

Mesilla Valley Maze

2024 Educational Program

Nuts About New Mexico & Texas!

Table of Contents

Lesson:	Page:	
Notes to the Teacher	2	
Lesson 1: Before the Field Trip	3	
KWL Chart	4	
Lesson 2: Nuts Grown in New Mexico & Texas	5-6	
Maps of New Mexico & Texas	7-8	
Lesson 3a: Nuts About New Mexico & Texas!	9	
Lesson 3b: Walking Pecan Lesson		
On site lessons at the Mesilla Valley Maze		
Lesson 4: Comparing the Nuts of NM & TX	10-11	
Nut Comparison Diagram	12	
Interesting Nut Facts	13-14	
Lesson 5: Growing Nuts	15-16	
Peanut Plant Handout	17	
Life Cycle of a Tree Nut Handout	18	
Life Cycle of a Peanut Handout	19	
Lesson 5: Nut Knowledge Assessment	20	
Optional Enrichment Activities & Resources	21	

Notes to the Teacher

The following lessons correlate with New Mexico Common Core State Standards, Next Generation Science Standards (NGSS) and Texas Essential Knowledge and Skills (TEKS).

Each lesson may be modified by the teacher to suit the various grade levels and skill sets of students.

Many resources were used to compile these lessons; you may refer to certain websites to find out more information within each lesson.

This curriculum was written and compiled by Joanna Salopek, a former Las Cruces Public School District teacher. Joanna received her Bachelor of Science in Agriscience Education from Auburn University and her Master of Arts from the University of New Mexico in Secondary Education.

What to Expect

This curriculum is intended to be used both before and after your field trip to the Mesilla Valley Maze. Lessons 1-2 should be completed before your visit, students will then participate in the Outdoor Classroom at the Mesilla Valley Maze for Lesson 3, and supplementary Lessons 4-5 may be utilized in the classroom after your field trip. Students may also return to Lesson 1 (KWL Chart) after their visit to complete the last column of their chart.

NEW THIS YEAR:

In addition to the Outdoor Classroom, we will also be providing a walking lesson for small groups that is geared towards 3rd grade and up. This interactive lesson will involve walking through our Pecan orchard with a guide that will focus on the life cycle of a pecan, pecan facts and more!

Lesson 1: Before the Field Trip

KWL Nuts Chart

Objective: Students will evaluate their current knowledge of different nuts (pecans, pistachios, peanuts and pinons) by discussing their thoughts with their classmates, propose ideas of what they would like to learn while at the maze and then articulate what they learned during their visit.

Standards & Benchmarks:

<u>New Mexico:</u> NMCC ELA: SL.K.1A-B, SL.1.A-C, SL.2.1C, SL.3.1C-D, SL.4.1D, SL.5.1C

Texas: TEKS ELA: K.12A, 1.13A, 2.1D, 3.1A, 4.1A, 5.1A

Procedures:

- 1. Have Students create a K-W-L chart in their notebooks, let them work on poster paper in groups, or provide copies of the pre-made chart below.
- 2. Instruct students to get with a partner and then "think-pair-share" about what they already know about the different types of nuts grown in New Mexico and/or Texas.
- 3. Then, as a class, discuss some of the answers your students have come up with. If necessary, you may provide them with the following topics to get them started: what types of nuts are grown in New Mexico and/or Texas, where they might have seen them used in our everyday lives, the differences between each nut, how they taste, how they are used, who grows them, etc.
- 4. After discussing, instruct students to fill out the K, or "What I KNOW" column of their chart.
- 5. Then, have students "think-pair-share" again to discuss what they'd like to learn. Again, as a class, discuss these questions and have students fill out the W, or "What I WANT to learn" column on their page.
- 6. Students will then fill out the L, or "What I LEARNED" column using the same methods as before once they return from their field trip.



Name: Date:

New Mexico & Texas Nuts K-W-L Chart

What I KNOW	What I WANT to learn	What I LEARNED

Lesson 2: Nuts Grown in New Mexico & Texas

Objective:

Students will be able to identify the different nut crops grown in New Mexico and/or Texas. They will use a map and key to show where each nut is grown throughout the state in which they live.

