

Fruit or Vegetable?

Objective

Students explore the difference between fruits and vegetables according to different criteria and develop their own definitions. Students research to find information about import and export of common fruits and vegetables.

Key Words

fruit, vegetable, produce, government, economics, trade, import, export, tariff

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, eggplant, cucumber, etc. One 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)

Oklahoma Academic Standards

GRADE 6

Government and Economics:
4.2,3,4
Health—1.4,7; 3.10; 7.1
Speaking and Listening: R.1,3;
W.1,2
Reading and Writing Process:
R.1,2,6,7
Vocabulary: R.1,3,4,5
Research: R.3; W.2,3,4
Multimodal: R.1,2; W.1,2

GRADE 7

Speaking and Listening: R.1,3;
W.1,2
Reading and Writing Process:
R.1,2,6,7
Vocabulary: R.1,3,4,5
Research: R.3; W.2,3,4
Multimodal: R.1,2; W.1,2
Health—1.4,7; 3.10; 7.1

GRADE 8

Speaking and Listening: R.1,3;
W.1,2
Reading and Writing Process:
R.1,2,6,7
Vocabulary: R.1,3,4,5
Research: R.3; W.2,3,4
Multimodal: R.1,2; W.1,2
Health—1.4,7; 3.10; 7.1

HIGH SCHOOL

Economics—2.2; 3.1,2; 4.1,2;
9.2

Resources Needed

computer and/or library access

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

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 vegetables. 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 the 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.

Social Studies/English Language Arts

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. 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.
4. Read and discuss background and vocabulary.
 - Students will discuss tariffs in light of the story in the background about tomatoes. What other reasons might government agencies have for placing

produce in one or the other category. Is this an appropriate role for government? Why or why not?

5. 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.
 - 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?
 - Students will develop their own definitions of fruit and vegetable.
6. Students will work in groups to search various sources to find definitions for fruit and vegetable (dictionaries, online search engines, science books, nutrition sources, etc.)
 - Groups will report what they find to the class.
7. Students will use online or library resources to find government agencies with responsibilities related to the sales of fruits and vegetables both domestically and internationally. Students will summarize the responsibilities of each agency.
8. Students will work in groups to design charts for a supermarket survey to find where common fruits and vegetables originate.
9. Students will research NAFTA and report on the impact it had on the sales of fruits and vegetables in the US.
10. Students will use online sources to research the largest number of fruits and vegetables exported and imported. (USDA Economic Research Service <http://www.ers.usda.gov/data-products/fruit-and-tree-nut-data/data-by-commodity.aspx>)

Health

1. 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.

Extra Reading

- Anderson, Jodi Lynn, *Peaches*, HarperTeen, 2006.
- Bauer, Joan, *Squashed*, Puffin, 2001.
- Dahl, Roald, and Lane Smith, *James and the Giant Peach*, Puffin, 2000.
- Landau, Elaine, *Tomatoes (A True Book)*, Children's, 2000.
- Moser, Lisa, and Stacey Schuett, *Watermelon Wishes*, Clarion, 2006.

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 FRESH MARKET VEGETABLE PRODUCTION BY CROP

United States, 2010-12 (metric tons), "Vegetables 2012 Summary," USDA, National Agricultural Statistics Service

Crop	2010 (metric tons)	2011 (metric tons)	2012 (metric tons)
artichokes	39,190	45,350	51,300
asparagus	36,240	38,100	34,520
beans, snap (green beans)	229,610	243,440	245,030
broccoli	874,930	823,220	928,590
cabbage	1,054,050	959,750	964,830
cantaloupe	321,460	855,920	768,930
carrots	1,054,010	991,640	1,053,830
cauliflower	321,460	301,590	303,450
celery	903,690	878,240	896,290
corn, sweet	1,343,900	1,301,080	1,423,370
cucumbers	380,340	335,430	452,860
garlic	170,190	190,690	195,910
honeydews	163,880	160,480	156,130
lettuce, leaf	589,850	541,540	561,730
onions	3,338,380	3,360,970	3,277,460
peppers	732,820	813,200	843,810
pumpkins	487,520	485,570	560,820
spinach	261,590	277,640	242,080
squash	305,180	328,760	340,060
strawberries	1,294,180	1,317,320	1,367,530
tomatoes	1,268,280	1,280,530	1,251,450
watermelons	1,893,100	1,688,040	1,770,630

Oklahoma Ag in the Classroom is a program of the Oklahoma Cooperative Extension Service, the Oklahoma Department of Agriculture, Food and Forestry and the Oklahoma State Department of Education.

