Rice

*Lesson Plan for Grade 5, Social Studies*

*Prepared by NAITC*

*Modified by Mississippi State University, School of Human Sciences*

*for Mississippi Farm Bureau Federation - AITC*

# OVERVIEW & PURPOSE

In this lesson, students will be able to locate the United States and Mississippi using a map.

# EDUCATIONAL STANDARDS

**Mississippi College-and-Career Readiness Standards:**

G.5.3 Recognize maps, graphs, and other representations of the earth. Create representations of the earth using technology, maps, and globes. Identify cardinal and intermediate directions (e.g., north, northeast, northwest, southeast, southwest, east, and west). Locate the Mississippi and the United States using maps and globes.

ELA-W.5.9Draw evidence from literary or informational text to support analysis, reflection, and research.

Math-5.G.2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane and interpret coordinate values of points in the context of the situation.

**NALOs:**

T4.3-5 b Describe how technology helps farmers/ranchers increase their outputs (crop and livestock yields) with fewer inputs (less water, fertilization, and land) while using the same amount of space.

# OBJECTIVES

* Students will locate where and how rice is cultivated around the world

# MATERIALS NEEDED

* World wall map
* Sticky notes, 1 per student

Activity 1

* *One Grain of Rice: A Mathematical Folktale* by Demi
* More Than One Grain of Rice activity sheet, 1 per student
* Calculators (1 per student)

Activity 2

* Teacher Background Agricultural Connections information from this lesson
* Rice Paddy Images

### Essential Files (maps, charts, pictures, or documents)

* [Rice Paddy Images](https://drive.google.com/file/d/1RLTXePtVt5mBXYJUDIkJeUFPHZWjBHui/view?usp=drive_link)
* [More Than One Grain of Rice Activity Sheet](https://drive.google.com/file/d/1w39kqtP75ovviBSsZ4vLIWSlvzZ7QiLk/view?usp=drive_link)

# Lesson Set Up:

1. Display a large world map for the students.
2. Have the book One Grain of Rice by Demi ready to read aloud to the students.
3. Have the More Than One Grain of Rice Activity sheet printed for the students (1 per student).

# VOCABULARY

**brown rice:** whole grain rice from which the inedible hull has been removed, but which still has the germ and outer layers of bran

**regions:** areas of Earth’s surface that have unifying physical and/or human characteristics

**rough rice:** unprocessed rice still in the hull as it comes from the field, also known as paddy rice

**staple food:** a food that is eaten regularly and is a dominant part of the diet, supplying a major proportion of energy and nutrient needs

**white rice:** rice from which the inedible hull, germ, and outer layers of bran have been removed

# Ag Facts:

* Rice farming is about 10,000 years old.
* Thousands of varieties of rice are farmed.
* Rice is the primary staple food for more than half of the people on Earth.
* *Toyota* means bountiful rice field. *Honda* means the main rice field.

# Background information for teachers:

Rice is the primary **staple food** for more than half of the people in the world, and it is grown on every continent except Antarctica. Most of the world’s rice is grown and eaten in Asia. China, India, and Indonesia are three of the top rice-producing countries in the world. Rice is also an important crop in Latin America and Africa, where Argentina, Brazil, Colombia, Madagascar, Nigeria, and Tanzania are important rice-producing countries.

There are four major **regions** of US rice production: the Arkansas Grand Prairie, the Mississippi Delta, the Gulf Coast, and the Sacramento Valley of California. Nearly all of the rice grown in the United States comes from six states: Arkansas, California, Louisiana, Mississippi, Missouri, and Texas.The United States produces less than 2% of the world’s rice but is a major exporter, contributing more than 10% of the rice that is globally traded. About half of all rice grown in this country is exported. The United States also imports some rice from other countries. Nonetheless, more than 80% of the rice used in the United States is grown by US farmers.