Standards & Benchmarks:

<u>New Mexico:</u> NMCC Social Studies: K.19-20, 1.17-18, 2.21, 3.24, 4.21, 4.23, 5.23, 5.28

<u>Texas:</u> TEKS Social Studies: K.3C, K.4B, K.14.D, 1.4A-B, 1.5A-B, 2.3A, 2.5A, 3.2B, 3.3A, 3.4C, 3.14C, 4.6.A, 4.11B, 4.20.A-B, 5.6D, 5.24A

Materials:

Provided Map of New Mexico or Texas

Colored Pencils/Markers/Crayons

Procedure:

- 1. Start the lesson by asking students what types of crops are grown in New Mexico or Texas (depending on your location). First, explain that crops are things grown for our consumption, such as fruits, vegetables, nuts, etc.
- 2. If students are not familiar with agriculture, help them by first discussing what types of food they eat, and where it might be grown. Lead them by talking about what is in their school breakfast or lunch (i.e. fruits like apples, peanut butter and jelly sandwiches, lettuce in salad or their hamburgers, etc.).
- 3. For your own knowledge, some crops grown in each state include, *but are not limited to:*

New Mexico: lettuce, onions, chile, cabbage, corn, peanuts, pecans, pistachios, watermelon, wheat, potatoes, cherries, pine nuts

Texas: corn, peanuts, pecans, rice, cabbage, spinach, cantaloupe, potatoes, onions, tomatoes, chile peppers, cotton, pistachios, pine nuts, watermelon

- 4. Explain to students how farmers use the land within our states to grow the food that they eat every day. In particular, guide students to focus on the different types of *nuts* grown in their state. Each state includes pecans, peanuts, pistachios, pinons, and a few other nuts.
- 5. You may briefly discuss what each nut is, and what they may look like.
- 6. Next, you will give students maps of their state. (For younger students, you may use the provided maps <u>Texas New Mexico</u>, or for advanced students that are focusing more on geography, you might have them get in pairs and draw a large outline of their state on poster paper before filling it in with pertinent information. Including the cardinal directions can be added for older students.
- 7. Have students fill in the main information on their map* including:
 - a. A star where their city is located + its name.
 - b. Any major rivers, lakes, mountains, or major landmarks in their area.
 - c. The state name as a map title.
 - d. Optional:
 - Map key
 - Counties
 - Cities other than their own
 - State capital
 - National monuments or forests

*Suggestion: On your projector or Smart Board, pull up a grade-appropriate map of your state that includes the detail you would like your students to put on their own maps.

- 8. Once the basic map information is complete, explain that you will be showing where each of the main nuts grown in your state come from.
- 9. To show this, you will draw a picture of a pinon, pecan, pistachio, or peanut in the areas that grow each crop using the guides provided.
- 10. Then, you may discuss why each crop is grown in a different area. *This discussion may be most appropriate for older students who understand that weather and resources differ throughout the state.*
- 11. Have students color their maps and add any personal details they would like.





New Mexico - Land of Enchantment



Texas - The Lone Star State

Lesson 3a: Nuts About New Mexico & Texas!

At the Mesilla Valley Maze Outdoor Classroom, taught by a licensed Texas teacher!

Objective:

Students will attend the Outdoor Classroom lesson and participate in the discussion of the many different nuts grown throughout New Mexico and Texas, discern the various ways in which these nuts grow, and learn basic facts about each nut crop.

Standards & Benchmarks:

<u>New Mexico</u>: NGSS K-LS1-1, 1-LS1-A, 2-LS2-C, 3-LS1-1, 4-LS1-1, 5-LS1-1 <u>Texas:</u> TEKS Science: K.13A,C,D, 1.13, 2.13.A, 3.134.13, 5.13

This lesson is appropriate for all ages!

Lesson 3a: Walking Pecan Lesson

At the Mesilla Valley Maze Pecan Orchard

Objective:

Students will participate in a walking tour in our pecan orchard in which they will learn all about pecans, their uses, the life cycle of a pecan and more!

Standards & Benchmarks:

<u>New Mexico:</u> NGSS K-LS1-1, 1-LS1-A, 2-LS2-C, 3-LS1-1, 4-LS1-1, 5-LS1-1

<u>Texas:</u> TEKS Science: K.13A,C,D, 1.13, 2.13.A, 3.13, 4.13, 5.13

This lesson is geared for 3rd grade and up. Small groups of 40 or less are preferred.

