

APPLE USES:

applesauce, bread, juice, apple cider, pie filling, apple cider vinegar, apple butter, salads

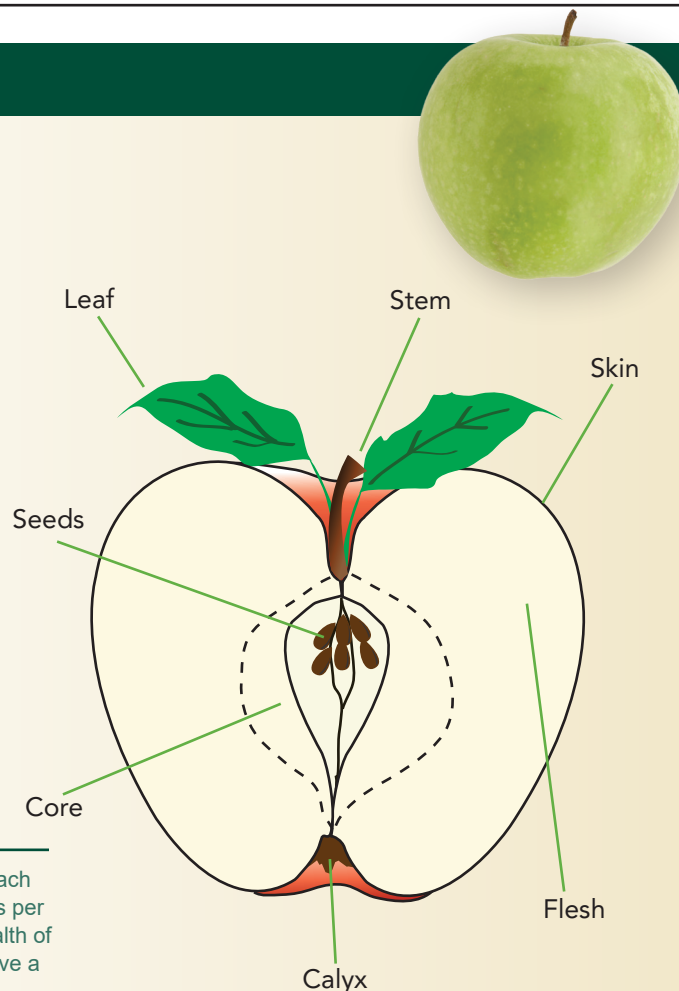
WHAT ARE APPLES?

Apples are a member of the rose family. The apple tree originated in an area between the Caspian Sea and the Black Sea. There are 7,500 varieties of apples grown throughout the world. You can find 2,500 varieties in the United States. Only 100 of those varieties are grown commercially. Apples are grown in all 50 states, however, they are grown commercially in only 36. Apple varieties range in size from a little larger than a cherry to as large as a grapefruit. There are apples that have an aftertaste of pears, citrus, cinnamon, cloves, coconut, strawberries, grapes and even pineapple!

Planting an apple seed from a particular apple will not produce a tree of that same variety. The seed is a cross of the tree the fruit was grown on and the variety that was the cross pollinator. Commercially grown apples are produced by two methods: grafting or budding. This allows growers to select desirable traits from two trees, such as strong and sturdy roots from one and the fruit of another.



Apples have five seed pockets or carpels. Each pocket contains seeds. The number of seeds per carpel is determined by the strength and health of the plant. Different varieties of apples will have a different number of seeds.



VOCABULARY

BUDDING: a type of grafting that consists of inserting a single bud into a stock. It is generally done in the latter part of the growing season.

CALYX: the stubby brown nub at the opposite end from the apple stem that is the remaining parts of the apple blossom.

FLOWER: the blossom of a plant.

FRUIT: the edible part of a plant developed from a flower.

GRAFTING: technique in which a section of a stem with leaf buds is inserted into the stock of a tree.

LEAF: green part of a plant that helps collect sunlight and nutrients for the plant.

NECTAR: the juice of a fruit that attracts the insects or birds that pollinate the flower.

ORCHARD: a group or collection of fruit trees.

PETAL: brightly colored parts of a flower.

POLLEN: the yellow powder inside a flower which fertilizes other flowers.

POLLINATION: the transfer of pollen from the anthers to the stigma of a flower.

POMOLOGY: the science that deals with fruits and fruit growing.

STEM: the stalk that supports a leaf, flower or fruit.

