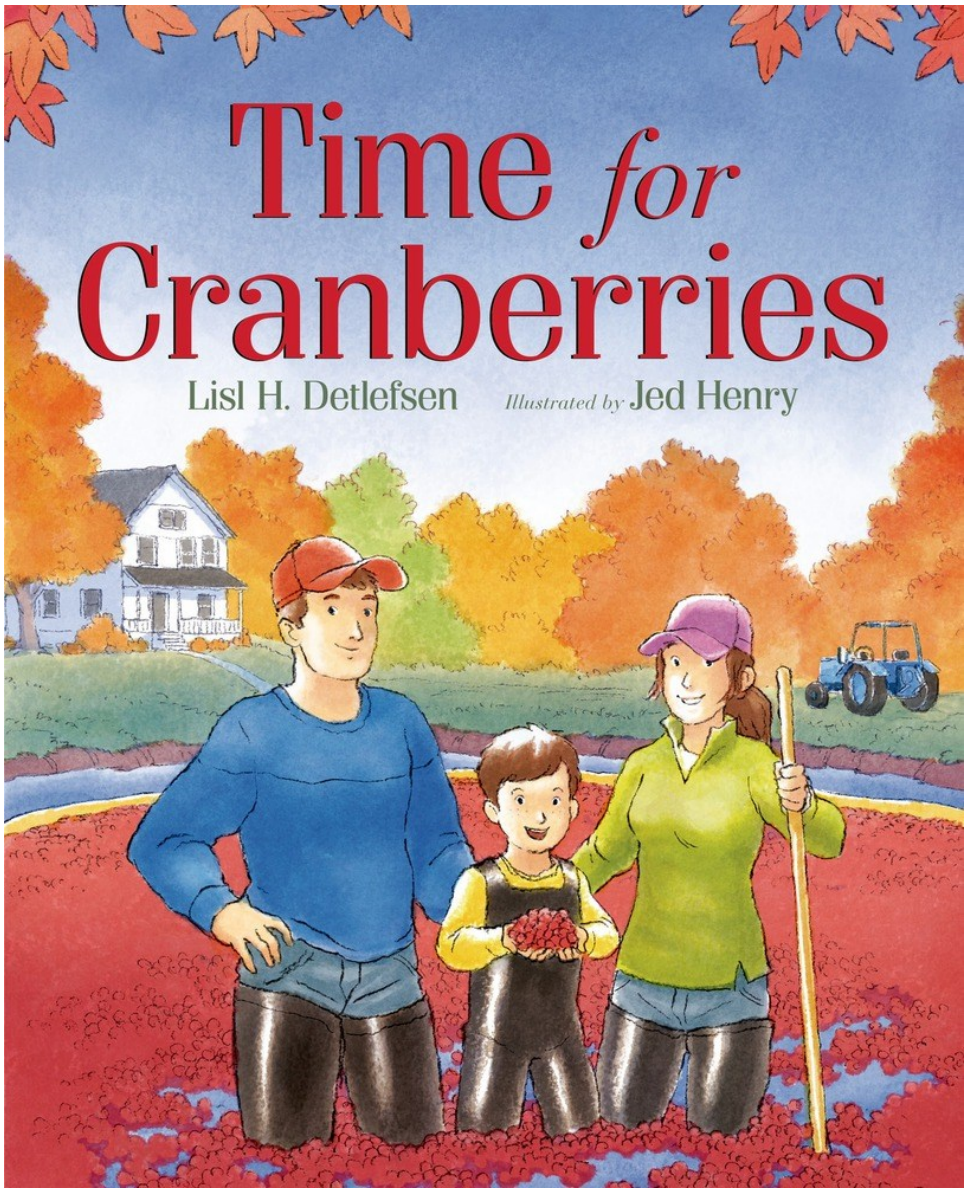


Educator's Guide

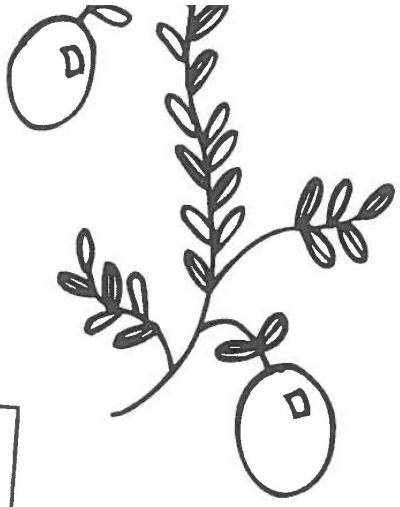
The Wisconsin Farm Bureau Foundation and Wisconsin Ag in the Classroom Program present a companion lesson and activity booklet for the 2017 Book of the Year. Order forms can be found at www.wisagclassroom.org.

Wisconsin Ag in the Classroom
Wisconsin Farm Bureau Foundation
P.O. Box 5550
Madison, WI 53705
www.wisagclassroom.org

Standards Alignment

Activity	Common Core Standards	Next Generation Science Standards	Agriculture, Food and Natural Resource Standards
Some Like it Sweet, Some Like it Tart			ABS6.a.2.e FPP2.c.2.e FPP3.a.2.e FPP4.a.2.e
How Does it Grow? Corn vs. Cranberries			ESS2.b.4.e PS5.a.1.e
Step by Step in the Marsh	RI.4.6		ABS7.b.1.e FPP3.a.2.e PS1.a.2.e
Will It Bounce?	RI.4.7	3-5-ETS1-3	EHS1.b.1.e IMT.a.1.e LE1.b.1.e LE1.b.2.e
A Day in the Life of a Cranberry	RI.4.3 W.4.3 L.4.1 L.4.2		FPP1.a.1.e PS1.a.2.e PS3.e.2.e

Cranberry Recipes For You To Cut Out And Make



Cranberry Muffins

The 1988-89 fourth grade class of Washington School in Merrill, Wisconsin proposed the Cranberry Muffin be named Wisconsin's state muffin. This is their recipe!

Ask your mom or dad to help.

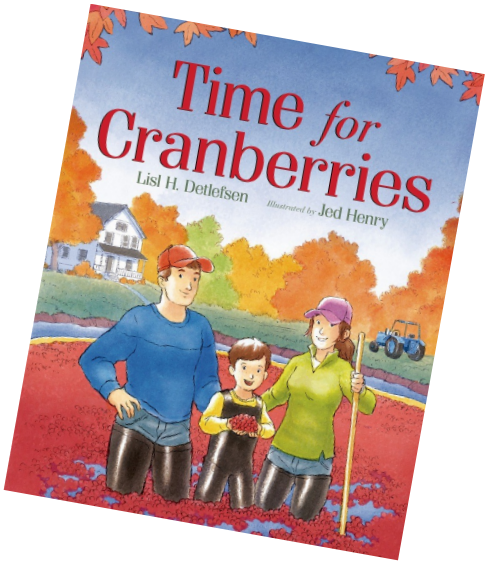
- 2 cups all-purpose flour
- 1 cup sugar
- 1½ teaspoon baking power
- 1 teaspoon salt
- ½ teaspoon baking soda
- ¼ cup butter or margarine
- 1 egg, well beaten
- 1 teaspoon grated orange peel
- ¾ cup orange juice
- 1½ cup chopped cranberries

Sift flour, sugar, baking powder, salt and baking soda into a large bowl. Cut in butter until mixture is crumbly. Add egg, orange peel, and orange juice all at once. Stir until mixture is evenly moist. Fold in cranberries. Spoon batter into prepared muffin cups, ⅔ full. Bake at 350° for about 25-30 minutes or until golden brown. Makes 15 muffins.

WISCONSIN STATE CRANBERRY GROWERS Association

Funding provided by the Wisconsin Cranberry Board, Inc. and the Wisconsin State Cranberry Growers Association (WSCGA). Additional information may be obtained from WSCGA, P.O. Box 365, Wisconsin Rapids, WI 54495, telephone (715) 423-2070, E-mail: wiscran@wctc.net, web: www.wiscran.org

About *Time for Cranberries*



This delightful book is written by Wisconsin author, Lisl H. Detlefsen and illustrated by Jed Henry. Lisl's home is nestled in the heart of Wisconsin on the Whittlesey cranberry marsh, where her husband's great-great-grandfather purchased the land from the State of Wisconsin in 1871. *Time for Cranberries* is a delicious story that follows a boy and his family through the process of collecting cranberries from booming and cleaning, all the way to eating. It's a thankful celebration of harvesttime on farms and a reminder of all the good things to eat all year long from them.

Cranberry Vocabulary

Antioxidant: a part of food and other products that prevents harmful chemical reactions in which oxygen is combined with other substances; helps keep your body healthy

Bed: an area of land that cranberries grown on, typically in the shape of a rectangle

Boom: long, floating tubes filled with foam that are used to corral cranberries

Booming: the act of gathering picked and floating cranberries at one end of the bed

Cleaner: metal grates and bars used to clean and separate good berries from bad berries and leaves

Corralling: Moving cranberries toward a suction pump

Fiber: the part of a plant that helps you digest other food

Hypothesis: an idea or theory that is not proven and needs to be studied through science

Marsh: the word used to describe the entire cranberry farm; also called a bog

Perennial: living for several years or for many years; having a life cycle that is more than two years long

Pollination: the transfer of pollen from a stamen to a pistil of a flower; this allows the plant to create flowers and/or fruit

Suction pump: a machine that draws cranberries out of the bed and up into the cleaner

Vitamin C: A vitamin found in fruits and leafy vegetables that helps keep your body healthy

Waders: tall, waterproof boots, pants, or overalls that cranberry growers wear to walk into a flooded cranberry bog

The Wisconsin Cranberry

The cranberry has quite the history that dates back many years. Native Americans loved to eat cranberries, but they also used the beautiful, bright red color to dye fabrics and made medicines with them as well. It was once called "crane berry" by early settlers because of the blossom's resemblance to the beak of a sandhill crane. Cranberries can be found in Massachusetts, New Jersey, Oregon, Washington, Canada, Chile, and yes—Wisconsin.

Cranberries were first harvested commercially in our state around 1860 by Edward Sacket in Berlin, Wisconsin. Today, more than 250 growers produce cranberries throughout central and northern Wisconsin. A mixture of sand and peat can be found in northern and central Wisconsin, which is perfect for growing cranberries. There are 20 counties in Wisconsin where cranberries grow well due to the soil type that is present.

In 2004, the cranberry was named our official state fruit. Today, Wisconsin grows approximately 60% of the nation's entire supply of cranberries. While we are famous for our cows and cheese as America's Dairyland, we could also be known as America's Cranberryland!

In 2014, more than five million barrels of cranberries were harvested. Each barrel weighs approximately 100 pounds. Can you do the math to figure out how many pounds of cranberries were harvested then? Hint: it's hundreds of millions of pounds.

Not only are cranberries tasty, they are healthy for you, too. Vitamin C, which is found in many fruits and vegetables, is also found in cranberries and acts as an antioxidant. Antioxidants help to protect cells in your body from becoming hurt or damaged. Vitamin C also helps the immune system protect the body from getting sick. A serving of cranberries provides a whopping 22% of your daily vitamin C.

More good news for cranberry lovers: a serving of dried cranberries provides 12% of the fiber your body needs each day. Fiber provides many health benefits and helps your body digest other food too.

More Fun Cranberry Facts:

- There are approximately 440 cranberries in one pound.
- It takes about 4,400 berries to make one gallon of juice.
- 95% of cranberries are made into sauce, juice, and dried fruit. Only 5% are sold as fresh berries.
- About 20% of all cranberries are eaten during the holidays.
- More than 1,000 food and beverage items have cranberries as an ingredient.

Growing Wisconsin Cranberries

Farming is a job that people work 365 days out of the year. Just like dairy farmers, vegetable farmers, and grain farmers, cranberry farmers work all year long to make sure we have delicious, tart berries to enjoy. Many of the cranberry farmers in Wisconsin live on their marshes with their families. When it comes time to take care of the berries and harvest them, everyone pitches in a helping hand.

Fall or autumn is the time of year when we most often think of cranberries. Why? It's harvest time! The grower must coordinate many things: transportation and trucking, people to help harvest, machinery, and packaging of the cranberries. A hand rake was once the method for picking berries from the bogs, but now they are gathered with mechanical harvesters, boats, corrals, pumps and conveyors.

Contrary to popular belief, cranberries do not grow in water. Cranberries are a perennial plant that grow on vines in sandy fields called bogs and marshes. In Wisconsin, cranberry marshes are flooded with water to help with harvesting. Because the tiny berries contain a pocket of air with four chambers, when the marsh is flooded, the berries float to the surface to be picked up by harvesting equipment. Cranberries are harvested each year from late September through October.

Winter brings a unique set of tasks. The vines require love and care to make sure they stay healthy for next year. After harvest, the marsh is once again flooded with a protective layer of water that will freeze over, which covers the vines in a blanket that keeps them from sub-zero temperatures and gusting winds. This is also when cranberry growers keep up on bookwork or fix machinery.

As the frozen bogs thaw along with the snow and ice, it means it's almost time for spring work. During this season, growers drain the winter water away and make sure the vines don't suffer from spring frost. They take unwanted weeds out of the bogs, renovate older bogs, and construct new ones.

Summertime is abuzz with work on a cranberry marsh, for that is when pollination occurs. Honeybees are one of the main pollinators of cranberries. Once the vines have come back to life after spring and spouted their crane-shaped flowers, it's time to bring in the bees. Many growers rent honeybee hives from beekeepers to bring to their marshes.

While growing at the end of summertime and into early fall, the cranberry does not start out bright red and beautiful. When the berries first appear on the vines, they are white with some pink. As the fall days bring cooler weather and warm sunshine, the berries ripen on the vines and turn the deep shade of red that we see in juice, sauce, and fresh berries to eat. And then, we are back to beginning and harvest time is here again!

Some Like it Sweet, Some Like it Tart

Objective: Students will learn about the various products cranberries are made into, and compare and contrast them.

Preparation: Gather materials. If possible, show students the Into the Outdoors: Sea of Red video segment: www.learnaboutcranberries.org/additional-resources

Materials:
- Dixie cups (three per student)
- Blindfolds
- Three different cranberry products. This will work best if they are different in texture, taste, and color. White versus red cranberry juice works well. Cranberry sauce, with or without whole berries, frozen or fresh berries, and dried berries are also options.

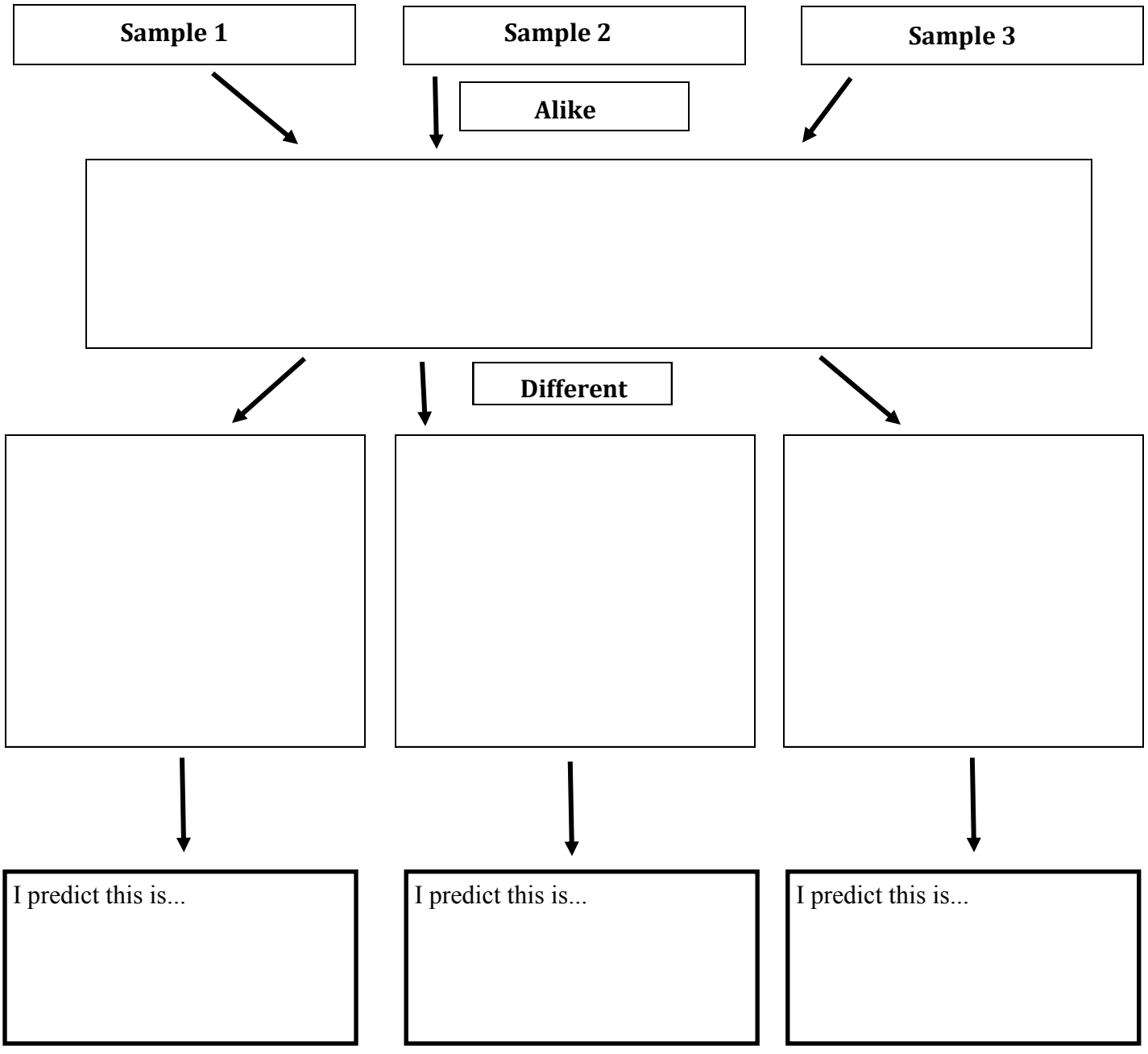
Discussion:
Explain to students that cranberries do not grow as red berries first. As the summer progresses and changes into fall harvest season, the cool weather and bright sunshine ripen the berries from white to red. White cranberry juice is made from early harvest berries that are ripe enough, but have not yet turned red. Various methods of processing can lead to different cranberry products that we can all enjoy.

