Forage

*Lesson Plan for Grade 2, Social Studies*

*Prepared by NAITC*

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

*for Mississippi Farm Bureau Federation - AITC*

OVERVIEW & PURPOSE

Students will learn about rangelands by participating in a hands-on activity of growing their own grass to represent a beef or sheep ranch.

# EDUCATIONAL STANDARDS

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

G.2.2 Investigate physical features of the local region. 1. Examine how physical features affect human settlement. 2. Distinguish between urban, rural, suburban, etc. 3. Investigate different types of landforms and their characteristics.

ELA-RI.2.4 Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.

**NALOs:**

T1.K-2 a Describe how farmers/ranchers use land to grow crops and support livestock.

# OBJECTIVES

* Students will describe what range land is used for and where it is located

# MATERIALS NEEDED

* *Cow Grazing* picture (1)

Activity 1: Trailblazing

* Jiffy 7 peat pellet pots (1 per student)
* Plastic cups (1 per student)
* Permanent markers (1 per group)
* Grass seed,\* 2–3 teaspoons (10-15 g) per group
* Plastic spoons (1 per group)
* *Trail* activity sheets (laminate the sheets and provide each group with a transparency marker to save paper) (1 per group)
* Transparency markers (such as Vis-a-Vis) (1 per group)

Activity 2: Grass and Grazing

* Water ( supply for the classroom plants)
* Scissors (1 per student)

Activity 3: Lasso'n Lingo

* *Lasso’n Lingo* handout (1 per student)

Concept Elaboration and Evaluation

* Computer with internet access for each student
* [Ridin' the Range Webquest](https://form.jotform.com/70605091176150) (1 per student)
* Ridin' the Range Webquest Answer Key (1 per teacher)

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

* [Lasso'n Lingo Handout](https://drive.google.com/file/d/12rIfPYa_hhq64l9CVEMOF3h1HRe5KaKH/view?usp=drive_link)
* [Cow Grazing Picture](https://drive.google.com/file/d/1GKpziWtf_EagvEXbjpvSqwIaE17u4n5g/view?usp=drive_link)
* [Ridin' the Range Webquest](https://form.jotform.com/70605091176150)
* [Ridin' the Range Webquest Answer Key](https://drive.google.com/file/d/1GmLwFoHrrNOP0D6CyXUNIk4BtUWFrJp-/view?usp=drive_link)

# Lesson Set Up:

1. Pre-determine 6 groups of students.
2. Pull up and display the cow grazing picture for the students.
3. Have the peat pellets, plastic cups, permanent marker, grass seed, and plastic spoon ready for students to use.
4. Print the Trail activity sheet (1 per group of students).
5. Print the *Lasso’n Lingo* vocabulary handout for the students.

# VOCABULARY

**carrying capacity:** the maximum number of animals a piece of land can support without degradation

**open range:** unfenced areas that can be grazed by livestock

**rangelands:** open land vegetated mainly by native grasses, forbes, and shrubs used by grazing wildlife and livestock

# Ag Facts:

In Mississippi in 2019 there was:

* 610,000 acres of hay harvested in 2019
* 1.40 million tons of hay produced in 2019
* $151 million value of production of hay in 2019

# Background information for teachers:

What is **rangeland**? When the term first came into use in the 1800s, it was used to describe the extensive, unforested lands dominating the western half of North America. Today, *rangeland* refers to a large, mostly unimproved section of land that is used for livestock grazing. Rangelands can be found in a wide variety of ecosystems, including natural grasslands, savannas, shrublands, deserts, tundras, alpine communities, coastal marshes, and wet meadows. Rangelands are usually mountainous, rocky, or dry areas that aren’t suitable for growing the usual farm crops. However, grass and other plants on rangeland can be used for grazing livestock. People can’t eat grass, but cattle and sheep can turn grass into beef and lamb.

As the human population continues to grow, more space is needed for neighborhoods, businesses, and the cultivation of crops. There are 1.8 billion acres in the United States. This is all the land available for homes, schools, airports, roads, farms, ranches, recreational areas, wildlife habitat, and everything else. Rangelands are important because they provide multiple goods and services and support many uses within the same space; they are multiple-use lands. Rangeland ecosystems provide nutritious forage for grazing livestock, which produce food, fiber, leather, and many other useful by-products. These same rangelands provide forage and habitat to wildlife (including many threatened and endangered species), numerous recreational opportunities, and a unique setting for social and cultural activities. We depend on these goods and services and expect them to be sustained for the benefit of future generations.