Lesson 4: Comparing the Nuts of NM & TX

Objective:

After learning about the various types of nuts grown in New Mexico and Texas in the Outdoor Classroom, students will discuss and chart their many similarities and differences by using a comparison diagram.

Standards & Benchmarks:

<u>New Mexico:</u> NMCC ELA K.SL.1,4-5, 1.SL.1,4-5, 2.SL.1, 3.SL.1, 4.SL.1, 5.SL.1

<u>Texas:</u> TEKS ELA: K.1, K.2E, 1.1A-D, 1.2F, 2.1A-D, 3.1A-E, 4.1.A-D, 5.1A-D TEKS Science: 3.1.F, 4.1.F, 5.1.F

Materials:

White board + markers

Poster paper

Markers/Colored Pencils

Procedure:

- 1. Hook students' attention by showing them a cluster of pecans (still in their husk), a pinecone, peanuts in their shell, and a handful of pistachios. If you have access to physical samples, that would be best, but pictures from online would also work.
- 2. Playing off their prior knowledge that they were taught in the Outdoor Classroom, have students identify each of the nuts.
- 3. Next, explain that know you know all about each of these types of nuts, you will be deciding how they are similar and different by using a chart *similar* to a Venn Diagram. (For younger students, a discussion of what a Venn diagram is may be necessary. Explain that it's a visual representation of how certain items are the same and different.)
- 4. Once an understanding of a comparison chart is reached, draw a large version of the chart on your whiteboard using the templated provided.
- 5. Have students partner up and create a similar diagram on poster paper, instructing them to label as you do.

- 6. You may then discuss what your students learned at the Maze about the nuts, or you can provide students with additional pecan/pistachio/pinon facts by reading about them using the fact sheets provided and playing videos.
- 7. As a class, begin to discuss the similarities and differences between the nuts while filling in your example diagram. Dependent on students' age level and what prior knowledge they have, observe the physical attributes of the nuts, discuss how each is used/what foods we make with each, how they are harvested, etc. A sample diagram with some possibilities is provided on the next page. *Students will have varying amounts of information as well as detail dependent upon grade level skills.*
- 8. After and/or during the discussion, have students add the characteristics of the various nuts to their chart.
- 9. Instruct students to include a picture of each nut on their diagram and to provide an appropriate title.
- 10. Encourage students to provide as much detail about each nut as possible.

Modification: If the comparison chart is too advanced for your grade level, you can always modify to use a simple Venn diagram in which you compare one of the tree nuts to a peanut.

Nuts of New Mexico & Texas Comparison Chart



Interesting Nut Facts

Pecan Facts:

- The first documented evidence of nut consumption occurred around 7,000 BC, during the Stone Age.
- The name "pecan" is an Algonquin word meaning "a tough nut to crack."
- The history of pecans can be traced back to the 16th Century, originating in central and eastern north America and the river valleys of Mexico.
- George Washington and Thomas Jefferson planted pecan trees in the 1700s. Washington called them "Mississippi nuts."
- Roasted pecan shells were a common coffee substitute in Civil War rations.
- Today pecans are widely available throughout many states, including New Mexico & Texas!
- Pecan trees range in height from 70 to 100 feet but sometimes grow to 150 feet or more. Native pecan trees - those over 150 years old - have trunks more than 3 feet in diameter.
- The pecan tree is a member of the hickory family.
- There are over 1,000 varieties of pecans, many named for Native American Indian tribes.
- Astronauts took pecans to the moon in two Apollo space missions.
- Pecans contain more than 19 vitamins and minerals, including Vitamin A, Vitamin E, folic acid, calcium, magnesium, phosphorous, several B vitamins, potassium and zinc.
- Pecans are harvested each fall or winter when it cold enough for their husks to open up.
- Pecans are usually harvested using machines!

