

Fruit or Vegetable?

Skills: Science, Language Arts

Objective: Students explore the difference between fruits and vegetables from different perspectives and develop their own definitions.

Background

NOTE: COMPLETE ACTIVITY 1 BEFORE SHARING BACKGROUND WITH STUDENTS.

In 2006, the Oklahoma Legislature declared watermelon our state vegetable. For many this was surprising, since most of us think of watermelon as a fruit. Strawberries had been named our state fruit the year before, and a legislator from Rush Springs wanted a similar honor for the watermelons that grow so plentifully in his part of the state. Watermelons consistently rank in the top 20 of our most valuable Oklahoma commodities. The legislator argued that since watermelon is in the same family as squash and cucumber, and squash and cucumbers are vegetables, watermelon should be called a vegetable and given the state honor. Although some members were skeptical, the Legislature passed the bill.

Confusion over what is a fruit and what is a vegetable is not new. In scientific terms the fruit is the part of the plant that develops from the ovary in the base of the flower and contains the seed of the plant. By that definition, many of the foods we commonly call vegetables are actually fruits, including squash and cucumber. The problem is that vegetable is not a botanical category like fruit. The dictionary definition of vegetable is “a usually herbaceous plant grown for an edible part.” By that definition, all the fruits we eat are also vegetables.

The Oklahoma legislature is not the first government entity to try to determine the difference between fruits and vegetables. In the late 19th Century, US tariff laws imposed a duty on vegetables but not on fruits. Importers of tomatoes argued that since tomatoes are actually a fruit, they should not be subject to the tax. In 1893 the US Supreme Court settled the matter by declaring the tomato a vegetable, using the popular definition which classifies vegetable by use. Since tomatoes are generally served with dinner and not dessert, the court reasoned, it should be classified as a vegetable. The case is known as *Nix v. Hedden* (149 U.S. 304). While the tomato can be classified botanically as a fruit, it is officially categorized as a vegetable in the United States.

For purposes of counting, the US Department of Agriculture (USDA) agrees with the Oklahoma Legislature in calling the watermelon a vegetable. In the national agricultural census, conducted by the USDA’s National Agricultural Statistics Service (NASS), watermelons are counted as vegeta-

P.A.S.S.

GRADE 6

Science Process—2.1,2;

3.4; 4.1,2,3,4; 5.3,4

Physical Science—1.1

Reading—1.1a,3a; 3.1b,2a;

5.1ab,2a

Writing—1.2; 2.7

Oral Language—1.2

Social Studies—1.2; 4.2

Math Process—1.3; 4.1;

5.4

Math Content—5.1

Health—1.4,7; 3.10; 7.1

GRADE 7

Science Process—2.1,2;

3.4; 4.1,2,3,4; 5.3,4

Physical Science—1.1

Reading—1.1; 3.1a,2a;

5.1ab,2a

Writing—1.2; 2.8

Oral Language—1.2

Social Studies—1.1; 6.1

Math Process—1.3; 4.1;

5.4

Health—1.4,7; 3.10; 7.1

GRADE 8

Science Process—2.1,2;

3.4; 4.1,2,3,4; 5.3,4

Physical Science—1.2

Life Science—3.1

Reading—1.1; 3.1a,2a;

5.1a,2a

Writing—1.2; 2.8

Oral Language—1.2

Social Studies—2.1

Math Process—1.3; 4.1;

5.4

Math Content—5.1

Health—1.4,7; 3.10; 7.1

Resources Needed

computer and/or library access

assorted whole fruits and vegetables, especially some that may be unfamiliar to students

bles. NASS also counts strawberries as vegetables. Apples, pears, cherries, peaches, plums and grapes are counted as fruits. Strawberries are counted as fruits only if they are used in production.

For nutrition purposes, the USDA lists fruits and vegetables the way most people think of them. The USDA's Center for Nutrition Policy and Promotion (CNPP) lists watermelon and strawberries as fruits. Squash, cucumbers and tomatoes are listed as vegetables.

No matter how you categorize them, nutrition experts agree that fruits and vegetables provide nutrients that are vital for health and maintenance of your body. People who eat fruits and vegetables as part of an overall healthy diet are likely to have a reduced risk of diseases such as cardiovascular disease, type 2 diabetes, certain cancers, and coronary heart disease. Vegetables and fruits are also low in calories and high in fiber. Eating them instead of higher calorie food can be helpful in lowering calorie intake and maintaining a healthy weight. Fiber is beneficial in keeping the muscles of the digestive tract strong and removing waste from the body.

