

*Duration: 45 to 90 minutes*

## Standards:

### National Standards for FCS

8.5.7 Prepare various fruits, vegetables, starches, legumes, dairy products, fats, and oils using safe handling and professional preparation techniques.

### CT Career and Technical Education Performance Standards

K.19 Prepare various fruits, vegetables, starches, legumes, dairy products, fats, and oils using safe handling and professional preparation techniques.

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## Description:

Rice and beans are a fundamental food pairing, found in various forms all across the world. This lesson explores the reasons behind that pairing, as well as introducing to students the debate over GMOs and how they present themselves in rice.

## Objectives:

- Debate the effectiveness of GMO “Golden Rice” in addressing Vitamin A deficiencies.
  - Discuss different reasons as to why rice and beans are often paired together.
  - Recognize the different forms that rice and beans take across the world.
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## Vocabulary:

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| ■ Dice- cutting a food item into pieces ranging from $\sim\frac{3}{4}$ - $\frac{1}{4}$ inches per side                       | DNA has been altered using genetic engineering techniques  |
| ■ Mince- very fine dice, smallest unit to cut a food item  | ■ Golden Rice- a genetically modified, biofortified crop   |
| ■ Saute- to cook in a minimal amount of oil in a shallow pan on moderately high heat.  | ■ Biofortification- an increase in the nutritional value of crops. Golden rice is genetically modified to produce beta-carotene, which is not normally present in rice |
| ■ “Claw” knife grip- the basic way we hold our non-dominant hand when cutting in order to protect fingers from being injured | ■ Beta-carotene- nutrient converted into vitamin A when metabolized by the human body, which is needed for   |
| ■ GMO- Genetically Modified Organism, an animal, plant, or microbe whose   |  |

healthier skin, immune systems, and vision

- VAD- Vitamin A deficiency, significant contributor to childhood mortality
- Simmer- Small bubble of liquid in a saucepot

## Materials:

- Note cards
- Cutting board
- Chef knife
- Mixing bowl
- Scrap bowl
- Saute pan
- Sauce pot
- Spatula/Wooden spoon
- Ingredients for [Cuban-Style Arroz Congrí Recipe](#)

## Recipe:

- [Cuban-Style Arroz Congrí Recipe](#)

## Procedure:

1. When students enter the room, give them a notecard with one half of a food pairing - spaghetti and meatballs, milk and cookies, bagels and cream cheese, etc. Be sure to include rice and beans as one of the choices. Have the students find the food that matches theirs and pair up.
  - a. Have each pair think about why those foods go together. Is it based on texture? On taste? Convenience? Unpack the reasons why certain foods might go together.
2. Select the pairing of rice and beans to dive deeper into. Have students think about this combination. Where have they seen "rice and beans?" On menus? At home? Make a list of the different places that eat rice and beans. Use this list if needed: [35 Delicious Rice and Beans Recipes](#)
3. Explain that today we will learn more about why rice and beans are such an important part of diets across the world, as well as make a version of rice and beans called congri, a black bean and rice combination from Cuba.
4. To answer why rice and beans are such an important part of a diet, show students the video [Why Lentils And Rice Are Scientifically Delicious Together | What's Eating from America's test kitchen](#). They can think of the lentils discussed in the video as analogous to the black beans they are cooking. During the video, students should generate a list of the reasons why this combination is so popular. Some ideas to discuss:

- a. Rice and beans are filling, and relatively inexpensive.
  - b. There are thousands of combinations to try.
  - c. When combined they create a complete protein.
  - d. Rice and beans have been cultivated for thousands of years.
    - i. For further reading on the history of rice production, check out [The History of Rice by Michael W. Twitty](#).
5. To prime students' thinking after the video, introduce the idea that recently there have been changes to the very concept of rice that we will learn about later.
6. In groups, have students start on the [Cuban-Style Arroz Congrí Recipe](#). This can be done over the course of two classes, time permitting. Students can simmer the beans and prepare the sofrito, and cook the rice on the second day if necessary.
7. While beans are simmering, students can clean up and begin to read through the [Genetically Modified Organisms: The Golden Rice Debate](#) in order to prepare for a Socratic Seminar either later in the class or the following day.
8. To prepare for the seminar, check that each student has completed their [Socratic Preparation Notes- Golden Rice](#)
9. Display the main questions on the Classroom board:
  - a. "What is Golden Rice? Is it actually helping Vitamin A deficiencies? Do you agree with the use of GMOs in the production of Golden Rice?"
10. Review discussion norms using the following slide show:
  - [F1-3.10 Golden Rice Socratic Seminar Slides](#)
11. Begin Socratic Seminar. The teacher is the coordinator from the outskirts of the circle. Set a timer for 10-15 minutes and switch inner and outer circles to allow all students the same experience. Facilitate the discussion as needed, filling in gaps and clarifying information for students.
12. Complete the [Cuban-Style Arroz Congrí Recipe](#) based on your previous steps. As you enjoy the rice, complete the following:
  - a. Ask the class: has your opinion changed or stayed the same after participating in the Socratic Seminar?
  - b. Students should grade themselves on the [Lab Rubric/Reflection \(Student\)](#)

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## Assessment(s):

- Formative assessment: Students participate in a Socratic Seminar about GMO rice.

- Summative assessment: Students make a rice and bean dish. Students complete a [Lab Rubric/Refelction \(Student\)](#)

## Resources:

- [Cuban-Style Arroz Congrí Recipe](#)
  - [35 Delicious Rice and Beans Recipes](#)
  - [Why Lentils And Rice Are Scientifically Delicious Together | What's Eating Dan](#)
  - [The History of Rice by Michael W. Twitty](#)
  - [Genetically Modified Organisms: The Golden Rice Debate](#)
  - [F1-3.10 Golden Rice Socratic Seminar Slides](#)
  - [Socratic Preparation Notes- Golden Rice](#)
  - [Lab Rubric/Refelction \(Student\)](#)
  - [Genetically Modified Organisms: The Golden Rice Debate | NYU Langone Health](#)
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## Extensions:

- If budget allowed: Students could prepare various types of rice and bean dishes from different cultures and share them as the class.
- Discuss the importance of complete proteins and amino acids.