

HARVEST LESSONS

THIS MONTH'S THEME:

APPLES

Lesson Plan



HARVEST LESSONS ARE A FUN WAY FOR K-4 CLASSROOMS TO EXPLORE, TASTE AND LEARN ABOUT EATING MORE FRUITS AND VEGETABLES EVERY DAY.

ACTIVITY SUMMARY

ACTIVITY	GRADE LEVEL	CURRICULUM CONNECTION	TIME
Intro	all	Literacy: speaking, listening Science, social studies: evaluating claims to determine whether they are true	10 min.
Taste Test	all	Literacy: speaking, listening Math: measurement, graphing/tallying responses	20 min.
#1 Observe, Draw & Discuss Apples	all	Science: classification, observation	15 min.
#2 Apple Sequencing	all	Science: life cycles	10 min.
#3 Importance of Apples Activity	3-4	Social Studies: past and present Literacy: listening and speaking	20 min.
#4 Apple Literature	all	Literacy: listening comprehension	20 min.
#5 Apple Songs	all	Music and movement	5 min.
#6 Mapping the History of Apples	3-4	Social Studies: history, geography	20 min.
#7 It's a Small World	3-4	Social Studies: geography	10 min.



INTRODUCTION (10 MINUTES)

ALL GRADES

TRUE OR FALSE?

Introduce or reintroduce yourself to the class. Begin with a fun interactive true or false activity. When a statement is true, students will stand up. When they believe a statement is false, they will sit down.

1. The very first apple trees grew in North America.

False! Apple trees originated in Kazakhstan, a small country near Russia.

Then people brought apples to China, and then to Europe, and then when Europeans came to North America in the 1600s, they brought apples with them.

2. There once were 14,000 different kinds of apples growing in the United States.

True! In 1905 the U.S. Department of Agriculture published a 400 page book listing more than 14,000 distinct types of apples grown in the U.S. Now there are a lot fewer kinds of apples because fewer people are farmers, and growers favor sweet varieties for eating, rather than some older more tart varieties for cider.

3. You can only eat local apples in the fall.

False! If kept at a cool temperature with the right amount of moisture, apples can keep for a long time! You can find Vermont & New Hampshire apples at some grocery stores all year long! If your grocery store doesn't have local apples all year, you can make apples into applesauce and can it, and eat local apples all year that way.

4. Johnny Appleseed was a real person.

True! His real name was John Chapman, and he brought hundreds of apple seeds west. He started several different tree nurseries, and sold apple trees to other white settlers who were heading west.

5. Red delicious apples are the most tasty kind.

False! Most people think they are one of the least yummy kinds of apples. They're grown because they look very beautiful and delicious, and are very hard so they aren't easily bruised while traveling across the country in trucks to grocery stores.

6. Apples are the healthiest fruit because "An apple a day keeps the doctor away."

False! Apples are very healthy, because they have lots of Vitamin C, and lots of fiber, which helps your digestive system do its job, as well as some phosphorous and some potassium which are both important nutrients. But other fruits have more types of vitamins and nutrients, and a higher amount per serving. The saying "An apple a day keeps the doctor away" was invented by apple growers in the early 1900s because they wanted people to buy more apples.



(introduction, continued)

Ask these focusing questions throughout the lesson:

- What is the part of the plant that we eat?
- What color is it?
- How does it help our body?
- Where does it originate?

HEIRLOOM APPLE TASTE TEST (20 MINUTES)

PREPARATION

Gather varieties of apples that grow locally. Try to get varieties that show the diversity of colors and sizes available. Bring in an apple slicer or knife and cutting board, careful to keep sharp items away from children.

PROCEDURE

Ask, "Is every apple the same?" and then explain that there are different kinds of apples, and that "You're going to see if you can taste the difference!" Say the name of a variety, and write it on the board. Then have each student taste it. Ask them to describe what it tastes like, and record the words they say. For younger kids, you might need to give them some examples of words to use (sweet, sour, tart, tangy, crunchy, soft, mushy). Do this for every variety. Then ask the class to vote on their favorite. Record the votes in a chart with tallies.

ACTIVITY #1 (15 MINUTES)

ALL GRADES

OBSERVE & DRAW APPLES

MATERIALS

- Journal or paper
- Colored pencils
- Apples (whole and sliced)

PROCEDURE

Have students draw and label the parts of an apple. Can they label skin, seeds? After conducting an apple taste test they can write in their journals about their experience. What was their favorite variety? Did they learn something new about apples today?



ACTIVITY #2 (10 MINUTES)

ALL GRADES

APPLE SEQUENCING

Ask students “How do we get apples anyways? Where do they come from?” Take a few responses. Then explain that there are a lot of steps that go into growing apples. With younger students (K-2), go over what each card represents (out of order though).

Explain that students will try to put them in the right order. Give a deck to each student or pair of students, and give them 5 minutes to arrange them. Then ask a few students or pairs to share the sequence they came up with. Find and discuss the correct order as a class.

ACTIVITY #3 (20 MINUTES)

GRADES 3-4

IMPORTANCE OF APPLES

Hand out a Venn diagram template (see appendix) to each student, and explain how a Venn diagram works. Draw your own Venn diagram on the board. “We’re going to use our Venn diagram to compare how apples used to be important here 100 or 200 years ago, and how they are important now.”

