prior to physical activity. Whole grain sorghum is also a great way to replenish energy stores after sports or workouts.

- i) As time permits, discuss the significance of sorghum as a gluten-free grain. This is important for people with celiac disease, a condition where gluten from wheat, rye and barley damages the small intestine. Some people are also intolerant to gluten and find that a gluten-free diet helps them feel better.
- j) Display the Super Star Sorghum! poster and review the parts of the plant. Ask if they can identify the part of the plant that we eat (the grain). Show students the Sorghum Growth and Development poster and explain how it shows the stages of growth and advises farmers on how to manage sorghum during each stage of growth. Students will utilize the Sorghum Growth and Development poster in a small group activity when they complete their Sorghum Up Close classroom activity sheet.

**3. Break students into small groups. Pass out the Power Up With Sorghum! student handout and Sorghum Up Close classroom assignment sheet to each student. Display the Sorghum Growth and Development and Super Star Sorghum! posters for students to use as a reference for completing activities.**

**4. Introduce and complete the sorghum bowl building and tasting activity.**

- a) Set out the cooked and cooled sorghum, added ingredients, dressing choices, cups or bowls and spoons on a clean table. Place a serving spoon or tong with each ingredient.
- b) After hand washing, invite three to five students at a time to assemble their sorghum bowl, layering the sorghum, desired ingredients and dressing in their cup or bowl.
- c) Ask students to describe the taste and texture of sorghum. Point out that sorghum has a neutral, nutty flavor, making it ideal to combine with both sweet and savory ingredients.
- d) Challenge students to brainstorm other ways to enjoy sorghum. Point out that sorghum works well in many dishes as a substitute for other grains such as rice, bulgur or barley.
- e) BONUS: Invite students to devise a recipe utilizing sorghum as an ingredient.



5. **Pass out the Setting a SMART Sorghum Goal activity sheet. Review SMART goals with students, provide examples, and ask students to write a SMART goal for including whole grain sorghum in their diet.**

## Going Further

1. Invite the school foodservice director to your classroom to discuss how sorghum is being used in the school foodservice program.
2. Encourage students to try sorghum at school or at home and challenge them to develop a unique use or recipe for sorghum.
3. Ask students to research gluten and learn about the health/medical rationale that explains why some people are unable to tolerate this protein.
4. Discuss careers in agriculture, science, engineering, and nutrition related to sorghum production. Some examples include:
  - Farmer/Producer - plant and harvest sorghum
  - Marketing and Sales - bring products to the consumer
  - Engineer - develop or improve machines used to harvest and process sorghum; explore new applications and uses for sorghum
  - Food Scientist - create new foods using sorghum as the main ingredient
  - Nutrition/Dietetics - analyze and/or conduct sorghum research and communicate to consumers regarding the health benefits of sorghum; develop nutrient-rich recipes featuring sorghum
5. Scan the QR code below to show students the “Sorghum: The Super Grain” video from the United Sorghum Checkoff Program.
6. Challenge students to locate sorghum as an ingredient in a product that they find online or at the store.



# Education Standards

## National Health Education Standards (NHES):

Performance expectations by the end of 8th grade:

- 3.8.2 Engage in an interpersonal conversation about a health-related product or technology to make an informed health decision.
- 6.8.2 Set a SMART personal health goal.
- 6.8.4 Develop a detailed plan, with a timeline, for achieving a personal health goal.

Performance expectations by the end of 12th grade:

- 3.12.4 Write about a health-related issue using valid and reliable sources of information.
- 6.12.2 Set a SMART personal health goal.
- 6.12.4 Develop a detailed plan, with a timeline, for achieving a personal health goal.

## Kansas Standards for English Language Arts:

- RI.7.13, RI.8.13  
Read and comprehend high quality informational text of appropriate quantitative and qualitative complexity for grade 7 and 8.
- SL.7.1, SL.8.1  
Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 7 and grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.
- RI.9-10.13, RI.11-12.13  
Read and comprehend high quality informational text of appropriate quantitative and qualitative complexity for grades 9-10 and grades 11-12.
- SL.9-10.1, SL.11-12.1  
Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10 and grades 11-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

## Sources:

1. National Health Education Standards, [www.schoolhealtheducation.org/wp-content/uploads/2022/10/National\\_Health\\_Education\\_Standards\\_Guide-10.02.2022.pdf](http://www.schoolhealtheducation.org/wp-content/uploads/2022/10/National_Health_Education_Standards_Guide-10.02.2022.pdf)
2. Kansas State Department of Education, Standards for English Language Arts, <https://community.ksde.org/Default.aspx?tabid=5301>

