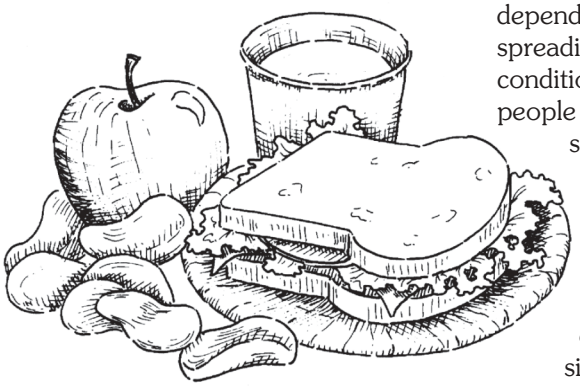
Lunchtime Favorites

LEVEL: Grades PreK-12
SUBJECTS: Science, Health, Consumer Education, Mathematics, Social Studies (Geography)
SKILLS: Analyzing, classifying, collaborating, collecting data, comparing similarities and differences, discussing, drawing, explaining, identifying, listing, reasoning, sorting



MATERIALS

Paper plates; drawing paper and materials; two hula hoops or string or butcher paper; four signs: "Plant," "Animal," "Plant and Animal," and "Other." **Older students**: photocopies of the attached ***Comparison of Diets*** sheets. **Optional**: encyclopedias, magazines, food pictures, computers, ***The Complexity of Food***, ***Japanese Meals*** and ***Feeding Guests in Haiti*** sheets.

VOCABULARY

animal, consumer, diet, interdependence, nutrients, nutrition, plant, source

RELATED LESSONS

What's the Shape of Your Diet?
Calorie Counting
Chewsy Choices
Feed the Need
Mighty Macros

SUPPORTING INFORMATION

People use plants and animals as food. Food from animals also traces back to plants because animals eat plants or they eat other animals that eat plants. This creates a long food chain. Plants and animals depend on each other. Animals use plants as food, and some plants depend on animals for pollinating, spreading seeds, and improving soil conditions. For a nutritious diet, people need food from a variety of sources, which could include animals and plants. (See the FLP lesson "What's the Shape of Your Diet?")

History, geography, and economic conditions play significant roles in diet in various cultures. For example, Europeans consume corn and potatoes because they brought them from the Americas in the 16th century. They found that these crops grew well in parts of Europe and added variety to a bland and limited diet. That diet may have been a factor in why Columbus' contemporaries averaged less than 5'6" in height.

In some countries, the geography of the land affects the food choices. The Japanese diet includes large quantities and varieties of fish, not surprising for an island country with only 15 percent arable land. The Chinese eat a great deal of pork. Unlike most other livestock, pigs do not require pasture space. That's important in a country in which farmland is scarce and transportation of food has often been difficult and expensive. In Northern Africa, flatbreads and other foods made from grains are the basic food, with fruits and vegetables also a part of the diet. Meat is not part of the daily diet for some people because it costs too much. Occasionally they eat chicken, goat or lamb.

One strategy that will help students learn to compare and contrast information about food is the Venn dia-

BRIEF DESCRIPTION

Students trace the sources of their food from lunch to learn the interdependence of plants, animals and people. They explore the importance of eating a variety of foods from plants and animals and discover how culture influences food choices.

OBJECTIVES

(Note: All four objectives are appropriate for older students; younger students may accomplish only the first three objectives.)
The student will:
- identify and list all the lunch foods eaten on a given day;
- sort and classify these foods according to their source using a Venn diagram;
- recognize that human foods come from plants, animals and other organisms that are neither plant nor animal; and
- explain how and why dietary choices might vary in other regions of the world.

ESTIMATED TEACHING TIME

For younger students, 45 to 60 minutes. For older students, 60 to 90 minutes plus time for research. (Can be taught in two sessions.)

gram. (See the ***Venn Diagram#1*** and ***#2*** sheets located in the Appendixes for more information.) This lesson will help you discover the top five lunchtime favorites of your class.

GETTING STARTED

Gather one paper plate per student, drawing materials, and two or three hula hoops, string, or butcher paper for constructing the Venn diagram. Make signs labeled "Plant," "Animal," "Plant and Animal" and "Other." For older students, make photocopies of the ***Comparison of Diet*** sheets for each student. **Optional**: gather encyclopedias, books about other countries, and other references (e.g., the Internet) students could use as they research other cultures.

