

An Apple A Day – Reading Passage

Directions: Read the text then complete the questions by selecting the best answer.

Where Did Apples Come From?



Believe it or not, the only apples that grew naturally in the United States were crabapples, a small, bitter fruit compared to what we eat today. The apple, as we know it, was brought to the United States from Europe in the 1600s. The first apple orchard is said to have been planted in Boston, Massachusetts in 1625. Back then, apples were used to make apple juice, apple cider, dried apples, apple butter and vinegar. The apples were even used as food for the pigs, cows, and horses.

During the long, cold winters, settlers could not grow fresh fruits and vegetables. So instead, they found ways to preserve the apples. The apples were peeled, cored and hung out to dry on a big net or hung to dry on strings tied to trees or posts. The warm air evaporated the water inside the apples and dried them in a few days. These dried apples would provide food for the family all winter long.

Apple Production

Today as many as thirty-two states grow apples. Most of these apple orchards are in our northern states such as Washington, Michigan and New York. Washington State has the best climate in the world to grow apples because of its warm days and cool nights. Of all the apples grown in the United States, about half are sold fresh and half are made into apple sauce, apple juice, or dehydrated apple products.



Growing Apple Trees

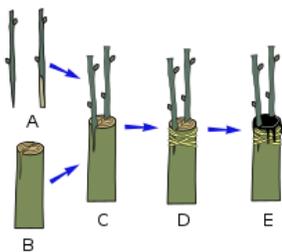


Image by GiancarloDessi, via Wikimedia Commons

Apple trees are very difficult to grow from seeds. It takes about 15 years for a tree grown from a seed to produce an apple. If an apple seed was planted when you were born, the tree that grows from it wouldn't produce apples until the time you got your learner's permit to drive! Because of this, most apple trees are grown by grafting or budding onto existing trees which have a healthy root system. Growers take the best parts from different trees and stick them together with glue and tape before covering air-exposed areas with wax. This is called **grafting**.

Sometimes growers use budding instead of grafting. In **budding**, one bud is taken from a tree and attached under the bark of another tree with tape or glue. Growers are always trying to make new and perfect apples. They continue to combine the genetic material

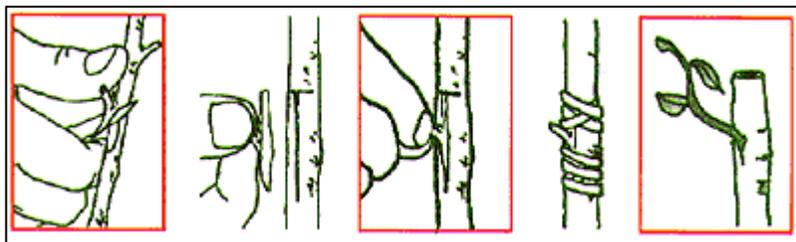


Image from NSApples.com

contained in the branches, buds or roots to adjust the taste, color, texture, shape, and growing season of the apple.

Apple blossoms are white or pale pink and appear on apple trees in the spring. Unknowingly, bees and other **pollinators** take pollen from one apple blossom to another apple blossom as they fly in the orchard. This process is known as **pollination**. When an apple blossom is pollinated, it develops into an apple. Bees are so important for pollination that some apple growers place beehives in directly their orchard.



Apples are special, though. They require a special type of pollination called **cross-pollination** to produce an apple. This means a pollinator must take pollen from one type of apple tree (say, a Red Delicious variety) to another type of apple tree (like a Fuji apple) in order for the Fuji apples to grow, and vice versa. Talk about hard work!



Orchard platform image from agriexpo.com

When it's time to harvest apples, skilled farm workers are needed do the job. If a farm does not have an **orchard platform**, (see image) to take pickers through the rows of trees, they must rely on ladders. Pickers using ladders wear large bags over their shoulders in order to pick and store a large number of apples before climbing back down to store them in bins. As you can imagine, climbing ladders up and down all day is a very tough job. The workers, many of whom immigrated to the U.S. or are seasonal employees from countries like Jamaica, Peru, or Mexico, are strong, reliable, and willing to do this difficult work.

How Do We Get Apples in the Winter?

Apples are harvested in late summer and early fall; however, we can buy fresh apples from the store all year. This is due to **Controlled Atmosphere Storage**. Controlled Atmosphere Storage regulates the temperature, oxygen, carbon dioxide, and humidity in the storage room. Each variety of apple requires different conditions so computers help keep the specified conditions constant. As an apple ripens, the starches change to sugar and the apple takes in oxygen and gives off carbon dioxide. This is the **respiration** process of an apple. In Controlled Atmosphere Storage, the respiration process is slowed down so the apples do not ripen quickly. Most varieties of apples can be stored for 12 months or longer. Due to Controlled Atmosphere Storage, we are able to enjoy apples all year round.