Other points of discussion:
- Nutritional value of cranberries
- Cranberry recipes
- What is their favorite way to have cranberries?
- Are there any family traditions they have while enjoying cranberries?

Some Like it Sweet, Some Like it Tart

Procedure:

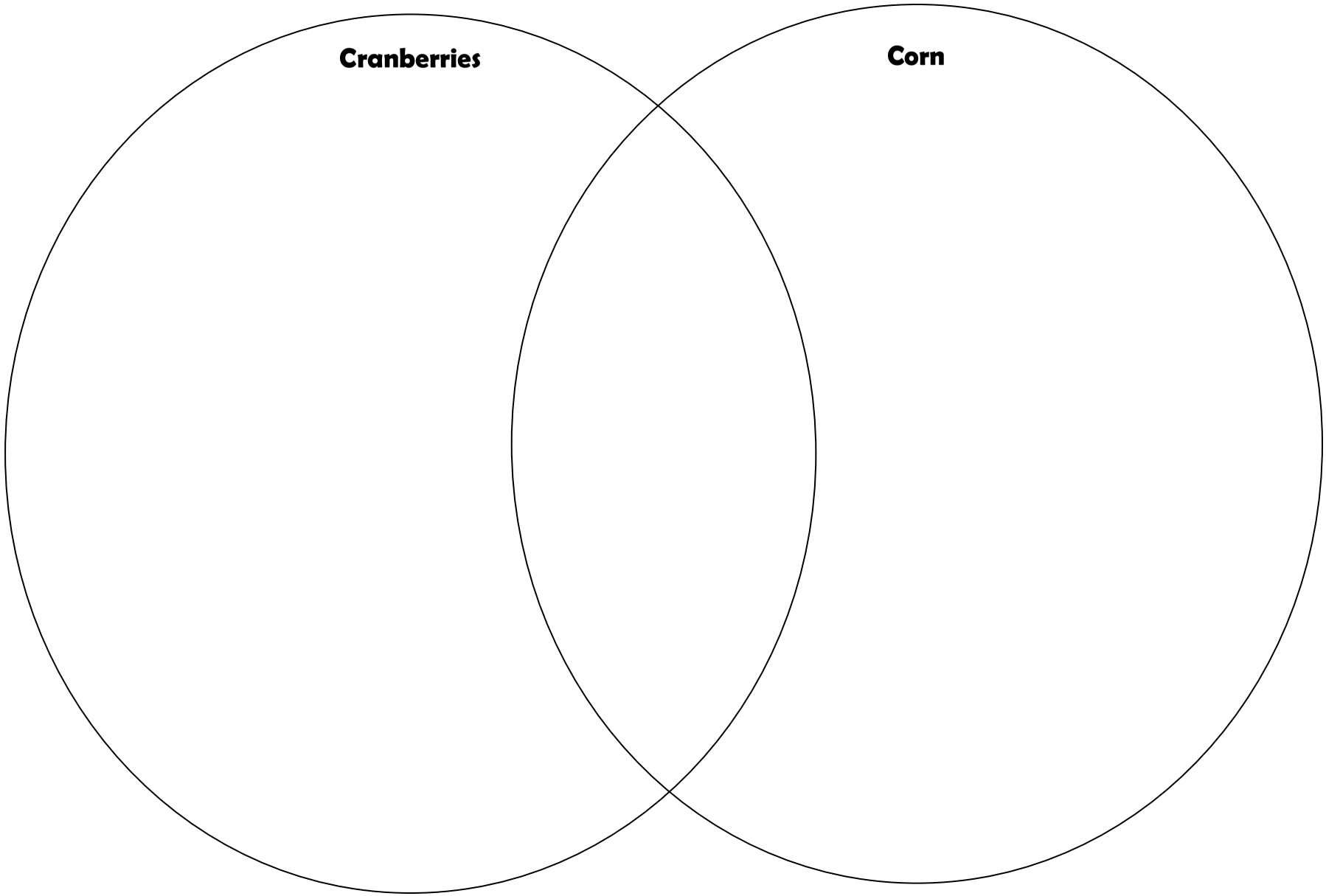
1. Have students research various products cranberries can be made into.
2. Distribute cranberry samples to students.
3. Ask if they can determine the product simply by smell.
4. Have students taste each sample. Can they determine the cranberry product from the flavor and texture?
5. Have them remove blindfolds and examine the samples for color.



Discuss what their findings were in pairs, small groups, and/or as a large group. Finally, reveal to students what each of the samples were!

How Does it Grow? Cranberries vs. Corn

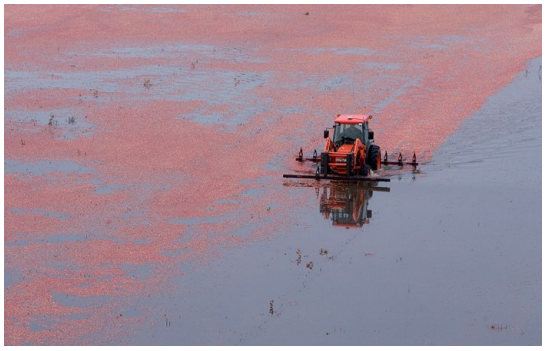
Conduct research and use your prior knowledge to compare and contrast how cranberries and corn are grown and harvested. (Examples: Where does it grow and what type of soil does it grow in? What machines are used in harvesting? What time of year is it harvested? How do we eat it?)



Step By Step in the Marsh

Procedure:

1. Cut out each of the boxes below so they are separate cards. Place them photo side face up and mix them together.
2. Have students sort the cards in order of which the event occurs on a cranberry marsh. Descriptions of the photos will be located on the back of the cards.



Flowers appear that are shaped like a crane

Honeybees pollinate the cranberry flowers

The cranberry grower watches the berries grow & makes sure they're ripe

The bog is flooded & a picking machine removes berries from the vines

A boom corrals the floating cranberries

The cranberries are gathered from the bog and rinsed

Berries are sorted for color and the Bounce Test may be used

Cranberries are processed and made into products we love!

Will It Bounce?

Objective: Students will learn about one of the historical ways cranberries are sorted by developing a hypothesis and using the scientific method.

Preparation: Gather materials. If possible, show students the Into the Outdoors: Sea of Red video segment: www.learnaboutcranberries.org/additional-resources

From the 3-4 minute mark, cranberry sorting and the bounce test is demonstrated. Tell the story of how this bounce test was discovered and why it would be used in production facilities.