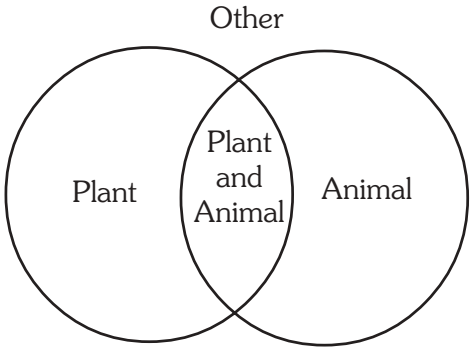
PROCEDURE

1. Just before lunchtime, tell students they will need to remember what they ate for lunch. Ask them to think about which foods come from plants and which ones come from animals. Have students save any food packaging from their lunch that lists ingredients of the product.

2. Back in the classroom after lunch, make a master list in a visible place of all the foods students ate. Repeated items need to appear only once.

3. Distribute paper plates or paper and drawing materials. Ask each student to draw a picture of one item they had for lunch. Use the master list as a checklist to make sure each item is represented. If there are not enough items for one per student, have several students draw an item mentioned more than once.

4. Create a large Venn diagram with two hula hoops, string circles on the floor, or circles drawn on butcher paper. Use the signs and label the main part of one circle "Plant" and the other "Animal." Label the overlapping area of the two circles "Plant and Animal." Make an "Other" category for items that the students are unsure of or foods that are neither plant nor animals such as mushrooms.

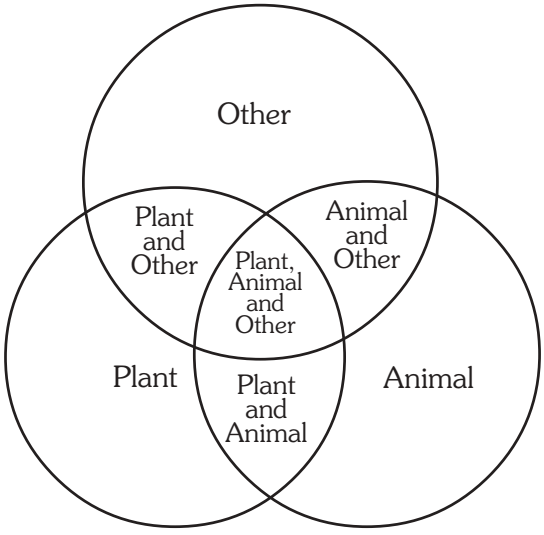


Have students place their drawn items in the appropriate circle or overlapping area according to the source of that food. For example, an apple would be placed in plant, string cheese in animal, and a meat sandwich in the overlapping area. If a question arises about placement of a food, students can help each other or refer to the ingredients on the saved packaging. Older students might draw a Venn diagram including the "Other" category on paper and write all the items from the master list in the appropriate areas of the overlapping circles.

If a student is not sure of whether to place a food item in a plant or animal category, have him/her put it outside the Venn diagram in the "Other" category as an item to discuss later.

For older students

Use three circles with "Plant," "Animal," and "Other" labels in the areas that do not overlap, and "Plant and Animal," "Plant and Other," "Animal and Other," "Plant, Animal and Other," category to include the three kingdoms of Protista, Monera and Fungi due to the virtual impossibility of using five circles to link all five kingdoms and demonstrate the overlapping of foods in a visual fashion. A chart is included in this lesson that describes commonly consumed foods in this "Other" category, with an explanation about their inclusion. Their complex nature will surprise many students.



5. Discuss the diagram and findings by asking:

   - Did we eat more foods from plants or from animals?

- How are foods from plants and animals the same? *(They are both made of substances [essential nutrients] necessary for growth, good health, and energy. We depend on farmers and ranchers to produce plants and animals that supply the variety of foods we need to get essential nutrients for growth and development.)*

- How are they different? *(We get different kinds of foods from plants and animals. A variety of grains, fruits, vegetables, and nuts come from plants. Animals provide us with a variety of meat, egg and milk products. Some of the essential nutrients are more abundant in foods from plant sources; other essential nutrients are more abundant in foods from animal sources.)*

- Why do we need plants and animals? *(They provide us with a variety of foods that give us the essential nutrients and energy necessary to grow, perform daily activities, and stay healthy.)*

- Are plants or animals more important to us as food? Why? *(Both are equally important because each type of food provides different nutrients necessary for the body to grow and develop. For instance, vegetables and fruits are high in vitamins A and C, but low in protein and iron. Meats are low in vitamins A and C, but high in protein and iron.)*

- In what ways do plants need animals? *(Some plants need animals to be pollinated and fertilized so they can produce seeds and fruits. The seeds are important for growing more plants.)* Animals need plants? *(Some animals eat plants [cattle] or other animals that eat plants [coyotes eat rabbits].)* Explain to students that this is what is called interdependence - depending on each other.

