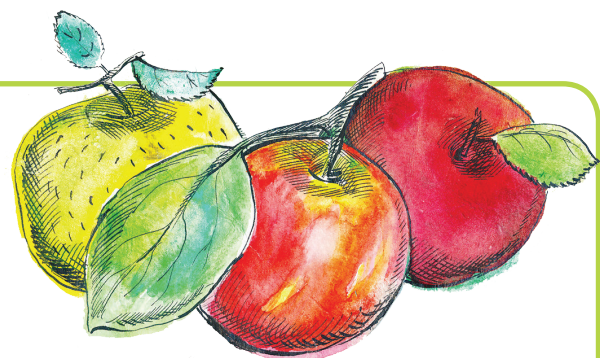


Classroom Bites

Apples

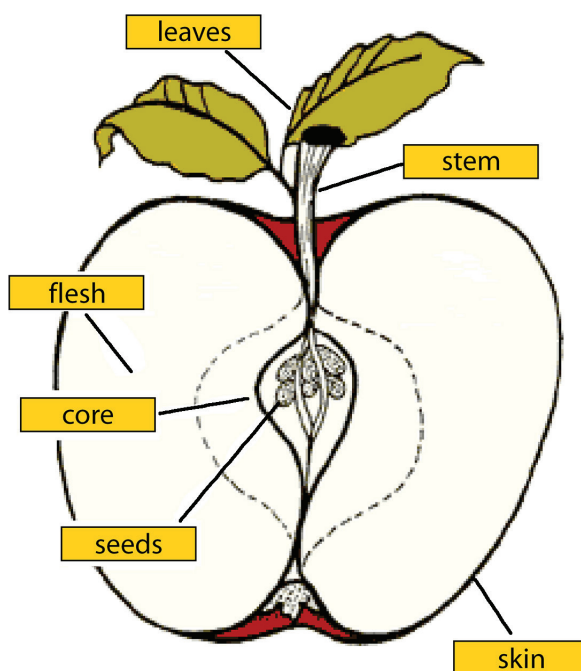


Did You Know

- The wild ancestors of apples grow in the mountains of central Asia.
- There are over 7,500 varieties of apples grown worldwide and 2,500 are grown in the US. However, only a handful of varieties are commonly found in grocery stores today.
- Check out Orange Pippin online for listings and descriptions of apple varieties (www.orangepippin.com).
- Apples were brought to the United States in the 17th century.
- The Bitterroot Valley and other areas in the western and south central part of Montana are the largest apple producing areas in the state.

Grow Your Own

Planting the seed from your favorite apple variety will not grow that same variety and will likely produce apples that are bitter. To get a desired variety of apple (such as Sweet Sixteen), the trees have to be grafted. This means taking a branch from the desired variety and attaching it to a root to form a new tree. Growing apples requires planting more than one variety of tree to ensure pollination. Purchase one-year-old trees of different varieties that possess multiple branches and are certified to be disease resistant, especially to Fire Blight. Plant in early spring, allowing 35-45 feet of growth space for standard-size apple trees, less for dwarf varieties. Fruit trees such as apples are an excellent, long-term option for schools. Maintenance is minimal and the fruit is in season during the school year.



Selection

Choose firm, shiny, smooth-skinned apples with intact stems. Apples should smell fresh, not musty. Remove apples with bruises or rot from the bag or container so they do not spoil the other apples.

Storage

Refrigerate apples in a plastic bag, away from strong-smelling food. Store away from other fruits, as apples naturally produce ethylene, which may cause other fruits to prematurely ripen. Eat within three weeks. Prevent cut apples from browning by dipping them in lemon juice.

Cooking

Applesauce. Place peeled, cored, and sliced apples in 1/4 inch of water. Steam apples in a microwave or pan on the stove until soft and add water if needed. Remove from heat, mash apples to desired consistency, and add seasonings such as cinnamon, cloves, ginger, or nutmeg. Eat warm or allow to cool.

Bake. Select larger apples and remove core with knife, leaving 1/2 inch of the apple core intact at the bottom. Put a small amount of seasoning in the hole. Place apples in a baking pan and add 3/4 cup water to the pan. Bake at 375°F for 30-40 minutes or until desired tenderness.

Grill. Combine 1/2 cup water and 1/4 cup lemon juice in a large bowl and put sliced apples in mixture for 30-60 minutes. Place soaked apple slices on skewers and grill about seven minutes on each side. Once grilled, remove from heat and add seasonings. For added variety and texture, add apples to a grilled meat or vegetable kabob.

Raw. Rinse and dry an apple to enjoy as is, or slice and dip in peanut butter, yogurt, or hummus. Dip apple slices in lemon juice to prevent browning.

Season. Enhance the flavor of apples with cinnamon, clove, ginger, or nutmeg.

