

# Harvest of the Month

Network for a Healthy California



## Nutrition Facts

Serving Size: ½ cup corn (82g)  
Calories 89      Calories from Fat 9

	% Daily Value
Total Fat 1g	2%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 0mg	0%
Total Carbohydrate 21g	7%
Dietary Fiber 2g	9%
Sugars 3g	
Protein 3g	
Vitamin A 4%	Calcium 0%
Vitamin C 9%	Iron 3%

**CORN**

## Health and Learning Success Go Hand-In-Hand

The World Health Organization recognizes that school fruit and vegetable snack programs are an effective school-based strategy to improve children's health and reduce obesity. Encourage students to make healthy food choices and be active every day. Use *Harvest of the Month* to give students an opportunity to explore, taste, and learn about the importance of eating fruits and vegetables.

## Exploring California Corn: Taste Testing

### Getting Started:

- Partner with local grocery store and/or school nutrition staff and request produce samples for taste tests.
- Review *Taste Testing Tips* in the Educators' Corner of [www.harvestofthemonth.com](http://www.harvestofthemonth.com).

### What You Will Need (per group):

- 1 cup each of cooked white and yellow corn, 1 cup air-popped popcorn, and 1 corn tortilla
- Printed Nutrition Facts labels for each item\*

### Activity:

- Have students make a 5x6 grid. Label columns: white corn, yellow corn, popcorn, corn tortilla. Label rows: look, feel, touch, smell, taste.
- Examine each corn item using the five senses. Describe findings in the chart.
- Make another grid. Label rows: calories, fat, carbohydrates, protein, vitamins. Examine Nutrition Facts labels and fill in the chart.
- Discuss the similarities and differences as a class. Discuss why the nutrient values change when corn is used as an ingredient in other foods.

\*Download from the Educators' Corner of [www.harvestofthemonth.com](http://www.harvestofthemonth.com).

Source: ABC Unified School District, 2009.

### For more ideas, reference:

*School Foodservice Guide – Successful Implementation Models for Increased Fruit and Vegetable Consumption*, Produce for Better Health Foundation, 2005, pp. 39-42.

## Cooking in Class: Corn Salsa

### Ingredients:

**Makes 32 tastes at ¼ cup each**

- 4 cups canned corn (drained)
- 4 cups mild, chunky salsa
- 64 whole wheat crackers
- Napkins and paper plates

- Combine corn and salsa together in medium bowl. Mix well.
- Serve ¼ cup corn salsa with two whole wheat crackers on a plate.

Source: Monrovia Unified School District, 2009.

For nutrition information, visit:  
[www.harvestofthemonth.com](http://www.harvestofthemonth.com)

## Reasons to Eat Corn

A ½ cup of white or yellow corn provides:

- A good source of folate and thiamin, also known as vitamin B<sub>1</sub>.\*
- A source of many other vitamins, including vitamin C and pyridoxine, also known as vitamin B<sub>6</sub>.
- A source of fiber, manganese, phosphorus, magnesium, niacin, and potassium.

\*Learn more about thiamin on page 2.

### Champion sources of thiamin:\*

- Beans (black, lima, navy, pinto, soy)
- Corn (white and yellow)
- Fortified breakfast cereals
- Pasta and rice
- Whole grain products

\*Provide a good or excellent source of thiamin.



## What is Thiamin?

- Thiamin, also known as Vitamin B<sub>1</sub>, is a water-soluble vitamin.
- The body requires thiamin to form adenosine triphosphate (ATP), which is used to produce energy in every cell of the body.
- Within the body, thiamin is found in the skeletal muscles, heart, liver, kidneys, and brain.
- Thiamin is also essential for the proper functioning of nerve cells.

For more information, visit:

[www.nal.usda.gov/fnic/foodcomp/Data/SR21/nutrlist/sr21w404.pdf](http://www.nal.usda.gov/fnic/foodcomp/Data/SR21/nutrlist/sr21w404.pdf)

## Botanical Facts

**Pronunciation:** kôrn

**Spanish name:** maíz

**Family:** Poaceae

**Genus:** *Zea*

**Species:** *Zea mays*

Corn is an annual member of the grass family Poaceae and of the Monocot group.