To nutrition experts a more important way to categorize fruits and vegetables is by their color. Some possible benefits, by color, are listed below:

Red—May help fight some cancers; helps fight colds; helps keep the heart healthy and helps us see at night.

Orange—May help fight colds; aids in developing a healthy heart; may help prevent cataracts.

Yellow—May help prevent hypertension.

Green—May help fight some cancers; helps us see at night.

Purple and blue—May help fight some cancers; may help with memory and maintain urinary tract health.

White, tan and brown—Promote heart health and reduce cancer risk.

Activities

1. One by one, hold up the whole fruits and vegetables you have brought to class.
 - As a class, students will identify each as a fruit or a vegetable.
 - Place the produce in separate piles based on student opinions.
 - Lead a discussion about the difference between fruits and vegetables.
2. Hand out the student worksheet, "Oklahoma Fruits and Vegetables."
 - Students will determine if each food listed is a fruit or vegetable and place their answers in the first blank column.
3. Read and discuss background and vocabulary.
 - Provide copies of the three charts showing how certain fruits and vegetables are categorized by two USDA agencies.
 - Students will fill in the remaining columns on the worksheet based on what is shown on the two charts.

4. Students will discuss the difference in fruits and vegetables based on the USDA lists.
 - What do the foods listed as fruits have in common on each list?
 - What do the foods listed as vegetables have in common on each list?
 - How are the two groups different on each list?
5. Students will develop their own definitions of fruit and vegetable.
6. Students will search various sources to find definitions for fruit and vegetable (dictionaries, online search engines, science books, nutrition sources, etc.)
7. Students will consider other categories by which fruits and vegetables might be listed (color, flavor—sweet, sour, bland—plant part, etc.)
 - Students will develop charts for sorting fruits and vegetables by the categories they have chosen.
8. Students will divide into groups.
 - Assign two or three fruits and vegetables to each group.
 - Students will research their assigned fruits and vegetables to find health benefits.
 - Students will report their findings to the class.
9. Students will research online or in the library to find other Oklahoma state symbols.
 - Does Oklahoma have a state grain? A state bean? A state nut? If not, discuss as a class what those should be.

Extra Reading

- Bauer, Joan, *Squashed*, Puffin, 2001.
- Dahl, Roald, and Lane Smith, *James and the Giant Peach*, Puffin, 2000.
- Fleischman, Paul, and Judy Pederson, *Seedfolks*, HarperCollins, 1997.
- Hughes, Meredith Sayles, *Buried Treasure: Roots & Tubers*, Lerner, 1998.
- Hughes, Meredith Sayles, *Cool as a Cucumber, Hot as a Pepper: Fruit Vegetables*, Lerner, 1998.
- Hughes, Meredith Sayles, *Green Power: Leaf & Flower Vegetables*, Lerner, 2001.
- Hughes, Meredith Sayles, *Stinky and Stringy: Stem & Bulb Vegetables*, Lerner, 1999 Lerner, 1999.

Vocabulary

- botanic**—having to do with a branch of biology dealing with plant life
- cardiovascular**—of, relating to, or involving the heart and blood vessels
- commodity**—a product of agriculture or mining
- coronary heart disease**—a condition and especially one caused by atherosclerosis that reduces blood flow through the coronary arteries to the heart and typically results in chest pain or heart damage
- duty**—a tax on imports
- fruit**—the usually edible reproductive body of a seed plant, especially one having a sweet pulp associated with the seed; a succulent plant part used chiefly in a dessert or sweet course
- importer**—one who brings (as merchandise) into a place or country from another country
- government entity**—a government organization that has an identity separate from those of its members
- maintenance**—support or provision for something
- nutrition**— the act or process of nourishing or being nourished
- ovary**—the enlarged rounded usually basal portion of the pistil or gynoecium of an angiospermous plant that bears the ovules and consists of one or more carpels
- statistics**—a branch of mathematics dealing with the collection, analysis, interpretation, and presentation of masses of numerical data
- tariff**—a schedule of duties imposed by a government on imported or in some countries exported goods
- type 2 diabetes**—a common form of diabetes mellitus that develops especially in adults and most often in obese individuals and that is characterized by hyperglycemia resulting from impaired insulin utilization coupled with the body's inability to compensate with increased insulin production
- vegetable**—a usually herbaceous plant (as the cabbage, bean, or potato) grown for an edible part that is usually eaten as part of a meal

Oklahoma Fruits and Vegetables

Are the foods listed below fruits or vegetables? Write what you think in the first blank column, then use the charts provided by your teacher to determine how they are categorized by two government agencies.