Preserve. For information on preserving apples, look for Extension MontGuides on: Drying Fruit; Freezing Fruit; Home Canning Pressures and Processing Time; Making Jams, Jellies and Syrups. Visit www.msuextension.org/nutrition and click on the food preservation link or contact your Extension office.

Adapted from the Apple Food Fact Sheet developed by Montana State University Extension. For the full fact sheet and other resources, visit: www.msuextension.org/nutrition.

Nutrition Information

The saying “an apple a day keeps the doctor away” has truth to it. Apples are a good source of fiber and contain vitamins and minerals such as vitamin C and potassium. Most of the apple’s nutrients are located just below the skin and are removed when peeled. Potassium is an electrolyte and is needed for many functions in the body, including the electrical activity of the heart.

Recipes

Easy Applesauce

Get kids involved in mashing apples for a fun and easy treat.

Source: Harvest for Healthy Kids (www.harvestforhealthykids.org)

Servings

4-6

Ingredients

4 medium apples
1 cup water
1/4 tsp cinnamon
1/8 tsp nutmeg

Preparation

1. Peel and slice apples, removing the core. Leaving the peel on will result in chunkier applesauce and will retain more nutrients and color.
2. Place in pot.
3. Add water, cinnamon, and nutmeg.
4. Bring to a boil and let simmer until mushy.
5. Let children use a masher to mash up the apples into a sauce.
6. Set aside and let cool.
7. Serve warm or chilled.

Apple ‘N Cabbage Slaw

Serve as a tasty side dish or as a colorful addition to sandwiches!

Source: Picture the Recipe (<http://picturetherecipe.com>)

Servings

4

Ingredients

2 cups red cabbage
1 cup green cabbage or lettuce
1 1/2 apples (recommended: golden variety)
2 carrots (about 1 cup)
3 green onions
1-2 Tbsp of cilantro or more to taste
2 Tbsp oil
2 Tbsp honey
2 Tbsp apple cider vinegar
Juice of one lime (about 1 Tbsp)
Salt & pepper to taste
Optional: Dash of cayenne

Preparation

1. Shred the cabbage into fine strips. Measure cabbage or lettuce and add to a large mixing bowl.
2. Grate the carrots using a big holed grater and add to the bowl along with sliced green onions.
3. Finely chop a small handful of cilantro and add it to the salad mix.
4. Lastly, cut the apples into thin match-stick pieces and add it to the salad. Don’t cut the apples until you’re ready to dress the salad since they will turn brown. Toss everything together well.
5. For the dressing start with the salad oil in a jar or a bowl.
6. Add the honey, apple cider, lime juice, salt, pepper, and a light dusting of cayenne to the oil.
7. Put the lid on and shake the dressing (if you’re using a bowl simply whisk it with a fork) until the oil and other liquids are mixed well.
8. Drizzle over the salad and toss well until everything is coated in the dressing.
9. Serve chilled.

Activities

Scientific Investigation of Apples

Adapted from California Harvest of the Month, Apples, and Scientific and Health Education Partnership, "What factors affect the oxidation of apples?"

Grades

3-10

Objectives

This activity demonstrates the process of oxidation and how to set up a scientific experiment. Students will be able to:

- Set up a scientific experiment and make a hypothesis
- Explain the process of oxidation
- Determine the effects of different liquids on oxidation