APPLE

VARIETIES:

Braeburn, Cameo, Cripps Pink, Fuji, Gala, Golden Delicious, Granny Smith, Honeycrisp, McIntosh, Jonagold, Jonathan, Red Delicious

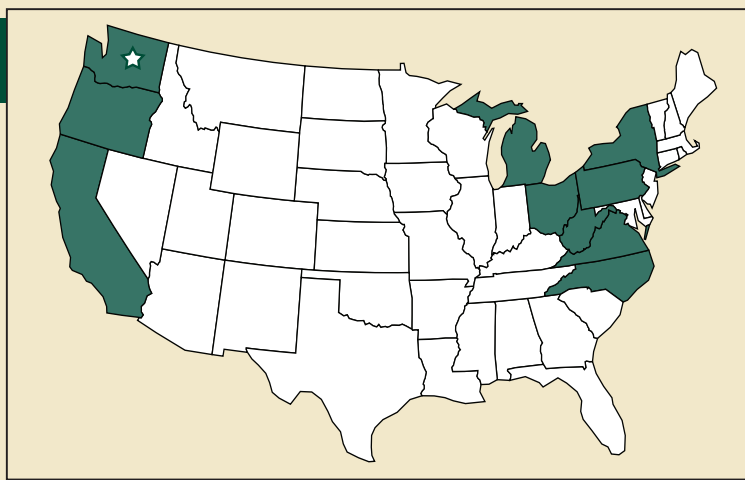
UNITED STATES APPLE PRODUCTION

Top Apple Producing States

Washington, New York, Michigan, Pennsylvania, California, Virginia, North Carolina, Oregon, Ohio, West Virginia

☆ Apple Capital of the World

Wenatchee, Washington



APPLE HISTORY

6500 B.C. — Archeologists have found evidence that humans have been enjoying apples since at least 6500 B.C. It is believed apples grew wild in Central Asia and China, as well as in Southwest Asia long before they were cultivated. The Stone Age peoples of Europe cultivated apple trees.

3000 B.C. — The ancient Lake Dwellers of northern Italy and Switzerland also grew apples.

The Greeks and Romans both cultivated apples. When the Romans conquered England (first century B.C.) they brought the art of apple cultivation with them.

During the Age of Exploration, the apple was the most important cultivated fruit.

The Spaniards brought apples to Mexico and South America.

1659 — The Pilgrims of Massachusetts Bay Colony planted apple seeds.

1730 — The first apple nursery was opened in Flushing, New York.

1768 — Newton Pippin apples were the first apples exported from America in 1768. Some were sent to Benjamin Franklin in London.

1790 A.D. — Thomas Andrew Knight of England begins the first controlled apple hybridization program for apple improvement.

Pioneers brought apple trees west. Native Americans planted trees from seeds they had received at white settlements.

EARLY 1800s — John Chapman, better known as Johnny Appleseed, started many small orchards throughout Ohio and Indiana.

1803 — The apple parer was patented by Moses Coates.

1811 — The McIntosh apple was discovered.

1843-1869 — Those following the Oregon Trail to the west carried young saplings or scion wood for grafting apple trees once settled in their new home.

1868 — The Granny Smith apple was discovered in Australia.

1872 — The Red Delicious apple originated at an orchard in Iowa.

1905 — The Golden Delicious apple was discovered in West Virginia.

TODAY — The annual apple crop grown in 36 U.S. states averages well over 200 million bushels.

DID YOU KNOW?

Apples ripen six to ten times faster at room temperature than if they were refrigerated.

A bushel of apples weighs approximately 42 pounds and will yield 20-24 quarts of applesauce.

A peck of apples weighs 10.5 pounds.

The average size of a United States orchard is 50 acres.

Apples are fat, sodium, and cholesterol free. One medium apple is about 80 calories and has 5 grams of fiber.

It takes about 36 apples to create one gallon of apple cider.

Apples harvested from an average tree can fill 20 boxes that weigh 42 pounds each.

It takes energy from 50 leaves to produce one apple.

APPLE

CAREERS: food scientist, grower, entomologist, truck driver, arborist, processor, marketer, food process engineer, horticulturist, food safety specialist

SPOTLIGHT ON CAREERS:

ENTOMOLOGIST—An **Entomologist** studies insects and their relationships to the environment, humans and other organisms. Bees and other insects are essential for pollinating fruits, vegetables, and nuts. At the same time, other insects destroy millions of tons of food and fiber crops each year. Some attack crops in farmers' fields or during storage, and others spread diseases that reduce plant yields. Agricultural entomologists work with farmers and growers to find ways to manage insect pests and protect their crops while also protecting beneficial insects.

