

Fields of Candy Bars

Skills: Social Studies, Language Arts

Objective: The student will research and write about the origins of the ingredients in candy bars.

Background

For most of its history, chocolate was not a candy bar but a bitter, spicy drink. The Maya mixed roasted, ground cacao beans with water, flavored it with herbs or spices (chile was common) and then poured the mixture from one vessel to another until it was foamy. One of the variations might have involved adding honey, but the Maya did not commonly sweeten the drink.

The bitter substance may have been cultivated as early as 1500 BC by the ancient Olmec people of Chiapas, Guatemala and Yucatan. It wasn't until the seventeenth century that the Spanish, who had carried the beans back to their homeland, started adding sugar and spices like vanilla and cinnamon to their chocolate drink.

Chocolate still wouldn't be processed into candy bars for another 200 years. The industrial revolution produced technology that allowed manufacturers to squeeze some of the fat out of cacao beans and grind them into cocoa powder. In 1847, Joseph Fry & Co., a chocolate manufacturing firm in England, developed a method for mixing some of the melted cacao butter back into the cocoa powder and created a paste that could be pressed into a mold for a candy bar.

Besides Mexico and Central America, cacao is now grown in other tropical countries, especially West Africa. Although Oklahoma doesn't have the climate necessary to grow cacao, many of the other ingredients that go into making candy bars grow here.

Soybeans are a major ingredient in most candy bars. Soy lecithin is a natural emulsifier, which keeps the chocolate and cocoa butter in the candy bar from separating. Soy is the flaky meal left after soybean oil is removed from the soybeans. Soy protein gives a pleasant texture to candy bars. Although the soybean originated in China, the US is now the largest producer of the versatile crop. Oklahoma ranks 27th of the 29 states that grow soybeans. Most of Oklahoma's soybeans grow in the eastern part of the state where the growing season is wet and warm. Farmers in Oklahoma plant soybeans in May and June and harvest them in October and November.

The Maya may have occasionally added honey to their chocolate, and the Spanish added sugar cane, but many candy bars today are sweetened with a syrup converted from the starch in corn. Corn originated in the New World thousands of years ago and, as with soybeans, many uses have been devel-

P.A.S.S.

GRADE 1

Writing—1.1; 2.1

Oral Language—2.2,6

Social Studies—1

GRADE 2

Writing—1.1; 2.2

Social Studies—1.1

GRADE 3

Writing—2.2,3ab

Social Studies—1.1

GRADE 4

Writing—1.1; 2.1abcd

Social Studies—1.1,3

GRADE 5

Writing—1.1; 2.1

Social Studies—1.1; 7.1

GRADE 6

Writing—1.2; 2.2; 3.2abcd

Social Studies—1.2

Materials

Large bag of miniature candy bars with peanuts

Samples of Oklahoma crops (untreated)—soybeans (most likely available from feed stores during October and November), peanuts, dry corn

oped for it. Most corn in the US grows in Midwestern states like Illinois and Kansas. In Oklahoma most of the corn grown is used as feed for animals. The top corn-producing counties in Oklahoma are Cimarron, Texas, Beaver, Ellis, Wagoner, Muskogee, Hughes and Bryan Counties. Corn is planted during April and May and harvested during September and October in Oklahoma.

Peanuts are an important ingredient in many of the most popular candy bars. The peanut originated in the New World but did not gain popularity as a food for humans here until it had travelled to Africa by way of Spain and then back to the American colonies with African slaves. The US produces only about 10 percent of the world's peanut crop. India and China account for more than half of the world's total production. Alabama, Florida, Georgia and South Carolina produce the largest peanut crops in the US, but Oklahoma ranks seventh in the nation with its crops of Spanish peanuts. Most of Oklahoma's peanuts grow in the southwest part of the state, in Caddo, Beckham, Tillman, Love, Hughes, Washita, Greer, Harmon and Bryan Counties. Peanuts are planted in May and June and harvested in October and November.

Caramel is a key component in many candy bars. Caramel is made by mixing together milk, sugar, fat (such as butter or vegetable oil), and flavorings (such as vanilla) and cooking this mixture until it boils. The mixture is then cooled and formed.

Milk is by far the most important ingredient in caramel and is the main contributor of color and flavor. The protein in the milk, when cooked, provides the characteristic caramel texture. The top dairy states in the US are California, Minnesota, Wisconsin, Iowa, New York, Pennsylvania, and Vermont. In Oklahoma, the largest numbers of dairy producers can be found in Grady, Mayes, Adair, Bryan, Delaware, Payne, Lincoln, Comanche and Murray Counties.

Language Arts

1. Read and discuss background.
2. Hand out the candy bars, and have students taste them and describe what they are tasting. Write the descriptive words on the chalkboard (chewy, sweet, crunchy).
3. Have students write a paragraph describing the candy bar.

Social Studies

1. Ask what ingredients are in the candy bars that give them the characteristics they have named.
 - Ask students if they can name at least three ingredients that might have been produced in Oklahoma (most likely corn syrup, soy lecithin and protein, and peanuts).
 - Allow students to examine the crop samples you have brought.
 - Provide students with county maps of Oklahoma (See the “Maps” sec-

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Oklahoma Ag in the Classroom
Oklahoma 4-H Programs
205 4-H Youth Development
Oklahoma State University
Stillwater, OK 74078
405-744-8889 <http://www.agclassroom.org/ok>



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tion), and have them research to find where the three ingredients they have named might have been produced within the state. Are any of the ingredients produced in your county?

2. Have students research other ingredients in their candy bars and map their origins on a world map.
3. Have each student bring his or her own favorite candy bar and research the main ingredients.

Extra Reading

Bial, Raymond, *Corn Belt Harvest*, Houghton Mifflin, 1991.

Busenberg, Bonnie, *Vanilla, Chocolate and Strawberry: The Story of Your Favorite Flavors*, Lerner, 1995.

Forsyth, Adrian, *How Monkeys Make Chocolate: Foods and Medicines From the Rainforest*, Owl, 1995.

Micucci, Charles, *Life and Times of the Peanut*, Houghton Mifflin, 1997.

Vocabulary

cacao—An evergreen tropical American tree the seeds of which are used in making chocolate, cocoa, and cocoa butter. Also called cacao bean, cocoa bean.

cultivate—To plant, tend, harvest, and improve plants.

emulsifier—A substance with the ability to suspend small globules of one liquid in a second liquid with which the first will not mix.

ingredient—Something that is an element in a mixture or compound.

lecithin—Any of a group of phospholipids found in all plant and animal tissues, produced commercially from egg yolks, soybeans and corn and used in the processing of foods, pharmaceuticals, cosmetics, paints and inks and rubber and plastics.

protein—Any of a group of complex organic macromolecules that contain carbon, hydrogen, oxygen, nitrogen, and usually sulfur and are composed of one or more chains of amino acids.

Proteins are fundamental components of all living cells and include many substances, such as enzymes, hormones, and antibodies, that are necessary for the proper functioning of an organism. They are essential in the diet of animals for the growth and repair of tissue and can be obtained from foods such as meat, fish, eggs, milk, and legumes.