Materials:

- A yardstick for each group of students
- A number of small, round objects that may or may not bounce, that will provide a range (one set of objects for each group). Examples: cotton ball, bouncy ball, marbles, a quarter, ping pong ball, etc.
- A sheet of paper for each group to record bounce height

Discussion:

Drop a fresh, ripe, harvested whole cranberry on a wooden floor or cutting board, and you will see and hear it bounce. Drop a bruised or damaged berry and it rolls.

While this may seem only to be a fun fact, in reality it impacts how berries are sorted, and which berries are processed. Fresh, whole cranberries are highly prized. Bouncing them down stairs used to be the method for selecting these desired specimens.

Do you know John "Peg Leg" Webb? He was a New Jersey cranberry grower who, according to cranberry lore, accidentally spilled a bucket of berries down his cellar steps. He observed that the bad cranberries remained on the top steps while the good cranberries bounced all the way to the bottom. That was his "aha!" moment, and the invention of the Bounce Test.

This technique was the basis for wooden sorting mills that allowed good cranberries to bounce, while poor fruit rolled to the bottom of the mill. Today, cranberry growers use modern technology to sort cranberries with color, ultraviolet light cameras and lazar tubes.

Animatedly tell students the story of how John "Peg Leg" Webb discovered the Bounce Test for cranberries. Although this was an accident it proved to be very useful for the cranberry industry. Times have certainly changed since the first invention of the Bounce Test, too. Today, cranberry growers use modern technology to sort cranberries with color, ultraviolet light cameras and lazar tubes.

Will It Bounce?

Directions:

1) Pretend that each of your round objects is a cranberry. In order for a cranberry to be considered ripe, it must bounce one foot off the ground. Make a hypothesis about which round objects will bounce high enough to be considered a ripe cranberry. There may be more than one, give it your best guess.

   Example: "We hypothesize that _____, _____, and _____ will be ripe cranberries."

2) Have one teammate hold your yardstick straight up and down, with the smallest numbers near the bottom. Look at where 12 inches, or one foot, is from the bottom of the yardstick. This is where your objects must bounce to in order to be considered a ripe cranberry. Maybe it will even go higher!

3) One round object at a time, have another teammate hold the object at the top of your yardstick and drop it so it falls straight, without throwing it. The remaining teammates should watch to see how high the round object bounces on the very first bounce. Measure how high it bounced by recording the highest number on the yardstick it went to on your sheet of paper.

4) Do this test at least once for each object. If you do it more than once, add all your numbers together and divide by how many times you dropped the object to get the average.

Were your best guesses correct? Can you "Accept Your Hypothesis"?

Will It Bounce?

Object	Bounce Height (inches)

These objects were ripe cranberries:	These objects were NOT ripe cranberries:

Check One:

◯ **My Hypothesis is Correct**

◯ **My Hypothesis is Not Correct**

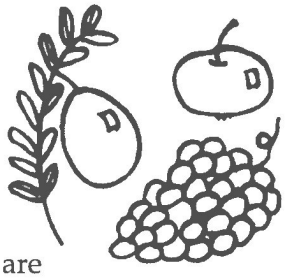
A Day in the Life of a Cranberry

Imagine if you were a cranberry, bright red and ready for harvest. Complete a diary entry or entries sharing your travels from the bog to what you might be made into.

Role: A Single Cranberry	Audience: 4th & 5th Grade Students
Format: Diary Entry (or multiple entries)	Topic: How cranberries are harvested and processed
Writing Assignment:	

Cranberry Facts

1. Cranberries are one of North America's native fruits (concord grapes and blueberries are two others).



2. There are five states in the United States which are the largest producers of cranberries—Wisconsin, Massachusetts, New Jersey, Oregon and Washington. Together they harvest more than seven million barrels of cranberries each fall. One barrel equals 100 pounds.

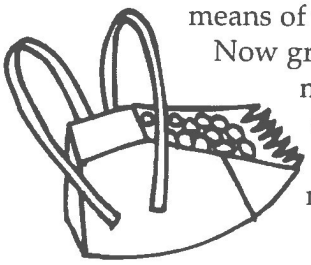
3. The early settlers gave the cranberry its modern name. To them, the pink cranberry blossoms resembled the heads of cranes; therefore the word "craneberry," later contracted to "cranberry."