The United States has the world’s highest yielding rice farms due to the wide availability of irrigation and advanced technology. Rice fields are leveled using computerized, laser-guided land-leveling equipment to make sure the flooded field or “rice paddy” is perfectly flat. Seeds are planted in early spring to an exact depth by grain drills pulled behind a tractor or cast over dry or flooded fields by airplane. Fields are flooded between March and May, depending on the region. Flooded rice fields provide important wetland habitat for hundreds of species of birds, mammals, and amphibians. Recirculating irrigation systems have allowed farmers to maximize yields and reduce the amount of water required by over one-third in the last 30 years. Between September and November, the rice is mature and ready for harvest. The fields are drained, and then the rice is harvested using combines. The rice heads are removed, and the rice stem or straw is left. The straw is cut and baled later, just like wheat, barley, and oat straw. The rice, called **rough rice** at this point, is then transported to a dryer where moisture is slowly removed from each grain. Finally, the rough rice is sent to a mill for processing.

The rough rice is first milled using a rice huller to remove the chaff (the outer husks or hulls of the grain); this creates **brown rice**. This process may be continued, removing the germ and the brown outer layers, which are called bran, to create **white rice**. Rice, both brown and white, is grouped by size: long, medium, or short grain. Short grain rice tends to be sticky, while long grain rice remains separate and is light and fluffy after cooking. Rice is used in breakfast cereals, baby food, rice cakes, beverages, and as table rice.

It is believed that rice was first cultivated in ancient Asia and from there spread to Africa and Europe. Rice was later introduced to South and North America and Australia with the advent of sea voyage. Rice farming in California began in the early 1900s, mainly in response to the increasing Chinese population during the Gold Rush.

Rice is the world’s second or third largest crop, behind maize (corn) and sometimes wheat.2 Rice cultivation is well suited to countries and regions with low labor costs and high rainfall, as it is very labor-intensive to cultivate without expensive machinery and requires plenty of water. Rice is a nutritious, affordable source of carbohydrates and is packed with vitamins and minerals. It includes thiamin, riboflavin, niacin, phosphorus, iron, and potassium, and is an excellent source of amino acids. Only a trace amount of fat is found in either brown or white rice. Brown rice is a good source of fiber and is part of a solid foundation for a healthy diet.

# LEARNING PROCEDURES

Interest Approach:

1. Ask students if they would rather have $10,000 dollars right now or receive one penny today and double it every day for 30 days?
2. Ask them to explain their answers.
3. Tell them you think they may change their minds after they hear the story you are going to read about doubling in mathematics! (The doubling of the penny over a month will result in over 5 million dollars!)
4. Now for a geography question—ask students to name all the places in the world that grow rice. On a large wall map of the world, place a sticky-note on the countries where students have said rice grows.
5. Tell students that you will return to the map later, but now it's time for a story.

### Procedures

Activity 1: One Grain of Rice

1. Read *One Grain of Rice* by Demi.
2. Ask students to figure out how much total rice Rani received from the Raja using the *More Than One Grain of Rice* activity sheet grid but not using calculators.
3. Have the students check their calculations using calculators and complete the additional questions about the doubling of a penny and a dozen eggs.
4. Use the following discussion questions to assess students' comprehension of the story and explore related concepts:
   * In what food group does rice belong? *(Grain)*
   * What good did the farmers in the story by Demi produce? *(Rice)*
   * Is rice a scarce good? *(Yes! It is a tangible item that people produce using productive resources—natural, human, and capital. Thus, rice is not a free good. Like all scarce goods, it commands a price in the marketplace.)*
   * Why did the rice farmers give almost all of their rice to the Raja? *(He commanded it. In return, he promised to store the grain.)*
   * What happened when the famine occurred? *(The supply of rice decreased, and the people had almost nothing to eat. Rice, which is already a scarce good, became much more scarce!)*
   * When a good becomes more scarce, what typically happens to the price? *(It increases.)*
   * When the price of rice rises compared to other goods, what do producers of rice typically do? *(Produce more rice! In the near term, this will cover higher production costs and, hopefully, earn the producers more profit.)*
   * When the price of a good rises compared to other goods, what do consumers of rice typically do? *(Consume/purchase less rice!)*

