

FRESH from the FARM



The Fresh from the Farm featured vegetable is

Corn

for educators

Healthy Kids Do Better in School

Studies show that good nutrition and regular physical activity can help students focus on school work and maintain healthy immune systems, helping them to fight off the flu and colds that tend to spike during the winter months. Smart Choices gives students the chance to explore, taste and learn about the importance of eating fruits and vegetables. It links the classroom, cafeteria, home and community to motivate and support students to make healthy food choices and be physically active every day.

Taste Testing with Corn

Engaging students through taste-testing activities allows them to experience the featured produce first-hand, helping create increased interest in eating fruits and vegetables.

Tools:

- 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 for younger students:

- 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.

Activity for older students:

- Have students make a 5x6 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.

Source ABC Unified School District, 2009

For more ideas:

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 corn (drain if using canned)
- 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



Corn is Healthy!

A ½ cup of white or yellow corn is:

- A good source of folate and thiamin, also known as vitamin B1.
- A source of many other vitamins, including vitamin C and pyridoxine, also known as vitamin B6.
- A source of fiber, manganese, phosphorus, magnesium, niacin, and potassium.

Nutrition Facts	
Serving size	1/2 cup (82g)
Amount per serving	
Calories 89	Calories from Fat 9g
% 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%
Source: www.nutritiondata.com	

Dakota
COUNTY



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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 porridge, cake, or bread.
- In Minnesota, the Oneota and Mississippian Native American tribes were cultivating corn and wild rice as early as 800 AD.

For more information, visit:

<http://www.campsilos.org/mod3/students>

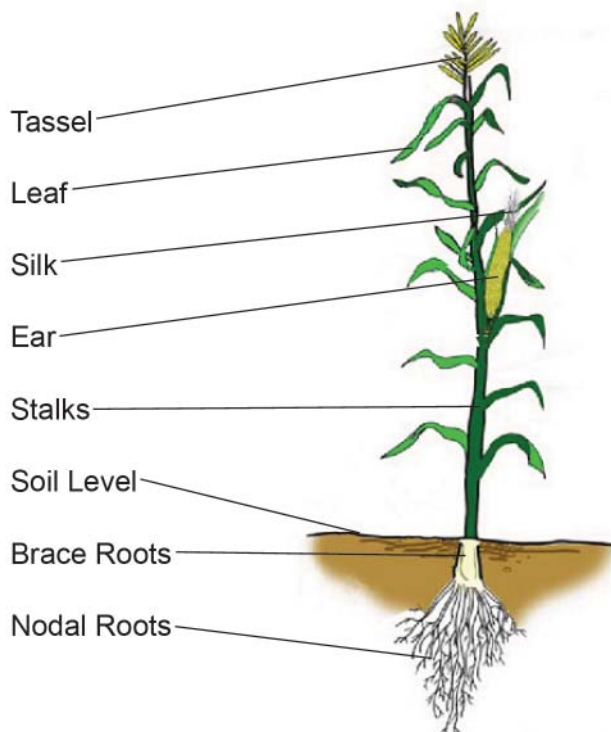
<http://www.nass.usda.gov>

How Does Corn Grow?

Corn crops grow well in warm-weather areas such as the Midwest. Adequate pollination is critical for individual ears of corn to develop properly. To maximize pollination, farmers plant corn in 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.harvestofthefmonth.com



Source: www.nccpg.com/images/MN120.gif

What's in a Name?

Pronunciation:	kôrn
Spanish name:	maiz
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://www.ars.usda.gov/is/timeline/corn.htm>

<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 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*

Ages 5 - 12	Ages 13 and older
2 ½ - 5 cups per day	3 ½ - 6 ½ cups per day

*Active people should eat the higher number of cups per day. Visit www.mypyramid.gov to learn more.

Physical Activity Corner

Yoga is a great way to build up strength and flexibility, and for students to relax and become more focused in school.

Yoga Pose: Corn on the Cob

Objective: Endurance and team cooperation

1. Begin in Table Pose (on hands and knees).
2. Take a “step” with the hands, moving hands several inches forward. The palms should be flat on the floor with fingers pointing forward.
3. Press hands into the floor then curl toes under. The area from the ball of the foot to the end of the toes should be held flat, making the foundation that supports lower body weight (See photo).
4. Students inhale and straighten legs to position themselves on hands and feet/toes in the plank pose. Shoulders should be directly over the wrists and the whole body should be in a straight line. This is very similar to the position you would be in doing a push-up. Do not lock elbows.
5. Extend your heels down and away from your body. Make sure you keep your head in line with your neck and spine. Visualize your body lengthening from the crown of your head to the soles of your feet.
6. Come out of Corn on the Cob (Plank) by bending your knees and returning to Table Pose, exhaling as you go.