- Why do we eat foods from both plants and animals? *(It is important to eat a variety of foods to get the nutrients we need, and at the same time, the right amount of calories to grow and/or maintain a healthy weight. Eating food from both plants and animals is important to achieve the variety that is important to a healthy diet. Foods are divided into five groups and these five groups are made of a combination of foods from plants and foods from animals. Each of these food groups provides some, but not all, of the nutrients we need. Foods in one group cannot replace those in another. No one food group is more important than another - for good health, you need them all.)*

- Why are some foods neither plant nor animal? *(They may be a fungus such as mushroom, or mineral such as salt, or synthetic such as artificial flavorings made from chemicals.)* (See the attached ***Complexity of Food*** chart.)

- What foods would the students be unable to eat if the "Other" category did not exist? *(Mushrooms, pickles, sauerkraut, soy sauce, diet soft drinks, chocolate, vanilla, yeast breads, cheeses of all types, pizza, yogurt, many salad dressings, ketchup, mustard, mayonnaise, etc.)* (See the attached ***Complexity of Food*** chart.)

- Do you think people in other parts of the world eat the same things our class did for lunch? Why or why not?

- What foods might students in another country eat? (See ***Japanese Meals*** and ***Feeding Guests in Haiti*** sheets in the Appendixes.)

- How would you explain the interdependence of plants, animals, and people? (Students should be able to answer this question based on answers to the previous questions.)

6. Distribute to each student the ***Comparison of Diets*** sheet. Have students research, gather and record information about diets in other countries. Have them 1) compare and contrast these diets with those of the class through the use of a Venn diagram; and 2) recognize how and why diets vary geographically. Students could use the following sources of information: encyclopedias; books about other countries; computers; foreign-born students, parents, or grandparents; teachers and others who have experience in the culture of another country (foreign language or social studies teachers perhaps); foreign consultants or representatives; ethnic organizations; and restaurants.

Optional session break

7. Have students share their information about diets in other countries. Discuss their results and responses to the questions from the ***Comparison of Diets*** sheets.

EVALUATION OPTIONS

1. Have students illustrate the plants and animals they ate in one day.

2. Have students use a Venn diagram to show:

   - at least two foods they eat that come from plants
   - at least two foods they eat that come from animals
   - at least two foods they eat that come from plants and animals
   - at least one food that contains a fungus
   - at least two foods that are a cultured or fermented product

3. Evaluate older students' ***Comparison of Diets*** sheets. Check for completeness and understanding.

4. Have students describe how the choices of food by their counterparts in other regions of the world differ from their choices and why.

5. Have the students research an organism needed to produce one of their favorite foods and prepare a poster project or presentation. Have the students use the Web sites found in the Resource section to complete this project.

6. Have the students create a list of all the foods they would not have if the Protista, Fungi and Monera kingdoms did not exist.

7. Have students write about why many sources of food are necessary for proper nutrition.

EXTENSIONS AND VARIATIONS

1. Have students cut out magazine pictures to represent food items to use with the Venn diagram.

2. Discuss biological classifications. One of the commonly used systems classifies the world of living things into five kingdoms: Animalia (animals), Plantae (plants), Monera (cyanobacteria [formerly known as blue green algae] and Bacteria), Protista (molds and other algae), and Fungi. Classify the food listed in newspaper ads into these groups. For example, under Animalia (animals) kingdom, students would list beef; under Plantae (plants) kingdom, asparagus; under Monera kingdom, guargum (the preservative); under Protista kingdom, nori (seaweed wrapper for sushi) and the blue streaks in Roquefort cheese (masses of penicillium mold spores); and under Fungi kingdom, mushrooms and yeast in leavened bread.

3. Compare today's variety of food and the food preparation time with that of another era and/or another culture.

4. Have students visit the grocery store. Ask them to identify lunch foods and discuss if they could have been grown or raised in their state.

5. Discuss likes and dislikes of food in one form, but not another. Illustrate by cooking or processing raw foods into other forms. For example:

   - popcorn kernels into popcorn;
   - peanuts into peanut butter (whip in blender until smooth); or
   - several raw ingredients (one cup each of sugar and peanuts, 1/2 cup corn syrup, and one teaspoon butter, vanilla, and baking soda) into candy. (In a casserole dish, microwave sugar and corn syrup on high for three minutes, add peanuts, microwave five to seven minutes, stirring often. Add butter, vanilla and baking soda, stir well, and pour onto greased cookie sheet. Let cool.)