In order to use rangelands in all of these ways without damaging them, it is important that rangeland health be closely monitored and managed. So, who owns and manages rangelands? Ranchers may use their own private land to graze their animals or pay a fee to the government to lease public rangeland. Permits are issued by both the Forest Service and the Bureau of Land Management to allow grazing on public lands. Federal rangeland managers and private livestock owners work cooperatively to ensure that public rangelands are well cared for. Well managed grazing can be both economically and ecologically beneficial. Compared with harvested feeds like corn and wheat, range and pasture provide a relatively inexpensive feed source for livestock. Sales of livestock and other ranching activities contribute to the strength of local economies. Properly managed livestock grazing can also help keep grasslands healthy.

Rangeland management begins with grass. We tend to take grass for granted because there seems to be so much of it. In fact, there is a lot of grass. It is one of our most important and available renewable resources. Grass plays a number of environmentally important roles. Grass covers the soil and holds it in place, slowing runoff of rain, preventing erosion, and reducing the potential for floods. Grass traps and filters sediments and nutrients from runoff, and helps water percolate through the soil and back into streams and groundwater.



Cattle and sheep are like rangeland lawn mowers that can help care for grassland ecosystems. Imagine what your lawn would look like if you didn’t mow it! At first glance, when we see animals grazing, it seems like the animal wins all. However, there are more winners here than first meets the eye. The moment grass is shorn, it seeks to restore a balance between its roots and leaves. When the tops of the grass leaves are eaten by grazing livestock, the same amount of root is lost. When the roots die, the soil’s population of bacteria, fungi, and earthworms gets to work breaking down the dying roots. This creates fertile organic matter that enriches the soil.

Rich soils, in turn, support more grass growth. Grasses regrow from the bottom up. Because their growing point is low to the ground, grasses can usually recover well after grazing. However, repeated, heavy grazing can kill grass. When a grass plant is grazed very low to the ground, a large portion of its roots die, and it has little leaf area left to make energy through photosynthesis. Because the plant can’t generate much energy, it takes a long time for the roots to regrow, and the plant is very susceptible to drought. Proper management of grazing involves moving livestock to a new area before grasses are grazed too low and allowing grasses a period of rest to regrow leaves and roots before grazing them again. With proper management, grazing can be a tool for keeping rangelands healthy.

In well-managed grasslands, decaying roots are the biggest source of new organic matter, and grazing animals actually build new soil from the bottom up. In the absence of grazers, the soil-building process would be nowhere near as swift or productive. Grazing cattle aerate the soil with their hooves, scatter seeds, and trim wild grasses. Wildfires have a harder time taking hold on shorter, cropped grass than on longer vegetation. Properly grazed or “mowed” grass can help create healthy green grass!

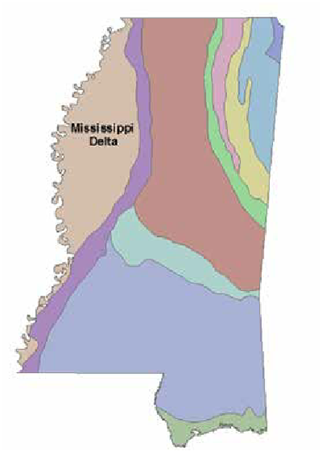
**Mississippi Rangelands**

Mississippi rangelands include prairies (black belt and Jackson), woodland areas (piney woods and longleaf pine savannas), coastal grasslands (marshes), and wetlands (pitcher plant wetlands and quaking bogs).

Rangelands have significantly decreased in Mississippi because of rangeland degradation and conversion to cropland, pine plantations, or urbanization

Mississippi Rangelands

* Mississippi Black Prairies
* Black Prairie
* Jackson Prairie
* Longleaf Pine Ecosystem
* Wet Pine Savannas
* Eastern gulf coastal grasslands



The Black Belt is a subdivision of the East Gulf Coastal Plain physiographic province. It forms a crescentic region extending from McNary County in extreme southern Tennessee, south through east-central Mississippi and east to Russell County, Alabama near the Georgia state line.The region is approximately 310 miles long and up to 25 miles wide, but narrowing at its northern and eastern extremes. The entire region is underlain by Selma Chalk formed from Upper Cretaceous marine deposits. Three major plant communities: open prairie, chalk outcrop, and forest.Dry longleaf pine forests are critically imperiled in the state and cover an estimated 40,000 acres in Southern Mississippi, with patches ranging from 50 acres to 1,000 acres. Some of the highest quality dry longleaf forest habitat remains in De Soto National Forest and on a few tracks owned by private landowners.

Wet pine savannas are open, nearly treeless (longleaf pine), fire-dependent plant communities dominated by well-developed ground cover and some low shrubs. Wet pine savannas are found on poorly drained hydric soils with long periods of soil saturation.

Due to fire suppression and conversion to pine plantation by planting and ditching, less than 5% of the original acreage of this habitat remains, making it one of the most endangered ecosystems in the country. The refuge savannas are considered the last remaining large expanses of this habitat. The ground-level plant community found here is one of the most species-rich in North America.The largest patches exist within the Mississippi Sandhill Crane National Wildlife Refuge, Lakeshore Savanna Preserve, and the Grand Bay National Wildlife Refuge.