Label one circle “Past,” and one circle “Present” or “Today.” Have students brainstorm reasons apples are and were important. Use props (see attached “List of Apple Props” for ideas) to prompt them. Guide them to record the reasons in the appropriate part of their Venn diagram (ask them where a reason should go, correct them if necessary, record the reason in one or two words on the board, then give them a little time to record it in their own diagram). When you run out of reasons or time, review the diagram and what it means with the class. You can follow this activity with a journal activity.

SUGGESTED PROPS

- Fresh apple (or plastic model)
- Empty vitamin bottles for:
 - Vitamin C
 - Potassium
 - Fiber
- Bottle of cider vinegar (empty or full)
- Jug of cider (empty or full)
- Applesauce container (jar, package, cup)
- Jelly jar or pectin packet
- Piece of firewood
- Photo of a rocking chair



(activity #3 continued)

- Pie pan or apple pie toy or photo
- Picture, figurine or stuffed animal of some animals that eats apples and/or apple leaves or saplings, such as:
 - white tailed deer
 - skunk
 - raccoon
 - birds (ruffed grouse, cedar waxwings, woodpeckers, yellow-bellied sapsuckers, blue-jays, crows and many more)
 - caterpillars (viceroy butterfly larva, eastern tent caterpillar and many many more)
 - cow
 - horse
 - squirrel
 - mouse
 - black bear
 - fox

Write in journal about why apples are important (10 min): Explain at least one reason why local apples are or were important, and draw a picture that illustrates that reason. For second grade and up, ask for full sentences. For third and fourth graders, ask for one reason they were important in the past and one reason they are important now. Remind students that they can use their Venn diagram to help with what to write.

ACTIVITY #4 (20 MINUTES)

ALL GRADES

APPLE LITERATURE

There is an abundance of books about this popular fruit. Here's a list of favorites from Vermont FEED. You may have a favorite of your own.

- [Amazing Apple Book](#) (as a teacher's resource)
- [My Apple](#) by Kay Davies and Wendy Oldfield (fabulous photos)
- [The Life and Times of the Apple](#) by Charles Micucci
- [An Apple Tree Through the Year](#) by Claudia Schreiber
- [The Seasons of Arnold's Apple](#) by Gail Gibbons
- [How Do Apples Grow](#) by Betsy Maestro
- [Albert's Field Trip](#) by Leslie Tryon
- [The Apple](#) by Joy Cowley (The Wright Group)
- [The Story of Johnny Appleseed](#) by Aiki
- [Apple Picking Time](#) by Michele Benoit Slawson
- [Applesauce](#) by Shirley Kurtz
- [How to Make an Apple Pie and See the World](#) by Marjorie Priceman
- [The Apple Pie Tree](#) by Zoe Hall



(activity #4 continued)

- Apple Picking Time by Michele B. Slawson
- The Life and Times of the Apple by Charles Micucci
- Ten Apples Up on Top by Theo LeSieg (Dr. Seuss)
- Johnny Appleseed by Steven Kellogg

ACTIVITY #5 (5 MINUTES)

ALL GRADES

SING APPLE SONGS

Sing these fun apple songs, to the tune of some familiar children's songs.

DO YOU KNOW THE APPLE MAN?

(sung to the tune of The Muffin Man)

Oh, do you know the apple man
The apple man
The apple man
Oh, do you know the apple man
Who loves to grow his trees

Oh, he has a great big smile
A great big smile
A great big smile
Oh, he has a great big smile
And loves to grow his trees
Oh, he has a big red apple
A big red apple
A big red apple
Oh, he has a big red apple
To bake a pie for me
(You can substitute other products for the pie,
such as applesauce, apple muffin, apple crisp)

HAVE YOU EVER SEEN AN APPLE

(to the tune of Have You Ever Seen a Lassie)

Have you ever seen an apple,
An apple, an apple
Have you ever seen an apple
That grows on a tree?
A red one, a yellow one
A green one, a golden one
Have you ever seen an apple
That grows on a tree?

APPLES, APPLES

(to the tune of Twinkle, Twinkle, Little Star)

Apples juicy, apples round,
On the tree or on the ground.
Apples yellow, apples red,
Apple pie and juice and bread!
Apples crunchy, apples sweet,
Apples are so good to eat

APPLE

(to the tune of BINGO)

I know a fruit that grows on trees,
And apple is its name, oh!
A - P - P - L - E
A - P - P - L - E
A - P - P - L - E

And apple is its name, oh!
In summer and in early fall,
It's time to pick an apple! (repeat A-P-P-L-E)
It may be sweet or may be tart,
It's red or green or yellow! (repeat A-P-P-L-E)

A MacIntosh or Granny Smith,
A Winesap or Delicious! (repeat A-P-P-L-E)
Make applesauce or apple juice
Or apple pie with apples! (repeat A-P-P-L-E)



ACTIVITY #6 (20 MINUTES)

GRADES 3-4

MAP THE HISTORY OF APPLES

MATERIALS

- A copy for each student of Harvest Lessons map (see appendix)
- One copy of the Apple Timeline & Mapping Directions to project, or one copy per student
- An atlas for each student or pair of students
- Colored pencils

PROCEDURE

Pass out copies of the Harvest Lessons map to each student. Project or pass out the Apple Timeline & Mapping Directions. Instruct students to follow the directions to map the history of apples!

ACTIVITY #7 (10 MINUTES)

GRADES 3-4

IT'S A SMALL WORLD

See attached sheet for background information and instructions on this activity from Healthy Food from Healthy Soils, which uses apples to demonstrate the finite nature of earth's resources.

