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Late Summer–FaLL

CHAPTER 1

Corn

Corn is a staple in many parts of the world, especially throughout Central and South a merica. In many parts of the world, corn is called maize. a lthough it is now grown the world over, it originated from central m exico, where native farmers began to cultivate wild corn (called *teosinte*) about 7,000 years ago. t hese early corn plants had ears that were the size of a person's thumb. o ver the course of thousands of years, native people brought corn north through the a mericas. When e uropean settlers came to the New World, they had never seen corn before and were amazed at its many uses. Native a mericans used the kernels for food, the husks for preparing tamales, the silk for medicinal teas, and the stalks for animal fodder. t oday, people also use many by-products made from corn, including cornmeal, flour, oil, syrup, and starch. m any different corn varieties are used for specific purposes. Sweet corn is the type of corn that people eat fresh, and its ears can range from thumb size to arm length,

depending on the variety. Popcorn is dried, then eaten after being heated until the kernels pop open. Some types of corn, called *dent* and *flint* corn, are dried and made into flour and *masa,* which is used to make tortillas. most of the world's corn is fed to animals.

Seasonality and Growing Conditions

California-grown sweet corn is available from June through early o ctober. Like all grasses, corn is pollinated by the wind. When the corn plant is midway through its growing season, ears will appear on the stalks. For pollination to occur, pollen clinging to the tassels on top of the stalks must be blown onto the corn silk extending out of the ears. o nce pollinated, the ears will continue to grow and develop kernels. Farmers use a simple test to determine whether sweet corn is ripe for picking. t hey pull back the husk and pierce a kernel with their thumbnail. If a clear fluid appears, it is too early to harvest, while a thick, milky substance means the corn is overly mature. a t hin, milky liquid means it is time to harvest the ears. most sweet corn varieties are harvested at this milk stage, although they may vary in sweetness, color, and kernel size.

Sustainable Farming Issues

In general, if corn is grown under the right conditions—with well-drained soil and lots of sun—problems with pests or disease can be kept under control.

a c ommon disease is corn smut, which makes the kernels swollen and black. Corn smut is not harmful to eat. In fact, it is a favorite delicacy in mexican cooking. Corn ear worms are a common pest. If you find worms burrowing in the tops of the ears, simply discard or cut away the affected portion. t he rest of the corn is still fine to eat. t he corn ear worm will grow up to be a little speckled moth. Corn smut does not affect enough ears to be a problem. Corn ear worm may be avoided by planting the corn early in the spring and harvesting in early to midsummer.

Sustainable agricultural practices include the use of Bt, a naturally occurring bacterium that is harmless to animals and beneficial insects and develops into toxic form only once the corn ear worm ingests it. When people eat vegetables, such as corn, that have been sprayed with Bt, no Bt toxin is consumed. t hat is why this natural pesticide is a part of the strategy for corn ear worm control used by farmers practicing sustainable agriculture.

Selection, Storage, and Nutrition Information

t he natural sugars in corn begin to convert to starch the moment the corn is picked, so corn ideally should be bought as fresh as possible and eaten immediately after purchase. When choosing ears, check the husk, silk, and kernels for freshness. t he husk should still have a healthy green appearance, while the silk should be golden and sticky underneath the husk. Check the kernels to ensure they are small and plump. Perform the thumbnail test described above. Corn is a good source of fiber and potassium.

RECIPE

Corn & Avocado Salad with Cilantro

Preparation t ime:	30 minutes
Cooking t ime:	None
t otal Lesson t ime:	45 minutes
recipe Le vel:	easy

Background

this lesson of fers a great opportunity to introduce three varieties of sweet corn: yellow, white, and bicolor. each may v ary in sweetness, intensity of color, and size of kernel. Before making the recipe, students can make detailed observations of the common characteristics of corn. ask students to draw and label parts; as students shuck corn, have them discuss the functions of the different parts. If you cannot find three arieties, try two (yellow and white are commonly available). If you can find only one, use it and focus the lesson on the parts of the corn

Objectives

Students will be able to:

Identify three different varieties of sweet corn.

State the parts of the corn ear (kernel, cob, stem, husk, and corn silk).

understand the functions of dif ferent parts of the corn ear.

Ingredients

For a class of 20:

- 10 ears corn (three different varieties or colors, if possible)
- 2 avocados
- 1 red onion
- 3 limes, large
- 1 bunch cilantro
- 1 tablespoon rice wine vinegar
- 1 teaspoon salt
- ½ cup pure olive or canola oil

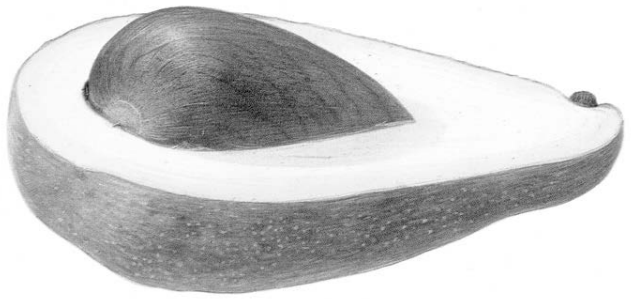
Materials

For the class:

- 1 large mixing bowl
- knife
- cutting board
- paper towels

For each group of 4:

- 2 cutting boards
- 2 knives
- 2 small bowls
- 4 napkins
- 4 plates
- 4 forks
- journals



Preparation

1. Wash the cilantro. Pat dry with paper towel.
2. ha ve students wash their hands. discuss proper methods of handling food.