	Hypothesis	USDA — NASS	USDA — CNPP
apple			
apricot			
asparagus			
beans, snap (green beans)			
blackberry			
broccoli			
cabbage			
cantaloupe			
carrot			
cauliflower			
cherry			
corn, sweet			
cucumber			
grape			
lettuce			
nectarine			
onion			
peach			
pear			
pepper			
plum			
pumpkin			
raspberry			
spinach			
squash			
strawberry			
tomato			
watermelon			

Fruit or Vegetable: Ag Statistics

PRINCIPAL VEGETABLES FOR FRESH MARKET: PRODUCTION BY CROP

United States, 2004-2006 (metric tons), "Vegetables 2006 Summary," USDA, National Agricultural Statistics Service

Crop	2004	2005	2006
artichokes	37,420	39,420	34,060
asparagus	93,530	69,580	56,020
beans, snap	261,680	251,330	288,710
broccoli	899,700	904,460	916,250
cabbage	1,132,750	1,101,090	1,165,090
cantaloupe	992,270	957,980	897,020
carrots	1,207,910	1,221,250	1,188,360
cauliflower	291,430	330,440	344,320
celery	883,550	847,580	812,380
corn, sweet	1,264,840	1,225,740	1,212,900
cucumbers	458,170	439,570	449,870
garlic	236,960	216,410	224,480
honeydews	236,820	221,030	228,520
lettuce, leaf	670,860	720,530	778,090
onions	3,767,750	3,334,070	3,249,880
peppers, bell	743,890	727,380	781,670
pumpkins	463,520	487,880	463,980
spinach	284,220	343,870	281,540
squash	351,800	378,020	430,090
strawberries	1,004,160	1,053,280	1,090,430
tomatoes	1,726,640	1,735,800	1,671,210
watermelons	1,672,930	1,741,920	1,908,390

Fruit or Vegetable: Ag Statistics

NONCITRUS FRUITS AND NUTS: TOTAL PRODUCTION BY CROP

United States, 2004-2006 (1,000 tons fresh equivalent), "Noncitrus Fruits and Nuts 2006 Summary," USDA, National Agricultural Statistics Service

Noncitrus Fruits	2004	2005	2006
apples	5,220.3	4,852.5	4,965.9
apricots	101.1	81.7	44.5
avocados	179.4	312.4	149.4
blackberries	24.0	24.5	21.3
blueberries, cultivated	114.4	119.3	138.0
boysenberries	3.1	2.6	3.0
loganberries	0.1	0.1	0.1
raspberries	45.0	50.4	58.1
cherries, sweet	283.1	250.8	295.7
cranberries	308.8	312.2	345.0
dates	17.2	17.2	19.6
figs	51.1	52.2	41.8
grapes	6,240.0	7,813.7	6,417.2
kiwifruit	26.7	37.2	26.1
nectarines	269.0	250.5	231.9
olives	107.5	142.0	23.5
peaches	1,307.1	1,184.6	1,010.1
pears	878.3	823.3	842.0
plums	156.0	171.0	158.0
prunes	143.9	295.9	576.0

Fruit or Vegetable: Nutrition

From "MyPyramid: Inside the Pyramid," USDA Center for Nutrition Policy and Promotion,
<http://www.mypyramid.gov/pyramid/index.html>

FRUITS

apples
 apricots
 avocado
 bananas

berries
 strawberries
 blueberries
 raspberries
 cherries

grapefruit
 grapes
 kiwi fruit
 lemons
 limes
 mangoes

melon
 cantaloupe
 honeydew
 watermelon

nectarines
 oranges
 peaches
 pears
 papaya
 pineapple
 plums
 prunes
 raisins
 tangerines

VEGETABLES

dark green vegetables
 bok choy
 broccoli
 collard greens
 dark green leafy lettuce
 kale
 mesclun
 mustard greens
 romaine lettuce
 spinach
 turnip greens
 watercress

orange vegetables
 acorn squash
 butternut squash
 carrots
 hubbard squash
 pumpkin
 sweet potatoes

dry beans and peas
 black beans
 black-eyed peas
 garbanzo beans (chickpeas)
 kidney beans
 lentils
 lima beans (mature)
 navy beans
 pinto beans
 soy beans
 split peas
 tofu (bean curd made from soybeans)
 white beans

starchy vegetables
 corn
 green peas
 lima beans (green)
 potatoes

other vegetables
 artichokes
 asparagus
 bean sprouts
 beets
 Brussels sprouts
 cabbage
 cauliflower
 celery
 cucumbers
 eggplant
 green beans
 green or red peppers
 iceberg (head) lettuce
 mushrooms
 okra
 onions
 parsnips
 squash
 tomatoes
 tomato juice
 vegetable juice
 turnips
 wax beans