



HARVEST LESSONS

THIS MONTH'S THEME:

BERRIES



Lesson Plan

HARVEST LESSONS ARE A FUN WAY FOR K-4 CLASSROOMS TO EXPLORE, TASTE AND LEARN ABOUT EATING MORE FRUITS AND VEGETABLES EVERY DAY.

ACTIVITY SUMMARY

ACTIVITY	GRADE LEVEL	CURRICULUM CONNECTION	TIME
#1: Local Berries	all	Science: geography	10 min.
#2: Nutrition & Background	all	Health: nutrition	10 min.
#3: Observe & Draw Berries	all	Health: nutrition Science: classification Math: measurement	10 min.
#4: Discussion About Pollinators	all	Science: structure of organisms	10 min.
#5: Reading Time	all	Literacy: listening comprehension	15 min.
#6: Comparing Wild & Cultivated Blueberries	3-4	Science: comparison, structure of organisms	10 min.
#7: Mapping Berries	3-4	Social studies: mapping, economics Literacy: reading comprehension	15 min.
#8: Recipe Taste Test	all	Math: measurement, graphing/tallying	20 min.



INTRODUCTION

ALL GRADES

Focus on the following questions:

For K-2: How do we get fruits? Why are blueberries healthy? How do we store and eat fruits?

For 3-4: Where do blueberries come from? How has eating blueberries in America changed over time? What is your favorite type of berry?

ACTIVITY #1 (10 MINUTES)

ALL GRADES

DISCUSSION ABOUT LOCAL BERRIES

Berries are an important crop in Vermont, and in the region of New England. Many berries grow in our gardens as well as in the wild. Lead a discussion about what berries grow in our state. The botanical definition of a berry is a fruit produced from one ovary, which would make tomatoes and other larger fruits berries too. The common way we use the word berry in English refers to small fruits that are either sweet or tart. Try these leading questions:

- How many of you have ever eaten berries?
- How many have berries growing in their backyard?
- In the woods near your house?
- What are some berries that can grow in Vermont?

Refer to the berry nutrition and background (activity #2) for age appropriate information to share about featured berries.

ACTIVITY #2 (10 MINUTES)

ALL GRADES

NUTRITION & BACKGROUND

BLUEBERRIES

Blueberries are considered a superfood because they are loaded with nutrients and antioxidant protection that can support eyesight, and help with some memory loss due to aging. Blueberries are ancient, dating back 13,000 years. They are native to North America and have deep roots in our country. Native Americans called blueberries “star berries” due to the blossom at the end of each berry that forms a 5-pointed star. There is twice the antioxidant power in a cup of wild blueberries versus the cultivated type.



(activity #2, continued)

STRAWBERRIES

Strawberries have more vitamin C than an orange. One serving, about 8 strawberries has 140% of the Vitamin C needed for one day. The first garden strawberry was grown in France in 1750, but wild strawberries come from North and South America, and have been around much longer. The USA grows the most strawberries in the world, with Turkey a distant second.

RASPBERRIES

Raspberries are high in fiber and vitamin C. Raspberries come in many colors including gold, black and purple, but red is the most common. Russia is the top producer of raspberries, with Poland second and Serbia third. When settlers came from Europe to America, they found Native Americans already eating and planting berries. In 1761, George Washington moved to Mount Vernon, Virginia and started cultivating raspberries.

BLACKBERRIES

Blackberries have the highest antioxidant content per serving of any food. They are great for health, athletic performance and lowering disease risk. Blackberries are a delicate fruit that grows on very thorny bushes. They are closely related to raspberries and have biennial canes. Interesting fact: blackberries and raspberries are not true berries. Each little bump in the “berry” is a fruit, or “drupelet” containing its own seed.

ACTIVITY #3 (10 MINUTES)

ALL GRADES

OBSERVE & DRAW BERRIES

Writing in journals or on blank paper, students may observe and draw the samples of available berries. At an age-appropriate level, discuss nutrition and origin of each plant.

What color is this? How is it good for you? (refer to berry facts section). What part of our bodies does it help? (Put the food on the body: eyes, brain, heart, stomach, if you have a diagram in your classroom.) What part of this plant are we eating? (A: fruit) Review that plant part's job. Where does this food grow? (A: In gardens and in the wild).



ACTIVITY #4 (10 MINUTES)

ALL GRADES

DISCUSSION OF POLLINATORS

View “Help Save Our Pollinators” for free online:

www.life.illinois.edu/entomology/pollinators/docs/Pollination%20Activity%20Book.pdf

To get the berries that we love, we rely on pollinating bees and butterflies. With the help of this guide, www.littlehumblebugs.com/Pollinators.pdf, you can discuss the value of pollinators in production of berries. Book: *What is Pollination?* by Bobby Kalman

EXTENSION FOR GRADES 3-4

The population of pollinators that we rely on for many of our crops including berries are at risk. Honeybees, and wild bumblebees are disappearing. Why is this?