Safety Precautions

re view safety precautions for using knives.

Making the Recipe

1. Provide each group of students with two ears of corn, each a different color variety. Give students a couple of minutes to examine and record observations about each variety. ha ve groups switch corn with other groups so that everyone has an opportunity to examine all three varieties of corn.
2. demonstrate shucking the corn and then cutting the k ernels from the cob. It is best to cut each cob in half and then place the flat edge of the cob on the cutting board to cut the kernels. (t eachers may want to do that themselves if the students are very young. more experienced students can stand the whole cob on end and cut off the kernels that way.)
3. demonstrate remo ving the seed, scooping out the flesh, and chopping the vocado. ha ve each group of students shuck and cut two ears of corn. di vide the tasks so that different groups prepare the avocado, peel and finely chop the onion, hal e and juice the limes, and chop the cilantro.
4. ha ve students place their prepared ingredients into the small bowls. Gather the bowls and mix the ingredients into a large mixing bowl. First add onion and corn, then the juice of two limes, vinegar, salt, and oil. Stir well and taste for salt and acidity. mix in the avocado.
5. ha ve a volunteer taste and add more lime juice and salt if needed. Serve and eat.
6. While the students eat, have each group share its observations about the different varieties of corn. Facilitate the discussion so that the class understands the similarities and differences among the varieties of corn.
7. Clean up materials. If you have a school or classroom compost or worm bin, place the food scraps there.

RECIPE

Corn on the Cob with Chipotle Butter

Preparation t ime:	20 minutes
Cooking t ime:	10 minutes
t otal Lesson t ime:	1 hour
recipe Le vel:	easy

Background

Like the previous corn recipe, this is a great lesson for discovering the three major varieties of sweet corn: yellow, white, and bicolor. Students can try all three varieties and discuss similarities and differences in their basic characteristics, such as kernel color, size, pattern on the cob, size of cob, color and texture of silk and husk. Chipotle chiles are smoked chiles. the y may be found in small cans in the hispanic section of a grocery store. If chipotle chiles are not a vailable, offer students mild chile powder to sprinkle on the cooked corn along with a squeeze of lime and optional salt and butter.

Objectives:

Students will be able to:

Identify three different varieties of corn.

State the parts of the corn (kernel, cob, stem, husk, and corn silk).

Ingredients

For a class of 20:

- 10 ears of corn (3 different color varieties, if available)
- 1 or 2 chipotle chiles
- 4 tablespoons butter
- 1 lime
- 1 teaspoon salt if butter is unsalted
- chile powder (optional)

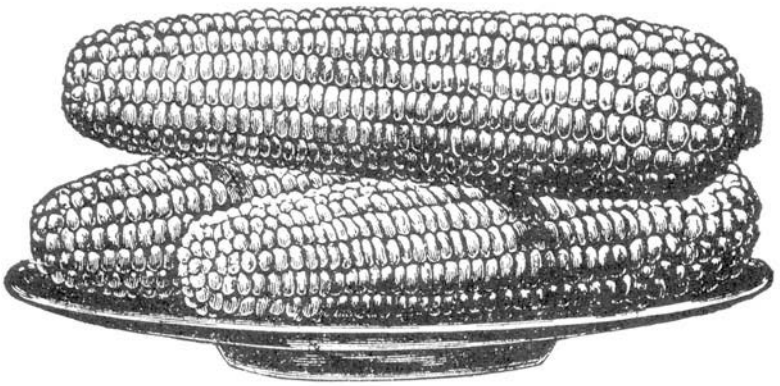
Materials

For the class:

- large pot with lid (8-quart)
- water
- mixing spoon
- hot plate
- 1 small mixing bowl
- tongs
- measuring spoons

For each group of 4:

- 2 cutting boards
- 2 knives
- 2 small bowls
- 4 napkins
- journals



Preparation

1. Because the chipotle can irritate eyes, prepare the chipotle butter before class. Chop the chipotles in very small pieces and mix them into the butter. Set the butter aside. make sure you wash your hands after handling the chipotles.
2. Place a large pot of water on a hot plate to boil.
3. have students wash their hands. discuss proper methods of handling food.

Safety Precautions

Prepare the chipotle butter before class to avoid eye irritation. Be cautious when adding and removing corn from boiling water. review safety precautions for using knives and the hot plate.