4. Cranberry vines will bear fruit indefinitely with proper care. Some cranberry marshes have vines that are over 100 years old.

5. It takes three to five years for a new marsh to produce a crop.

6. Cranberry harvest begins mid-September and extends for a few weeks. In the early days, the fruit was picked by hand and the whole town turned out for the harvest.

7. For more than 100 years, the cranberries were combed from the vines by means of wooden hand rakes. Now growers flood their marshes for harvesting and hand rakes have been replaced by mechanical equipment.



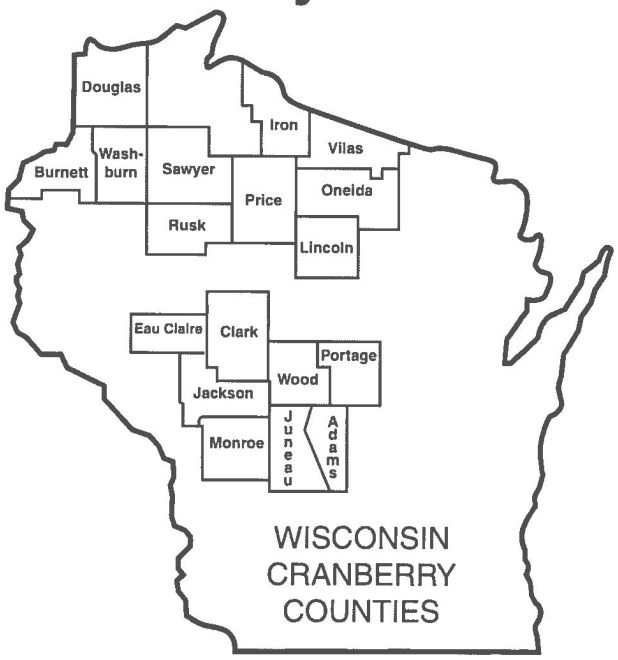
Some modern machines have teeth that gently lift the berries from the vines. While other types of machines agitate the water with enough force to dislodge the berries.

8. Cranberries contain vitamin C. Long ago, sailors ate cranberries to prevent a disease named scurvy.

9. Growers protect and manage over 180,000 acres of wetlands in Wisconsin. While cranberries are actually grown on about 18,000 of those acres, the remaining support property provides valuable habitat where plant and animal life flourish.

10. Cranberries have long been Wisconsin's #1 fruit crop. The cranberry growing tradition has been passed down by Wisconsin families since the mid 1800s. In April of 2004, the cranberry was named Wisconsin's official state fruit.

Where To Go To See Cranberry Marshes



Courtesy of: Wisconsin Cranberry Growers Association Activity Book

Additional Resources

Tours and Field Trips

Wisconsin Cranberry Discovery Center in Warrens
For marsh tour locations: www.wiscran.org/experience/cranberry-marsh-tours

Books

Time for Cranberries by Lisl H. Detlefsen - 2017 Wisconsin Ag in the Classroom Book of the Year. The book introduces young readers to the production of cranberries.
Cranberry Thanksgiving by Wende and Harry Devlin

On the Web

Into the Outdoors video segments on cranberry production through the seasons:
www.learnaboutcranberries.org
Wisconsin Cranberries: Growing Strong on YouTube
Wetherby Cranberry Library with online educational archives:
www.discovercranberries.com/about-cranberries/digital-archives

Activity Booklets

Looking for an activity booklet filled with fun cranberry games for kids? Get them for **free** courtesy of the Wisconsin Cranberry Growers Association. Download today from www.wiscran.org/cranberries/education

WISCONSIN STATE CRANBERRY GROWERS Association

Farm Bureau's Ag in the Classroom program provides teachers and students K-12 with an understanding of how their food is produced. The program seeks to work within existing curricula to provide basic information on our nation's largest industry: Agriculture. Wisconsin's Ag in the Classroom program is carried out by a network of local educators, volunteers and representatives from agricultural organizations and businesses. The goal of the program is to help students gain a greater awareness of the role of agriculture in the economy and society, so that they may become citizens who support wise agricultural policies.

WISCONSIN Ag in the Classroom