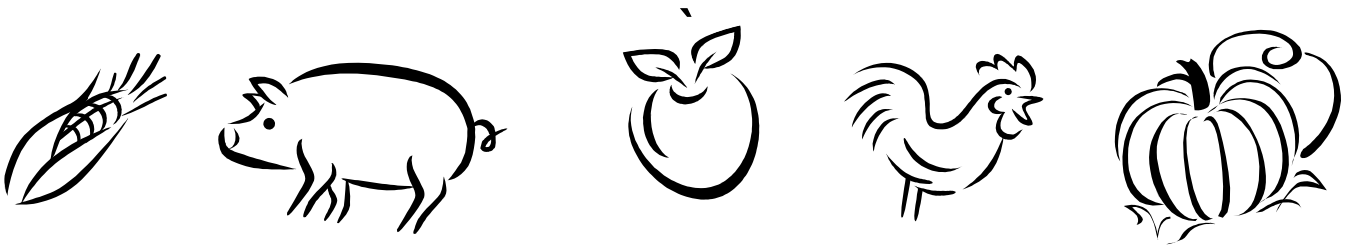


Rio Grande Botanic Garden

Heritage Farm

Education Guide

Albuquerque BioPark Education

Martin J. Chávez, Mayor

The Albuquerque Biological Park is a division of the City of Albuquerque's Cultural Services Department. For general inquiries, please call 311 (NM Relay or 711).

ABQ BIOPARK

INFORMATION FOR GROUP LEADERS

On behalf of the staff at the Albuquerque BioPark's Rio Grande Botanic Garden, thank you for your support and leadership during your trip. Whether you are here as a chaperone on a school field trip or on an outing with a family or community group, we hope you enjoy your visit and help your group to learn something new while you are here!

The Heritage Farm

The Rio Grande Botanic Garden's Heritage Farm is situated on 10 acres behind the garden conservatories. The crops and animals on the farm are typical of what would be found on a farm in the Rio Grande valley circa 1925-1935.

As visitors enter the farm, they will pass by a barn from that era that houses a modern cider mill and seasonal exhibit area. The adobe farmhouse is surrounded by a garden of heirloom flower varieties, kitchen vegetables and herbs. The farmhouse contains a living room, demonstration kitchen (with modern appliances) and bathrooms. Behind the farmhouse is a kitchen garden and a vineyard with Mission grapes and three varieties of table grapes.

A heritage orchard (mainly apples, but also pear, plum, apricot and other trees) is planted near the barn in the northwest corner. The field crops contain heirloom varieties of pumpkins, tomatoes, squash, chilies, bell peppers, corn and more. A one-acre field is planted with tall grass. The purpose of the field is to demonstrate the size of an acre and to provide hay for the farm animals.

Finally, an orchard of modern apple trees has been planted in the northwest corner and among the rows of the overflow parking lot. These apples, chosen for their taste, are used to make apple cider. The barn at the center of the exhibit area houses Navajo-Churro sheep, Alpine goats, a Jersey cow, a Pekin duck, Hampshire hogs, Dominique chickens, and Percheron draft horses.

Safety of students, animals, and plants

Remind students that they need to be aware of how their behavior affects each other, the animals and other visitors. Tell your group that the Heritage Farm is the animal's only home and they need to feel safe. The farm animals may be touched (however, watch carefully because the animals can nip), but please be sure students use the antibacterial lotion dispensers located near the animal barn afterwards.

Children love to climb, however, there are places at Heritage Farm where climbing can be dangerous. The plants are here for people to see and learn about. Some can be touched and smelled, but please leave the fruit, vegetables, and flowers so others can enjoy them. Groups are allowed to walk through the orchards and vineyard, but be sure to stay on the paths around the other planted areas.

Leaving the botanic garden with a souvenir can extend the child's experience, but remember that gift shop visits by school groups must be supervised.

The Albuquerque Rio Grande Botanic Garden is a great place to learn. Thank you for helping make your group's experience a great one!

Suggestions for your visit

If you are responsible for taking a small group independently of the whole class, get to know the children's names and make sure they know who you are and understand they must stay with you at all times. Children learn best when they are in a safe environment, and they will feel safest if you, the adult in charge, stays with them. It is very important that the children respect each other, the adults in their group, other visitors to the BioPark, and the animals and plants they encounter during their visit. Remind them to treat the animals and plants with the same respect they like to have.

