



WHAT'S ORGANIC?

GRADE LEVEL: 6-8

SUBJECT: Language Arts

NATIONAL STANDARD(S):

(6-8) LA: 4.8, 4.9, 5.1, 5.2, 5.4, 5.8

THEME: Horticulture/Plant Science

FOOD AND FIBER TOPIC: III-B,C,D

LEARNER OBJECTIVES:

Students will learn how certain foods come to be certified “organic.”

VOCABULARY

additive—A substance added to food for preserving it or to bring out the flavors.

beneficial insects— Insects that create a more positive environment for plants through pollination or by preying on insects that are harmful to plants.

carbon —Naturally abundant non-metallic element that occurs in many inorganic and in all organic compounds.

organic —Relating to or derived from living organisms.

pesticides—A substance used to control insect, plant, or animal pests.

synthetic- Produced by the combining of separate elements or substances, especially not of natural origin.

tillage practices—Practices used for cultivating land.

BACKGROUND

The word “organic” has several different meanings. To a chemist, it is any compound containing the element carbon which is found in all structures of plant and animal life. To the grocer it means vegetables, fruits, eggs, milk and meats that are produced using recognized organic methods.

A true organic farmer will follow natural growing practices as closely as possible. Organic foods are grown without the aid of unsafe and polluting chemicals. Instead of spraying crops with synthetic pesticides, the organic farmer can choose to plant varieties that are naturally more resistant to insects and disease, rely on beneficial insects, and use tillage practices that discourage pests. As a choice for fertilizer, the true organic farmer will use unrefined minerals obtained from natural deposits and organic sources of nitrogen found in animal manure or plant products. Organic farmers recycle waste matter into fertilizer, in keeping with another definition of the word “organic”— a whole cyclical, sustainable system.

Because organic farming requires more work than traditional farming, organic foods usually cost about 20 to 50 percent more than food not grown organically. Organic foods were once found only in health food stores. But in the past 15 years consumers have begun asking for more organically-grown foods. Supermarkets have responded by looking for farmers who will supply them with organically-grown fruits, vegetables and other organic products. In turn, more farmers are adopting organic practices.

The federal government is working on legislation that will allow only farmers who grow their food within certain guidelines to call their food organic. In addition, many states have passed laws of their own.

Why Organic? There are numerous problems associated with traditional chemically-dependent, land-intensive agriculture:

- Topsoil erosion. One-third of our nation's topsoil has eroded due to modern industrialized farming practices. Not only does each lost inch cause a six percent drop in farm yields, but it also leads to increased flood exposure as a result of siltation.
- Toxic runoff. Pesticide-heavy runoff from farmland into rivers, lakes, and streams takes a toll on wildlife. Riparian habitats within watersheds are destroyed by chemical contamination. Additionally, the conversion of wild habitat to agricultural land significantly reduces fish and wildlife populations through erosion and sedimentation, the effects of pesticides, removal of riparian plants, and the diversion of water.
- Decreased biodiversity. With its emphasis on yield, uniformity, market acceptability and pest resistance, the present-day agricultural norm sacrifices a variety of species. Before the advent of modern industrialized agriculture, farmers produced roughly 80,000 species of plants; today farmers rely on about 150. The increasing reliance on a small number of crop species means declining nutritional variety for consumers as well as increased strain on overburdened farmland.
- Health risks. Heavy reliance on pesticides by conventional farmers is suspected of increasing rates of cancer and reproductive problems in humans. More than 80 percent of the most commonly-used pesticides today have been classified by National Academy of Sciences researchers as potentially carcinogenic -- and are routinely found in mothers' milk.

The Future - Organic food production is one of the fastest-growing sectors of agriculture in the United States. Some organic farmers are idealists, seeking to live in a socially responsible manner, like one Iowa farmer who said he wanted to "increase fertility, keep erosion to a minimum, keep the water quality up, and pass on the farm in as good or better condition than I found it." Others have found that organic farming simply makes economic sense in the face of the rising costs of petroleum-based fertilizers and synthetic pesticides. For organic farmers, these lowered "input" costs are augmented by the premium prices they can charge for their chemical-free "commodity" foods. Nevertheless, the future depends on consumers. Without a market for their products, organic farmers will turn to pesticide use, or to other professions.