   Enjoy a tasting session! See the FLP lesson "Tomatoes to Ketchup, Chickens to Omelettes" to learn more about raw and processed foods.

6. See the FLP lesson "What's the Shape of Your Diet?" to learn about serving size, the *Food Guide Pyramid*, and nutrition. This lesson is for older students and includes a 24-hour food consumption chart for recording food or drink for meals and snacks, serving size, and number of servings.

7. See the FLP lesson "Calorie Counting" to learn about calories and physical activity.

CREDIT

Bader, Myles H., Dr. *10,001 Food Facts, Chefs' Secrets & Household Hints*. Reader's Digest Association (by arrangement with Michael Friedman Publishing Group). 2000. ISBN: 0762103019.

ADDITIONAL RESOURCES

Agriculture in the Classroom. CSREES, United States Department of Agriculture, Mail Stop 2251, 1400 Independence Avenue, SW, Washington, DC 20250-2251. (202) 720-7925. http://www.agclassroom.org/

Bader, Myles H., Dr. *10,001 Food Facts, Chefs' Secrets & Household Hints*. Reader's Digest Association (by arrangement with Michael Friedman Publishing Group). 2000. ISBN: 0762103019.

Barnes, R.S. (editor). *The Diversity of Living Organisms*. Blackwell Science. 1998. ISBN: 0632049170.

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Burkhardt, Ann. *Corn (Early-Readers Science Foods)*. Bridgestone Books. 1996. ISBN: 1560654503.

Burns, Diane. *Cranberries: Fruit of the Bogs*. Carolrhoda Books. 1995. ISBN: 0876149646.

Creasy, Rosalind. *Blue Potatoes, Orange Tomatoes*. Sierra Club Books For Children. 1997. ISBN: 0871565765 (hc), 0871565919 (pb)

Farmer, Jacqueline. *Bananas!* Charlesbridge Publishing. 1999. ISBN: 088106114X.

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Fowler, Allan. *Good Mushrooms and Bad Toadstools (Rookie Read-About-Science)*. Children's Press. 1998. ISBN: 051620808X.

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Morgan, Sally. *Flowers, Trees, and Fruits (Young Discoverers: Biology Facts and Experiments Series)*. Kingfisher Press. 1996. ISBN: 0753450321.

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Pickering, Robin. *I Like Oranges (Good Food)*. Children's Press. 2000. ISBN: 0516230115.

Robson, Pam, Helaine Cohen (editor). *Banana (What's For Lunch)*. Children's Press. 1998. ISBN: 0516262173.

Rosenstein, Mark. *In Praise of Apples: A Harvest of History, Horticulture & Recipes*. Lark Books. 1999. ISBN: 1579901247.

Royston, Angela. *Flowers, Fruits and Seeds*. Heineman Library. ISBN: 1575728222.

Royston, Angela. *Life Cycle of a Bean*. Heineman Library. 1998. ISBN: 1575726122.

Saunders-Smith, Gail. *Beans (Plants Growing and Changing)*. Pebble Books. 1997. ISBN: 1560654872.

Saunders-Smith, Gail. *Carrots (Plants Growing and Changing)*. Pebble Books. 1997. ISBN: 1560654880.

Scott, Emily, Catherine Duffy. *Dinner From Dirt: Ten Meals Kids Can Grow & Cook*. 1998. Gibbs Smith Publisher. ISBN: 0879058404.

Silverstein, Alvin, Virginia Silverstein and Robert Silverstein. *Plants (Kingdoms of Life Series)*. Twenty First Century Books. 1996. ISBN: 0805035192.

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Zuckerman, Larry. *The Potato: How the Humble Spud Rescued the Western World*. North Point Press. 1999. ISBN: 0865475784.

