



RESOURCES





“APPLE KIT” GLOSSARY

- Alternaria Blotch - A fungal pathogen of apples that results in defoliation of Red Delicious before the apples are mature.
- Anther - The part of the stamen that produces and holds the pollen.
- Aphid - A minute insect that sucks the juice from the leaves.
- Apiary - A place where bees are raised.
- Auger - A large screwlike tool used for boring holes in the soil. It is most commonly used for planting trees.
- Bee Hive - A wooden box used to “house” honey bees for harvesting honey. Bee hives are also moved into orchards at bloom time to help with pollination.
- Blossom - The apple flower which develops into the fruit.
- Boron - A nutrient required in small quantities by the apple tree.
- Brush Rake - An implement equipped with projecting prongs to gather material (brush or grass, etc.) on the surface of the ground.
- Bud - A small, covered bulge on the tree limb that contains the parts that will develop into leaves or blossoms.
- Budding (as in grafting) - A process where a bud of one apple variety is inserted into an apple rootstock to produce a new tree.
- Calyx - The dry, hairy part at the base of the apple formed by the five sepals.
- Carbon Dioxide - A gas which is absorbed from the air by plant leaves.
- Chemical - A substance used to protect the tree from diseases and pests.
- Chemical Mowing - The use of regulated chemicals to stop or slow down the growth process of grass, weeds, etc. in the orchard.
- Chlorophyll - The green pigment, or coloring, found in leaves. It traps the energy from the sun so the leaves can make food.
- Cleft Graft - A graft which joins a rootstock and a scion by means of a cleft made in a rootstock.
- Codling Moth - A moth whose caterpillars live in apples and other fruit.
- Cold Storage (coolers not CA)- A large refrigerated building that is held to a temperature at approximately 32-34 degrees to store apples for 3-4 months.
- Controlled Atmosphere Storage - (CA) storage where the oxygen level is reduced to stop the ripening process of the fruit. The fruit is stored in an airtight room where the carbon dioxide and humidity levels are controlled.
- Cycle - The period of time occupied by a series of events that repeat themselves regularly and in the same order such as: blossom, pollination, growth, maturity, harvest, and dormancy.
- Disease - A sickness of the tree that NC Apple Growers must manage to produce high quality apples. Some examples are: Powdery Mildew, Decay/Rot, Scab, Rust, Fire Blight, and Sooty Blotch.
- Dormant - Temporary time of apparent inactivity during the winter.
- Dwarf - A plant much below usual size for its kind.
- Entomologist - A person trained in the science of insects.





GLOSSARY CONTINUED

- Ethylene - A natural gas released by apples as they mature.
- Fertilization - When male and female reproductive cells are united by the pollination.
- Fertilizer - A mixture of plant food such as nitrogen, phosphorus, potassium, and calcium nitrate used to make soil richer in nutrients.
- Fertilize Spreader - An implement used to scatter fertilizer throughout the orchard rows.
- Filament - The stalk of the stamen.
- Flesh - The edible portion of the apple inside the skin.
- Forklift - A self-propelled machine for hoisting and transporting heavy objects by means of steel fingers inserted under the load.
- Fungicide - A product used to manage plant diseases.
- Fungus - Diseases that form on the host plant such as apple scab and powdery mildew.
- Glucose - A form of sugar that is produced by the leaves and used as a food and energy source by the apple tree.
- Grafting - To join together a scion and a rootstock to produce “like” varieties.
- Harvest - To pick/gather a crop.
- Herbicide - A product used to manage vegetation (weeds) in an orchard.
- Insecticide - An agent or chemical that kills insects.
- Insects - Pests that need to be controlled in the apple orchard, and if uncontrolled can damage apples. Some examples are: White Apple Leaf Roller, Red Banded Leaf Roller, and Tufted Apple Bud Moth.
- Integrated Pest Management (IPM) - A program that helps growers to determine proper timing for spraying. An entomologist monitors the orchards by setting a trap to determine the insect population.
- Mower - A machine used to cut down standing herbage (grass, weeds, etc.).
- Nectar - A sweet liquid found in plants that bees use in their making of honey.
- Nutrient - A nutritive substance or mineral used by the tree for growth.
- Orchard - A group of planted fruit trees.
- Ovarian Wall - The flesh of an apple that forms around the seeds.
- Ovary - The female part of the flower. The rounded base at the bottom of the pistil, inside of which are five compartments each containing two ovules.
- Ovule - A female reproductive cell that becomes a seed after fertilization.
- Oxygen - A gas which is released by the leaves during photosynthesis.
- Packing House - A facility where apples are put into commercial packages from field bins.
- Parasite - A plant that lives in or on another living organism from which it takes its nourishment.
- Pectin - A dietary fiber found in apples that aids in human digestion.
- Pesticide - A product used to manage pests.
- Pests - A collective term used to describe those things that will harm apple trees or apples, i.e. diseases, insects, weeds or vertebrate animals (mice, beaver, etc.).
- Petal - The part of a flower that attracts insects by its fragrance and color.
- Pheromone - Chemically scented lures used in traps to attract adult pests.