OTHER IDEAS

- See attached background information on some of the more complicated parts of apple reproduction – pollination, grafting, and the difference between an heirloom and a hybrid
- Extend the heirloom apple taste test into a version of Shelburne Farms' Posy Poetry activity
- Ask students to invent a variety of apple – they will name it, describe why it's worth growing (e.g., it tastes a little like strawberries, it lasts a long time, it is a beautiful pink color), and make an illustration of their imaginary apple variety
- Plan a field trip to an apple orchard

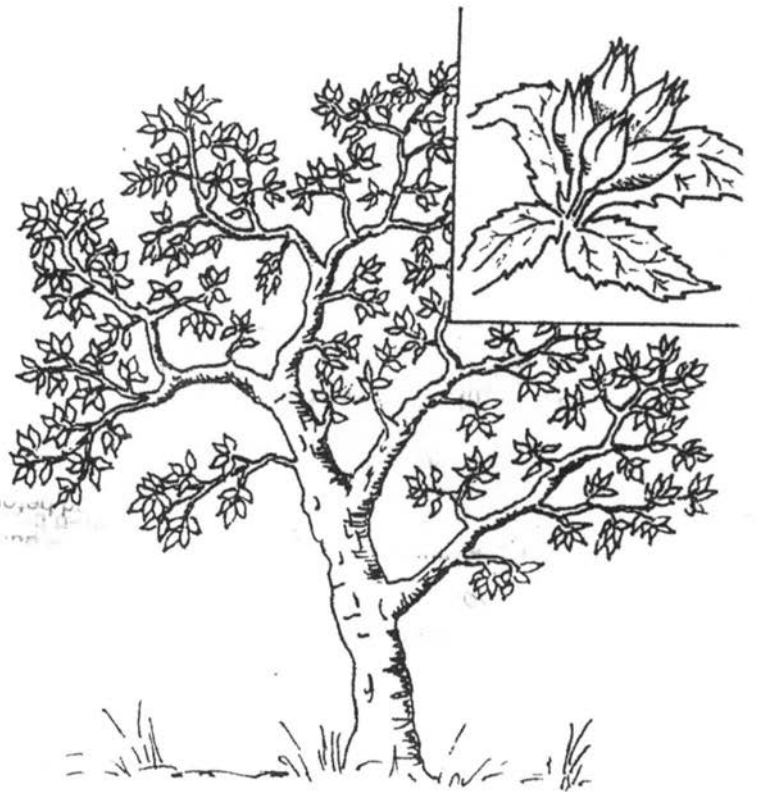
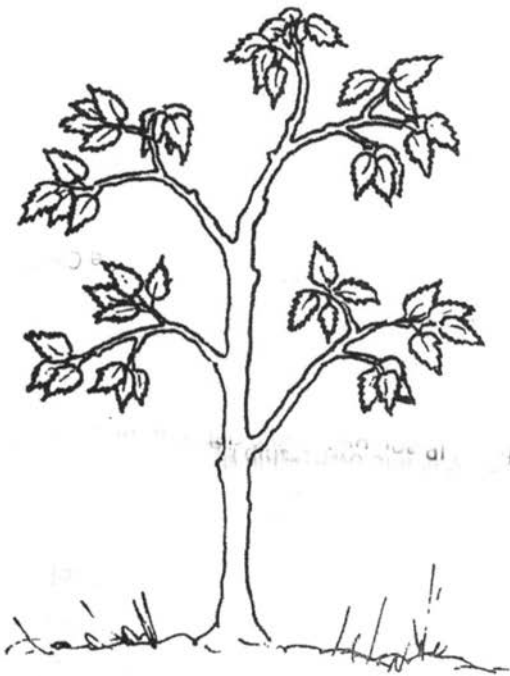
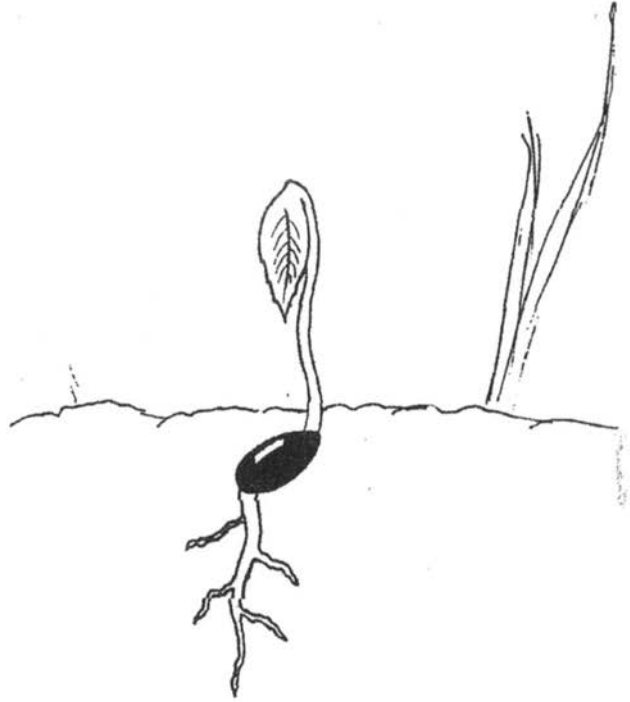
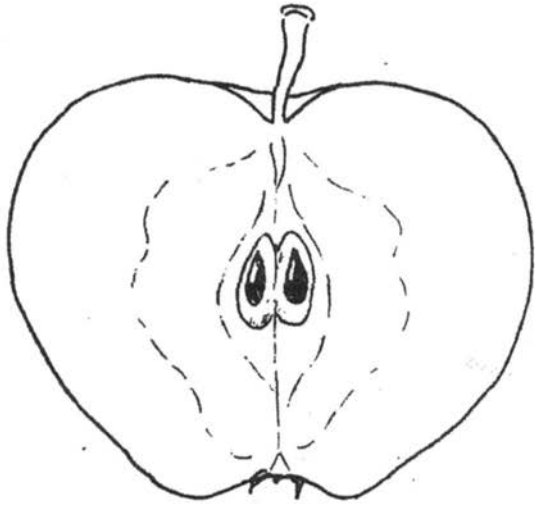
CLOSINGS

ACKNOWLEDGEMENTS

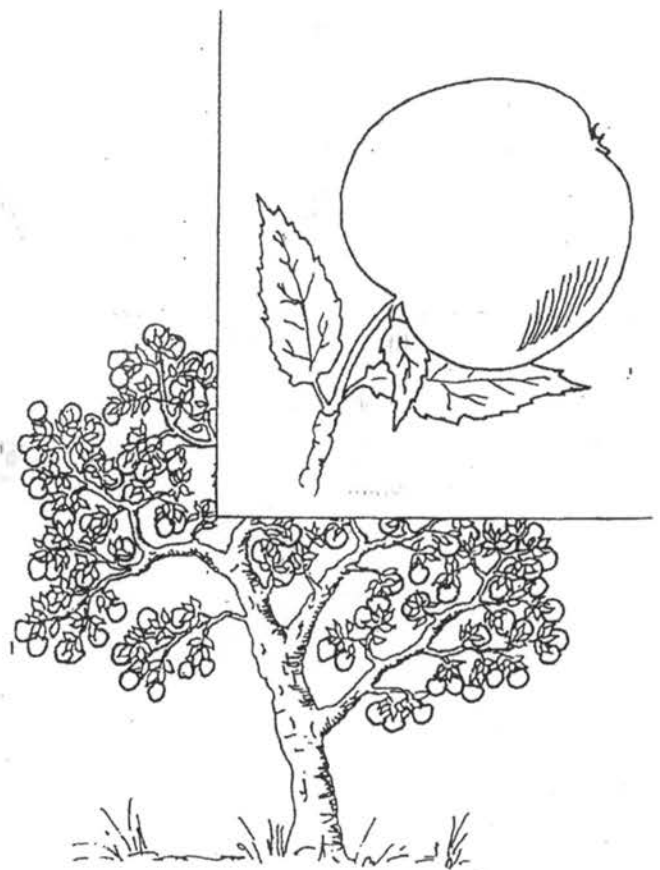
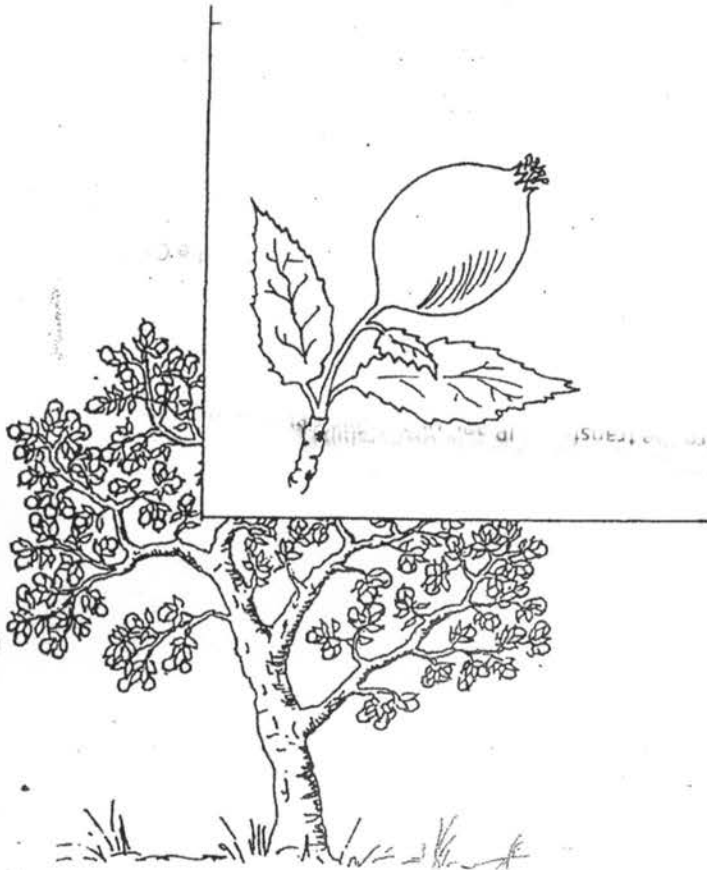
The following people contributed to developing this lesson plan: Chloe Powell, Aurora Coon, Cat Buxton, Karen Ganey and Kaitlin Haskins.

