

Wild Blueberry Lesson

Goals

Students will...

- Increase their familiarity with wild blueberries.
- Eat wild blueberries when offered them.
- Increase their understanding of nutrition.
- Increase their awareness of the environmental benefits of composting.



Objectives

Students will...

- a. Describe the growth of blueberries from early spring through harvest
- b. Identify where blueberries grow in Maine and find on map
- c. Explain what a nutrient is
- d. List the 6 nutrients
- e. Write a persuasive letter using the appropriate format and/or write a paragraph with appropriate punctuation and capitalization
- f. Enter information into a table
- g. Relate how eating a variety of foods affects a person's health

Lesson Activities

- Review points about safety, sanitation, and cooperation
- Introduce wild blueberries
- Background information on blueberries
- Lessons from the farm
- Cook wild blueberry whole-wheat pancakes
(Form groups of 4 to 6 students)
- Do compost activity while food is cooking
(See compost lesson for mini-lessons)
- Eat
- Wrap-up
- Distribute copies of recipes and challenge sheets to students
- Clean-up

Other Blueberry Activities

Nutrition Science Lesson

What are Nutrients and Why do I Need Them?

Global and Regional Mapping

Blueberry Fact Sheet

Writing Ideas

Blueberry Activity Sheet

Word Search

Additional Recipe

Background Information on Wild Blueberries

Did you know that...?



Maine is the largest producer of wild blueberries

In fact, Cherryfield Maine is known as the “Blueberry Capitol of the World. The blueberries grown in Maine are almost exclusively wild blueberries. The wild highbush blueberry is called *Vaccinium corymbosum L.* and the wild lowbush is *V. angustifolium Ait.*, and is a part of the Ericaceae plant family (heath family). The part of the plant we eat is the berry, which grows in clusters from the rhizome stems. Wild blueberries require much time and work in order to grow. The plants are initially established from seeds, and are seasonal, growing from July to August. Harvesting is done from late summer to early fall, when berries are big and bluish-purple. Wild blueberries are annual, but because the soil is acidic* (pH 4.5), most blueberry fields are pruned to the ground every other year. The majority of crops are grown in Maine, Eastern Canada, Michigan, New Jersey, British Columbia, Washington, Oregon, Georgia and Arkansas. Frozen, canned and processed wild blueberries are available year round.

Wild blueberries can be eaten raw or cooked

As a raw fruit, blueberries can be consumed as part of a meal, alone or in fresh-fruit salads to provide color and texture. Cooked wild blueberries are also consumed alone or as an ingredient in recipes. Blueberries are a great source of vitamin A, vitamin C and calcium.

Native Americans found many uses for blueberries

In the 1800’s, Native Americans consumed dried wild blueberries in soups, stews and cured meats. Native Americans were the first to encourage blueberry growth by burning over the fields on a regular basis. Another use for blueberries is as a dye. Today, the Wrangler Jeans Company uses wild blueberry juice to dye denim clothing.

* If you have not done the Compost Mini-Lesson #8, students may not know what *acidic* or *pH* means, so an explanation will be necessary.

Lessons from the Farm - Wild Blueberries



Wild blueberries can grow on a hillside. The soil is rocky and clay based. Generally, blueberry soil is sandier. The clay soil holds the moisture and helps the blueberries grow and survive droughts. This soil also makes it difficult to drive heavy vehicles in the field as they may become stuck in the wet soil.

A food processing company that practices IPM (Integrated Pest Management) can assist blueberry farms in managing the fields. In May, the blueberry plants are swept with a net to look for pests, such as blueberry spanworm, grasshoppers, blueberry flea beetle, blueberry thrips, and blueberry leaf beetle. In the middle of June, blueberry farmers place sticky yellow insect traps in the fields and they are checked daily to count the blueberry fruit fly. If six or more blueberry fruit flies are found on any one trap in a single visit or if a total of ten flies are found on any one trap in more than one visit, then some control measure may be needed. Other problems in wild blueberry fields are *Monilinia* blight (mummy berry) and blossom blight. These are fungi that appear in some fields due to wet weather.

Wild blueberries require insect pollination and when the blossoms appear, honeybees are placed in the fields. It is recommended that two to four hives per acre are needed for good pollination. The farmers use two hives per acre to pollinate the berries. Native bees and bumblebees are also encouraged in the fields. To avoid harming the bees, no chemicals are used at this time.

In the last week of July or the first week of August, a crew of rakers comes to rake the blueberries. The crew is usually made up of local people who are hired by the company that buys our blueberries. Some growers sell their berries at roadside stands. This requires a lot of work to ensure that the berries are clean.

After the first hard frost in the fall or in early spring, the field that was harvested is pruned by burning or mowing and does not bear fruit the year after pruning. Pruning is a management technique that improves yield. During this nonbearing year, weed control is practiced.

You can hand pick berries early in the season to eat, put on cereal and put in fresh fruit desserts. Later when more berries are ripe on the vine, you can make jam,

freeze, and can. You can also add them to muffins, pancakes, pies, crisps, cobblers, cakes, cookies and sauces. Blueberries can be dried and used in place of raisins in cakes and cookies, and are very good in scones.

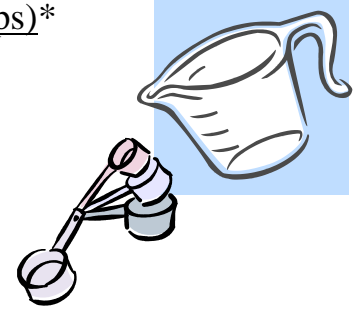
The “Wild Blueberry Association of North America” markets wild blueberries and they are promoting them for their health benefits. Research has shown that a flavonoid component in blueberries inhibits an enzyme that is involved in the early stage of cancer. You may contact them for more information on this or other topics about wild blueberries at:

WBANAP.O. Box 100
Old Town, ME 04468
(207)-570-3535

Materials and Preparation

Food needed for blueberry whole-wheat pancakes (for 4 groups)*

- 4 12 oz. bags fresh or frozen wild blueberries
- 1 dozen eggs
- 4 12 oz. containers milk
- 4 8 oz. plain nonfat or low-fat yogurts
- 2 12 oz. jars wheat germ
- 1 5 lb. bag whole-wheat pastry flour
- 1 lb. butter
- 10 oz. can baking powder
- Saltshaker
- 1 64 oz. maple syrup jug (for cooking and topping)
- 3 bottles blueberry syrup (optional ingredient, either homemade or purchased)
- 2 cans cooking spray



Materials needed (for 4 groups)

- 4 large bowls
- 4 medium bowls
- 4 small bowls
- 4 sets measuring spoons
- 4 sets dry measuring cups
- 4 liquid measuring cups
- 4 electric egg beaters
- 4 ladles or scoops
- 4 potholders
- 4 plastic spatulas
- 4 whisks
- 4 egg splitters
- 4 large metal spoons
- 4 wooden spoons
- 1 electric Teflon griddle
- Cleaning towels, napkins
- Plastic silverware
- Paper plates, plastic cups and wax paper
- Drinks for students
- Compost bucket
- Copy of recipes for each student
- Copy of challenge sheet for each student
- Copy of blueberry fact sheet
- Copy of writing sheet for each student
- Copy of word search for each student

Materials and Preparation continued



Each station should have the following:

Food

1 1/2 cups whole-wheat flour
1/2 cup wheat germ
1 tsp. baking powder
1/4 tsp. salt
3 eggs
3 Tbs. maple syrup
Blueberry syrup (optional)
1 1/2 cups milk
1/2 cup plain nonfat or low-fat yogurt
3 Tbs. melted butter
1 1/2 cups wild blueberries

Materials

1 large bowl for dry ingredients
1 medium bowl for wet ingredients
1 small bowl for egg whites
1 electric beater
1 ladle
1 spatula
1 potholder
1 whisk
1 egg splitter
1 large metal spoon
1 wooden spoon
Cleaning towel
Copy of recipes

Use Maine blueberries and other Maine products when available.

Classroom Recipe for Wild Blueberry Whole-Wheat Pancakes

Ingredients:

1 1/2 cups whole-wheat pastry flour
1/2 cup toasted wheat germ
2 tsp. baking powder
1/4 tsp. salt
2 egg yolks
3 Tbs. maple syrup
1 1/2 cups milk
1/2 cup plain nonfat or low-fat yogurt
3 Tbs. melted butter, cooled
3 egg whites, beaten until stiff
1 1/2 cups wild blueberries
Blueberry syrup (optional)



Use Maine products and other ingredients from Maine when available.

Student Cooking Activities

Note: This recipe requires the use of griddles.

Measure and combine flour, wheat germ, baking powder and salt in large bowl. In medium bowl, mix egg yolks, maple syrup, milk, yogurt and butter until well blended.

Add wet ingredients to dry ingredients.

In small bowl, beat egg whites until stiff. Fold egg whites into batter.

Add wild blueberries and mix well.

Cook on moderately hot, greased griddle (300°F), turning when bubbles appear. Serve with a Tbs. wild blueberry pancake syrup or maple syrup.

Yield: 10 to 12 five-inch pancakes

Nutrition Science Lesson - Wild Blueberries



What are nutrients and why do I need them?

What is a nutrient?

A nutrient is a part of food that is needed to nourish our bodies. Nutrients do many different things: provide energy, heal wounds, and build muscles and bones, among other functions. There are six nutrients that our bodies need.

What are the six nutrients?

The six nutrients (carbohydrate, protein, fat, vitamins, minerals and water) can be divided into two groups: *energy providers* and *body helpers*. Energy providers are the nutrients your body uses to produce energy. When you eat foods that contain energy-providing nutrients, your body uses them as fuel. Body helpers are nutrients that help your body function in things like: digesting food, moving muscles, thinking, healing wounds, and making energy from protein, fat and carbohydrates. Our bodies need some nutrients every day and others only a few times a week. Some are needed in large quantities and others in very small amounts. Over time, however, we need to eat a variety of foods so that we will get enough of every nutrient for our bodies to be healthy.