WEB SITES

Cummins, R. Hays. *The "Nuts and Bolts" of Taxonomy and Classification*. Miami University. 2002. http://jrscience.wcp.muohio.edu/lab/TaxonomyLab.html

Madison, David. *The Tree Of Life*. University of Arizona. 2002. http://phylogeny.Arizona.edu/tree/phylogeny.html

Snack Bar Section. Microbe Zoo. 2002. http://commtechlab.msu.edu/sites/dlc-me/zoo/

EDUCATOR'S NOTES

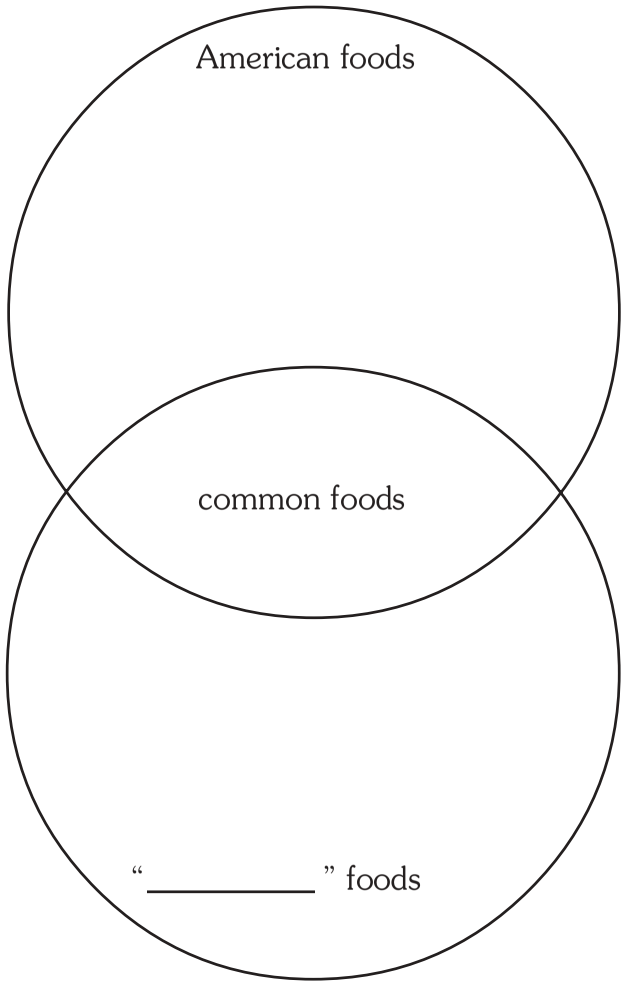
COMPARISON OF DIETS

Name: _____

Directions: List foods that represent a diet for "America" and "(name of country)" in the space provided. Once your list is complete for each country, write the individual foods in the circles below. Put American foods in the "American foods" circle, the other country's foods in the "_____ " foods circle, and foods common to both countries in the overlapping "common foods" space.

American foods

"_____" foods



Use the information above and answer the following questions on the back. 1) How are the diets of the two countries the same? Different? 2) What are the geographical similarities and differences between the two countries? What additional factors make the diets of the two countries different?

The Complexity of Food

Food	Some Components	Kingdoms					Explanation
		Plantae	Animalia	Monera	Protista	Fungi	
		Activity Categories					
		Plants	Animals	Other			
Artificial Sweeteners							The source depends on the process used to create the sweetener. Artificial sweeteners may or may not be plant- or animal-based.
Cheese Pizza	Wheat flour, yeast, a small amount of sugar, warm water, tomatoes, herbs, olive oil, mozzarella cheese	X	X	X			Pizza crust is made with yeast, which is a fungus. As the yeast grows, it produces carbon dioxide, creating bubbles and causing the dough to rise. The wheat flour, tomatoes, herbs, olive oil, and sugar are plant materials. The mozzarella cheese is usually made with the milk of dairy cows, coagulated into curds and whey by rennet from calves' stomachs or chymosin, a biotech product from microorganisms. It is then cultured with bacteria to give it flavor.
Diet Soft Drinks/ Diet Soda	Water, flavorings, artificial sweetener	X		X			Soft drinks are made with carbonated water, artificial sweetener, and flavorings. Many of the flavorings come from plants. The source of the sweetener depends on the sweetener used.
Fruit-Flavored Gelatin	Sugar, gelatin, flavorings	X	X				Fruited gelatins are usually made with sugar, and flavorings are from plants and gelatin from animals.
Honey	Concentrated plant nectar and bee enzymes	X	X				The honeybees harvest nectar from plants, add honeybee enzymes, and concentrate it to create honey.
Hotdogs	Beef, pork, chicken or turkey, garlic and other herbs, sugar or corn syrup, fillers such as powdered milk, cereal grains or isolated soy proteins	X	X				The meats are animal products and other ingredients are generally plant products.
Ketchup	Tomatoes, sugar, herbs and spices, vinegar	X		X			Ketchup is made with tomatoes, sugar, herbs, and spices from plants and vinegar. Vinegar is a fermented product.