This plant has "ears" with kernels of varying colors. Corn is considered a grain, vegetable, and fruit. When corn is harvested before maturity while the kernels are soft, it is considered a vegetable. Corn harvested at maturity is considered a grain. Each kernel of corn on a cob is a whole fruit. The corn kernel is botanically a type of fruit called *caryopsis*, which is a fruit with a single seed.

The Poaceae family is an important food crop consisting of the cereal grains such as corn, wheat, oats, barley, and rice. Corn is one of the highest producing cereal crops.



Types of Corn	Interesting Facts
Pod	Oldest type of corn; each kernel had its own husk; no longer cultivated.
Flint	Hard outer shell; comes in many colors; used for livestock feed and popcorn.
Dent	Grown primarily for livestock feed; softer than Flint.
Flour	White in color; primarily grown in South America for flour and used in baking.
Sweet	Grown for the consumer; comes in yellow, white, orange, purple, and black.

Sweet corn, known for its higher sugar content, is eaten fresh, frozen, and canned. Yellow and white corn is a hybrid created from heirloom varieties, such as multicolored corn. Nearly all sweet corn (98%) has been cross-pollinated for color, more starch, and larger ears and kernels. Sweet corn has three colors: yellow, white, and bi-color. The bi-color variety consists of 80% yellow and 20% white corn.

For more information, visit:

<http://aggiehorticulture.tamu.edu/plantanswers/publications/vegetabletravelers/corn.html>

<http://www.mnh.si.edu/archives/garden/history/corn.html>

## How Much Do I Need?

A ½ cup of corn is about one small ear of corn. This is about one cupped handful. The amount of fruits and vegetables you need each day depends on your age, gender, and physical activity level. Fresh, frozen, canned, and dried produce all count toward your daily recommended amounts. Set a good example by letting students see you eating fruits and vegetables.

### Recommended Daily Amounts of Fruits and Vegetables\*

	Kids, Ages 5-12	Teens and Adults, Ages 13 and up
<b>Males</b>	2½ - 5 cups per day	4½ - 6½ cups per day
<b>Females</b>	2½ - 5 cups per day	3½ - 5 cups per day

\*If you are active, eat the higher number of cups per day.

Visit [www.choosemyplate.gov](http://www.choosemyplate.gov) to learn more.

## How Does Corn Grow?

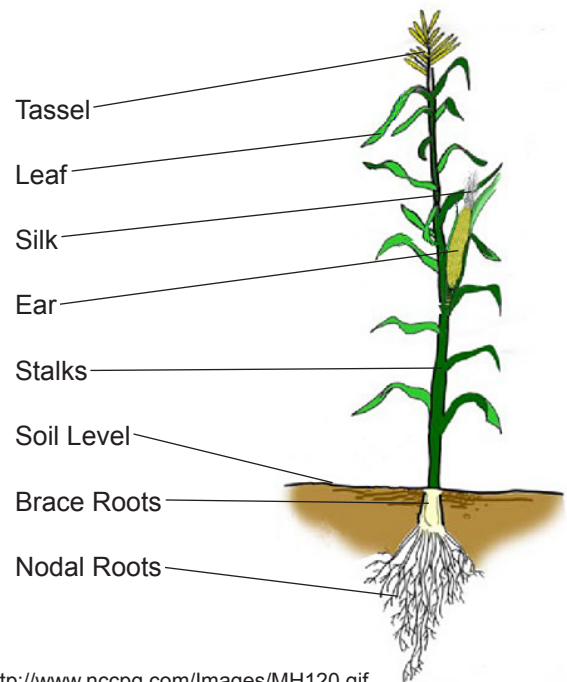
Corn crops grow well in warm-weather areas such as the Midwest states and southern and central regions of California. Adequate pollination is critical for individual ears of corn to develop properly. To maximize pollination, farmers plant corn at least four rows side-by-side in areas with good air circulation.