APPENDIX SEE WORKSHEETS THAT FOLLOW

Activity #2



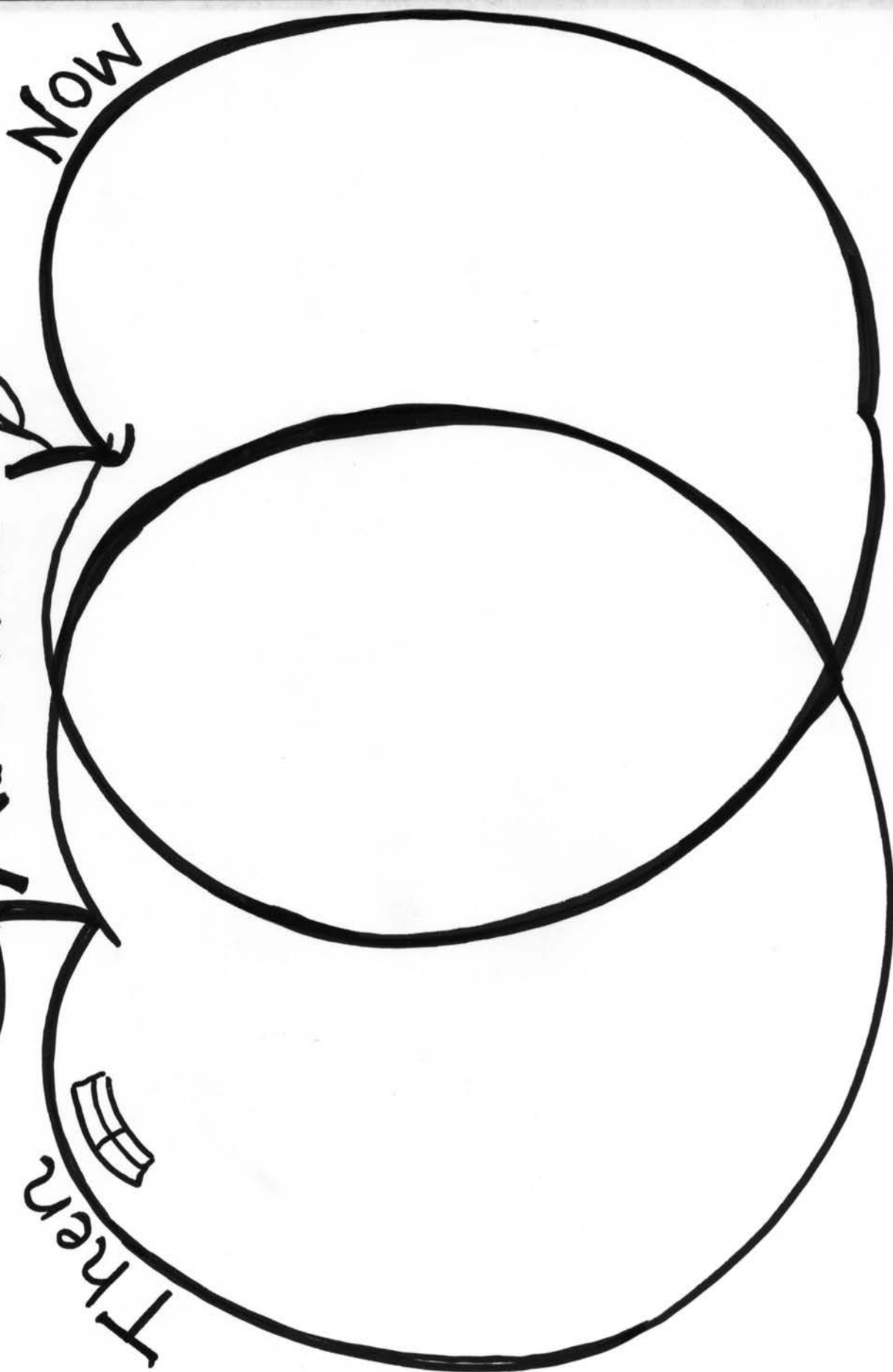
Activity #2



APPLES

NOW

Then



CREATING AN APPLE TIMELINE *Activity #6*

Not everyone agrees where apples first came from, but most scientists think it was somewhere in Central Asia, in a mountain range called the Dzungarian Alps. These mountains separate the countries that are now known as Kazakhstan, Kyrgyzstan, and China.

#1: On your map, color red the area where Kazakhstan, Dyrgyzstan, and China meet.

By 1500 BC, there are records showing the sale of apples in Mesopotamia. Mesopotamia is an ancient civilization that no longer exists. What used to be Mesopotamia is now the countries of Iraq, Kuwait, Iran, Syria, and Turkey.

#2: On your map, shade in yellow the countries of Iraq, Kuwait, Iran, Syria, and Turkey to show where Mesopotamia was. Then, draw an arrow from the area you shaded red to the area you shaded yellow.

In 1300 BC, an Egyptian pharaoh ordered apples to be grown around the Nile River.

#3: On your map, shade in Egypt as blue.

By 328 BC, Alexander the Great, the king of Macedonia, brought apples from Kazakhstan to his kingdom in Macedonia. Macedonia is still a country today but is smaller than when Alexander the Great ruled it.

#4: On your map, shade in orange the country of Macedonia and also the top Northern part of Greece to show Alexander the Great's huge kingdom. Next, draw an arrow from where you shaded red to Macedonia to show how the apples travelled.

By 100 AD, apples had spread throughout Europe, as far North as Germany!

#5: On your map, shade Europe in green as far North as Germany.

Apples finally came to North America in 1625 when the first colonists from Europe came over. The first apple orchards were planted in Boston.

#6: On your map, draw a star where Boston is to show the first apple in North America. Then, draw an arrow from Europe to Boston to show how apples traveled over the ocean to get to America.

