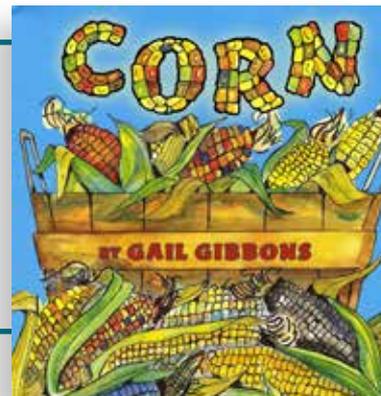


FEATURE

by Barbara Langham

## A CORNucopia of activities inspired by Gail Gibbons



The inside-front book jacket of Gail Gibbons' *Corn* tells readers the book offers a "cornucopia of information about a familiar food." Like many of the author's 50 children's books, *Corn* informs us about the history of corn, how it's planted and harvested, and its many uses—from food to fuel.

Buy or borrow a copy of Gibbons' book, published in 2008 by Holiday House and use it to introduce a rewarding project investigation this summer—and extending into fall. As your first step, learn more about the history of corn and think about how this food crop affects your community.

### Historical background

Corn originated in Mexico 10,000 years ago. It was cultivated in Central America by the Mayan and Aztec peoples who called it *maize*. Corn was also grown by native peoples in what is now the United States and Canada. Christopher Columbus and other explorers introduced corn to Europe. Today it is widely grown and consumed around the world (Encyclopedia Britannica, n.d.).

The Pilgrims in the early Massachusetts colony learned how to grow corn, which they called *Indian corn*, from the native people in the area. They held a harvest

celebration in 1621, which, according to tradition, was America's first Thanksgiving. They may have eaten corn, although eyewitness accounts of the event make no mention of it, because corn often mixed with kidney beans became a staple in their diet (Teachinghistory.org, n.d.).

Moreover, the Pilgrims' feast was probably not the first Thanksgiving observance in America. Historical documents

indicate that previous community offerings of thanks occurred among early colonists in Florida, Texas, Maine, and Virginia. As the country grew, several U.S. presidents declared Thanksgiving a national holiday, but each time the custom didn't last long. It took an act of Congress in 1941 to make it a permanent holiday (Plimoth Plantation, n.d.).

Nonetheless, the Pilgrims, according to Gibbons, used corn



in many ways. Aside from eating corn in cornbread and corn pudding, they used the husks to stuff mattresses and make dolls and burned cobs in fireplaces for warmth and cooking.

## Nutritional value

In the United States today, corn is boiled or roasted on the cob, creamed, converted into hominy, and ground into meal and made into cornbread, chips, and tortillas, among many other foods.

As a food for human consumption, corn is a healthy whole grain that provides fiber, vitamin C, and other nutrients (Barrie, 2019). It's gluten-free and low in fat and carbohydrates. But some corn-based products are associated with health risks. Corn oil, which is made by extracting oil from the germ part at the bottom of a kernel, is often used in frying and making salad dressings. Nutritionists warn against fried foods, regardless of the type of oil used, because they can contribute to weight gain and obesity (Traister, n.d.).

Cornstarch, which is made from the top part (endosperm) of a kernel, is used as a thickening agent in gravy and puddings. It's high

in calories and has few nutrients; a healthier substitute for thickening is dried milk powder (Corleone, n.d.). Corn syrup, which is broken down by enzymes from cornstarch, is mostly glucose, the simple sugar the body uses for energy. Glucose, when further converted, becomes fructose (fruit sugar) or high-fructose corn syrup (HFCS). Food manufacturers use fructose mainly to sweeten processed foods and HFCS to sweeten soft drinks. These derivatives are preferred by manufacturers because they're cheaper than table sugar.

The body processes these sugars differently. Glucose is metabolized by the brain, liver, muscles, and fat tissue and has a direct effect on blood sugar and insulin levels. Fructose, on the other hand, is metabolized primarily by the liver. Thus, it can have a more immediate effect on fats in the blood (triglycerides) and can contribute to a fatty liver. Nutritionists advise against excess consumption of any sugars because they add little, if any, nutrients to the diet, and they are linked to weight gain and diabetes (Webb, 2017, an, 2012).