STEP-BY-STEP INSTRUCTIONS

1. Write the words "organic" and "synthetic" on the chalkboard, and ask students for definitions. Hand out dictionaries, as available, and have students look the words up. Have students take turns reading the several definitions they find and discuss each one before going on to the next.
2. Ask students "What is organic food?" Share background information.
3. Hand out student worksheets for students to complete.

RELATED ACTIVITIES

1. Have students grow fast growing plants like lettuce or radish, using commercial fertilizer and organic fertilizer (compost, water from a fish tank, etc.). Then have students compare the growth rates and chart the results.
2. Bring samples of fruit or vegetables grown by organic and conventional methods to class and conduct a taste test.
3. Visit an organic farm, or invite an organic farmer to class to talk about some of the advantages and disadvantages to growing food this way.
4. Have students research laws regarding what guidelines farmers must follow to call their food “organic.”

RESOURCES

Student Books

- Burns, M. (1978). Good for Me: All About Food in 32 Bites. Little.
- Evans, I. (1984). Biology. Franklin Watts.
- Johnson, R. L. (1989). The Secret Language: Pheromones in the Animal World. Lerner.
- Johnson, S. A. (1983). Ladybugs. Lerner.
- Kalman, B. and Schaub, J. (1992). Squirmy Wormy Composters. Crabtree.
- Lavies, B. (1993). Compost Critters. Dutton Children’s Books.
- McLaughlin, M. (1986). Earthworms, Dirt and Rotten Leaves: An Exploration in Ecology. Macmillan.
- Sabin, L. (1985). Agriculture. Troll.
- Souza, D.M. (1991). Insects in the Garden. Carolrhoda.

Teacher Resources

“Insect Life Cycles,” Florida Ag in the Classroom, 545 East Tennessee Street, Tallahassee, FL 32308 (40-page lesson plan on the life cycle of insects and how they impact agriculture, with information about integrated pest management, free)

Related Internet Websites

The Organic Foods Production Act: A Guide to the Recommendations of the National Organic Standards Board. <http://www.cfarm.com/nosb/guide/0index.htm>

Worldview Articles on Organic food production and agriculture from the Natural Resources Defense Council OnLine. <http://www.nrdc.org/nrdc/dire/inxiss.html#agriculture>

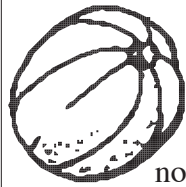
EVALUATION

Do students have a better understanding of the meaning of “organic food?” Answers for the student worksheet are as follows: 1. a; 2. d; 3. g; 4. c; 5. 3; 6. f; 7. b.

ACKNOWLEDGMENT

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What's Organic?



All food is organic. Food comes from living things, and living things are made of organic molecules. But not all food is grown organically. Most of the food grown in the US is grown with the help of synthetic chemicals. Only about 2 to 3 percent of all foods sold in grocery stores can legally be called “organic.”

In order to legally label a crop “organic,” the farmer must use natural methods. Instead of spraying crops with pesticides, the farmer depends on ladybugs, resistant plant varieties and other growing practices to protect plants. Organic farmers hoe weeds or smother them with ground covers called “mulch.” Organic farmers use fertilizers that come from mined mineral deposits or plant and animal waste.



The word “organic” has several different meanings. Match the sentences at the bottom of the page with one of the following definitions by writing in the correct letter. Look in the dictionary for help with words in the definitions that you don't understand.

- a. Of, relating to, or affecting organs or an organ of the body.
- b. Of, relating to, or derived from living organisms.
- c. Vegetables, fruits and meats grown without using synthetic fertilizers or pesticides.
- d. Simple, healthful, and close to nature.
- e. A whole, cyclical, sustainable system.
- f. Resembling a living organism in organization or development; interconnected.
- g. In chemistry, any compound containing carbon, an element found in all plant and animal life.



1. ___ Hepatitis is an organic illness because it affects an organ of the body, the liver.
2. ___ My sister moved to the country so she could live a more organic lifestyle.
3. ___ Chewing gum is made from an organic substance taken from the stomach of a cow.
4. ___ These organic apples are good, but some of them have worms in them.
5. ___ Putting plants in the aquarium will create an organic system in which the fish waste will feed the plants and the plants will produce oxygen for the fish.
6. ___ Farms and cities have an organic relationship; each needs the other to survive.
7. ___ My mother uses nothing but organic fertilizers on her tomatoes.