Students are generally very excited on field trips. If they move too fast, they miss lots of interesting things. Check the interpretive signs to find answers to the questions on the field trip worksheet. (Reading signs for younger students can be very helpful.) Try to pace students as they work their way through the exhibits. Focus their energy by asking them observation questions about the animals and plants they see. Get them to sit down quietly and watch the animals when possible. The botanic garden is a great place to slow down and make observations. Have students look for as many different plants as possible and have them watch for pollinators visiting the flowers, like bees, butterflies, and hummingbirds.

Sample questions to stimulate thinking and discussion:
How does this plant get its water, sunlight, and air?
What do farmers do to take care of this plant? How is that different today than it was in the 1920's?
How would this plant or animal be used by a farming family?

Background Information about the Farm

People are connected to plants and animals in ways that are both subtle and obvious. Plants provide food, fiber, medicine, oxygen, wood, and other products. Animals enhance our lives by pollinating plants, decomposing waste, and entertaining us through wildlife-watching and playing with our pets. But, perhaps the most tangible way animals and plants are connected to our lives is through agriculture. Because few of us actually live on farms, our connection to agriculture can be hard to visualize. The purpose of the Rio Grande Heritage Farm is to reconnect visitors with agriculture. By choosing a historic approach, the farm introduces visitors to a time (1925 to 1935) when agriculture was a central part of daily life.

The Heritage Farm includes many of the features that are typical of a farm from that era. Visitors will see a barn from the era with a modern cider mill, an adobe farmhouse with a kitchen garden, a vineyard, fruit tree orchards, an animal barn, an acre of grain, and an acre of other crops.

Early Agriculture in the Rio Grande Valley

Agriculture is not new in the Rio Grande Valley. Despite the harsh conditions of the desert Southwest, Native Americans have been growing crops here for almost 3,000 years, raising corn, squash, and beans. When the Spanish arrived in the early 1600s, they introduced wheat, barley, cabbage, radishes, onions, lettuce, fruit trees, grapes, and of course, chile.

After the Pueblo Revolt in the late 1600s much of the Indian land was divided among Spanish settlers. Later, the decedents of those landowners further divided the lands through land sales and inheritances. By the middle of the 1800s most landowners lived on very small farms and homesteads. Some of the current landowners in the Rio Grande Valley are the direct decedents of the original Spanish and Mexican settlers.

Farm Life in the 1920s and 1930s

Living on a farm in the 1920s and 1930s barely resembles most of our lives today. Life on a Rio Grande Valley farm was quite different than life in the town of Albuquerque even during the same time period. If you lived on a farm, most likely you had no indoor plumbing or electricity. Your days would be filled with chores such as plowing and harvesting crops, milking cows, washing clothes, feeding farm animals, and cooking.

Without electricity and indoor plumbing, today's simple tasks took quite a bit of effort. Laundry was done by hand, one piece at a time. Water was heated on a

wood-burning stove, then clothes would soak in the hot water before being scrubbed on a metal washboard. Finally, the clothes would be squeezed out with a hand-cranked wringer and hung to dry on a clothesline.

The farm house would have been heated by wood which meant collecting and chopping wood to feed the fire throughout the day. At night, the house would get colder as the fires died down. To use the bathroom, family members would need to leave the house to use an outhouse which they had built themselves. Cleaning, cooking, lighting the house, and bathing all involved many more steps than simply turning on a switch or spigot.

Each season brought a different set of chores and challenges. Fires, drought, floods, and illnesses could dramatically affect a family's fortunes. Some illnesses were treated with herbs that were blended into teas and salves from recipes that had been passed down through the generations. Neighbors helped each other during harvests, natural disasters, and illness.

During the same time period in other parts of the country, farmers were struggling with the economic depression and severe drought. Farmers who were able to produce more food than their families needed, faced depressed market conditions and other economic problems that limited their ability to profit from their crops. Many of those farmers moved West to look for new ways to survive. Because most of the farmers in the Rio Grande Valley owned small farms, they were less affected by global economic changes. Still, they were poor and had to work hard to survive.

The 1930s: A Turning Point

Even though the 1930s were a difficult time for farmers, new technologies were introduced that allowed farmers to farm more land with fewer hands. Some of the major changes included:

- Combines (machines for harvesting and threshing grain)
- New technology for tractors
- Rubber wheels
- Hybrid seed corn
- Synthetic fertilizer
- New, more effective pesticides
- More access to electricity and indoor plumbing

As farmers scraped together enough money or received money from New Deal programs, they invested in these new technologies.

Irrigation

In a region where rain could not be relied upon, irrigation was critical. Pueblo Indians probably used ditches to irrigate their crops in the Rio Grande Valley. Spanish farmers enlarged and expanded these when they acquired the land.

The Rio Grande was the water source for the irrigation ditches, called acequias. The main acequia (acequia madre) carries water from upstream and smaller ditches branched off from there. Farmers tapped into these smaller ditches to irrigate their fields. Metal or wooden gates were raised and lowered so water can be let onto a particular field or passed onto the next farm. This type of system is still used today.

The irrigation system worked well, perhaps too well. There was no good system to drain the excess water off the fields. Gradually, the soils became waterlogged from irrigation and from natural flooding. By 1925, many acres were no longer usable for either farming or housing. In 1930, the Army Corps of Engineers began a program to drain the land, and developers and farmers began to make use of the landscape.

Crops: Then and Now

Not only was the actual work of farming done differently in the 1920s and 1930s, the crops were very different. Crops back then were more naturally disease resistant and better tasting than the varieties used currently. Seeds were passed among farmers and through generations of families. Modern crops have been chosen for mechanical harvesting, increased production and to look appealing to shoppers.

In their gardens, farmers often grew plants that were used as remedies for various illnesses. Mallow, mint, chamomile, onions, and various other herbs and vegetables were used to treat fevers, pain, and colds.

Before pesticides were available, farmers planted extra crops because they knew some would be lost. Generally, they figured one third of the crops would be eaten by rabbits, another third would be ruined by birds and insects, and the final third could be harvested. They also planted crops in specific arrangements to control insect pests or discourage rabbits from entering the fields.

The orchards in the Rio Grande Heritage Farm include both modern and heirloom (older) varieties of fruit trees. In the northwest corner, the apples, pears, peaches, cherries, apricots, plums are heirloom varieties. The apple trees on the south side of the farm are modern varieties that are used for making cider on site.

Mission grapes were once abundant in the region, but are rarely grown here now. Spanish priests brought the first grapes in the mid-1600s and the wine they made was used mostly for Roman Catholic communions. By the 1800s more than a million gallons of wine was produced in New Mexico. In the Rio Grande Valley, the wine industry came to a halt by the mid 1930s as a series of floods, poorly drained fields, and prohibition combined to close all the wineries. Currently there are numerous wineries in the state, but only one uses mission grapes.

Farm Size

The size of a farm in New Mexico has changed exponentially. The average size of a farm today is over 3,000 acres. In the 1920s and 1930s, it was only a few hundred acres. The Rio Grande Heritage Farm is only 10 acres.

The size of an acre used to be based on the amount of land an ox could plow in one day. Since that amount can vary, today an acre is considered to be 43,560 square feet (640 acres equals one square mile). At Rio Grande Heritage Farm, the grain field behind the animal barn is exactly one acre.

Animals at the Rio Grande Heritage Farm

Percheron Horse: This large horse breed was favored for heavy work like pulling large wagons. They were brought to the United States in the mid-1800s and became quite popular. By the 1930s, more than 70% of the registered draft horses in the U.S. were of this breed, but once trucks and tractors appeared, they were rarely used. By the middle of the 1950s, there were only 100 Percherons in the U.S. The two males at Heritage Farm came from an Amish farm in Indiana and are used for pulling most of the farm equipment including a disc cultivator, a plow, a manure spreader, a seeder, and wagons.

Hampshire Pig: These pigs were raised mainly for their meat. The breed came from England and were imported to the United States around 1830. Meat, from pigs and other animals, had to be cured or preserved because there was no refrigeration on most farms.

Jersey Cow: The Jersey cow is one of the oldest types of dairy cows, originating on an island off the coast of England. Their milk has a high percentage of butterfat and protein, and they generate more milk per pound of body weight than many other breeds of dairy cow. Some farmers in the Albuquerque area sold their excess milk to Creamland Dairy.