Healthy Snacks

“An apple a day, keeps the doctor away” is an old saying. Research today supports this idea because of the benefits provided by eating an apple each day. Apples are low in calories. A regular, medium size apple contains approximately 80 calories. Apples are therefore a great substitute for snacks such as candy and chocolate. Apples even prevent tooth decay because juice from an apple has properties that can kill up to 80% of bacteria in your mouth. Apples contain lots of fiber which aids in the digestive process. Apples also contain over 9 vitamins and 9 minerals our bodies need. Hungry? Grab an apple for a snack!

Adapted from Illinois Ag in the Classroom AG Mag on Apples

1. *“Apples contain over 9 vitamins and minerals.”*
What does the word *contain* mean as it is used in this text?

- A. have
- B. grow with
- C. eat
- D. are

2. Reread the last paragraph, “Healthy Snacks”. Which word best describes apples in this paragraph?

- A. safe
- B. delicious
- C. difficult
- D. healthy

3. Most apples grow best in states with

- A. cool days and cool nights
- B. warm day and cool nights
- C. warm days and warm nights
- D. hot days and cold nights

4. Which is NOT a good way to grow an apple tree?

- A. planting apple seeds
- B. grafting
- C. budding
- D. pruning

5. Bees are important to apple production because they

- A. turn an apple's starch into sugar
- B. help preserve the apple
- C. help create different varieties of apples
- D. cross-pollinate apple blossoms

6. Apples are a healthy snack because they

- A. are low in calories
- B. contain fiber to help your digestion
- C. contain over 9 vitamins & 9 minerals
- D. all of the above

Extended Response: Think about the trip an apple takes from the farmer's orchard to your home. Make a list of the human, natural and capital resources that are used during the apple's travel. Using your list, write a description of the process and materials used to get apples from the farm to your home.



Apple Trivia

- Apples come in all shades of reds, greens and yellows.
- 100 varieties of apples are grown commercially in the United States.
- Most apples are still picked by hand in the fall.
- 25 percent of an apple's volume is air. That is why they float.
- Most apple blossoms are pink when they open but gradually fade to white.
- It takes the energy from 50 leaves to produce one apple.
- One of George Washington's hobbies was pruning his apple trees.
- Apples ripen six to ten times faster at room temperature than if they were refrigerated.
- Don't peel your apple. Two-thirds of the fiber and lots of antioxidants are found in the peel. Antioxidants help to reduce damage to cells which can trigger some diseases.



TRY THIS EXPERIMENT AT HOME! APPLE SCIENCE

(ASK AN ADULT FIRST!)

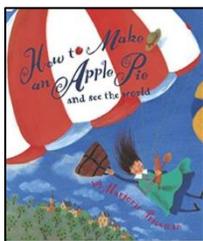
Did you ever cut up an apple and not eat it right away? Did you notice that it may have turned brown? In this experiment you'll attempt to prevent the apple from browning.



1. Cut the apple into 4 pieces. (Don't use a sharp knife without an adult's help!)
2. Leave one of the pieces on the kitchen table or counter. Place another apple piece in the refrigerator.
3. Sprinkle lemon juice on the other two apple pieces.
4. Place one of these pieces on the table and the other in the refrigerator.
5. Check each of the apple pieces every 5 minutes.



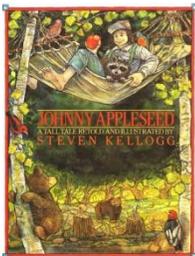
CHECK OUT THESE BOOKS:



HOW TO MAKE AN APPLE PIE & SEE THE WORLD

BY MARJORIE PRICEMAN

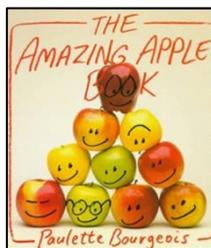
From the jungles of Sri Lanka to the apple orchards of Vermont, the energetic little baker searches far and wide to find the finest ingredients for her apple pie. The silly adventure comes with a recipe for apple pie.



JOHNNY APPLESEED

BY STEVEN KELLOGG

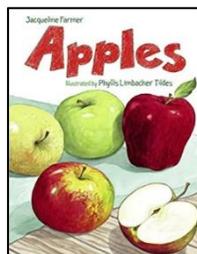
No apple unit would be complete without the legend of Johnny Appleseed. The magnificent pictures and prose of this book share the lively story of a true American hero.



THE AMAZING APPLE BOOK

BY PAULETTE BOURGEOIS

An amazing collection of the history of apples, uses for apples in pioneer times, the science of growing and producing apples, apple varieties, and much more. This book even has some apple games.



APPLES

BY JACQUELINE FARMER

The apple is the most popular fruit in the United States and this book shares an "orchardful" of facts about apples. Beautifully illustrated.