For yoga poses with pictures, visit:
www.cdph.ca.gov/programs/cpns/Documents/Network-ShapeofYoga.pdf

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).

Classroom Activity: Let's Get Popping!

Experiment with different varieties of popcorn and make comparisons regarding performance (For background, refer to Popcorn Facts on pg. 4).

Equipment: 3 kinds of popcorn, 3 popcorn poppers
Prior to activity, have students make predictions.

Activity:

- Measure 1/3 cup of uncooked popcorn from each variety.
- Have students estimate number of kernels per 1/3 cup, record number.
- Count out, record actual number of kernels.
- Estimate weight and volume of popped corn in grams/ounces and cups/milliliters, record all.
- Pop the popcorn.
- Measure, record actual weight and volume of popped corn.
- Record number of unpopped kernels.

Conclusion:

Have students compare actual data with their predictions. Discuss what is the “best” popcorn variety.

From Corn in the Classroom, www.kcorn.org/kcgaprojects/education

Student Sleuths

- Corn provides zeaxanthin and lutein. What are these and what health benefits do they provide?
- Corn can be classified into which three food groups?
- What is ATP and how does it work in our body?
- Is corn a monocot or a dicot? What is the difference?
- 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

Adventurous Activities

Have students write journal entries every day of what they ate for lunch. Have students monitor how they feel (e.g., tired, energetic, etc.). Use the Nutrition Data custom data entry tool to complete a nutrient analysis of their lunches (www.nutritiondata.com). Compare journal entries between school lunches and lunches from home.

Corn Agricultural 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.

- Minnesota is the nation's fourth top producer of sweet corn.
- Sweet corn is one of a few crops grown in all 50 states.

For information, visit: www.nass.usda.gov



Permission to use and adapt this material was received from the California Department of Health, Network for a Healthy California. Original development funded by the USDA Supplemental Nutrition Assistance Program (formerly the Food Stamp Program). These institutions are equal opportunity providers and employers.

Recipe Corner

Zucchini Corn Casserole

- 3 cups of sliced zucchini (1 lb.)
- ¼ teaspoon of salt
- 1 ½ cups (12 oz.) low fat cottage cheese
- ¾ cups of dry bread crumbs (preferably whole grain)
- ¼ cup wheat germ
- 2 tablespoon of minced fresh parsley
- 1 tablespoon of chopped fresh basil or ½ teaspoon dried basil
- Kernels from 4 medium ears of corn (about 2 cups)
- 3 medium tomatoes
- 3 ounces of cheese (Cheddar, Monterey Jack or Muenster) cut into small strips

Place zucchini in a colander and toss it with salt. Set it aside to drain for at least 15 minutes. Press the zucchini to remove more water. Pat zucchini dry with a paper towel. Set aside.

Preheat oven to 350 degrees F. In medium-sized bowl, combine cottage cheese, bread crumbs, wheat germ, parsley and basil. Set aside. Line bottom of a greased, 2 quart baking dish with zucchini. Layer half of the cottage cheese mixture on top of zucchini. Layer on corn. Add cottage cheese mixture to top of the corn. Cover with tomato slices and arrange the cheese strips on top of the tomatoes.

Cover the casserole. Bake for 15 minutes. Remove cover and bake for another 15 minutes. Remove and let stand for 10 minutes before serving. Serves 6.

Source: www.basic-recipes.com

Student Advocates

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 Dakota 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 now 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.

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

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 our community can use more green-friendly resources like corn-based products.



Literature Links

Primary

- **The Three Sisters: Exploring an Iroquois Garden** by Macia Earnes-Sheavly, (Cornell University, Cornell Cooperative Extension, 1993)
- **Popcorn** by Frank Asch (Parents Magazine Press, 1983)
- **Corn is Maize: The Gift of the Indians** by Ailiki (Harper Trophy, 1986)

Secondary

- **The Corn Grows Ripe** by Dorothy Rhodes (Viking Press, 1956)
- **Corn Belt Harvest** by Raymond Bial (Houghton Mifflin Company, 1991)
- **The Corn Raid: A Story of the Jamestown Settlement** by James Lincoln Collier (NTC Publishing Group, 2000)

For more information:

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

Popcorn Facts

Popcorn is a whole grain. Air popped popcorn has just 31 calories per cup. Three cups of popcorn equals one serving.

Popcorn differs from other types of corn in that its hull has just the right thickness to allow it to burst open. Inside each kernel of popcorn holds a small drop of water surrounded by a circle of soft starch. The soft starch is surrounded by the kernel's hard outer surface. As the kernel heats up, the water begins to expand, and the starch thickens. The heated water and starch apply pressure to the hull. The pressure inside the grain will reach 135 pounds per square inch before finally bursting the hull open.



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