The use of pesticides is one thing that has been linked to the disappearance of pollinators, as well as the exposure to harmful bacteria and fungus. What can we do to help the population of beneficial pollinators?

- Plant flowers that bees love, avoid using chemical pesticides in your garden, become a beekeeper, tell your congressmen and senators what you've learned about why bees are so important to us, and about the dangers facing our insect friends.
- Purchase local honey, and if you have old honey containers, clean your containers well before recycling- if our local bees get into contaminated honey, they could bring foreign disease back to their hives.

ACTIVITY #5 (15 MINUTES)

ALL GRADES

SUGGESTED READING

GRADES 1-4

Blueberries for Sal

This classic children's book by Robert McCloskey tells the story of a mother and daughter blueberry picking, who encounter a mother bear and pair of cubs feasting on berries in the same patch. Sal's mother tells her not to eat all the berries so they can store some for winter, but Sal has a hard time following that direction. The bears meanwhile are feasting before a long winter rest. In the story we learn that the mother bear tells her young to eat all they can before winter comes. Follow this story with discussion of storage of berries through the winter. How is the human family different from the bear family in its needs, and ways to store this precious food?



(activity #5, continued)

PRE-K & KINDERGARTEN

The Little Mouse, the Red Ripe Strawberry and the Hungry Bear

Illustrated by Don Wood and written by Audrey Wood. A simple story about a ripe strawberry and a mouse convinced by the narrator that a hungry bear will smell his strawberry and eat it first. The only way to protect it from the appetite of the hungry bear is to share it with the author. Food is always more delicious when we share it! End the story by sharing strawberries or strawberry smoothies!

ACTIVITY #6 (10 MINUTES)

GRADES 3-4

COMPARING WILD BLUEBERRIES & CULTIVATED BLUEBERRIES

Discuss differences between wild and cultivated berries. Make a Venn diagram comparing and contrasting the two varieties of berries.

Wild or lowbush blueberries (36% of total) grow low to the ground in bunches of 3-4 and the fruits are much smaller than the blueberries we find in stores. They look deep purple-blue, to almost blue-black. Wild blueberries grow in Canada and North America where soils are acidic and climate is cool. Cultivated or domestic varieties of blueberries (64% of total) are called highbush plants. The berries are much larger than the wild ones, and the bushes can grow quite large. If not trimmed, the plants can grow to more than 10 feet tall. The berries are generally available at stores and the flavor is not as intense as the wild type. Cultivated fruits are deep blue in color.

Blueberries are often called a superfruit for its high concentration of antioxidants. The disease fighting antioxidants are found in the skin of the fruit, and because the wild variety is smaller, there is more surface area of the skin, and therefore more helpful antioxidants.

ACTIVITY #7 (15 MINUTES)

GRADES 3-4

MAPPING BERRIES

Read the text in the Mapping Berries activity in the appendix and follow the directions for each type of berry. Also see the attached map.



ACTIVITY #8 (20 MINUTES)

ALL GRADES

TASTE TEST: SMOOTHIES OR MUFFINS

Have children list different ways they have eaten berries. How can we eat berries in the winter? We can freeze them, dry them, or make jams and jellies. What are some of the students' favorite ways to enjoy berries? How have our changing storage methods affected how we use berries after the season of picking them? Make a Venn diagram to show variations and commonalities among ways berries are stored and eaten today and in the past.

POLLINATOR SMOOTHIE

INGREDIENTS

- 1 frozen banana, peeled and sliced (optional)
- 2 cups frozen strawberries, raspberries, or blueberries
- 1 cup milk
- 1/2 cup plain yogurt
- 1/2 cup freshly squeezed orange juice
- 2 to 3 tablespoons honey or to taste

DIRECTIONS

Put all the ingredients in a blender and process until smooth. Pour into glasses and serve.

Cook's note: For non-dairy smoothies, substitute 1 cup rice milk for the milk and yogurt. Or, use soy yogurt or milk instead of dairy.

Equipment Note: If you have access to a bike powered blender, this can be a fun variation to the smoothie making!

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(activity #8, continued)

“ANY MUFFINS” WITH BERRIES

This flexible whole grain recipe can be altered to fit any berry or other fruit.

