



What's Growing On In Virginia?
Virginia Foundation for Agriculture in the Classroom
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What's Growing On In Virginia?

The Virginia Foundation for **AGRICULTURE IN THE CLASSROOM**

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Virginia apples: Healthy, tasty and good for the economy

CRISPY, CRUNCHY, JUICY AND SWEET—VIRGINIA APPLES ARE A TASTY TREAT.

And with only 80 calories, no fat, 20 percent of the daily recommended intake of dietary fiber, and vitamins A, C and iron, apples are a healthy treat as well.

Virginia apples are grown in the Valley and Ridge, Blue Ridge and Piedmont regions, but primarily in the Shenandoah Valley. Warm days, cool nights, consistent rainfall and rich soil create ideal conditions for growing a wide variety of apples.

From Gala to York, Virginia apples provide consumers lots of healthy options. And the state's apple producers contribute an estimated \$235 million to the economy each year, according to the Virginia State Apple Board.

There are apples grown in more than 100 commercial orchards statewide, on about 16,000 acres of land. Virginia orchards produce an average of 5 million to 6 million bushels of fruit each year.

Apples are harvested in the late summer and fall, and there are more than 30 orchards, farm stands and farmers' markets in Virginia where you can find fresh apples. If you want to pick your own, visit www.virginiaapples.org/pick-your-own/index.html for a list of places to visit.

But not all picked apples are eaten whole. About 70 percent of Virginia apples are used for processing. That means they are made into products like applesauce, apple juice, apple butter, pre-packaged slices and cider.

Virginia apples are sold to 15 other states and exported to more than 20 countries. All of those sales generate an estimated \$235 million for the state's economy each year, ranking Virginia sixth nationwide among apple-producing states.

While apples are a pretty important business, they also significantly contribute to people's health.

Numerous studies have linked eating apples to possibly reducing the risk of cancer and helping prevent heart disease, stroke, Alzheimer's disease and asthma symptoms.

So, as the old adage advises, eat an apple a day to keep the doctor away—and keep Virginia's apple growers in business.



GRANNY SMITH



RED DELICIOUS



FUJI



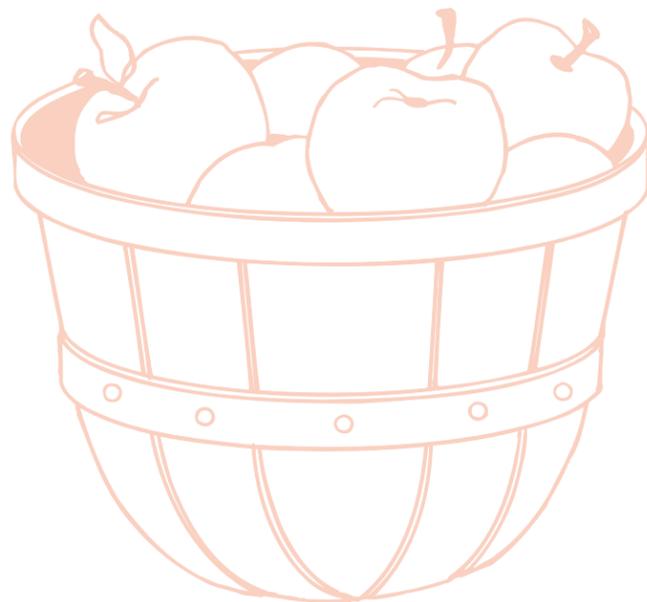
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About the Newsletter

What's Growing On In Virginia? is a semiannual publication for Virginia elementary and middle school teachers, published by Agriculture in the Classroom

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Apple varieties grown in Virginia:

Fuji – a cross between Red Delicious and Virginia Rawls Jennet apples; blush color with green and yellow stripes; the best sweet apple available after Nov. 1; good for baking, applesauce, salads and snacks

Gala – originally developed in New Zealand; red/orange color with yellow stripes; one of the first Virginia apple varieties available; crunchy, juicy, tart taste; good for snacking

Ginger Gold – discovered in the foothills of the Blue Ridge Mountains, growing among twisted, uprooted trees; greenish gold skin with a slight blush; available mid-August through October; doesn't discolor when cut

Golden Delicious – lightly textured green/gold skin; available mid-September through April; has an extended shelf life; sweet taste and crisp texture

Granny Smith – green with a slight pink blush; available late fall through spring; doesn't brown when cut; tart and crisp, it's ideal for pies or frying

Jonathan – first red apples available in the fall; light red stripes over yellow or deep red; sweet-and-tart flavor makes them the perfect all-purpose apple

Red Delicious – striped to solid red; available in mid-September; crisp, sweet flesh; perfect for adding to pancakes, muffins and crisps

Rome – deep, solid red and perfectly round; available in mid-October; ideal for baking because of its firm texture and mildly sweet taste

Stayman – discovered in 1866; crimson with a firm texture and sweet-tart taste, it is a perfect all-purpose apple

Winesap – rich red color that is perfect for holiday eating and decorating; tart, tangy, juicy and extra firm; perfect cut into salads

York Imperial – discovered early in the past century near York, Pa.; deep red with green streaks and a distinctive shape; available mid-October; intense tart/sweet flavor



APPLES

Nutrition Facts

Serving Size 1 medium apple
(154g/5.5 oz.)

Amount per Serving

Calories 80 Calories from fat 0

	% Daily Value*
Total Fat 0g	0%
Saturated Fat 0g	0%
Cholesterol 0mg	0%
Sodium 0mg	0%
Potassium 170mg	5%
Total Carbohydrate 22g	7%
Dietary Fiber 5g	20%
Sugars 16g	

Protein 0g

Vitamin A 2%	*	Vitamin C 8%
Calcium 0%	*	Iron 2%

* Percent of Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your caloric needs.

	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium		2,400mg	2,400mg
Potassium		3,500mg	3,500mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:

Fat 9	*	Carbohydrate 4	*	Protein 4
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LESSON PLAN >> ELEMENTARY SCHOOL

Weighing apples

Background Knowledge

Virginia growers produce an average of 8 million to 10 million bushels of apples a year, making apples the state's 17th largest agricultural commodity. The majority of Virginia apple orchards are in the Shenandoah Valley.

Apples are one of the many fruits that contain water, which contributes to the weight of the fruit. As apple slices are dried, their weight decreases due to the release of the water. This investigation will allow the students to make distinctions among observations, inferences and conclusions; make notes of their observations; and appropriately measure and record their data.

Procedure

1. Ask the students to think about what an apple tastes like. As they share their descriptions, make a list on the board. See if the students will come up with the fact that apples taste juicy/watery.
2. Ask the students to get out their science notebooks so they can write down observations and data.
3. Distribute an apple slice and a small piece of string to each student.
4. Ask the students to write observations of their apple slice down in their science notebooks. They also can draw a picture to help detail what the apple slice currently looks like.
5. After the students have completed their observations, have them tie their strings around their apple slices.
6. Have the students take turns finding the weight of their apple slices (including the strings) using the scales.
7. The date and the weight should be written in their science notebooks.
8. After all the data has been collected and recorded, hang the apple slices to dry.
9. Ask students to make a prediction/hypothesis about what will happen to the apple slices as they are hung to dry.
10. About three days later, have the students take down their apple slices and record their observations in their science notebooks. Again, they should draw pictures to help detail what the apple slices now look like.
11. After recording their observations, ask the students to make a hypothesis regarding whether they think the apple slices' weight will have changed in comparison to the first time the slices were weighed.
12. After predictions have been made, have the students take turns finding the new weight of their apple slices (including the strings) using the scales.
13. The date and the new weights should be written in their science notebooks and compared to the first weights.
14. After the data has been collected and recorded, hang the apple slices back up to dry.
15. About three days later, have the students take down their apple slices and record their observations in their science notebooks.
16. Repeat steps 11 through 14 to finish the investigation.

SOL:

Math 3.14, 4.10, 5.11
Science 3.1, 4.1, 5.1

Objective:

to be able to make observations, create inferences and draw conclusions about apples. Students will observe and find the weight of apple slices before and after drying.

Materials:

- apples (cut into slices - one slice per student)
- string
- a place to hang string (to allow apple slices to hang dry)
- scales
- science notebooks (to record data)

17. After all the data has been collected, discuss with the students why the apple slices' weight decreased over the period of time. Lead the discussion to the fact that, as the slices dried, they lost water and, therefore, the weight decreased due to the decrease in water weight.

Extension

- Put the dried apple slices under a microscope to allow the students to observe their appearance.
- Create a line graph using the weights of the apple slices.
- Try this experiment with other types of fruit grown in Virginia, like peaches or grapes.