The Western Gulf coastal grasslands are a subtropical grassland ecoregion of the southern US and northeastern Mexico.Specific areas include a number of barrier islands. The coast is vulnerable to tropical storms that can seriously damage habitats.

This ecosystem is edaphic in origin; the soils in this region are of a heavy clay that contributed to difficulty for woody species to establish, allowing grasses and herbaceous species to be more competitive.The region name, though, is a bit of a misnomer. It is not a wide open, treeless prairie; instead, the grassy areas are broken up by many pockets/groves of forest, usually along water courses, or isolated silt/sand pockets among the substrate (where the soil is more permissive for tree growth).

# LEARNING PROCEDURES

Interest Approach:

1. Show your students the *Cow Grazing* picture. Ask your students if they see anything in the picture that looks tasty to eat.
2. Explain to the students that humans do not have an adequate digestive system to obtain sufficient nutrients from grasses and other similar plants. However, cattle and sheep thrive by grazing rangelands. In this lesson, students will learn how grazing can be managed to be a benefit to ranchers and to improve and maintain the health of the land.

### Procedures

Activity 1: Trailblazing

1. Review with your students the background information concerning rangelands, grazing, and the nature of grass.
2. Divide your class into 6 groups. Each group will be taking a different “trail,” and on their way, they will start their own “ranch” with a small planting of grass. *Note: Some of the "Trail" activity sheets will be most pertinent to Utah students, but the majority are generic and will be pertinent to students in any state.*
3. Provide each student with a peat pellet and a plastic cup to hold it.
4. Provide each group with a permanent marker, 2–3 teaspoons (10-15 g) of grass seed in a small bowl, a plastic spoon, one of the *Trail* activity sheets, and a transparency marker.
5. Ask students to place the peat pellet into the cup. Explain that you will be pouring a 1/2 cup (120 mL) of water into each person’s cup while each group reads their *Trail* activity sheet, completes the activity, and then starts their ranch (plants their grass seed) by following the instructions in the sidebar of the *Trail* activity sheet.
6. Instruct the students to begin working on the activity but to also observe their peat pellets. When they finish the activity, the water should be absorbed and the peat pellet completely hydrated. It takes about 15 minutes for the peat pellet to hydrate and expand into a pot in which seeds can be planted.
7. When each group has completed their activity and all students have planted their grass seed, ask each group to share what they learned on their trail.

Activity 2: Grass and Grazing

1. Once the seeds germinate, keep the peat pots moist, and allow the grass to grow until it has reached 2–3 inches (5-7 cm) in height. Students will be applying two different grazing treatments and will leave some of the grass untreated.
2. When the grass is 2–3 inches (5-7 cm) tall, ask the students to use scissors to cut half of the grass blades short—1 inch (2.5 cm)—above the soil to simulate a cow grazing.
3. They should clip another quarter of the grass down to the crown—where the blades meet the roots; this part of the blade is white in color. To simulate overgrazing, ask students to clip this quarter area to the crown every couple of days.
4. The last quarter section of the grass should remain unclipped.
5. Observe the grass for a few weeks, and then make comparisons. What are the results of the overgrazed, grazed, and ungrazed grasses? Ask students how their grazing experiment compares to mowing their grass.

Activity 3: Lasso’n Lingo

1. Learning western land terms is a fun way to cement what students have learned about rangelands. Share the following vocabulary list *Lesson Lingo* with students. Discuss the meanings of the words.
2. Ask students to write a story using at least 12 words from the list.
3. When all of the students have finished writing their stories, ask for volunteers to share what they’ve written with the class.

**Concept Evaluation and Elaboration:**

* Rangelands can be public or private land. They are located in open spaces where there is grass and other grazing beneficial to livestock.
* Rangelands are generally not ideal for crop farming due to a variety of factors which can include rugged topography, limited water resources, etc.
* Rangelands are defined in part by their physical geography. Physical geography affects what plants and animals live in an area as well as what kinds of activities humans undertake in an area.
* Grazing rangelands can be beneficial to the environment if managed properly.

# Additional Learning Procedures

To help students review and elaborate more about forage try using the [“I used to think…Now I think…”](https://drive.google.com/file/d/1CBYNhCLHMI4_KwPmYEc87RPy-cVyHGIG/view?usp=drive_link) method to allow students to think deeper and make new connections.

To continue the conversation about forages try reading different texts that discuss forages further. [“Glorious Grasses, The Grains”](https://www.agfoundation.org/recommended-pubs/glorious-grasses-the-grains) discusses the plants we eat and is a great tool to make students take lesson they just learned a step further.



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

*For more information and additional lessons visit*

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