INGREDIENTS

2 $\frac{3}{4}$ cups whole wheat pastry flour (or $\frac{1}{2}$ whole wheat and $\frac{1}{2}$ white pastry flour)
4 t baking powder
pinch salt
3 eggs
 $\frac{1}{3}$ cup butter
1 c milk, $\frac{1}{4}$ cup honey (or 1 $\frac{1}{4}$ fruit juice)*
 $\frac{3}{4}$ fresh or dried fruit, nuts, or combination

**If adding fruit that is very juicy, such as strawberries or peaches, reduce the amount of liquid by $\frac{1}{4}$ cup.*

DIRECTIONS

Sift together flour, baking powder and salt. In a separate bowl, beat the eggs. Melt butter and let it cool, then add it to the eggs. Mix wet and dry ingredients together briefly. The secret to light muffins is to stir the batter as little as possible. Gently fold in the fruit, nuts or food of your choosing.

Spoon into an oiled muffin tin, filling cups to the brim, and bake at 400 degrees for 20-25 minutes. Muffins are done when the center peaks are firm to the touch. If muffins do not peak, the oven is too low, or the batter is too thin.

from the Common Ground Dessert Cookbook



ACTIVITY #9 (20 MINUTES)

ALL GRADES

BERRIES IN OUR GARDENS

Does your school or community garden grow berries? With kids, draw a map of your school or town. Mark where existing berries are growing (wild or planted), and in your dream world, where other berries could be planted. Take this to your farm to school committee and administration to see if any of these locations are feasible for adding berries to school grounds.

Have students incorporate their math skills and draw a dream garden either in a real or imagined location using graph paper. The following measurements will be helpful:

- Blueberries need 2.5 feet if you are going to plant them in hedgerows, and 6 feet apart if you are going to grow them as separate plants. More than one variety is required for pollination.*
- Blackberries and raspberries should grow in hedgerows 8-10 feet apart, with individual plants 2 feet apart.*
- Strawberries should be planted 1 foot apart, with 3 feet between rows.*

**The exact distances will depend on the varieties of berries chosen.*

CLOSINGS

ACKNOWLEDGEMENTS

Thanks to input from Upper Valley Educators, Shelburne Farms, VT FEED, Vermont Harvest of the Month and Green Mountain Farm to School

BACKGROUND INFORMATION

<http://users.resist.ca/~kirstena/pageblackberries.html>

<http://www.tytyga.com/History-Of-Blackberry-Plants-a/370.htm>

<http://www.driscolls.com/nutrition-health/berry-nutrition-facts>

APPENDIX SEE WORKSHEETS THAT FOLLOW

Activity #7

BERRY TIMELINE & MAPPING DIRECTIONS

STRAWBERRIES: Wild strawberries are native to North and South America. Native Americans were already eating strawberries when Colonists arrived. They often crushed the berries, mixed with cornmeal and baked into a bread. The common garden strawberry was first cultivated in France in the 1700's, and is the result of a hybrid crossing of two wild varieties.

#1. Label the continents of North America and South America and draw a strawberry on these continents. Label the country France and draw a strawberry.

RASPBERRIES: The raspberry is believed to be native to Eastern Asia, and to have crossed the Bering Strait, a land bridge that connected Asia, and North America during the last Ice Age, over 12,000 years ago. Today, wild and cultivated raspberries grow in North America, Europe, and Asia. The highest producing countries are Russia, Poland, and Serbia.

#2: Label the continents of Europe and Asia, and the countries of Russia, Poland, and Serbia. Draw a raspberry in the places mentioned. Connect N. America and Eastern Asia with a line where the Bering Strait would have been.

BLUEBERRIES: Wild Blueberries are native to North America, and are historically one of the most important foods to natives, settlers, and wildlife. Some native groups called them "star berries" because of the five pointed flower which was thought to be a symbol from the Great Spirit. Natives used the juice as cough medicine, and the dried leaves as a tea to promote relaxation. The explorer Samuel De Champlain observed Native Americans harvesting wild blueberries next to Lake Huron in 1615, and European settlers soon propagated the fruit. The first commercial use was during the Civil War to prevent scurvy, a disease caused by a lack of vitamin C. Today, wild blueberries (34%) are commonly known as lowbush plants, and the cultivated highbush varieties (64%) are grown in more than 23 states and Canada.

#3: Label the USA and Canada on the map and draw a blueberry there.

BLACKBERRIES: Grow wild all over the world, on every continent except Australia and Antarctica. Throughout history, they have been used as medicine. Ancient Greeks and Romans used the leaves to treat sickness and diseases. Blackberries did not get cultivated for gardens until 1880, first in California. Native Americans used blackberries for juice, eating raw, or cooked. They were dried or cooked then pounded into small cakes for winter storage. Leaves and roots were extensively used for medicinal purposes. Young, green shoots could be harvested and peeled for salads.

#4: Label the continents of Australia and Antarctica, and draw blackberries on every other continent. Label the modern countries of Italy and Greece where Ancient Greeks and Romans used blackberry leaves as medicine.

THIS MONTH'S FOOD:

