

Why Do Cranberries Float?

*A lesson from the New Jersey Agricultural Society
Learning Through Gardening program*

OVERVIEW: Your students probably don't ever wonder whether the fruits or vegetables they eat can float or not, but for one fruit – cranberries – this characteristic is important to how they are harvested. In this fun floating lesson, students practice making hypotheses and learn how to theorize why their hypotheses were correct or not. And students learn how one of New Jersey's biggest crops – cranberries – are harvested by when they float.

GRADES: PreK-2

OBJECTIVE: The student will be able to:

- Make a hypothesis on whether or not a fruit or vegetable will float.
- Develop theories for why their hypotheses were correct or incorrect.
- Explain why a cranberry floats.
- Explain how most cranberries are harvested.



MATERIALS:

Variety of fruits and vegetables of varying sizes and weights, for example: a potato, a carrot, a pumpkin, an apple, an orange, grapes, peas, and especially cranberries.

A water table or large container filled with water

PREPARATION:

Create a chart listing all the fruits and vegetables and two columns: Floats and Sinks.

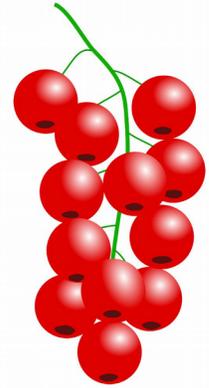
PROCEDURE:

Students will conduct a floating and sinking experiment. Before a child places a fruit or vegetable in the water, ask the students whether it will float or sink and take a vote. Record the votes on the chart. For example: Carrot: sinks = 5 votes, floats = 16 votes. A child tests the item and the vote that is correct is circled.

After all the items have been tested, look at the predictions. How many times did the students predict correctly? Discuss what factors children considered in making their prediction. List them. Why were the predictions wrong on certain items? What factors fooled them?

Ask the class why they think the cranberries floated when the _____ did not. Cut open a cranberry and show the students the air pockets inside. Compare the cranberry to other floating things students know that are filled with air (tubes, rafts, etc.)

Explain that many cranberries are grown in New Jersey. In fact, New Jersey is number three in the country for cranberry production. Tell students that cranberries grow in wet, spongy areas called bogs. When cranberries are harvested, the bogs are flooded, a machine is driven through the bogs to shake the berries off the plants, and the cranberries all float to the top. The cranberries are then gathered together and sucked into a truck.



Show the YouTube video *How Does It Grow: Cranberries*:
https://www.youtube.com/watch?v=XZPXQ7nw_9Y.

Discuss the video with the class. What did they learn about cranberries? How are cranberries harvested? What in the video surprised them?

EVALUATION:

Student can explain verbally why he/she made a particular hypothesis.

Student can develop a theory as to why that hypothesis was correct or incorrect.

Student can explain that cranberries float because of the air pockets inside them.

Student can explain that cranberries bogs are flooded at harvest time so that the cranberries will float to the surface.

EXTENSIONS:

Take your floating and sinking experiment further. Make hypotheses with the class about which items sink or float and devise ways of proving or refuting the hypothesis.

Examples: Large items sink. Test all large items. Is the hypothesis true?
Red items float. Test all red items Is the hypothesis true?
Small items float. Test.
Items that sink will float if you cut them into small pieces. Test

Is weight the factor? Weigh the items and record the weights. Test the heavy-items-sink hypothesis. A bag of cranberries weighs more than one cranberry. Does a bag of cranberries float? How about six oranges in a bag?

Figure ways items that sink can be made to float. How can you sink the floaters? Objects like egg and milk cartons, rocks, blocks, string and tape can be introduced to make this possible.

Read the book *Cranberries, Fruit of the Bogs*, by Diane Burns

Locate on the map other places where cranberries are grown. (Massachusetts, Wisconsin, Oregon, Washington, and British Columbia.)

Use cranberries as counters for math problems. Estimate the number of cranberries needed to fill various containers.

New Jersey Learning Standards

*Science: PreK:5.1.1-4 K:LS1.C, ESS3.A, ETS1.A 1: LS1.A, ETS1.A
2:LS2.A, ETS1.A*