Activity 2: Geography of Rice

1. Looking at the world map and the sticky notes where students guessed rice is grown, read the first two paragraphs in the *Background Information*  section aloud to the class.
2. Add sticky notes to the wall map where needed (note that rice is grown in many countries and only the most prominent are mentioned here). Ask students to color in these areas on the map on their *More Than One Grain of Rice* activity sheets, including the top six states in the United States. Also ask students to answer the last question on the activity sheet.
3. Ask students if they can think of anything these rice-growing regions have in common.*(They have wet, warm climates; they are found at middle latitudes that are not too far north or too far south.)*
4. Explain to students that rice needs a long, warm growing season and lots of water. Rice can even grow in standing water, so rice farmers often flood their fields. Flooding rice fields ensures that the rice has plenty of water and prevents most weeds from growing. The flooded fields are drained and allowed to dry when it is time to harvest the rice.
5. Share and discuss the *Rice Paddy Images* with students. In order to flood rice paddies, they must be enclosed around the edges to hold water. In hilly areas rice fields are terraced, creating level areas that can hold water. Discuss the difference between harvesting with a tractor and harvesting by hand.
6. Use the following discussion questions to further explore the geography of rice:
   * How long have people been growing rice? *(Approximately 10,000 years)*
   * Where do you think rice was first cultivated? *(Scientists have found evidence of ancient rice cultivation in several different locations in Asia. It's likely that rice farming was developed simultaneously by different ancient civilizations in Asia.)*
   * What do you think rice farming was like thousands of years ago? *(Although tractors are a recent invention, people have been modifying the movement of water and the shape of the land to grow rice for thousands of years. Without engines, people used the power of flowing water, human labor, and animal strength to move materials, plow fields, and weed and harvest crops.)*
   * Do you think rice was as important to ancient civilizations as it is to people today? *(Rice was a foundational crop for ancient civilizations in India and China. The development of civilization went hand-in-hand with the development of agriculture.)*
   * What geographic features might be important to a civilization that depends on growing its own rice as a staple food? *(There are many, for example: latitude and altitude (both affect the length of the growing season), the quality of the soil for fertility and for holding water (clay soils hold water, while sandy soils allow water to drain quickly), the presence of rivers to provide irrigation water, etc.)*

**Concept Elaboration and Evaluation**

After conducting these activities, review and summarize the following key concepts:

* Rice is an important crop grown by farmers around the world. After harvest, the rice must be processed at a mill.
* Brown rice is milled to remove the hull, and then it is ready to package and sell to consumers. White rice is processed more in order to remove the germ and bran.
* Rice is a staple food for more than half of the people in the world.
* Geographic features that affect the availability of water and the length of the growing season help determine where rice is grown.
* Rice has been cultivated for thousands of years. Today we have advanced technology that helps achieve high rice yields, but in some parts of the world rice is still cultivated using only human and animal power.

Additional Learning Procedures

To help students review and elaborate more about rice, try using the [“The Carousel”](https://drive.google.com/file/d/1YbPfwKbk13HdcTUCAqCVIJbjO_2bobyC/view?usp=drive_link) method to allow students to think deeper and make new connections.

Additional Things to Consider:

[Everybody Cooks Rice](https://agclassroom.org/matrix/resource/241/)

[Farms Feed the World](https://agclassroom.org/matrix/resource/375/)

[One Grain of Rice](https://agclassroom.org/matrix/resource/167/)

[The Boy Who Changed the World](https://agclassroom.org/matrix/resource/227/)



Source: <https://www.agclassroom.org/teacher/matrix/>

*For more information and additional lessons visit*

*https://msfb.org/ag-in-the-classroom/lesson-plans/*