Alpine Goat: Alpine goats were imported to the United States in the early 1900s. This breed originated in France and are tolerant of a wide range of climates. Females are good milk producers.

Navajo-Churro Sheep: Navajo-Churro sheep were brought by the Spanish conquistadors for their mutton in the late 1500s making them the first domesticated sheep to be introduced to North America. They later came close to extinction when the U.S. Army tried to eliminate the flocks to control the tribes and when farmers replaced them with other breeds. An unusual characteristic of this breed is that males frequently have more than two horns. The wool from this hardy breed is used for Navajo rugs.

Dominique Chicken: This hardy breed of chicken was common on farms during the 1800s. As new chicken breeds became popular, their population declined. By 1970 there were very few left. They have been designated a Conservation Priority breed, and efforts are being made to increase their numbers.

Spring and Summer on the Farm

Spring was one of the busiest times on a farm. In early spring, farmers prepared the soil for planting. In the Rio Grande Valley, farmers burned the corn stalks that were left in the ground from the prior year to enrich the soil. They also spread manure on the fields to act as fertilizer and plowed the soil. In May and June, farmers planted their crops.

Also in the spring, baby farm animals were born. New lambs, pigs, calves, and horses needed to be fed and protected from unpredictable weather. In addition to the chores children did year round, they were also expected to take care of many of the newborn animals. Farmers trained inexperienced workhorses to wear harnesses and pull farm equipment.

By summer, families were ready to start picking some fruits and vegetables. What they didn't eat right away, they canned, preserved, or baked into pies. Children helped with picking fruits and vegetables, cutting hay to store in the barn, and tending beehives in addition to their usual tasks of gathering eggs, churning butter, feeding animals, and cleaning.

On summer weekends, families sometimes went to town to sell eggs, cream and other farm products. In the evenings, they could stay to watch a movie, concert, or go to a dance. The long summer days also meant children had a little more time for recreational activities such as fishing, swimming, and horseback riding.

Fall and Winter on the Farm

Fall and winter brought a different set of tasks to farm families. After a summer spent tending crops, the last harvesting was completed in the fall. Apples and garden vegetables were gathered, stored and canned for the coming winter. Farmers picked corn for storage in a corncrib where it dries and is then prepared for feeding cows, horses, and pigs.

When children return to school in the fall, their chores continue at home. Before school, most children were expected to milk cows and give food and water to horses, sheep, pigs, and cows. After school, they often repeated these tasks as well as chopping wood, gathering corncobs to be burned in the cook stove, and collecting eggs.

As winter got closer, farmers spent time repairing the buildings on the farm to protect farm animals and people from cold weather. In November, a hog or cow was often butchered, cured, and smoked so it could be eaten throughout the winter.

During winter, many farm chores were done in the dark because the days were cold. Keeping the wood box full and the wood stoves burning in the farmhouse were critical to the family's comfort. The same chores that were straightforward other times of year became more complicated when there was snow on the ground and animal troughs were full of frozen water. With the longer nights, kerosene lamps were depended upon to light the farmhouse. Some families had a battery-powered radio so they could listen to various programs or music. Often neighbors would gather together to socialize, play games or enjoy music.

Pre Visit Activities

Brainstorming

Many urban children have an image of farms that is based on books, television, and movies rather than personal experience. Before visiting the Rio Grande Botanic Garden Heritage Farm, find out what your students are expecting to see on their field trip.

Ask students what they think the farm will look like and what it might be like to live there. Find out what crops and animals they expect to see. Write their answers on the chalkboard or flip chart, but don't correct their answers. Instead, keep the information until after their field trip to Heritage Farm and compare their answers to their new experiences. What were they surprised to see at the farm? What might be different about a farm in New Mexico compared to somewhere else? Would they like to live on a farm? Why?

Farm Animals

Do your students know what kinds of animals live on a farm? Give a copy of the "Farm Animals?" worksheet to each student. Instruct them to circle the animals that farmers would keep on their farm. When they are finished, discuss their answers. You can explain that some animals are used for work, food or other products (horses, sheep, goats, chickens, pigs), but there are also undomesticated animals that visit farms (mice, ducks, coyotes, snakes, bees).