Peanut Facts:

- The peanut is not a nut, but a legume related to beans and lentils.
- The United States produces four basic varieties of peanuts: Runner, Virginia, Spanish and Valencia. Each type is distinctive in size and flavor.
- The first peanuts grown in the United States were grown in Virginia.
- The average American consumes more than six pounds of peanuts and peanut butter products each year.
- March is National Peanut Month.
- Peanuts are planted after the last frost in April or early May.
- Dr. George Washington Carver researched and developed more than 300 uses for peanuts in the early 1900s; Dr. Carver is considered "The Father of the Peanut Industry" because of his extensive research and selfless dedication to promoting peanut production and products.
- Astronaut Allen B. Sheppard brought a peanut with him to the moon.
- The peanut plant originated in South America.
- As early as 1500 B.C., the Incans of Peru used peanuts as sacrificial offerings and entombed them with their mummies to aid in the spirit life.
- Peanuts contribute more than \$4 billion to the USA economy each year.
- The peanut growth cycle from planting to harvest is about five months.
- The average peanut farm is 100 acres.
- The peanut plant produces a small yellow flower.
- Americans eat more than 600 million pounds of peanuts (and 700 million pounds of peanut butter) each year.
- Peanuts flower above ground and then migrate underground to reach maturity.

Pinon Facts:

- Pine cones close their scales to protect the seeds from cold temperatures, wind and even animals that might try to eat them.
- Pine cones open up and release their seeds when it is warm and it is easier for the seed to germinate.
- Most local pinon nuts come from the "2 Needle Pine" which is the state tree of New Mexico.
- It takes nearly 2 years for a pine cone to mature
- Pine cones can stay on tree for more than 10 years before dropping to the ground.
- Only 20 varieties of pine tree worldwide produce cones with large enough pine nuts for harvesting.
- Pine nuts are a good source of thiamine (B1), Vitamin K, magnesium, and protein. They are also one of the best natural sources for manganese, phosphorus and zinc.
- A single nut yields as much 20 calories. One pound of pine nuts supplies 3,000 calories-much more than an average pound of hamburger! Not what you'd call a low-fat, diet food!
- People have been eating pine nuts since 4000 BC. Navajo and Pueblo traditions both identify pinyon nuts as food of their ancestors.
- The name pinyon or piñon is Spanish for "pine nut".

Pistachio Facts:

- Pistachios are native to the low mountains and barren, dry foothills in the elevated deserts of Afghanistan, Iran, and Turkey.
- Historically, they were considered a rare delicacy and a favorite of the Queen of Sheba.
- Pistachios were imported to America in the 1880s but did not become popular as a snack food until 50 years later.
- Pistachio trees are drought resistant and very tolerant of high temperatures.
- Pistachio trees can grow up to 30 feet tall.
- It takes approximately six years after the tree is planted in the orchard before the first harvest.
- Pistachio trees are either male or female and the pollen is distributed throughout the orchard by the wind.
- Some pistachio trees have been known to produce for over 300 years!
- A mature pistachio tree can produce up to 50 pounds of nuts in a given year
- Pistachios contain over 13 key nutrients.
- China is the top consumer of pistachios.
- In Iran, pistachios are known as the "smiling nut". In China, it's called the "happy nut".

Lesson 5: Life Cycle of Nuts

Adapted from the Georgia Pecan Commission

Objective:

Students will be able to identify and differentiate between the life cycles of tree nuts and peanuts and create a timeline showing peanut growth and development over the course of one year.

Standards & Benchmarks:

<u>New Mexico:</u> NGSS K-LS1-1, 1-LS1-A, 2-LS2-C, 3-LS1-1, 4-LS1-1, 5-LS1-1

<u>Texas:</u> TEKS Science: K.1B-E, K.13A,C,D, 1.1A-D, 1.13, 2.1B,E,F, 2.13.A, 3.1.A-F, 3.13, 4.1A-F, 4.13, 5.1A-F, 5.13

Materials:

Egg Cartons (1 per group of 3-4 students) Soil Peanut Seeds Water 11 x 17 sheet of paper (1 per group of 3-4 students) Markers, crayons, or colored pencils Life Cycle of Tree Nuts Handout Life Cycle of the Peanut Handout

Procedure:

- 1. Begin by discussing what your students have learned about the difference between peanuts and tree nuts, such as pistachios, pecans, and pinons. What is the main difference in how they grow?
- 2. Explain that while tree nuts grow on trees, peanuts (or legumes) grow underground.
- 3. To show this, start by using the provided handout to show the life cycle of a tree nut. Have students work together or independently to use the word bank to fill in the life cycle of a tree nut.
- 4. Then, repeat this with the life cycle of the peanut handout. *To modify either handout, fill in some of the vocabulary words for your younger*

students and have older students provide definitions for each of the key vocabulary words.