ARBORIST—An **Arborist** is an individual trained in the art and science of planting, caring for, and maintaining individual trees. They are knowledgeable about the needs of trees and are trained and equipped to provide proper care. Arborists provide services such as pruning, tree removal, planting, emergency tree care after storms, fertilizing, aeration to improve root growth, cabling or bracing for added support of weak branches, installation of lightning protection systems and helping control insect and disease problems.

APPLE PATH

All apple trees start from a seed. (Commercial apple growers start their trees by grafting or budding. This allows them to produce fruit quicker.)



Before a tree can produce apples, the blossoms must be pollinated.



Apple trees take four to five years to produce their first fruit. Some apple trees will grow over 40 feet high and live over 100 years.



Ripened apples are picked by hand and are then stored for later sale, or they are packed and sent to wholesale markets, or to the processor, where they are made into other consumer products such as applesauce, cider, and pie filling.

ALL IT TAKES IS A BEE



Pollination is the process that allows plants to make seeds and reproduce. This happens when the pollen is transferred from the anther to the stigma. Apples, just like all other fruit trees, need a little more than just the wind to help with the transfer of pollen. Honeybees, mason bees, and bumblebees are the main pollinators of apples. The bees get signals from the smell of the flowers that there is sweet nectar inside their blossoms. As bees fly around collecting nectar to take back to the hive, grains of pollen from the blossoms stick to their bristly legs. Pollen grains are brushed off and picked up as the bees fly from blossom to blossom. When the apple blossom is pollinated, it will begin to develop into an apple. Many apple growers place beehives in their orchards to promote pollination.

APPLE FUN FACTS:

Fresh apples float because **25%** of their volume is air.

On average, a person eats **45 pounds** of apples a year.

The crabapple is the only apple **native to North America**.

The largest apple picked weighed **3 pounds**.

Most apple blossoms are **pink when they open** but gradually fade to white.

SCIENCE AT HOME

STARCH IT

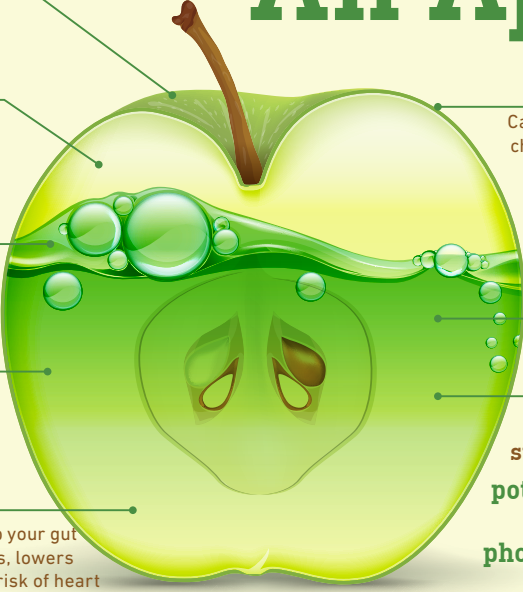
Apples naturally contain a carbohydrate known as starch. As apples ripen, the amount of starch decreases as it is converted into sugar. Starch turns into sugar near the center of the apple or the core first. The starch conversion works its way out towards the skin of the apple. Apples are ripe when most of the starch becomes sugar. An iodine test is a simple way to see whether an apple is ripe. Try this starch test to see if your apples are ripe. Did you know you can tell how sweet an apple is by how much starch is in it?

Materials:

brown iodine small paint brush
an apple a knife

1. Have an adult cut an apple in half for you.
2. Brush some brown iodine on the cut surface.
3. If your apple turns a dark purple color, then there is still a lot of starch in the apple. If your apple only has a small amount of purple, then it only has a little starch. A ripe apple will have less starch because most of it has been converted to sugar.

An Apple a Day



Vitamin B
Helps maintain red blood cells and keeps your nervous system strong.

Vitamin C
8mg Helps boost your immune system to fight infectious agents.

Vitamin E
Contributes to healthier skin and stronger immune system.

Vitamin K
4mcg Helps make the proteins which strengthens your bones.

Dietary Fiber
4g Mostly found in the peel and helps keep your gut "regular," can help maintain weight loss, lowers cholesterol levels, and can reduce the risk of heart disease, diabetes, and some types of cancer.

Peel
Can also help lower the chance for tooth decay, acting as a natural toothbrush.

84.6% water

Minerals
calcium 3g strengthens bones
potassium 129mg builds muscle
phosphorus 9.5mg filters out waste

Everyone has heard the phrase, "an apple a day keeps the doctor away," but what about apples makes them so healthy? Apples are known as nutritional powerhouses because they contain a variety of vitamins and nutrients that have many benefits to help our bodies function. Apples may not actually keep the doctor away, but they are a step in the right direction.



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