Seasons of a Tree

Have your students noticed that many trees don't look the same all year round? Fruit trees go through some particularly interesting changes each season.

Give each student a copy of both of the handouts ("Apple Tree Branches" and "Seasons"), scissors and glue. Tell students to cut out the pictures of the apple tree branches, then arrange them in the appropriate boxes on the second handout (the branch with the blossoms would go in the "spring" box on the second handout, etc.). Discuss their answers before gluing the pictures in place. The drawings can be colored in when the glue dries.

During your visit to Heritage Farm, ask students to notice the fruit trees and figure out which of the pictures they most resemble.

Rio Grande Botanic Garden

Heritage Farm

Field Trip Worksheet

Red Barn and Farm Equipment

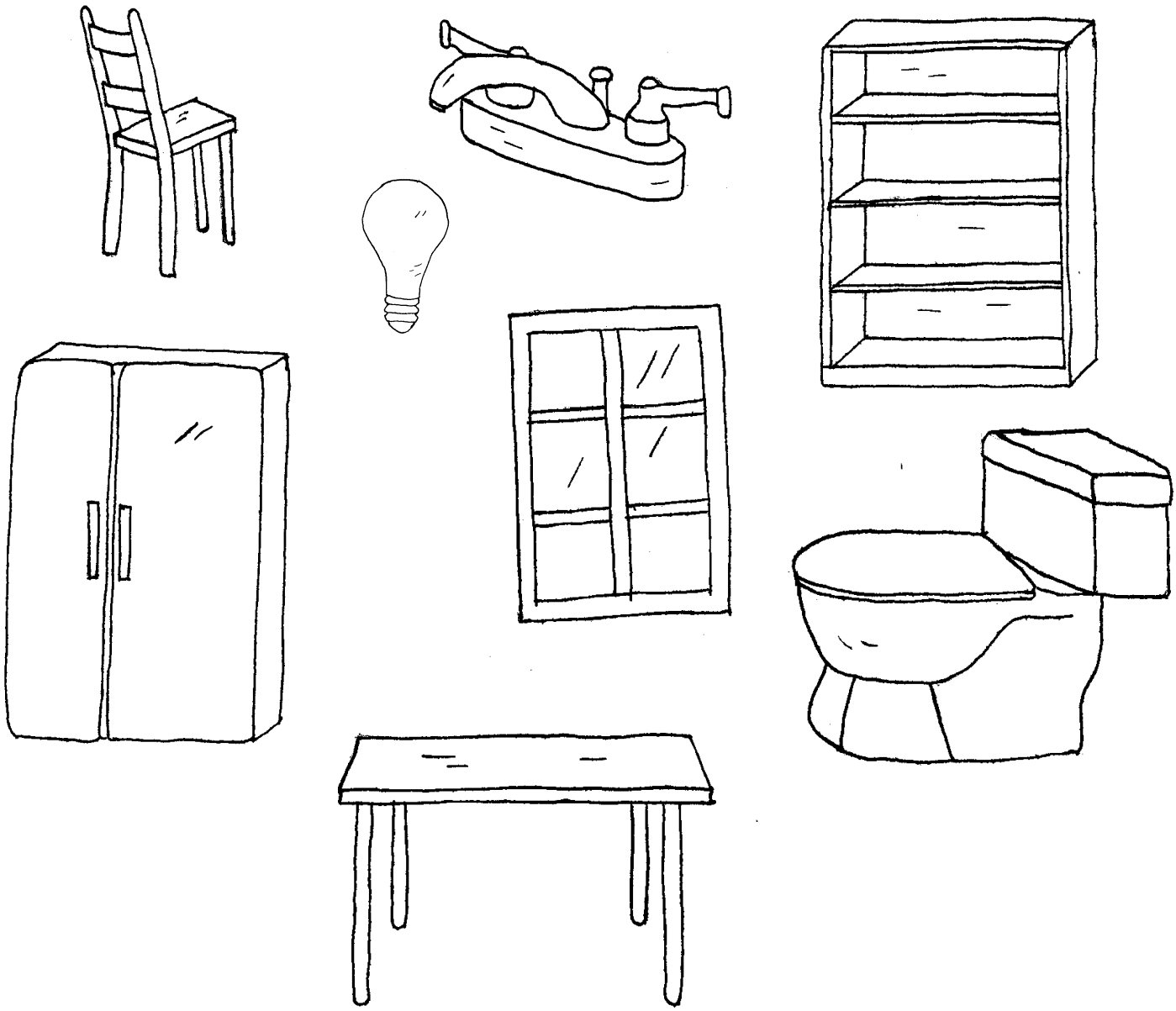
Look through the window of the big red barn, then draw or describe something that you see inside.