GLOSSARY CONTINUED

- Photosynthesis - A physiological process whereby plants use light, water, and carbon dioxide to produce food for the plant.
- Pick Sacks - A heavy duty fabric sack used to hold fruit while harvesting. The sack is carried by the picker with help from straps which are placed around the neck and waist for support and balance. The pickers hands are then free for use.
- Pigment - Color-producing material that is present in plants.
- Pistil - The female organ in the center of a flower, made up of a stigma, a style, and an ovary, and ovules.
- Pollen - The fine, yellow dust that is produced by the anthers of a seed plant and contains the male reproductive structure.
- Pollination - The transfer of pollen from the male structure (anther) to the female structure (stigma).
- Pomology - The study of fruits and nuts.
- Predator - An insect that kills other insects for food.
- Pressure Tester - A device that measures the firmness or pounds of pressure in an apple.
- Processing - A manufacturing process by which apples are peeled, cooked, and prepared for canning.
- Propagate - Budding or grafting to reproduce a certain variety.
- Prune - To cut away and shape a tree to keep the tree to size, to allow for maximum light penetration, and preserve the health of the tree.
- Pruners - A device used for cutting away unwanted limbs and branches, consisting of two long handles with heavy duty scissor-type blades for cutting.
- Refractometer - A device that measures the sugar content in an apple.
- Rootstock - A section of tree with roots that is used as the base of the graft. The scion is grafted onto it.
- Scion - A living section of a tree branch that supports two or more dormant buds and is grafted to the rootstock. The scion determines the kind of fruit the tree will produce.
- Semi-dwarf - A plant below normal size for its kind.
- Sepal - Five green, leaflike structures that make up a flower's calyx.
- Sprayer - A device by which a spray is dispersed or applied; in this case crop protectants are applied to the trees.
- Stamen - The male reproductive part of a flower made up of an anther and a filament.
- Stem - The stalk of the flower that connects it to the branch.
- Stigma - The sticky top of a flower's pistil.
- Style - The part of a pistil connecting the stigma and the ovary.
- Tractor - A four-wheeled or tracklaying rider-controlled automotive vehicle used especially for drawing farm implements or bearing and propelling such implements.
- Tray Pack - A method of packing apples in which the apples are individually put into cells-similar to egg cartons.
- Tree Planter - Farm implement pulled by a tractor and used to deposit trees into the soil during planting.





GLOSSARY CONTINUED

Trellis - Support and training system for young trees using wooden posts and cross wires.

Truck - An automotive vehicle used to haul heavy objects, transport equipment, goods, etc.

Variety - Different kinds of apples.

Adventitious buds - Buds that can produce roots or shoots at an unusual location on the plant if environmental conditions are favorable.

Bark - All tissues lying outward from the vascular cambium.

Callus - Undifferentiated (parenchyma) tissues formed at a wounded surface.

Cambium - A thin layer of living cells between the xylem (outer sapwood) and phloem (inner bark) that is responsible for secondary growth. Because cambium cells divide and make new cells, the cambia of two different but related plant will grow together if they are fixed and held firmly in contact.

Compatible - Plant parts (scion and rootstock) that are capable of forming a permanent union when grafted together.

Incompatible - Plants whose parts will not form a permanent union when grafted together.

Scion - A plant part that is grafted onto the interstock or the rootstock. The scion usually has two or more buds.

Top-worked plant - An established tree or mature plant whose upper portion has been removed back to the main limbs or trunk and then grafted with new scions.

Union - The point where the scion and rootstock are joined.





BUSHEL OF “APPLES”

Apple Media Center

The Story of Johnny Appleseed by Alik

Nice story about the goodness of a man called Johnny Appleseed

Johnny Appleseed by Steven Kellogg

The Amazing Apple Book by Paulette Bourgeois

Good book with lots of activities and crafts, for all ages

Walt Disney American Classics - Starlight Editions, 1989

Johnny Appleseed story

From Appleseed to Applesauce by Hannah Lyons Johnson

Good book with lots of apple information

All About Apples by Alice Martin

Informational teacher resource book

An Apple A Day by Judi Barrett

Good details

An Apple A Day by Jennifer Storey Gillis

Over 20 apple projects for kids

The Little Red House with No Doors and Windows and a Star Inside

by Caroline Sherwin Bailey

A wonderful apple story

Fruit by Gallimard Jeunesse

Discovery book, very good pictures

Apples, Apples, Apples by the North Carolina Department of Agriculture

Good information and recipes, good teacher resource

Apple Trees by Sylvia A. Johnson

Good information, great pictures

How Do Apples Grow? by Betsy Maestro

Good book

In Praise of Apples, A Harvest of History, Horticulture and Recipes by Mark Rosentein

Good reference book for teachers





The Seasons of Arnold's Apple Tree by Gail Gibbons

Good story about the apple seasons

The Legend of William Tell by Terry Small

Good story

Picking Apples and Pumpkins by Amy and Richard Hutchings

Good contrasting story

Who Stole the Apples? by Sigrid Heuk

The Life and Times of the Apple by Charles Micucci

Apple Valley Year by Ann Turner

Applesauce by Shirley Kurts

Apple Picking Time by Michele Beneit Slawson

The Giving Tree by Shel Silverstein

Great story about relationships

10 Apples up on Top by Dr. Seuss

Apple Tree! Apple Tree! by Mary Blocksma

Apple Pigs by Ruth Orback

Apple Pie by Anne Wellington

Apples to Zippers by Patricia Rueben

Pamphlets and Booklets

A Grower's Guide to Apple Insects and Diseases in the Southeast by the Alabama

Cooperative Extension Service, Auburn University, Alabama

Accurate and informative, good teacher resource

Apples and You by the U.S. Apple Association

Scriptographic booklet

Appletime by Chris H. Bridge

A storybook you can color





Down on the Farm at the Barnyard Palace

**Goodness Grows in North Carolina by North Carolina Department of Agriculture
Coloring book**

Filmstrips

**Story of Johnny Appleseed
U.S. Apple Association
6707 Old Dominion Drive
Suite 320
McLean, Virginia 22101-4556**

**How Apples Grow
U.S. Apple Association
6707 Old Dominion Drive
Suite 320
McLean, Virginia 22101-4556**

(703) 442-8850

Videos

Down on the Farm: A Musical Salute to Agriculture

**The Division of Marketing North Carolina Department of Agriculture
Contact: NC Department of Agriculture Division of Marketing
(919) 733-7887**

Johnny Appleseed

**Walt Disney Productions
Appropriate for Grades K-3
Contact the U.S. Apple Association
*Rental fee***

The All American Apple

**Adams County Fruit Growers ASC
Penn State University
Biglerville, PA 17307
Contact: Bill Kliener (717) 677-4160
*purchase***

Fresh Washington Apples: A Growing Tradition

**Washington Apple Commission
P.O. Box 18
Wenatchee, Washington 98807**

Common Apple Picking Techniques

Produced by Michigan State University

Apple Packing House Operations

Produced by Michigan State University





The Truth about Pesticides and Food

**Dow Elanco
1 Bridle Path Ct.
Hendersonville, NC 28791
(704) 891-9996**

Integrated Pest Management

**Rohm and Haas
100 Independence Mall West Philadelphia, PA 19106-2399**

The Michigan Apple Story

**c/o Michigan Apple Promoters
13610 Heffron Road
Beldong, Michigan 48809**

Web Sites

North Carolina Apple Education Kit K-5 Home Page

<http://www.ces.ncsu.edu/henderson/>

Henderson County Apple Newsletter

www.ces.ncsu.edu/henderson

Virtual Orchard

orchard.uvm.edu

Apple Pest Management Guide

orchard.uvm.edu/aim/9697neapmg/default.html

Five A Day Program

www.depe.ei.nih.gov/5aday/

Bee Keeping Home Page

<http://weber.u.washington.edu/%7Ejls/bee.html>

Other Resources

North Carolina Cooperative Extension Office

740 Glover Street

Hendersonville, NC 28792-4470

Att. Marvin Owings

(828) 697-4891

North Carolina Apple Growers Association, Inc.

Att. Evelyn Hill

P.O. Box 58

Edneyville, NC 28727



RESOURCES



North Carolina Department of Agriculture, Division of Marketing
570 Brevard Road
Asheville, NC 28806
(828) 253-1691

U.S. Apple Association
6707 Old Dominion Drive
Suite 320
McLean, Virginia, 22101-4556
(703) 442-8850

Unique Country Products
32A Char Drive
Westfield, Massachusetts 01085

Teacher Created Materials, Inc.
Thematic Unit: Apples
P.O. Box 1040
Huntington Beach, California 92647

The Education Center, Inc.
Mailbox Magazine: September issue
1607 Battleground Avenue, Greensboro, NC 27408

Michigan Apple Education Committee
13105 Schavey Road
DeWitt, Michigan 48820

Instructional Fair, Inc.
Whole Language Theme Unit: Apples
Grand Rapids, Michigan 49501





Acknowledgments:

The design of the “NC Apple Education Kit” was a cooperative effort of the North Carolina Apple Education committee. An advisory group was formed including apple growers, teachers, farm market operators, the NC Cooperative Extension Office, and the Blue Ridge Apple Growers Ladies Auxiliary. Also support from the North Carolina Apple Growers Association and the North Carolina Department of Agriculture in Raleigh, NC have aided in the development of this kit.

We wish particularly to thank the following individuals and agencies for their assistance:

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Marvin Owings -Extension agent/ NC Cooperative Extension Office- Hendersonville, NC
 Dr.Mike Parker - Advisor/Department of Horticultural Science - Raleigh, NC
 Alex C. Romero - Sales Representative/Dupont Agricultural Products - Charlotte, NC
 Doug Robertson - Formerly of NCDA Marketing Division - Asheville, NC
 Evelyn Hill - Executive Secretary/Blue Ridge Apple Growers Assoc. - Hendersonville, NC
 Wanda Love - Henderson County Public School System - Hendersonville, NC
 Lisa Nix - original artwork - Hendersonville, NC
 Michelle Russell - graphic artwork - Hendersonville, NC
 Allan L. Henderson - Technical Coordinator - Business Support Systems - Hendersonville, NC
 Dr. M.A. Owings - proof work - English Department Head Emeritus,Clemson University
 Clemson , SC
 Cecelia Shultz - Elementary School Educator, TN
 Alyson Hope - Master Pomologist , TN

SPONSORS:

Blue Ridge Apple Growers Ladies Auxiliary (BRAGLA)
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 North Carolina Department of Agriculture
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North Carolina Educational Kit

ANSWER KEY

Social Studies K-5

Who Am I?