- Flint, Flour, and Dent corn are ready for harvest when each kernel on the cob has matured.
- Sweet corn is harvested when the kernels are immature and still soft.

For a chart with information about how to plant and grow corn, refer to *Corn Botanical Images* (in the Educators' Corner) at [www.harvestofthemoonth.com](http://www.harvestofthemoonth.com).

For more information, visit:

<http://urbanext.illinois.edu/corn/guide.html>



Source: <http://www.nccpg.com/Images/MH120.gif>

## School Garden: Container vs. Ground

If your school has a garden, here is an activity you may want to implement. Look for donations to cover the cost of seeds, tools, irrigation systems, electric pumps, and any salary incurred by garden educators or others.

### Upper elementary grades\*:

Experiment with growing corn from seed in containers and in the ground.

#### Activity:

- Divide students into two groups: Container Corn and Ground Corn.
- Ground Corn Group: Follow directions for planting in *How Does Corn Grow?* (page 2).
- Container Corn Group: Fill two 15-gallon containers with dirt from the garden and corn from the same packages as the Ground Corn group. Follow same planting directions, except plant seeds in containers.
- Each group journals their activities twice a week and charts growth of their seeds. Discuss pros and cons of growing techniques. Which grows faster? Which has more pests? Which needs more water? Which yields more harvest?

\*Activity intended for upper elementary grade levels. For lower grade level activities, refer to the *Corn Botanical Image* on [www.harvestofthemonth.com](http://www.harvestofthemonth.com).

Adapted from: <http://www.csgn.org/pdf/SoilTexture.pdf>

## Student Champions

Have students talk to a local grocery store produce manager.

- Ask if they purchase from local growers?
- Discuss the implications/impact of local farming on the economy. Is corn grown in your county? Calculate the mileage and estimate how much it costs to ship corn from the nearest farm to your local supermarket.



Discuss how corn is a renewable resource that is used to promote a cleaner environment.

- Research the impact of ethanol on our health.
- Some plastic products are made from biodegradable corn. How could this affect future generations?
- Chemicals used to de-ice roads are being replaced with corn-based products that are safer for the environment. Is this important in California? Why or why not?

### Follow-up Activity:

Complete *Adventurous Activities* (page 4).

Adapted from: <http://www.urbanext.uiuc.edu/corn/guide/html>

#### For more ideas, reference:

*How to Teach Nutrition to Kids* (3rd Edition), Connie Liakos Evers, 2006.

## Student Sleuths

- 1 Why should we eat corn?
- 2 Corn provides *zeaxanthin* and *lutein*. What are these and what health benefits do they provide?
- 3 Corn can be classified into which three food groups?
- 4 What is ATP and how does it work in our body?
- 5 Is corn a monocot or a dicot? What is the difference?
- 6 How is corn pollinated?

#### For information, visit:

<http://urbanext.illinois.edu/corn/guide.html>

<http://ohioline.osu.edu/agf-fact/0128.html>

[http://www.rbg.ca/kids/vascular\\_pre2.html](http://www.rbg.ca/kids/vascular_pre2.html)

## Home Grown Facts

- The United States is the world's leading producer of sweet corn, accounting for about 46% of the world's corn production between 2002 and 2004.
- California is the nation's top producer of sweet corn.
- Sweet corn is one of a few crops grown in all 50 states.
- Most counties have smaller, local farms that grow sweet corn for roadside stands and farmers' markets.
- These counties lead the state in production of sweet corn: Fresno (29.4%), Imperial (21.0%), Contra Costa (17.6%), San Joaquin (12.0%), and Riverside (6.3%).



2007 Data

#### For more information, visit:

[www.cdffa.ca.gov](http://www.cdffa.ca.gov)

## A Kernel of Corn History

- Ears of corn have been found in caves in Mexico that date back seven to eight thousand years.
- By the time Christopher Columbus reached the New World, corn grew from Southern Canada to the Andes Mountains in South America.
- The Native Americans gave corn to Christopher Columbus, who brought it back to Spain. Once in Europe, corn spread quickly throughout the world.
- The Indians taught American settlers how to cultivate corn and use the alkali from wood ash to turn it into hominy. The hominy was cooked, broken into grits, or ground into meal for making porridge, cake, and bread.
- The Mojave Indians of Colorado and California were farmers who grew and harvested corn.