What were some of the chores farmers and their families did in the 1920s and 1930s?

Farm House

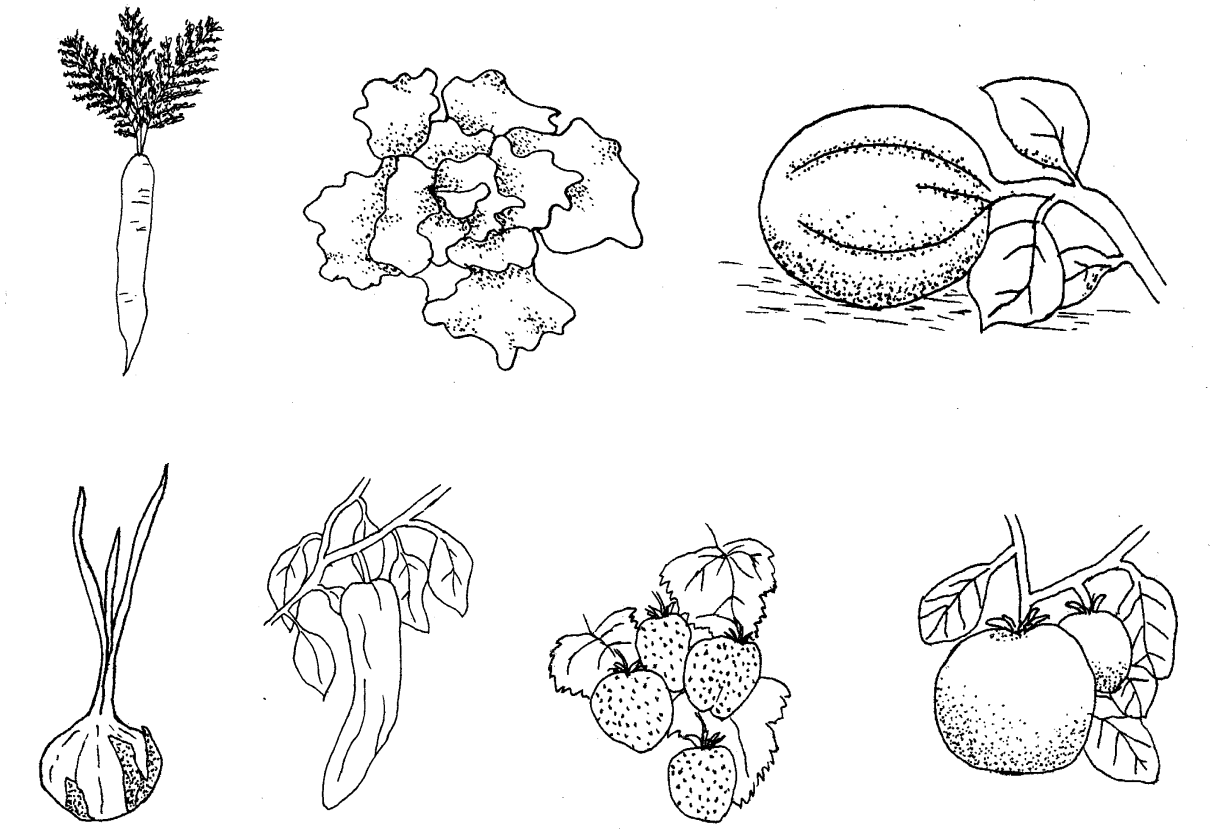
Before entering the gate to the farm house, look at the outside of the house. What is the house made of?

When you enter the farm house, take a careful look around the room. Circle the things below that would probably not be in a farm house in the 1920s and 1930s.



Kitchen Garden

The kitchen garden is the small, fenced-in area behind the farm house. Look carefully at the plants to see if you can find any vegetables or fruits that you recognize. Circle the plants that you see.