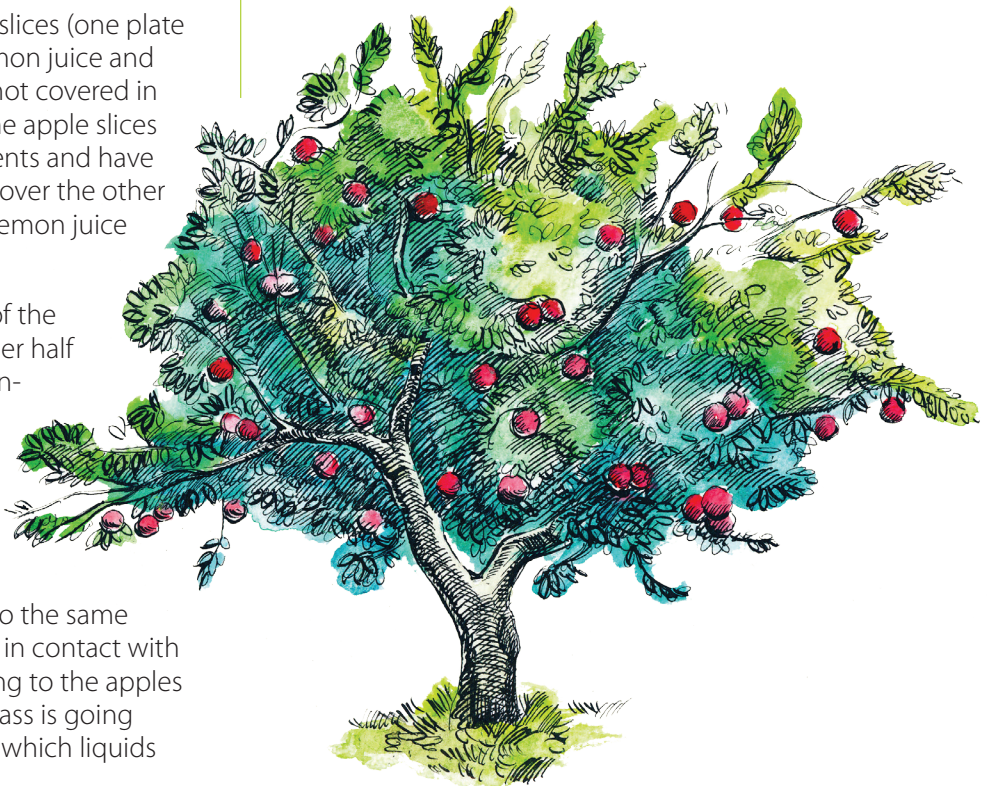
Supplies

- A few slices of apples, half covered in lemon juice and half without
- Two apples of the same variety
- Knife and cutting board
- One tablespoon each of lemon juice, water, and apple juice
- Plate

Directions

1. Show students two plates with apple slices (one plate of fresh-looking slices treated with lemon juice and one with brown apple slices that are not covered in lemon juice). Ask students which of the apple slices they would prefer to eat. Call on students and have them explain why they preferred one over the other (a likely answer is that the slices with lemon juice look fresher and more appealing).
2. Ask the students why they think half of the apple slices turned brown but the other half didn't? Allow students to share their answers and then introduce the word oxidation. Explain that oxidation is a browning reaction that occurs when the apple comes in contact with the air and lose electrons. Another type of oxidation students might be familiar with is rust—this occurs due to the same chemical reaction when metal comes in contact with oxygen. Explain that you did something to the apples that didn't turn brown, and that the class is going to conduct an experiment to find out which liquids prevent apples from turning brown.

3. With younger students, introduce the experiment supplies (apples cut in half, lemon juice, apple juice, and water) and the procedure (pour 1 tablespoon of each liquid over three apple halves and do not pour anything over the fourth half. Observe the differences in browning of the apples after one hour). You may want to have older students develop an experiment to test the effect of certain liquids on browning of apples and record their data and results. Ask students to make a hypothesis about what will happen with each liquid.
4. Begin the experiment by following the procedure mentioned above. Set the apples in a visible spot in the classroom and allow students to observe the changes after one hour. Older students may want to observe the apples directly after applying the liquids and note the time it takes for each reaction to occur.
5. After an hour, ask which method worked the best and discuss possible reasons why. Close the lesson by reviewing the concept of oxidation and having students think about other applications of the results (could this liquid be used to prevent other fruits from turning brown? Could it be added to fruit salad?). Challenge the students to think about a reason why oxidation matters. Brown apples may not be appealing to you to eat or rust on a car may cause problems.



Book Nook

Apples, by Gail Gibbons

Applesauce Season, by Eden Ross Lipson

How do Apples Grow?, by Betsy Maestro

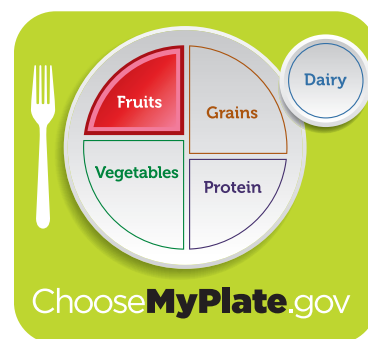
How to Make an Apple Pie and See the World,
by Marjorie Priceman



Dig Deeper

For sources and photo credits along with more recipes, lessons, quick activities, resources, and guides, visit:

www.montana.edu/mtharvestofthemonth.



Notes:

4 Montana Harvest of the Month: Apples



The Montana Harvest of the Month program showcases Montana grown foods in Montana schools and communities. This program is a collaboration between the Office of Public Instruction, Montana Team Nutrition Program, the National Center for Appropriate Technology, Montana State University Extension, Gallatin Valley Farm to School, and FoodCorps Montana. More information and resources are available at: www.montana.edu/mtharvestofthemonth.

Funds were provided in part by a USDA Team Nutrition Training grant, a USDA Farm to School grant, Montana Healthcare Foundation, Northern Pulse Growers Association, Montana Department of Public Health and Human Services, and Montana School Nutrition Association. USDA is an equal opportunity provider and employer. The Montana State University Extension Service is an ADA/EO/AA/Veteran's Preference Employer and Provider of Educational Outreach. This publication was supported by the Grants or Cooperative Agreements Numbers, 6 U58DP004818-03-01 & 5 U58DP004818-03-00, and funded by the Centers for Disease Control and Prevention. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention or the DPHHS.