References

- www.urbanext.uiuc.edu/apples/edu-projects_5B.html
- www.virginiaapples.org
- www.atozteacherstuff.com/Themes/Apples



LESSON PLAN >> MIDDLE SCHOOL

Mummifying apples

Background Knowledge

Throughout history, people have used mummification as a way to preserve family members who have died. In order for mummification to occur, all the water must be removed from the body. Although the mummification process evolved over time, body preparers used a natural salt, natron—now called baking soda, to help dry out the body. This investigation will allow students to experiment with different minerals to determine which best dries out an apple.

Procedure:

1. Distribute the apple slices (eight slices), eight cups and pieces of tape to each group of students.
2. Ask the students to copy the table below into their science notebooks.
3. Have the students write "starting weight" on eight pieces of tape, leaving room to write the weight of the apple slices on the tape. Students should then tape one of these pieces to each cup.
4. Select one apple slice, weigh it and record the slice's weight on the piece of tape on Cup #1. Place the apple slice in the cup.
5. Select the other apple slices, one at a time, and weigh them. As each apple is weighed, place it in a cup and write its corresponding weight on the tape on the cup. Have the students record the data on their data tables.
6. After all the apple slices have been weighed and the cups labeled appropriately, get out the measuring cups, table salt, Epsom salts and baking soda.
7. Add $\frac{1}{2}$ cup of baking soda to Cup #1, completely covering the apple slice. Label this cup as "baking soda only."
8. Add $\frac{1}{2}$ cup of Epsom salts to Cup #2, completely covering the apple slice. Label this cup as "Epsom salts only."
9. Add $\frac{1}{2}$ cup of table salt to Cup #3, completely covering the apple slice. Label this cup as "table salt only."
10. Add $\frac{1}{4}$ cup of table salt and $\frac{1}{4}$ cup of Epsom salts to Cup #4, completely covering the apple slice. Label this cup as "table and Epsom salts."
11. Add $\frac{1}{4}$ cup of table salt and $\frac{1}{4}$ cup of baking soda to Cup #5, completely covering the apple slice. Label this cup as "table salt and baking soda."
12. Add $\frac{1}{4}$ cup of baking soda and $\frac{1}{4}$ cup of Epsom salts to Cup #6, completely covering the apple slice. Label this cup as "baking soda and Epsom salts."
13. Add $\frac{1}{3}$ cup baking soda, $\frac{1}{3}$ cup table salt and $\frac{1}{3}$ cup Epsom salts to Cup #7, completely covering the apple slice. Label this cup as "baking soda, table and Epsom salts."
14. Leave Cup #8 with only the apple slice, and label this cup as the control.
15. Place all eight cups on a shelf in direct sunlight and let them sit for seven days.
16. Ask the students to make a hypothesis about which mineral mixture will work best to dry out (or mummify) the apple slices. Have the students write down their hypothesis in their science notebooks.

SOL:

Math 6.10, 6.18
Science 6.1, 6.5, PS.1, PS.2

Objective:

to conduct a scientific investigation to validate a hypothesis using a control and variables. This lesson focuses on conducting an experiment using different salt compounds to determine which will best mummify an apple.

Materials:

- 2 fresh apples per group, each cut into quarters
- large box of table salt
- large box of Epsom salts
- large box of baking soda
- knife (for the teacher)
- eight 12-oz. disposable plastic cups - per group
- measuring cup - one per group
- large mixing bowl
- permanent marker
- masking tape
- scale
- graph paper



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17. After seven days, take down the cups from the shelf. Take each apple slice out of the cup, one at a time, and try to brush off as much salt and baking soda as possible. Do not rinse off the slices, as they will become rehydrated.
18. Have students weigh each apple slice and record the data on their data tables.
19. Have the students compare the starting weight of each apple slice with its ending weight. Have the students record their conclusions in their science notebooks and create a graph comparing the different weights of the apple slices.

Cup Number	Starting Weight	Mineral Used	Ending Weight
1			
2			
3			
4			
5			
6			
7			
8			

Extension:

- Put the dried apple slices under a microscope to allow the students to observe their appearance.
- Try this experiment with other types of fruit.