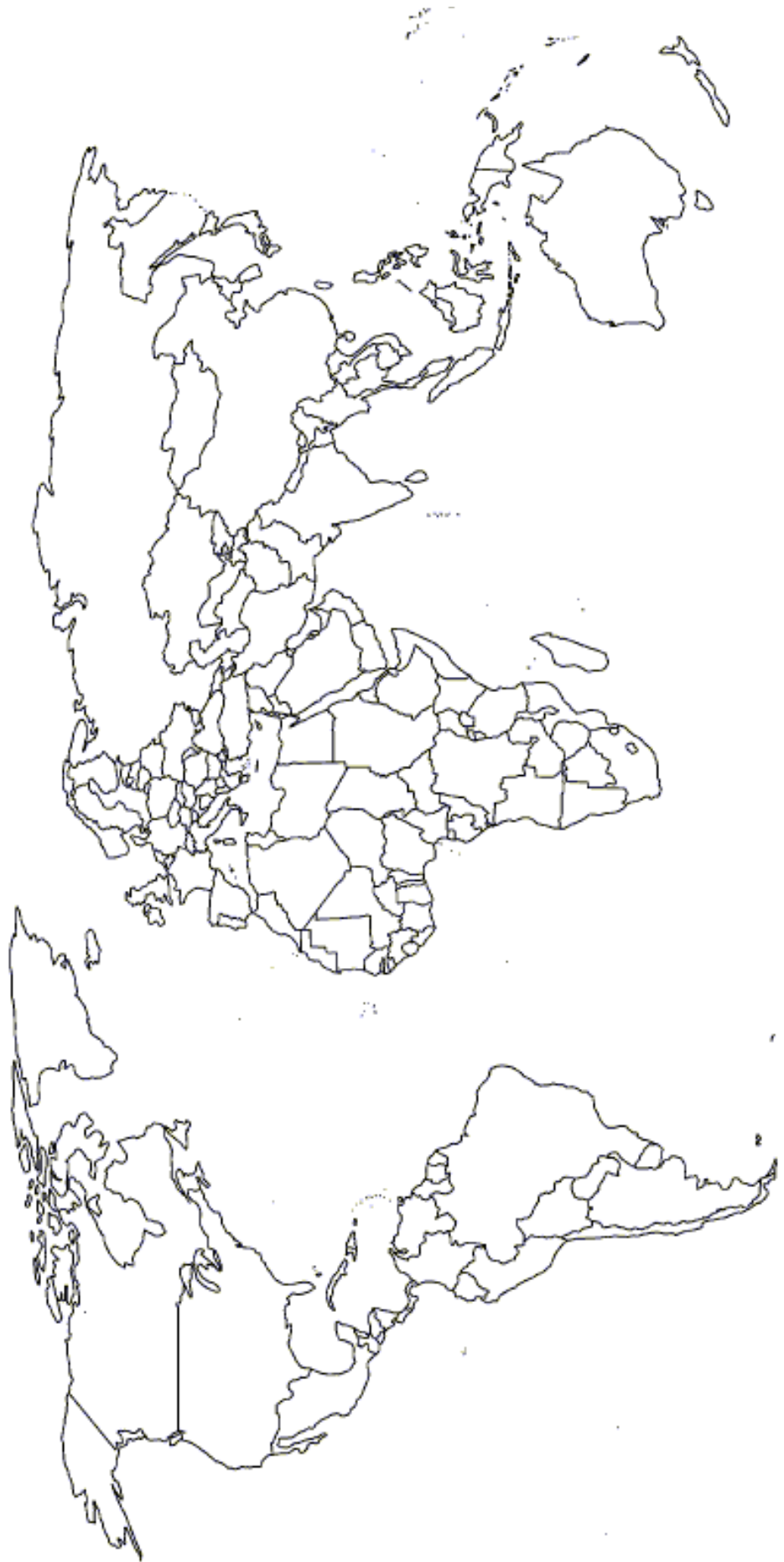
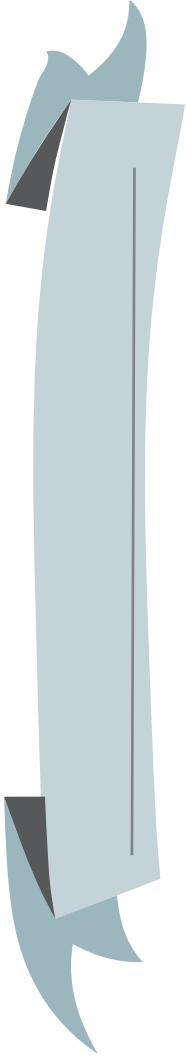
Johnny Appleseed was a real historical figure, a man named John Chapman who planted nurseries as he travelled through Pennsylvania, Ohio, Indiana, Illinois, and Northern Virginia starting in the 1790s.

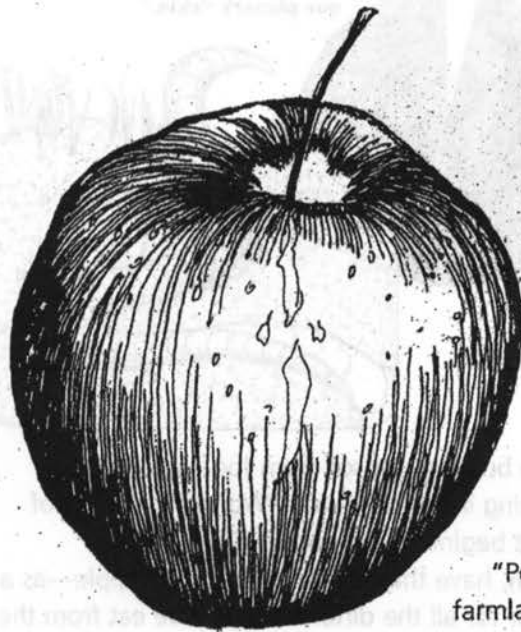
#7: Draw a path between these states.