Fruit or Vegetable? Ag Statistics

NONCITRUS FRUITS: TOTAL PRODUCTION BY CROP

United States, 2010-2012 (1,000 tons fresh equivalent), "Noncitrus Fruits and Nuts 2012 Summary," USDA,
National Agricultural Statistics Service

Crop	2010 (1,000 tons fresh equivalent)	2011 (1,000 tons fresh equivalent)	2012 (1,000 tons fresh equivalent)
apples	4,645.8	4,712.5	4,530.6
apricots	66.4	66.7	60.8
blackberries, cultivated	22.6	26.4	26.8
blueberries, cultivated	208.3	221.6	236.7
boysenberries	1.1	1.3	1.0
raspberries	40.5	54.0	48.6
cherries, sweet	313.2	334.4	424.0
cranberries	340.4	385.7	402.3
dates	29.0	33.3	31.1
figs	40.9	38.7	38.7
grapes	7,471.2	7,447.7	7,343.4
kiwifruit	32.7	37.7	29.6
nectarines	233.2	225.2	188.9
olives	206.0	71.2	160.0
peaches	1,150.3	1,071.8	978.3
pears	813.6	965.7	858.2
plums	141.3	160.0	115.0

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
raisin
tangerines

VEGETABLE

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
 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
 squash
 tomatoes
 tomato juice
 vegetable juice
 turnips
 wax beans

USDA Agencies

The United States Department of Agriculture (USDA) works to support the American agricultural economy to strengthen rural communities; to protect and conserve our natural resources; and to provide a safe, sufficient, and nutritious food supply for the American people. The Department's wide range of programs and responsibilities touches the lives of every American every day. Listed below are a few of the agencies under the USDA, with information their missions, responsibilities, and services they provide.

Agricultural Marketing Service (AMS), <https://www.ams.usda.gov>

The Agricultural Marketing Service (AMS) administers programs that facilitate efficient, fair marketing of U.S. agricultural products, including food, fiber, and specialty crops. AMS identifies and promotes the development of marketing opportunities for the agricultural community by conducting and supporting research and providing information on farmer direct marketing activities. AMS programs promote a strategic marketing perspective that adapts product and marketing practices and technologies to the issues of today and the challenges of tomorrow.

Agricultural Research Service, www.ars.usda.gov

The Agricultural Research Service (ARS) is the principal in-house research agency of the USDA. ARS is charged with extending the Nation's scientific knowledge through the administration of its national programs, as well as by conducting research projects in animal and crop production and protection, human nutrition, food safety, bioenergy, the environment, and other topics that affect the American people on a daily basis.

Economic Research Service, <http://www.ers.usda.gov/about-ers/careers-at-ers.aspx>

The Economic Research Service (ERS) is a primary source of economic information and research in USDA. ERS conducts its research program to inform public and private decision making on economic and policy issues involving food, farming, natural resources, and rural development. ERS's economists and social scientists conduct research, analyze food and commodity markets, produce policy studies, and develop economic and statistical indicators. ERS staff disseminates economic information and research results through an array of outlets.

Foreign Agricultural Service, <http://www.fas.usda.gov>

The Foreign Agricultural Service (FAS) works to improve foreign market access for U.S. products and administers market development and export financing programs. FAS helps U.S. exporters develop and maintain markets overseas for U.S. food and agricultural products. FAS helps developing countries improve their agricultural systems and build their trade capacity.