- 5. After completing both handouts, tell your students you are going to grow one of these types of nuts in the classroom. Ask them which one they think you should grow, a tree nut, or a peanut. Discuss the reasons as to why growing a peanut might be more attainable such as that trees are too big for the classroom! They would also need more light, water, and space than a peanut plant would. Plus, it takes A LOT longer for a tree to grow and produce nuts than a peanut plant.
- 6. To plant your peanuts (Make sure to take note of any peanut allergies within your classroom), begin by setting out the planting supplies.
- 7. Split students into groups of three or four.
- 8. Have each group fill one egg carton with potting soil and get 12 peanut seeds.
- 9. Instruct students to use their pinkie finger to make a hole for the seed in each compartment of the egg carton. Students should push their finger in until the soil is to the top of their fingernail. Have Students place one seed in each hole and cover with soil.
- 10.Completely saturate each compartment with water.
- 11.Place in a warm area where light will reach the seeds (either in a windowsill or under a plant light).
- 12.Discuss with students what is needed for your peanut plants to grow such as light, water, nutrients.
- 13. Post the following timeline for students to see using a projector or whiteboard:
 - 1. In the US, peanuts are planted after the last frost in April through May.
 - 2. In 10 days, peanut seedlings poke through the soil.
 - 3. In 40 days, yellow flowers appear on the plant.
 - 4. Flowers pollinate themselves and the petals fall off. The peanut ovary, called a "peg" begins to form.
 - 5. The peg grows away from the plant and back into the soil. The peg is what turns into a peanut, which is technically the "fruit" of the plant.
 - 6. In 4-5 months, peanuts are harvested.
- 14. Have groups create a visual timeline on a large (11x17) sheet of paper. As the peanut plants grow in the classroom, have students note

observations on their timeline. Older students may take measurements of the plant growth in order to create graphs of growth over time.

- 15. When a peanut plant has finally grown, teach students the various
- parts of the peanut plant using the visual below.
- 16.Harvest peanuts when they are ready!

The Peanut Plant



N	ame	
× ,	wille_	

Life Cycle of a Tree Nut

Directions: Using the image and word bank below, fill in the blanks to create the life cycle of a tree nut.



Name_

Life Cycle of a Peanut

Directions: Using the image and word bank below, fill in the blanks to create the life cycle of a peanut



Word Bank:

Germination Peanut Flowers Plant Seedling Plant with Peanuts

Seed Planting Sprout

Lesson 6: Nuts Knowledge Assessment

Objective:

Students will demonstrate their knowledge of the various nuts grown in New Mexico & Texas.

Procedure:

Modifying by grade level, have students answer the following evaluative questions after they have visited the Mesilla Valley Maze, attended the Outdoor Classroom lesson and completed Lessons 1, 2, and 4.

Nut Questions:

- 1. While at the maze, you learned and saw many different things. Write 3-5 sentences about what you learned.
- 2. Draw a diagram to show the life cycle of a peanut.
- 3. What is the main difference between how peanuts and other nuts, such as the pecan, grow?
- 4. Which of the following is NOT a tree nut?
 - a. Pistachio
 - b. Peanut
 - c. Pecan
 - d. Pinon
- 5. What are at least 3 uses for nuts grown in our state?

Optional Enrichment lessons:

Pecan Fingerprints- Oklahoma Ag in the Classroom

https://cdn.agclassroom.org/ok/lessons/primary/pecan.pdf

In A Nutshell- New Mexico Ag in the Classroom

https://agclassroom.org/matrix/lesson/644/

Cracking Open the Story of Nuts- New Mexico Ag in the Classroom

https://agclassroom.org/matrix/lesson/764/

Growing America- Georgia Peanut Commission

https://gapeanuts.com/wpcontent/uploads/2020/07/2020_ed_math_growingamerica.pdf

Resources:

https://oklahoma.agclassroom.org/resources_facts/agfacts/ https://www.canr.msu.edu/news/fun_facts_about_pine_cones https://www.netstate.com/states/maps/nm_maps.htm https://cdn.agclassroom.org/ca/resources/fact/pistachios.pdf https://texasfarmbureau.org/. https://webnew.ped.state.nm.us/bureaus/instructional-materials/new-mexico-contentstandards/ https://tea.texas.gov/academics/subject-areas