- | | |
|-------------------|---------------------|
| 1. Granny Smith | 6. Golden Delicious |
| 3. Red Delicious | 7. Winesap |
| 2. Jonagold | 8. Pink Lady |
| Golden Delicious | 9. Red Delicious |
| Rome Beauty | 10. King Luscious |
| Stayman | |
| 4. Rome Beauty | |
| 5. Arkansas Black | |

Social Studies K-5

S.S. Activity (map of counties)

- | | |
|--------------|--------------|
| 1. Henderson | 4. Wilkes |
| 2. Lincoln | 5. Haywood |
| 3. Cleveland | 6. Alexander |

Social Studies K-5

The Apple Seasons

- | | |
|------------|-------------|
| Across | Down |
| 1. bin | 1. bud |
| 3. dormant | 2. picksack |
| 7. sprayer | 4. mower |
| 8. cycle | 5. tractor |
| | 6. truck |

Communication Skills K-2 & 3-5

Apple Phrases

1. An apple a day keeps the doctor away.
2. As American as apple pie.
3. A is for apple.
4. The apple of my eye.
5. Enjoy North Carolina apples.



RESOURCES



Communication Skills K-2

The Taste of Apples

1. apples
2. tart apples
3. sour
4. sweet apples
5. students choice here

Communication Skills K-2 & 3-5

Scrambled Apple Names

- | | | | |
|----------------|---------------------|----------------|------------|
| 1. Rome Beauty | 3. Red Delicious | 6. Pink Lady | 9. Winesap |
| 2. Jonagold | 4. Golden Delicious | 7. Ginger Gold | 10. Gala |
| | 5. Mutsu | 8. Fuji | |

Science K-2

Apple Tree Parts

- | | |
|-------------|----------|
| 1. apples | 4. bark |
| 2. leaves | 5. trunk |
| 3. branches | 6. roots |

Science 3-5

The Apple Blossom fill in the blank

1. calyx
2. petals
3. stamens
4. ovary
5. stigma
6. seeds
7. style

Science K-2 & 3-5

Apple Parts

1. leaves
2. stem
3. flesh
4. core
5. seeds
6. skin





Science 3-5

Apple Blossom Parts

- | | |
|-----------|-----------|
| 1. stigma | 5. style |
| 2. petal | 6. stamen |
| 3. calyx | 7. sepals |
| 4. ovary | 8. ovule |

Poems, Stories, and Music K-5

Johnny Appleseed Sentence Strips

1. Johnny was born on September 26, 1774
2. Johnny is described as a man.....
3. Johnny Appleseed set out to plant apple tree...
4. Johnny carried a pot on his head...
5. Animals and people were friends...
6. People loved to talk about the apple seed man...
7. In March of 1845 Johnny..

Healthful Living K-5

Foods made from Apples

- | Down | Across |
|----------|-----------|
| 1. juice | 4. butter |
| 2. dried | 6. pie |
| 3. fresh | 7. slices |
| 5. cider | 9. jelly |
| 8. sauce | |

Math K-2

Same Shapes

1. first, second, fourth
2. second, third, fourth
3. first, second, third
4. first, third, fourth

MATH K-2

Apple Math Problems

1. 3
2. 3
3. 56
4. 5
5. 5
6. 10



RESOURCES



Math K-2

Bee Hive Math

1. 11
2. 10
3. 12
4. 7
5. 9
6. 8

Math 3-5

Apple Math Tasks

Task 1: David's orchard = 2640 trees, Jeff's orchard = 2646 trees

Task 2: 1 bushel = \$9.00; 2 1/2 bushels = \$10.00;

4 pecks = \$10.00; or 1/2 bushel and 2 pecks - \$10.00

Task 3: 120 quarts in a 30 gallon drum; 200 quarts in a 50 gallon drum;

480 pints in a 30 gallon drum; 800 pints in a 50 gallon drum;

960 cups in a 30 gallon drum; and 1600 cups in a 50 gallon drum.

Task 4: must empty 36 times

Task 5: 60,232 people