Which nutrients provide energy?

Carbohydrates found in foods like blueberries, breads, and carrots

Protein found in foods like fish, beans, chicken, and beef

Fat found in foods like butter, cream, and oils

Which nutrients are body helpers?

Vitamins like vitamin C in fruits, or vitamin A in squash and carrots

Minerals like calcium in milk or iron in meats

Water either by drinking liquid or eating fruits and vegetables, which have water in them

Global and Regional Mapping

Blueberries



World Map

Discuss with students the origin of blueberries. Have them find it on the map.

Blueberries originated in the northeastern United States and Canada. Now they grow in many places around the world, including Maine!

Wild Blueberries ----- The United States and Canada (120°, 45°)

Local Harvest Calendar

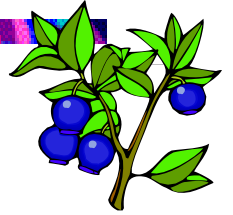
Have students determine when blueberries are available in our area from the harvest calendar (they are harvested from late July to August).

Discuss methods of storing blueberries through the winter months (drying, freezing, or making them into a jam or jelly).

Discuss with students where in Maine blueberries are generally grown (northern and coastal areas).

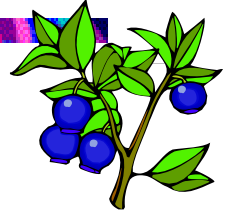
Date _____ Name _____

Blueberry Fact Sheet



1. What part of a plant is the blueberry?
2. Where did blueberries originally come from?
3. In what season do blueberries grow best?
4. Where are blueberries grown in Maine?
5. What do clothing manufacturers use blueberries for?

Blueberry Student Activity Sheet



Name _____

You have learned that bodies need nutrients to grow and be healthy. Use the table below to organize information about the six nutrients.

Nutrients			
Energy Providers	Foods	Body Helpers	Foods

Blueberries are a very healthy food to eat. List the nutrients that blueberries contain.

1. _____
2. _____
3. _____

Write a paragraph to explain why eating a variety of foods is important to a person's health.

Writing Ideas – Blueberries



1. What did you like or dislike about this lesson?
2. Write a story or report that includes at least three of the facts from the blueberry fact sheet.
3. Brainstorm some questions and write a letter to a blueberry farmer.
4. Cook the blueberry recipe for your family or friends. What did they think? Did they like it? Were they surprised?
5. Come up with your own ideas...

Wild Blueberry Challenge Sheet



I agree to try blueberries the next time they are served to me in the cafeteria or at home.

I agree to eat blueberries	I did it! I ate blueberries!

Blueberry Word Search

S	Y	R	U	P	S	X	V	I	T	A	M	I	N	C
S	F	K	H	D	P	Z	D	K	F	I	Y	D	A	Z
B	X	C	D	T	A	L	E	B	S	S	C	R	Z	C
V	L	M	R	C	N	H	O	N	E	Y	B	E	E	S
W	J	U	I	Y	C	K	A	H	O	O	H	G	F	D
I	X	I	E	V	A	A	B	R	H	M	I	F	D	L
L	C	C	D	B	K	T	N	Y	V	U	F	R	W	G
D	C	L	K	I	E	Y	D	N	G	E	R	U	E	C
Y	H	A	G	F	S	R	U	P	E	S	S	I	E	P
N	Y	C	O	L	A	F	R	I	W	D	E	T	L	R
E	R	G	Y	T	G	R	Y	Y	A	R	B	A	F	O
T	N	G	E	D	F	O	Q	W	T	Z	N	X	C	T
R	R	I	D	Y	Y	Z	I	P	E	T	I	L	G	E
R	X	S	A	D	U	E	J	L	R	L	J	K	H	I
V	I	T	A	M	I	N	A	K	F	A	R	M	J	N

Find the following words that are about blueberries in the letters above:

Blueberry	Honeybees	Dried	Protein	Vitamin C
Calcium	Maine	Dye	Syrup	Fruit
Canned	Pancake	Frozen	Wild	Water
Carbohydrate	Plant	Farm	Vitamin A	Harvest

(Answer Key on page 232)

Additional wild blueberry pancake recipe

Ingredients:

1 egg
1 cup flour
3/4 cup milk
2 Tbs. oil
1 Tbs. sugar
3 tsp. baking powder
1/2 tsp. salt
1/2 cup blueberries



Use fresh Maine blueberries and other products if available

Note: This recipe requires the use of griddles.

Student Cooking Activities

Beat egg with hand beater until fluffy.

Beat in remaining ingredients just until smooth.

(For thinner pancakes, stir in additional 1/4 cup milk).

Grease pan.

Pour about 3 Tbs. batter into pan.

Cook until puffed and dry around edges.

Turn and cook other side until golden brown.

Yield: 14 pancakes