Making the Recipe

1. Provide each group of students with two ears of corn. Give students two minutes to examine and record their observations (see Background). have groups switch corn with other groups so that everyone has an opportunity to examine all three varieties of corn.
2. demonstrate shucking corn. have students shuck the corn and break it in half. allow students to examine different pieces and make more observations.
3. ask students to put the corn in small bowls and place them on the demonstration table. When the water has boiled, add corn. do not crowd too many ears into one batch. It will probably take two to three batches, depending on the size of the corn. each batch should cook for 3 to 5 minutes.
4. While waiting for the corn to cook, have a student squeeze the lime juice and mix salt into the chipotle butter. Stir the butter mixture.
5. remove the corn with tongs and give each student half of an ear to eat. Let the students put the butter on if desired and eat.
6. While the students eat, have each group share its observations about the different varieties of corn. Facilitate a discussion so that the class understands the similarities and differences among the varieties of corn.
7. Clean up materials. If you have a school or classroom compost or worm bin, place the food scraps there.

RECIPE

Corn Cakes

Preparation t ime:	40 minutes
Cooking t ime:	10 minutes
t otal Lesson t ime:	1 hour
recipe Le vel:	adv anced

Background

making corn cak es allows students to learn many cooking techniques: blending, whisking, separating eggs, and folding mixtures. Further, students will practice measuring solids and liquids. the whole process is f airly messy, but students love trying each part of the recipe. as the class proceeds, students can make predictions about how corn cakes are made and why the instructions require such details.

Objectives

Students will be able to:

measure liquids and solids by using kitchen measuring instruments.

observ e, demonstrate, and label the different steps of cooking (blending, separating and beating eggs, folding, and panfrying).

understand the functions of dif ferent tools for cooking.

Ingredients

For a class of 20:

- 10 ears of corn
- 2½ cups flour
- 2 teaspoons salt
- 5 teaspoons baking powder
- ⅝ cup corn flour (finel ground cornmeal)
- 5 eggs
- 3 cups milk
- ¼ cup canola oil

Materials

For the class:

- 1 egg (for demonstration)
- hot plate
- measuring spoons
- 1 small mixing bowl
- wooden spoon
- 3 measuring cups
- serving spoon
- spatula
- large pot (8-quart)
- egg beater or whisk
- water
- griddle, large skillet, or electric skillet (optional)

For each group of 4:

- 2 cutting boards
- 2 knives
- 4 bowls (1 small, 2 medium, and 1 large)
- 2 egg beaters (optional)
- 4 plates
- 4 forks
- 4 napkins
- journals

Preparation

h ave students wash their hands. d iscuss proper methods of handling food.

Safety Precautions

r eview safety precautions for using knives and the hot plate. r emind the children to immediately wipe up any spills when they handle raw eggs and to wash their hands after handling the eggs.

Making the Recipe

1. h ave each group of students shuck two ears of corn and then cut the kernels off the cob. Students will place the kernels in a bowl and set them aside.
2. d irect each group to measure and combine in a bowl ½ cup flou , ⅛ cup corn flou , 1 teaspoon baking powder, and a scant ½ teaspoon salt. Note that groups will need to share measuring cups and spoons. h ave them set the flour mixture aside.
3. d emonstrate how to separate an egg. Carefully crack an egg over a small bowl and tip all the egg into one-half of the shell, letting the clear white of the egg drain into the bowl. d rain as much of the white as possible and place the yolk in a medium mixing bowl. *Note:* e gg separation is messy with students of any age. If you are uncomfortable with students separating the eggs, make it a class demonstration.
4. h ave each group separate one egg and place the yolk in a medium mixing bowl (or provide them with a separated egg). With a whisk, students beat the egg yolk with ½ cup plus 2 tablespoons milk and 1 scant tablespoon oil.
5. h ave each group add the flour mixture bit by bit, whisking it into the yolk mixture until the batter is smooth. t hen have them stir in the corn kernels and set the batter aside.
6. Show students how to whip their egg white with an egg beater or whisk until it just forms stiff, white peaks, being careful not to overbeat. e ach group should gently fold the egg white into the batter. (Chilled egg beaters and bowls help form peaks.)
7. h ave each group bring its batter to the demonstration table to cook.
8. h eat and lightly oil the skillet or griddle. d rop spoonfuls of batter onto the griddle. Cook until bubbles start to form on the surface and the edges become slightly dry, then carefully turn over with a spatula to cook the other side. y ou may want to re-oil the pan after a batch or two.
9. a s each group of students cooks its corn cakes, have the rest of the class write in their journals, describing the fun compared with difficult parts of making the recipe
10. While the students eat, have each group discuss its experience in making the recipe.
11. Clean up materials. If you have a school or classroom compost or worm bin, place the food scraps there.

ACTIVITY

designing your own Farm

Preparation time: 10 minutes
total Lesson time: 50 minutes

Background

many children have little, if any, direct experiences with a working farm. For many of them, a farm has a sort of mythic quality, which is mostly influenced by movie and storybook representations. When asked what they would find on a farm, many of these students will be able to name chickens, goats, or corn but not much else.

In this activity, students take a close look at a map showing what a local farm might look like in September. this particular farm, Full Belly, has a spectacularly rich diversity in what it produces over the course of a year and can help to broaden students' understanding of the concept of *farm*. Students then have an opportunity to design their own farm, imagining what they would want to produce and what farm elements they would like to have.

Objectives

Students will be able to:
determine which of the foods they eat are grown on a local farm.
Create a farm plan that includes a variety of elements.
(For older students) Consider the season in their farm plan.

Materials

For each group of 4:
- 4 copies of Full Belly Farm farm profile (optional)
- 2 copies of Full Belly Farm map
- 2 copies of Full Belly Farm crop list (optional)
- 4 large sheets of drawing paper
- crayons or colored pencils

Preparation

1. make copies of materials.
2. make a chart with three columns on the board. Label the first two columns "Foods" and "Farm Products" and leave the third column blank.

Doing the Activity

1. ask the class to name one or tw o foods that they have eaten in the last two days. Write these under the "Foods" column in the chart on the board. then ask students what the crops or farm products are that make up each food. For example, for toast, the farm product is wheat; for orange juice, the farm product is oranges; for pepperoni pizza, the farm products are wheat, tomatoes, onions, herbs, milk, and beef.
2. ask groups of four students to w ork together to list all the foods they have eaten in the last two days and the farm products associated with them.
3. (optional) Gi ve students a copy of the Full Belly Farm farm profile. read the arm profile as a class. ask students to name or guess which of their f arm products might be found at Full Belly in the fall.
4. Give each pair a map of Full Belly Farm. In their groups, have students look for the farm products on their group's list. ha ve them place a check mark next to each product that is found on the Full Belly map. using the chart on the board, label the third column "more Products at Full Belly" and have students list any additional products they find on the map that were not on their farm products list.
5. ha ve students look for and color the following farm elements on their map:

Barn	Greenhouse	racks
t rees (other than crops)	Compost pile	ri ver
roads	open fields	houses

6. discuss as a class what the importance of each of these elements might be. F or example, the barn may be used for storing or sorting crops, for storing tools and machinery, and for storing animal feed as well as for housing animals; trees offer shade as well as habitat for pollinating birds and insects; roads provide access to the back areas of the farm; the greenhouses enable the farmer to grow seedlings or plants in an environment warmer than the outside temperature (and thus increase the variety of plants produced); compost piles create a rich fertilizer for the plants; open fields pr vide space for the next season's plants; and drying racks allow the farmer to dry fruit and tomatoes for storing and selling in the winter months.
7. For older students: ha ve students look at the Full Belly crop list and determine which of their group's farm products may be on the list but offered in a different season from those in the fall. Lead a discussion about why crops are offered only at certain times of the year, introducing the concept that crops have certain seasons that provide the best growing conditions for them. remind the class about storage crops, such as dried fruits and nuts, that are available year-round.
8. Give each student a piece of drawing paper. Invite the students to imagine that they will be designing their own farm. First, have them list all the crops and other elements they would want or need on their farm (they may use the Full Belly Farm map and Full Belly Farm crop list for ideas). then ha ve them draw a map or illustration showing their farm, including all the elements they have selected. y ou may also encourage them to think in terms of a logical layout for their farm.
9. Post the designs and ask students to point out some of the features of their farms.

Full Belly Farm

The farmers at Full Belly Farm in Guinda, near the town of Woodland in Yolo County, know that fresh-picked corn is the sweetest corn.

dru ri vers, who started Full Belly with her husband and two friends in 1983, explains what it takes to get the freshest corn to customers. "When we sell at the farmers market, we get up at 3 o'clock in the morning to pick corn," says dru. "W e're out there in the field with flashlights" at the mark et, Full Belly's corn has become so popular that people swarm around the stand to buy every last ear.

about 12 to 15 acres of Full Belly' s 200 acres are devoted to corn. ev ery year, Full Belly grows thousands of corn plants. during corn season, which usually begins in late June and ends in october , a crew of workers picks corn every single day.

Like most relatively small organic farms, Full Belly does not grow just one crop, but grows 70 to 80 different crops each year. one e xample is the moon and Stars heirloom variety of watermelon shown in the photograph. "We're really lucky that our wonderful climate allows us to harvest vegetables all year round," says dru.

Full Belly sells about one-third of its produce through Community Supported agriculture (CSa). With CSa, f arms sell their produce directly to individual consumers rather than to wholesalers or stores. CSa members pay a weekly fee in exchange for a box of vegetables. usually , the members live in cities where they cannot grow their own vegetables yet want really fresh, organically grown produce. most subscribers pick up their boxes of vegetables every week at a drop-off place, such as a school or a church. Sometimes, for an extra fee, the

farmer will deliver the produce boxes right to the member's door. Full Belly, one of the most successful CSa f arms in California, has more than 600 CSa members.

Why would a farmer decide to sell produce in this way rather than just truck it all to a wholesaler? dru e xplains that when selling directly to the customer, farmers can get better prices for the produce because they do not have to share profits with the wholesalers and the mar ets. In addition, when selling to stores or even at a farmers market, farmers can never be sure that all the produce will sell. Sometimes, especially during the rainy season, not many

customers come out to the market. and sometimes stores will decide that they do not want everything the farmer is selling. With Community Supported agriculture, f armers can always be sure that they sell everything they grow because members pay in advance and agree to take a box every week.

For the CSa members, this arrangement means always eating the freshest produce and eating only what is in season. It also means getting a surprise every week because they never know exactly what is going to be in the box. t o make sure customers are not frustrated by some fruit or vegetable they have never eaten or cooked, each week's box comes with a newsletter that tells about all the produce in the box and gives some recipes.

a typical summer box will contain Full Belly' s sweet corn as well as tomatoes, melons, eggplant, peppers, basil, and summer squash. as the season changes to winter, Full Belly members receive broccoli, cabbage, carrots, turnips, beets, and leafy greens, such as kale and chard.

one customer admits that before she joined Full Belly, she was never sure what was in season. "I love eating with the seasons and also learning how to cook vegetables I wouldn't normally buy at the store," she says.

If you are a Full Belly member, you can visit the farm any time you want. "People are always welcome to come and pitch a tent on the land," says dru. "W e also organize work days where members can come and help out." By far the favorite day to visit is Full Belly's annual "hoes do wn," a day when the farmers literally put their hoes down and stop working to celebrate the harvest. on this day , as many as 3,000 people visit the farm for tours, music, crafts, and a chance to try such farming activities as milking cows, shearing sheep, and grinding corn.

With Community Supported agriculture, dru e xplains, "We're not just providing fresh vegetables. We're providing an education for our members and a connection to our farm."

Full Belly Farm Crop List

	Spring	Summer	Fall	Winter
almonds*			÷	÷
almond Butter*	÷		÷	÷
asparagus	÷			
Basil		÷	÷	
Beets (red, chioggia, gold)	÷		÷	÷
Broccoli	÷			÷
Cabbage	÷			÷
Carrots	÷		÷	÷
Cucumbers		÷		
daik on (several varieties)	÷		÷	÷
eggplant		÷	÷	
Flowers	÷	÷	÷	
Garlic-dry*		÷	÷	
Garlic-fresh	÷			÷
Grapes		÷		
Greens**	÷		÷	÷
hard Squash*			÷	÷
Leeks			÷	÷
Lettuce	÷		÷	÷
melons***		÷		
New Potatoes	÷		÷	
okra		÷		
onions (red, yello w, torpedo)	÷	÷		
Sweet and hot Peppers			÷	
Peaches		÷		
Pumpkins			÷	
Salad mix	÷		÷	÷
Spinach	÷		÷	÷
Strawberries	÷			
Sugar Snap Peas	÷			
Sun dried Fruit, onions, and t omatoes*	÷	÷	÷	÷
Sweet Corn		÷		
t omatoes		÷		
t urnips	÷		÷	÷
Walnuts*	÷	÷	÷	÷
Zucchini, Summer Squash		÷		

* Full Belly stores this crop and has it available well after its harvest season.
** Greens: arugula, chards, kales, mizuna, mustard, other Japanese greens
*** melon varieties: canteloupes, red watermelons, yellow dolls, canary melons, honeyloupes

Full Belly Farm map in late summer–early fall

Farm map by ellen t oomey

CHAPTER 2

t omatoes

t omatoes are one of the most popular vegetables grown in home gardens. the y originally grew wild in Peru and were first cult vated in me xico. the Spanish colonists of the fifteenth and sixteenth centuries introduced tomatoes to countries all over the world. t omatoes did not immediately become popular in europe and colonial North america because tomatoes are in the nightshade family, which contains many poisonous plants. the first recorded vidence of europeans eating tomatoes w as in an Italian cookbook from the 1600s. the French ascribed aphrodisiac properties to the fruit and called it the *pomme d'amour,* which means love apple.

It was not until the early 1900s that the tomato became popular in the united States. t oday tomatoes are one of america' s favorite summertime foods. California is one of the leading suppliers of tomatoes, especially heirloom varieties, producing 90 percent of the nation's processed tomatoes.

heirlooms are v arieties of fruits and vegetables that were popular in the eighteenth, nineteenth, and early twentieth centuries. heirloom v arieties of tomatoes offer consumers a new range of fl vors, textures, and colors. Popular heirloom tomatoes include the Brandywine, Green Zebra, and Cherokee varieties.

In general, commercial tomatoes are picked green and unripe so that they can withstand the rigors of travel. the tomatoes are then ripened in rooms with ethylene gas, which is a natural by-product of the tomatoes' ripening process. although this method is con venient, the only way for tomatoes and other fruits to develop their true, sweet fl vors is by sun ripening on the tree, bush, or vine.

Seasonality and Growing Conditions

t omatoes require warm, sunny weather and grow well in hot, dry climates. Some varieties have been bred to tolerate cooler climates. For example, early Girl can tolerate cool summer nights. the peak tomato season in California is from July through october .

t omato vines are of two major types: *determinate* plants, which have short vines and grow in a contained manner, and *indeterminate*, which are long, stringy, climbing plants that must rely on a trellis or staking in order to support the plant and its fruit.

t omato plants require fine, loose, well-drained soil that is fortified with a undant, decomposed organic matter. adequate drainage is vital in order to prevent bacterial wilt, stunting, and fruit rot. on indeterminate v arieties, pinching the side shoots (known as suckers) to produce one or two main shoots will result in larger, more fl vorful tomatoes and will also help to support the fruit and keep it off the ground.

Sustainable Farming Issues

t omatoes are prone to pests such as tomato hornworms, aphids, whiteflies, and cut orms, but spraying with soapy water or removing pests by hand may control them. Leaf blight and fungus may be avoided by proper air ventilation between plants. Some farmers will "water-stress" their vines—let them dry out between waterings—in order to create sweeter fruit.

a fe w farmers "dry farm" their tomatoes. In this system, well-mulched plants get needed water from ground moisture only and produce dense, sweet tomatoes.

Selection, Storage, and Nutrition Information

t omatoes should be smooth and slightly firm, with no splits or mushy spots. Never refrigerate tomatoes as this will make them mealy. Store them on the counter out of direct sunlight. t omatoes are high in antioxidant vitamin C and a good source of vitamin a.

RECIPE

Salsa Fresca

Preparation t ime:	20 minutes
Cooking t ime:	None
t otal Lesson t ime:	45 minutes
recipe Le vel:	easy

Background

Salsa can be a fun way for students to taste the fresh version of a condiment they buy in processed form. Preparing salsa also is an opportunity to look at the different parts of plants that people eat: bulbs (onion and garlic), stems and leaves (cilantro), and fruits (tomatoes).

Ingredients

For a class of 20:

- 6 to 10 medium tomatoes
- 1 bunch cilantro
- 1 clove garlic
- 1 white or red onion
- 2 limes
- ½ teaspoon salt
- 1 bag corn chips or baked tortilla chips

Materials

For the class:

- 1 large mixing bowl
- mixing/serving spoon
- colander
- knife
- serving bowls
- measuring spoons
- kitchen or paper towels

For each group of 4:

- 2 knives
- 2 cutting boards
- 1 small mixing bowl
- 4 napkins
- journals

Preparation

1. Wash the tomatoes and cilantro and let them dry in the colander. Gently pat the cilantro with a paper towel or clean dish towel to remove any excess water.
2. Clean and set up tables.
3. If you want each group to make its own salsa, rather than as a whole class as described in the directions, you will need to divide the ingredients and tasks accordingly.
4. ha ve students wash their hands. discuss proper methods of handling food.

Safety Precautions

re view safety precautions for using knives.

Making the Recipe

1. determine which students are going to prepare the v arious ingredients: tomatoes, garlic, onions, and cilantro.
2. Before handing out ingredients, demonstrate to the whole class how to prepare each item: tomatoes—core and then cut them into medium cubes; garlic—smash it and then chop finely; onion—dice it finely; cilantro—chop the l ves.
3. Provide each table with materials and ingredients. one student from each pair can get their materials; the other can get the ingredients.
4. Circulate among the groups, helping students dice and chop.
5. after all the tomatoes, onions, g arlic, and cilantro have been prepared, have students bring ingredients to the large mixing bowl, adding tomatoes first, then arlic, onions, and cilantro. Students who finish early can clean their cutting board and knife and b gin copying the recipe into their journals.
6. Cut a lime in quarters and have two students squeeze the juice of a quarter lime into the mix.
7. ha ve another student add ½ teaspoon of salt and mix. add salt and more lime juice to taste.
8. ask students to sit in a circle and pass the mixing bo wl so that each student will have a turn at mixing the salsa (three times each is plenty).
9. Serve salsa fresca in students' serving bowls at each table. Serve chips on a napkin for each student.
10. Clean up materials. If you have a school or classroom compost or worm bin, place the food scraps there.

RECIPE

Garden Tomato Sauce

Preparation t ime:	20 minutes
Cooking t ime:	10 minutes
t otal Lesson t ime:	40 minutes
recipe Le vel:	adv anced

Background

man y families cook dishes with store-bought tomato sauce, so for some students this might be the first time th y have the opportunity to actually make tomato sauce from raw ingredients. as the teacher prepares this tomato sauce in the skillet, students w atch and make observations. Some interesting things to observe include the steam rising from the sauce, the gradual thickening of the sauce, the simmering of the sauce, and the new smells created as the ingredients cook together.

y ou can use numerous types of tomatoes for this recipe. Big Beef, early Girl, and roma v arieties are great for cooking. ho wever, save the heirloom varieties for eating fresh.

Objectives

Students will be able to:

mak e observations while the teacher prepares the sauce.
discuss the reasons for each observ ation.
discuss ho w cooking and doing experiments are similar and different.

Ingredients

For a class of 20:

- 12 red tomatoes or 4 baskets of cherry tomatoes
- 3 cups rice, uncooked, *or* 2 lbs pasta
- 12 large basil leaves
- 4 cloves garlic
- ½ cup extra virgin olive oil
- 1 teaspoon salt (or to taste)

Materials

For the class:

- hot plate
- 8-quart pot or, for rice, rice cooker or 4-quart pot
- scissors
- medium bowl
- large skillet
- measuring spoons
- 2 measuring cups
- 2 wooden spoons
- 3 bowls for raw ingredients
- paper towels
- journals

Preparation

1. Wash the tomatoes with water and dry in the colander. Wash basil and pat dry gently in towels.
2. Clean and set up tables.
3. ha ve students wash their hands. discuss proper methods of handling food.
4. Set up the hot plate.
5. Follow the instructions on the package to cook the rice or pasta.

Safety Precautions

Be careful when adding ingredients to hot oil. re view safety precautions for handling knives and the hot plate.

Making the Recipe

1. demonstrate ho w to prepare each ingredient: coring, cutting, and dicing the tomatoes; making a chiffonade of basil (by rolling the basil leaves, cutting into thin slices, and cutting with scissors); peeling and chopping garlic. Provide each table with materials for four students.
2. at each table, ha ve pairs of students share the responsibilities of chopping tomatoes, making a chiffonade of basil, and peeling and chopping the garlic. Students place prepared ingredients into separate bowls.
3. Collect ingredients into three separate bowls and ask students to gather around the demonstration table. explain that you will be cooking the sauce and that as you add each ingredient, students will make observations using their senses. What are some of the sounds they hear? Smells? What do they see?
4. heat the oil in the skillet o ver medium heat. When the oil is hot, have a volunteer add the garlic. Let it sizzle for a minute. ask another v olunteer to add the tomatoes and basil. t urn down the heat and let the sauce simmer for 5 to 8 minutes or until tomatoes are just starting to become saucy. ha ve a volunteer measure and add the salt. Stir it in.
5. ha ve students return to their tables to write their observations in their journals while you serve up the sauce with rice or pasta.
6. as students eat, ask them to share their observ ations.
7. Clean up materials. If you have a school or classroom compost or worm bin, place the food scraps there.

ACTIVITY

Seed Saving and Sowing

Preparation t ime:	10 minutes
t otal Lesson t ime:	Part 1 – 30 minutes, plus 10 minutes each day for the next three or four days (in the fall) Part 2 – 15 minutes Part 3 – 30 minutes (in late January or early February)

Background

In this activity, students learn about saving seeds and growing tomato plants. t omatoes are an excellent choice for seed saving because they are self-pollinating and usually grow successfully from seed.

t omatoes are in season from the late spring to early autumn, but tomato seeds are best planted in late January or early February. this means that the y are at their ripest many months before it is time to plant the next crop. In this activity, students dry and store seeds in the fall for later planting.

at each stage of the harv esting, saving, and sowing process, the teacher can facilitate discussions about student observations and inferences, which can then be recorded by the students in their journals. as the tomato plants gro w, students can also make illustrations of them, write poems about the life cycle of tomatoes, and measure the stem and leaf growth of tomato plants over time.

It is important to choose *open-pollinated* or *nonhybrid* varieties of tomatoes for this activity. the seeds of hybrid varieties will not grow up to resemble their parents and may not taste good.

Objectives

Students will be able to:
demonstrate the proper method to sa ve tomato seeds.
understand the life c ycle of the tomato plant.

Materials

For the class:
- wax paper or baking sheet
- paper bag
- 5 pounds potting soil or compost
- 5 1-foot-deep pots or school garden
- 2 quarts water
- paper towels

For each group of 4:
- 2 heirloom or other *open-pollinated* variety tomatoes
- 1 small bowl
- 2 plastic spoons
- 1 knife
- 1 paper bowl
- journals

Preparation

Clear an area near a source of natural light, such as a windowsill, for the bowls.

DOING THE ACTIVITY

Part 1: Harvest and Preparation

1. Lead a discussion to elicit students' knowledge about the life cycle of plants. Write student responses on the board, and ask students to explain where seeds come from.
2. ask students to e xplain in their journals their ideas about the life cycle of plants. encourage them to make drawings with labels and explanations.
3. demonstrate ho w to harvest seeds from a tomato. Cut a tomato in half, then use a spoon to scoop out the seeds and pulp. Place the seeds and pulp in a bowl and add enough water to cover them. explain that this is done to sort out the viable seeds: the viable seeds will sink to the bottom, but nonviable ones will float.
4. Provide materials to student groups and supervise as they harvest and prepare seeds.
5. Set the bowls on a windowsill for three to four days. each day , a student from each group will skim off the floating seeds and pulp and stir the mixture. remind students to eep the viable seeds in the bowl (the ones that have sunk).