Today the largest producers of Apples are China, the United States, and Turkey.

#8: Label these countries.

THIS MONTH'S FOOD:





It's a Small World¹

Demonstrate the finite nature of earth's resources

Recommended Grades 3-6

♦ Math

♦ Geography

"They're making people every day, but they ain't makin' any more dirt." —Will Rogers

"People must fully understand the irreplaceable value of prime farmlands, and the ominous meaning of the war between the bulldozer and the plow. When farmland goes, food goes. Asphalt is the land's last crop." —M. Rupert Cutler, former Assistant Secretary of Agriculture for Natural Resources

Goals

Learn that soil is an important and finite natural resource and see how little arable land is available for food production. "As topsoil goes, so goes the food."

Key Points

- ♦ We have less and less farmable land left for growing food.
- ♦ Knowing this makes us realize how precious soil is.

Background

Most plants can't grow without soil. In our world today, only about one-half acre of arable land per person is available for food production.² The earth's soil surface can be likened to the skin of fruits and vegetables—often the most nutritious layer of the food. This "skin" is made up of minerals, rocks, organic matter, microorganisms, air, and water in varying proportions from one part of the globe to another. It is this thin and fragile layer of topsoil on the earth's surface that supports our entire agricultural ecosystem, permitting us to grow vast quantities of food. However, the volume of productive

healthy topsoil is diminishing at the same time as the human population escalates.³ Productive topsoil can be degraded or lost to erosion by moving wind and water, development, pollution, pesticide use, intensive single-crop agriculture, and by poor soil management or grazing practices.

Once lost or degraded, topsoil takes a long time to regenerate. It can take 500 years for a single inch of topsoil (25 mm) to accumulate.⁴ But through proper land-use planning and soil conservation techniques, soil can be saved and improved. For instance, farmers can use cover crops, field rotation, windbreaks, and contour planting (tilling and planting parallel to slopes and drainage) to reduce soil loss. They can replace nutrients and improve soil quality by adding organic matter to the soil. Towns can plan carefully where new houses and businesses will be built and preserve farmland for open space. Urban areas can control run-off water from paved surfaces, protect exposed soil by planting grasses or native plants, and construct new streets mindful of environmental impacts. All of these things can help the long-term economic, ecological, and social condition of a community.

¹ Indicators, Feb 26-27, 1999. Dr. Pimentel states, "Per capita world cropland is .27 ha."

² Ibid; <http://css.snre.umich.edu/> To sustain adequate crop production, a soil depth of 150 mm is needed. Center for Sustainable Systems, University of Michigan.

⁴ Soil Degradation by R. Lal and B. A. Stewart. Springer-Verlag, NY, 1990.

¹ Adapted from: The Natural Resources Conservation Service, U.S. Department of Agriculture, PO Box 2890, Washington, DC 20013.

² "Ecological Resources and Agricultural Sustainability" by David Pimentel in *Proceedings of A Life Cycle Approach to Sustainable Agriculture*

What You'll Need

Large apple(s); cutting board; knife; compost bucket (optional); OR paper; crayons/pencils; and scissors.

Getting Ready

Decide whether you want to prepare one "apple" diagram for each student or just demonstrate the activity.

How to Do It

Begin by using a large apple (with washed skin) to represent earth. Ask the class: How much of the earth-apple represents the soil in which food can grow (also known as arable land)?

Demonstrate in front of the class—"Julia Child" style—while your students follow along with their own apples or paper apples. Younger children or those with special needs can draw a picture of an apple with the skin on it (a generous circle, with a stem and leaf). The "skin" should be drawn/colored only on the circumference. If using paper apples, label each piece that is cut.

Cut the apple into four equal sections. Ask students what these represent. (Three parts represent the earth's water: oceans, lakes, rivers, and streams, one part represents the land.) Put aside the three water parts.

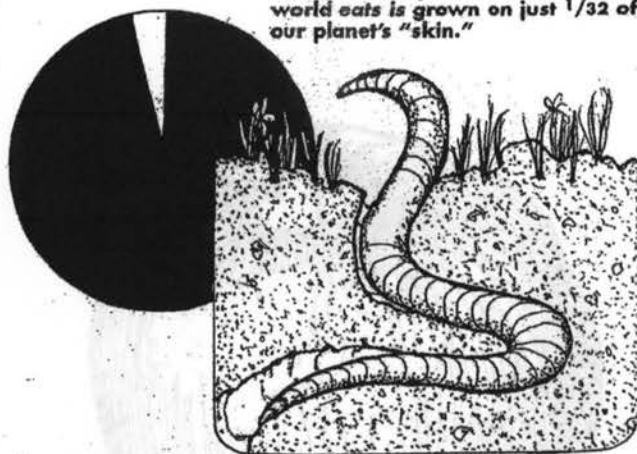
Cut the land portion in half lengthwise. One part represents deserts, swamps, Arctic/Antarctic terrain, and mountains. The other part symbolizes where people live and grow food. Set aside the non-usable land part.