#### For more information, visit:

[http://www.campsilos.org/mod3/students/c\\_history.shtml](http://www.campsilos.org/mod3/students/c_history.shtml)

<http://www.nhm.org/education/cahistory/3earlyca.pdf>



## Physical Activity Corner

Yoga is a fun way for everyone to get daily physical activity. It is a great way to build up strength and flexibility, and for students to relax and become more focused in school. Try this yoga activity in your school gym or play yard.

### Yoga Pose: Corn on the Cob

- 1 Start on hands and knees.
- 2 Take a deep breath in.
- 3 Breathe out and sit back on heels. Rest forehead on ground with arms straightened forward.
- 4 Breathe in and push body up into a full grown "ear of corn."
- 5 Hold for two breaths.
- 6 Return to start position and repeat.

Adapted from: *Shape of Yoga, Network for a Healthy California*, 2009.

For yoga poses with pictures, visit:

[www.cdph.ca.gov/programs/cpns/Documents/Network-ShapeofYoga.pdf](http://www.cdph.ca.gov/programs/cpns/Documents/Network-ShapeofYoga.pdf)



## Adventurous Activities

### Science Investigation

Have students research the role of corn in our lives and complete the following activities:

- Explain why corn is considered a biodegradable, renewable resource. Brainstorm ideas for how your community can use more green-friendly resources like corn-based products.

### Helpful Hint:

- Refer to *Student Advocates* (page 3) for pre-activity lesson.

## Activities & Resources Galore

Visit the Educators' Corner online for more resources:

- Cooking in Class (recipe analyses, cooking tips)
- Reasons to Eat (Nutrition Glossary)
- How Does It Grow (botanical images, growing tips)
- Student Sleuths (Answer Key)
- Adventurous Activities
- Literature Links (book lists)
- Links to California Content Standards (all grades)

All available at [www.harvestofthemonth.com](http://www.harvestofthemonth.com).

## Cafeteria Connections

Set aside time each day to discuss the menu with students.

- Ask which meals they would like to try.
- How many times is corn included on the menu?
- Does each meal include a fruit and a vegetable?

Learn how different cultures or parts of the country use corn for food.

- Have students bring a healthy recipe using corn that reflects their cultural heritage.
- Collect all recipes from students.
- Ask students to analyze their recipes for nutrient content.
- Ask your school nutrition staff to feature the Corn Salsa from the *Cooking in Class* activity (page 1).

## Just the Facts

- Corn is consistently among the top ten most commonly consumed vegetables by children in California.
- The average ear of corn has 800 kernels in 16 rows.
- Corn is grown on every continent of the world with the exception of Antarctica.
- Most of the corn grown in the United States is used to feed cattle, hogs, sheep, and poultry.
- Corn is used in processed foods and industrial products, such as cornstarch and plastics.

For more information, visit:

<http://oklahoma4h.okstate.edu/aic/lessons/extras/facts/corn.html>

## Literature Links

- Ask school librarian to obtain books on the history of corn. Have students write a book report on corn history and its importance to Native Americans.
- Ask librarian for a book on people indigenous to California who used corn in their diet. Make recipe from the *Cooking in Class* (page 1) or other authentic corn recipes. Invite the librarian to read the book to the class and lead the taste test activity.

For information, reference:

*How to Teach Nutrition to Kids* (3rd Edition), Connie Liakos Evers, 2006.

For a list of book ideas, visit:

[www.harvestofthemonth.com](http://www.harvestofthemonth.com)



This material was produced by the California Department of Public Health's *Network for a Healthy California* with funding from USDA SNAP, known in California as CalFresh (formerly Food Stamps). These institutions are equal opportunity providers and employers. CalFresh provides assistance to low-income households and can help buy nutritious foods for better health. For CalFresh information, call 1-877-847-3663. For important nutrition information, visit [www.cachampionsforchange.net](http://www.cachampionsforchange.net). © 2011