Part 2: Drying and Saving

1. after three or four days, collect the seeds for drying. drain the seeds from the bo wl and rinse them thoroughly.
2. Lead a discussion about whether it would be a good idea to plant the tomato seeds now. Point out that tomato plants need warm soil and plenty of sunshine to grow and that drying the seeds until a better planting time is a good way of storing them.
3. Spread seeds on wax paper or a baking sheet and let them dry for one week.
4. remo ve seeds from the wax paper or baking sheet and store in a labeled paper bag or envelope until ready to sow.

Part 3: Sowing

1. In late January or early February, retrieve the seeds for sowing.
2. Provide potting soil or, if your school has a compost bin, take the class to collect a bucket of compost.
3. demonstrate so wing seeds in paper bowls filled with soil. In each paper b wl, sow four to fi e seeds ¼ inch to ½ inch deep. Keep the soil moist but not muddy.
4. Place bowls in a dark area or cover the bowls with damp paper towels because seeds germinate better in darkness.
5. Check daily for sprouts, and water to keep the soil moist. once seeds ha ve sprouted, select the healthiest sprout in each bowl and pull out the others.
6. When the tomatoes reach six inches high, transplant them into one-foot-deep pots filled with potting soil or in an outdoor garden.
7. Lead a discussion about how tomato seeds get dispersed in nature without the help of people. ask students for their ideas. explain that sometimes tomatoes f all to the ground and decompose, leaving on the soil seeds ready to grow when the conditions are right. other times, animals eat the tomatoes. the seeds pass through their digesti ve systems and are dropped on the ground. If they are viable and land in some soil, they will grow. animals depend on plants for food. Plants depend on animals to spread seeds.

Eatwell Farm

Eatwell is a small organic farm located near the town of Winters, not far from Davis and Sacramento. The farm was started by Nigel Walker and Frances Andrews in 1993. Their twin sons, Andrew and Eric, were born on the farm in 1997.

Nigel and Frances each had different careers before they chose to start a farm. Nigel worked for a broadcasting company in his native england, and Frances w orked for the brokerage firm mo gan Stanley in New y ork. When they decided to try their hand at farming, they picked a rich agricultural region. “the land is flat” Nigel explains, “and we’ve got deep, fertile soil—beautiful stuff.” their neighbors include another farm, a walnut orchard, a prune orchard, cows, and sheep.

eatwell encompasses 70 acres altogether, with two and one-half acres devoted to tomatoes. “We’ve got 25,000 tomato plants on our farm and 25 different varieties,” says Nigel.

Nigel and Frances take pride in the unique tomatoes they grow, including the striped Green Zebra (it is still bright green when ripe), dark red Brandywine, little y ellow Pear, and Green Grape. man y of the unusual varieties are called *heirlooms.* Nigel explains that this term describes the oldest varieties of a crop, the ones that were brought to this country by settlers from different parts of the world. the seeds of these plants have been passed down from one generation to the next.

unlik e the hybrids that have been developed for most commercial tomato farming, “heir - loom tomatoes have the richest and deepest fl vor,” Nigel explains, “but they have very thin skins, so they can’t travel long distances on a truck.” Because of their fragility, heirloom tomatoes are rarely found in supermarkets, which get most of their tomatoes from far away. Commercial tomatoes are generally picked before they are ripe and then ripened with ethylene gas pumped into storage facili-

ties. that turns the tomatoes red, b ut the taste is not the same as that of a tomato ripened on the vine by the sun.

"heirloom v arieties were bred to be picked and eaten straight from the garden," says Nigel. these tomatoes are perfect for a home or school garden as well as for small farms that sell directly at farmers markets or farm stands.

In addition to tomatoes, Nigel and Frances grow grapes, fruit trees—including nectarines, peaches, pomegranates, apples, pears, and citrus—and a wide range of vegetable crops, such as potatoes, carrots, peppers, and onions. ha ving many crops means that there is always something in season at eatwell F arm. It also helps to ensure the farm's success: If one crop is damaged by bad weather or pests, Nigel and Frances can still sell their other crops. "di versity is the key to a healthy farm," says Nigel.

another crop gro wn at eatwell is la vender. Nibel started growing it as a hobby and then grew it on a large scale for sale. the eatwell Farm crew often stuffs bunches of lavender in baskets delivered to consumers who subscribe to a weekly delivery of produce through the Community Supported agriculture program. "It's a freebie," Nigel says with a laugh.

ho wever, Nigel and Frances have been surprised by how many recipes, especially from fine restaurants, use l vender as a food fl vor-ing. Flans, custards, cookies, salads, and some savory dishes can actually be enhanced with the delicate fl vor of lavender.

unlik e many jobs, being a farmer means working seven days a week. But Nigel says, "I enjoy what I do. ev ery day is really different. running a f arm involves many different tasks, like using machinery, learning about soil and plants, working with people, meeting your customers and learning what they want." Nigel and Frances not only work in the field, but also take their crops to the farmers market. the y have even designed their own Web site and newsletter.

ov er the years, Nigel and Frances have gotten to know many of their regular customers. "the y're really appreciative of what we do," says Nigel, "and this keeps me going on those cold, rainy days out in the field"