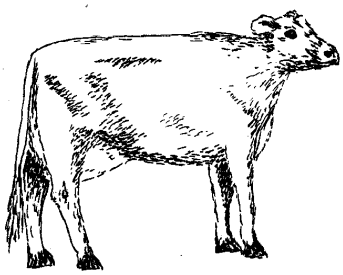
Why do you think there is a fence around the house garden?

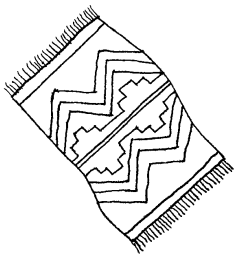
Animal Barn

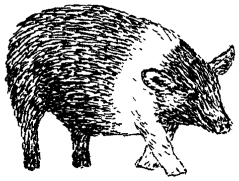
Watch the farm animals in the animal barn and yard for a while. Draw a picture of your favorite animal doing something that you saw.

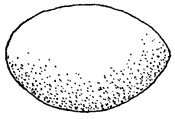
What is different about the sheep on this farm?

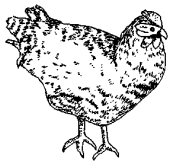
Draw a line from the farm animal to the type of thing they help us make. (One animal can make more than one thing.)

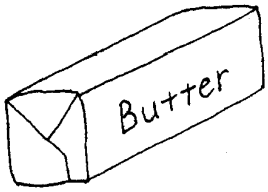


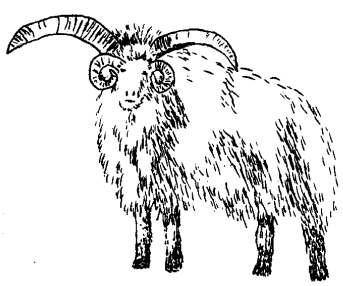


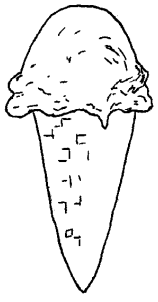












The Vineyard

Where were the first vineyards in North America planted?

How did the Spanish settlers use mission grapes?

Heritage Orchard

Why were these apple varieties chosen for Heritage Orchard?

How Big is One Acre?

Starting at the corner, walk the length of one side of the acre plot while counting your footsteps. Write down your number here:

Compare that number to the number of footsteps others in your group counted. Why is this not an accurate way to measure something?

In the past, the size of an acre was based on what?

Post Visit Activities

Farm Mural

While at Heritage Farm, your students probably learned about how farms look and function differently as the seasons change. Begin by asking students what the farm might look like each season and how the work changes during spring, summer, fall, and winter.

Divide the class into four groups and assign each group a season. Give each group a large sheet of paper, such as a section of white butcher paper or drawing paper. All four sheets will be combined into one mural at the end, so be sure the size will fit the wall space where it will be hung. Also provide drawings and/or painting materials to each group.

Tell students to illustrate a farm during the appropriate season. Encourage them to include drawings of animals and plants as well as the kind of work that might be taking place during their season.

When they are finished, each group can explain their artwork to the class and the separate sections can be hung in seasonal order on a wall of the classroom or school.

Plant a Window Garden

Students can get a small taste of what it's like to be a farmer by planting and taking care of their own "crop". Gather together enough small planting containers, potting soil, and seeds for each student to raise at least one plant. (If given enough light, many fruits and vegetables can be started indoors. Check with the nursery for selections that would be appropriate for your classroom.) Follow the planting directions on the seed packet. Keep the containers near a window in the classroom as they sprout and make sure each student has the opportunity to water the plants.

When the plants become large enough to transplant, students can either bring them home for planting or they can be transplanted to a suitable area of the school campus.

Alternatively, students can plant a window herb garden, starting with small plants rather than seeds. Some herbs that work well are basil, oregano, thyme, and cilantro. While the plants grow, students can search for recipes to use for a tasting party when the herbs are ready for harvesting.

Harvest Party

Celebrate the foods grown at the Rio Grande Heritage Farm by throwing a harvest party in your classroom.

Based on what your students learned during their field trip, help them generate a list of foods that might be grown and/or harvested during the current season. Using that list as a guideline, bring in some of the foods for a tasting party. (If parent volunteers are available, ask them to use their favorite recipes using the foods on the list.)