Slice into four equal parts the remaining piece (which represents land where food may be grown). Put aside three of them for the places that are too rocky, wet, hot, developed, or degraded to grow food. (The piece left is $\frac{1}{32}$ of the apple.)

Peel the last piece. This small bit of peel represents the earth's soil on which the whole earth's population depends for food.¹

Next, ask students for their reactions to the exercise. With so little of the earth available for growing food, what can be done to save soil or create new soil? (Soil conservation techniques help retain topsoil and compost application helps return nutrients and structure.) Describe how composting

Where does your lunch come from? Most of what you and the rest of the world eats is grown on just $\frac{1}{32}$ of our planet's "skin."



can help build up topsoil from food waste. (See composting information in *A Worm's-Eye View of Compost* beginning on page 147.)

Then, have them taste some of the apple—as a metaphor for all the different foods we eat from the earth. Hold up the remaining apple parts and discuss the options for "disposing" of them. If your class is already composting, or you have a compost system at home, collect the apple parts to compost. (This may be a good place to get your students interested in composting as the creation of soil amendments helps save soils.)

Classroom Conversations

- ◆ What would happen if we lost most of our topsoil?
- ◆ Why are some areas losing farmland?
- ◆ Of all the apple parts discarded as undesirable for growing food (i.e., oceans, deserts, developed or degraded land, land that's too wet or too dry), could any of them be altered in some way to turn into arable land?
- ◆ Invite your students to discuss what will happen if we have smaller and smaller amounts of soil yet more and more people who need food. Is that why some people are hungry? (Some of the reasons people are hungry include poverty, too few jobs with adequate pay, inequitable global income distribution, lack of education—especially for women, natural disasters, social injustice, political causes and lack of access to nutritious food. See the Resources in *Grow a Row*, pages 187–89.)

¹ Please note that this exercise is representational only and not an exact numerical calculation.



Action

Start a school bulletin board, mural, or poster about the earth's soils. Title it "Save Our Soils" and list the things the class knows about soil, what they want to learn, and what they can do to save it. Have students collect magazine photos of all different types of everyday objects and figure out which ones come from the land, especially which ones come from farmland.

Want to Do More?

- ◆ Ask older students to think about their own community. Do they have farmland? If not, did their community once have farmland, and what happened to it? How could we protect the farmland we have left? Invite them to research and calculate and/or map the diminished land available for farming due to development and sprawl. (Check with your municipal office,

Q: What's the difference between soil and dirt?
A: Dirt is what's under your fingernails.

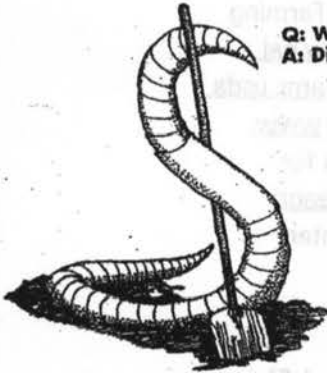
library, historical society, state agriculture department.)

- ◆ Use the apple exercise to practice applying fractions or percentages. At the end of each cut, ask what fraction remains?

- ◆ Create a compost pile or vermicomposting system (see related lessons

in *A Worm's-Eye View of Composting*, page 147).

- ◆ Make a bulletin board illustrating the soil layer, using information and diagrams available from your regional Cooperative Extension office or Natural Resources Conservation Service.
- ◆ Current events assignment: Watch the news for items related to soil loss, areas of famine or drought, or other farm-related news.
- ◆ Connect history to this activity by discussing the Dust Bowl era. (Listen to or teach Woody Guthrie's *Dust Bowl Ballads* (re-released by Buddha Records on CD in 2000. Includes the original liner notes). www.woodyguthrie.org See the *Smithsonian* article, "The Dust Bowl" by Michael Parfit, Volume 20, Issue 3, June 1989. *The Grapes of Wrath* by John Steinbeck also describes the Dust Bowl.



Lunchbox Locator

Here is a sample lunch. Ask students to figure out the ingredients in a given dish and locate them in this lunchbox. (Examples of possible answers appear in parentheses.)

Salad (carrots, lettuce, celery, tomatoes, soil)

Juice (fruit, tree, soil)

Bread (grains [wheat, corn, yeast], water, yeast, salt, soil)

Cheese (cow [grass and grain], soil)

Fruit salad (oranges, apples, bananas, watermelon, milk, leaves, water, soil)

Cookies (corn, chickens and grain, flour, wheat)

Hot sauce (peppers, salt, spices, water, soil)

They have ingredients that live in dirt & its source.

Shouldn't we have the "Dirt Made My Lunch" song?

Dirt Made My Lunch

Chorus

Dirt made my lunch, dirt made my lunch.
 Thank you dirt, thanks a bunch!
 For my salad, my sandwich, my milk, my lunch.
 Dirt made my lunch!

Dirt is a word we often use

When we talk about the earth beneath our shoes.
 It's a place where plants can sink their toes,
 And in a little while a garden grows.

Chorus

A farmer's plow will tickle the ground.
 You know the earth has laughed when wheat is found.

The grain is taken and flour is ground,
 For making a sandwich to munch on down.

Chorus

A stubby green beard grows upon the land.
 Out of the soil the grass will stand.
 But under hoof it must bow,
 For making milk by way of cow.

Chorus

Used with permission. Written by the Banana Slug String Band, P.O. Box 2262, Santa Cruz, CA 95063; 888-327-5847 www.bananaslugstringband.com