The Complexity of Food

Food	Some Components	Kingdoms					Explanation
		Plantae	Animalia	Monera	Protista	Fungi	
		Activity Categories					
		Plants	Animals	Other			
Mayonnaise	Vegetable oil, whole eggs, egg yolks, vinegar, sugar, lemon juice	X	X	X			Mayonnaise is an emulsion of the ingredients listed. It may contain other ingredients. The usual plant materials are vegetable oil that is often from soybeans or corn, sugar from cane or beets, and lemon juice from lemons. The eggs and egg yolks from chickens are the normal animal products. The vinegar is a fermented product made from apple cider, grape juice or wine. Fermentation is an anaerobic bacterial activity.
Milk Chocolate	Cocoa, cocoa butter, sugar, milk, vanilla	X	X	X			Cocoa, cocoa butter, sugar, and vanilla beans originate from plants. The pods of the cacao tree are harvested, slit open and fermented to develop the distinctive flavor. Natural bacteria on the outside of the pods are responsible for the fermentation. The cacao beans are roasted to become cocoa beans. Vanilla is produced by soaking chopped vanilla beans in alcohol. Alcohol is a fermented product. Most vanilla has a relatively high alcohol content. Milk, which is the animal product, usually comes from dairy cattle.
Mustard	Crushed mustard seed, vinegar, sugar	X		X			Mustard recipes vary a great deal. Most contain the three ingredients listed or use wine in place of the vinegar. The mustard and sugar are from plants. The vinegar and/or wine are fermented products.
Pickles	Cucumbers, vinegar, salt, garlic and other herbs	X		X			Pickles are a fermented product containing cucumbers, garlic and other herbs in a salt brine that is allowed to ferment. Fermentation is an anaerobic bacterial activity.
Salad Dressings	A variety of ingredients	X	X	X			Salad dressings can be made from a variety of plant and animal products, including herbs, vegetable oil, milk or buttermilk, cheeses, and sugar or honey. Most contain vinegar and/or wine. Vinegar and/or wine are fermented products. Any cheeses are cultured products that use either bacteria or mold to produce desired flavors. Buttermilk is a cultured product.
Sauerkraut	Cabbage, salt, water	X		X			Sauerkraut is a fermented product containing cabbage in a salt brine that is allowed to ferment. Fermentation is an anaerobic bacterial activity.

The Complexity of Food

Food	Some Components	Kingdoms					Explanation
		Plantae	Animalia	Monera	Protista	Fungi	
		Activity Categories					
		Plants	Animals	Other			
Soda/Soft Drinks	Sugar or corn syrup, water, flavorings	X					Soft drinks are made with carbonated water, sugar or corn syrup, and flavorings. Many of the flavorings come from plants.
Soy Sauce	Soybeans, water, salt	X		X			Crushed soybeans are mixed with water and salt (brine) and fermented to create soy sauce.
Tabasco or other hot sauces	Peppers, vinegar	X		X			Tabasco is produced by soaking chopped hot peppers (from plants) in vinegar and aging the mixture. Vinegar is a fermented product.
Tofu	Soybeans	X		Possibly X			Soybeans ground into a paste are often coagulated into a curd by using vinegar or another acidic plant product. Vinegar is a fermented product. If vinegar is used, the "Other" category is appropriate.
Vanilla	The seed pods of the vanilla orchid	X		X			Vanilla is produced by soaking chopped vanilla beans in alcohol. Alcohol is a fermented product. Most vanilla has a relatively high alcohol content.
Vanillin	Imitation Vanilla	X					Vanillin is a by-product of the wood pulp industry.
Worcester-shire Sauce	Anchovies, tamarinds, molasses, garlic, chilies, cloves, shallots and vinegar	X	X	X			Worcestershire sauce is made from anchovies, (animal), tamarinds, molasses, garlic, chilies, cloves, and shallots (plants), and vinegar. Vinegar is a fermented product (other).
Yeast Bread	Wheat flour, yeast, small amount of sugar, warm water, may have other ingredients	X		X			Leavened breads are made with yeast. Yeast is a fungus. As the yeast grows, it produces carbon dioxide, creating bubbles and causing the bread to rise.
Yogurt	Milk, sugar, flavorings, bacteria	X	X	X			Milk is cultured with bacteria to produce yogurt. Sugar, fruit and other flavorings are added later.

If you feed a man a meal,

you only feed him for a day -

but if you teach a man to grow food,

you feed him for a lifetime.

Peace Pilgrim