References

- www.newtonsaple.tv/TeacherGuide.php?id=1422
- www.virginiaapples.org

LITERARY CORNER

From seed to fruit: Books about how apples grow

Apples, Jacqueline Farmer, Charlesbridge Publishing Inc., ISBN-13: 9781570916946

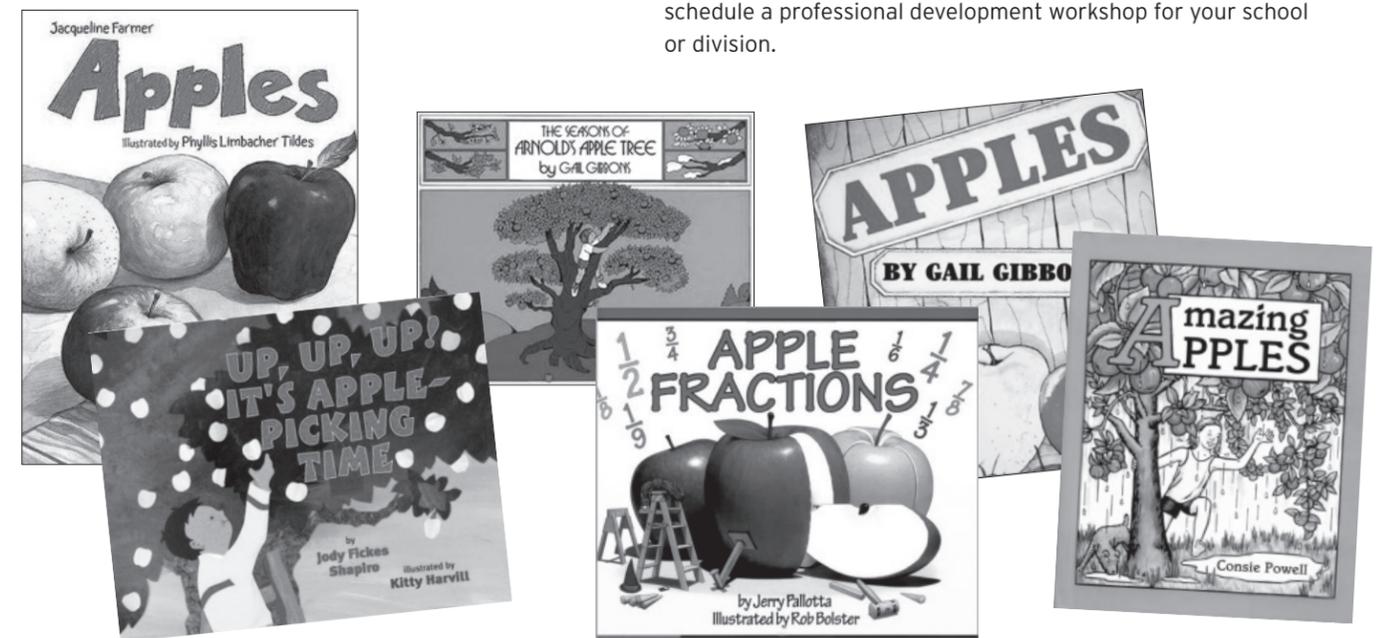
Amazing Apples, Consie Powell, Albert Whitman, ISBN-13: 9780807503997

Apples, Gail Gibbons, Holiday House Inc., ISBN-13: 9780823416691

Apple Fractions, Jerry Pallotta, Scholastic Inc., ISBN-13: 9780439389013

The Seasons of Arnold's Apple Tree, Gail Gibbons, Harcourt Children's Books, ISBN-13: 9780152712457

Up, Up, Up! It's Apple Picking Time, Jody Fickes Shapiro, Holiday House Inc., ISBN-0-8234-1610-0



AITC Program Highlights

WebQuests coming soon

New classroom lessons that follow the Virginia Standards of Learning are posted on the updated Web site for Agriculture in the Classroom—www.agintheclass.org.

Information on the site includes program highlights, lesson plans and literacy connections, as well as an updated schedule of teacher workshop opportunities. Coming soon are WebQuests, which are student-centered, inquiry-based lesson plans in which most or all of the information with which students work can be found online.

Regional teacher workshops scheduled

Agriculture in the Classroom will offer two free professional development workshops this winter for K-7 educators.

The first workshop will be held from 10 a.m. to 3 p.m. on Jan. 16, 2009, at Lewis Ginter Botanical Garden in Richmond. To register, call 804-262-9887. Registration deadline is Jan. 5.

The second workshop will run from 9 a.m. to 2 p.m. on Feb. 13 at the Featherstone Professional Center in Midlothian. Register by calling 804-290-1025. Registration deadline is Feb. 2.

Both workshops will feature hands-on activities and resources designed to bring Virginia's Standards of Learning to life. Additionally, each teacher will receive a resource kit with curriculum and activity books, posters, CDs and much more!

Remember, AITC will also come to you. E-mail aitc@vafb.com to schedule a professional development workshop for your school or division.