

LESSON THIRTEEN: Food Preservation and Storage

Time 30 minutes

Trunk Resources

Worksheets

- #14 Pumpkin
- #15 Squash
- #24 Cache pit

Graphics

- #4 Unidentified group of tipis
- #12 Single buffalo
- #18 Wichita Grass lodge, drying rack
- #19 Wichita village scene
- #20 Women on a platform
- #24 Drying squash on spits

Objects

- Parfleche
- Pumpkin mat

Teacher Resources

Orange construction paper cut into one-inch strips (twenty strips per student), scale, samples of dried foods to taste, beef jerky, other dried foods of your choice (optional)

Objectives

1. Students will identify drying as a method of food preservation.
2. Students will compare the weight of dry and fresh food.
3. Students will construct a pumpkin mat.

Historical background

Every group of people throughout the world has developed ways of storing food for future use, for all have known times of plenty and times of want. Early hunters and gatherers sometimes enjoyed plentiful and nutritious diets. During periods of drought and other conditions which caused food shortages, they suffered famine and malnutrition. Gradually they developed resourceful preservation techniques that allowed them to store food for use during times when it was not readily available. Through trial and error they learned to preserve much of their food supply by drying it. Over an immense period of time, this process gave people the ability to maintain a stable and varied supply of food. Dried food is also much lighter and easier to transport than fresh. This worked well for purposes of trade and transportation of food on journeys such as a buffalo hunt.

Gathering wild plants and cultivating gardens of crops such as corn, beans, squash, pumpkins, and sunflowers offered many varieties for the people living on the Plains. Agriculture was important not only to the villagers growing the crops, but also to the nomads who obtained the products of the gardens by trading with the farming tribes.

Squash and pumpkins were cut into long strips and hung to dry. After drying one or two days, the strips were taken down and pounded flat with a wooden mallet. Once dried and pounded, the strips were woven into mats, folded, and stored for later use. These mats were an excellent trade item.

Corn, a main staple, was prepared for eating in several ways. It could be eaten immediately after harvest by roasting or boiling. Usually it was roasted then placed on a specially constructed arbor to dry. The dried corn was placed in hide bags and stored for future use in soups and cornmeal. Dried ears of corn could be braided together by their husks to allow for easier transport.

As well as drying vegetables and fruits, Native Americans developed remarkably effective means for preserving meat and making it into especially nutritious and long-lasting foods. Processing the meat could be done in numerous ways. Often the meat to be dried was taken from along the buffalo's muscles. Some women cut the meat from a muscle in one piece by cutting round and round. Others cut it into thin sheets, following the grain of the meat. Many could cut meat nearly as thin as a sheet of paper with their sharp flint or bone knives. Thin sheets of meat dried quickly. At a distance these large pieces of meat looked like clothes drying on a line. The meat was dried on pole racks. Once dry, it was packed into parfleches between layers of dried peppermint leaves. The mint was eaten with the meat. Some women preferred to dry the meat in the air and sun until it was half dry and then build a brisk fire and finish drying it over the coals.

"Jerky" is a Spanish rendering of a Native American word. Jerky is made by cutting boned and defatted meat into quarter-inch slices and either dipping these in strong brine or rubbing them with salt. After the meat had been rolled up in the animal's hide for ten to twelve hours to absorb the salt and release some of the juices, it was hung in the sun to dry and finally was tied up into bundles. Fire and smoke were sometimes used to hasten the drying process and to keep insects away.

Pemmican was often prepared. To make pemmican, the dried meat was placed between two pieces of rawhide and pounded until it was fluffy and light. It might be left plain or mixed with dried pounded berries, fat, and sometimes a little sugar. It was then formed into balls or was bundled into parfleches for storage. Modern dieticians have a difficult time creating a better nonperishable and easily transportable food for people expending great physical effort. Pemmican consisted of lean dried meat (which provided protein), pounded with berries (which provided vitamins), in melted fat, (which provided energy).

Dried food was placed in rawhide bags and parfleches which were then placed in a safe place for storage. Many of the semisedentary tribes dug a bell-shaped pit or cache for this purpose. Pits varied in size from six to ten feet in depth and diameter which allowed a lot of room for storage. They were bell-shaped so that the narrow opening could be easily concealed. It was important that the pit not be raided, for the storage pit was indispensable to the Indians' economy.

Items were layered in the pit for storage. The initial layer was of clean sand on the bottom and dried grasses on the sides. Sticks were then laid on the sand to keep moisture

from reaching the skin bags containing the food. Dried corn and beans made up the initial layers to be followed by containers of dried meat. Odds and ends took up the left over space. Usually a year's supply of dried meats and vegetables were stored in the pit.

The narrow neck of the pit was covered with sticks and grasses to conceal the food cache. Pits were only entered every couple of months to replenish the food supply from the seasonal hunt, or when food ran low. They were cleaned each spring and fall. Cleaning was a major job that had to be done thoroughly and quickly. All of the women of the household worked together. The younger women did the heavy work of unloading, cleaning, and reloading the pits. The older women spread the food on hides in the sun. They were in great demand for this work. Patiently and skillfully, they picked through every kernel of corn, piece of pumpkin, and pile of beans searching for rotten or mildewing food. If any mildew got into the pits, everything would be ruined and the family would go hungry. Cleaning was a very serious task.

Sources: Gene Weltfish, *The Lost Universe*; Robert Lowie, *Indians of the Plains*

Vocabulary

Arbor – A shelter of vines, branches, or lattice work.

Cache pit or storage pit – Usually a bell-shaped hole in the ground used to store food and hide it from thieves and animals.

Jerky – A meat preserved in long sun-dried strips.

Parfleche – A leather container, often decorated, used for storage.

Pemmican – A concentrated food used by Native Americans consisting of lean meat dried, pounded fine, and mixed with melted fat and sometimes berries.

Preservation – To keep free from decay.

Pumpkin mat – Woven strips of dried pumpkin pieces of pumpkin could be torn off the mat and eaten, or used to flavor soups. The mats were also used as trade items.

Rawhide – Hide that has not been processed but has been left to dry and become hard.

Storage – A space or place for storing items.

Activities

1. Ask students where they get the food they eat. Where would they get food if there were no grocery stores or restaurants? (Gardens, hunting, fishing, etc.) Ask if anyone in the class has a garden. Ask them what types of fruits or vegetables they can pick from their gardens in January? How do we keep food from spoiling so that we can use it later on? (Refrigerator, Freezer, canning, drying, etc.)

2. Without our modern technology how might we prepare and store food to keep it from spoiling? How did the Native Americans preserve their extra food? (Drying.)
3. Use graphics #4 Unidentified group of tipis; #12 Single buffalo; #18 Wichita Grass lodge, drying rack; #19 Wichita village scene; #20 Women on a platform; #24 Drying squash on spits, to talk about the types of food Native Americans dried for later use. Drying was the most widely used form of food preservation by the Native Americans. Point out drying meat in graphic #4, and drying racks in graphics #18 and #19 to illustrate how meat and vegetables were dried for later use.
4. Drying is still a very safe and popular way of preserving food for future consumption. Have the class make a list of dried food items that we eat today. (Jerky, popcorn, sunflower seeds, nuts, dried fruit, etc.)
5. Ask students how the dried food was stored by Indians. (Cache or storage pit) Show them worksheet #24 Cache pit. The cache or storage pit was similar to today's grocery store, except that the Native Americans needed to fill it themselves.
6. Use the parfleche and the pumpkin mat from the trunk to discuss that food needed to be packaged so that it could be placed in storage. Have the class try to guess what each was used for.

Parfleche – Used for storing and transporting jerky, pemmican and other items.

Pumpkin mat – Squash and pumpkins were cut in strips, dried, and woven into mats. Pieces of pumpkin could be torn off the mat and eaten or used to flavor soups. The mats were also used as trade items.

7. Hand out the twenty strips of paper to each student and have them weave “pumpkin mats”. Glue the edges together once the strips are woven. For other exercises related to pumpkins, see the extended activities section at the end of this lesson.
8. Bring in samples of dried food for the class to taste. Include such things as jerky, dried fruit, sunflower seeds, and nuts.
9. Compare the weights of fresh and dried food. Dried food is much lighter and thus is easier to transport than fresh. One hundred pounds of fresh meat is equivalent to twenty pounds of dried meat. This activity may be done in one of two ways. Dry your own food and weigh it before and after. Weigh a fresh piece of food and a similar amount that is already dried. Apple or banana slices work well for this exercise. Have students record their results on paper and make a comparison.

Extended Activities

1. Comparing a Pumpkin With an Orange

Teacher Resources

One orange, one pumpkin, two grocery sacks, a knife, a stapler, paper towels

Activity

- Before students arrive, place the pumpkin and the orange in separate sacks and staple the sacks closed.
- Have students use their senses to gather clues about what might be in each sack. Let them make guesses and then open the sacks.
- Have students make a list of five ways the pumpkin and the orange are the same and five ways they are different.
- Cut open the pumpkin and the orange for the students. Now have the students make another list of similarities and differences.



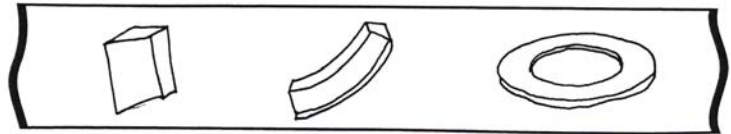
2. To Float or Not to Float

Teacher Resources

A pumpkin, a knife, paper towels, a scale, a large container of water

Activity

- Have one student weigh the pumpkin.
- Ask students to predict whether the pumpkin will float or sink in the water container.
- Have one student place the pumpkin in the water container. Ask students to explain why they think the pumpkin floats. (Eventually you may have to explain that the air space in the center makes it lighter, so it is able to float.)
- Ask students if they think small pieces of pumpkin will float.
- Have the pumpkin cut into different shapes, chunks, concave pieces, thin ringed cross sections, etc. If you have younger students you should cut the pumpkin into smaller pieces for them. If you have older students you may want to let them cut up the pumpkin.
- Have students guess which pieces will float and which will sink.
- The ringed cross sections should float best because the weight of the piece is spread across the water's surface.



3. Storage Pit Exercise

Trunk Resources

Worksheet: #24 Cache pit

Activity

- a. Outline a storage pit on the wall or bulletin board and have students fill it with the types of food that would have been stored there. Use pictures of different types of foods (Worksheets #13 Corn, #14 Pumpkin, and #15 Squash), miniature parfleches from the Transportation lesson on page 26, and construction paper pumpkin mats in this lesson.

4. Food Diary Exercise

- a. Have the class keep a food diary for a day or week and compare what we eat today with what the Native Americans ate. Also compare the nutritional value of the foods.

Cross References

- a. Have students attempt The Many Uses of Corn lesson beginning on page 52, the Hunting lesson, beginning on page 57, or the Buffalo lesson beginning on page 92.
- b. Have students design and construct a container for food storage by making a parfleche. See worksheet #12 Making a Parfleche.
- c. Read the book *Corn is Maize* with emphasis on the food storage section (page 22).
- d. Have students make some of the recipes from the manual that require dried food such as corn and bean soup, parched corn, shuck bread, pumpkin dumplings, and pemmican. The recipes are located at the back of the manual.