## Explore corn with children

Because preschool children learn best through hands-on activities, consider ways to allow children to explore real corn. The following activities offer a sample; you may develop other creative and effective learning activities.

### Talk about corn

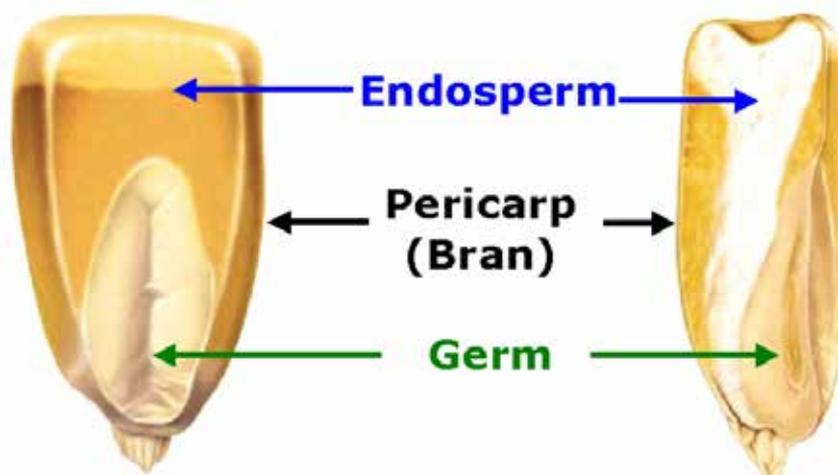
With a small group, open Gibbons' book to show the diagram of a corn plant. Point out the plant parts: **ear**, **leaf**, **stalk**, the **tassel** at the top, and the **roots** at the bottom. Note that the picture shows only 2 ears. Unlike tomatoes or green beans, corn stalks produce only 1 or 2 ears apiece.

Place the book and one or more ears of corn in the science center for children to explore on their own.

### Taste corn

Preschoolers are probably already familiar with corn as food. To introduce corn as a curriculum unit, arrange with the kitchen staff to include corn as part of a family-style lunch meal. Corn on the cob is reasonably priced in the summer; plan 1/3 ear for each child. Frozen and canned corn kernels are also available.

Show children a fresh ear of corn, with **husk** and **silks** intact. Explain where you got the corn—from the produce section of a supermarket or at a farmers' market, for example. Remove part of the husk to reveal the corn **kernels** inside. Encourage children to describe what they see, such as the green or brown husk and the vertical and horizontal rows of kernels. Remove some of the kernels to show the **cob**.



At mealtime, talk with children about the corn and consider charting children's responses to questions like these:

- What color are the kernels? (Kernels can be yellow or white).
- How does it feel in your mouth when you eat it?
- Do you like it?
- Do you ever eat it at home?
- Where does it come from?

### Art with corn

Historically, farming families made use of corn parts that we, today, put in the garbage can or compost pile. Children often made toys with corn cobs, husks, and silks. Offer school-age children dried husks and yarn to make corn husk dolls. See [www.teachersfirst.com/lessons/native-crafts/cornhusk.cfm](http://www.teachersfirst.com/lessons/native-crafts/cornhusk.cfm).

Offer short dried cobs children can use to make prints. Provide shallow plates of liquid tempera paint and heavy paper. Show the children that they can dip the cob into the paint and roll out designs.

### Grow corn

Corn is usually planted in the spring, and farmers often say that stalks are expected to be "knee high by the 4th of July." But late planting may be possible in some areas by planting late-growing varieties. Get advice first from a local plant nursery or county extension agent. Ideally, you will plant corn in a garden plot, but you can also try a large tub about 4x4 in size.

In small groups of children, show children the page on planting in Gibbons' book. Talk about the following:

- How is corn planted in fields by

farmers?

- What do they use as seeds?
- Would you like to plant your own corn?

A few planting principles:

- If you want corn to eat, plant sweet corn or popcorn.
- Plant only one variety. More than one may result in cross-pollination, which will lessen the corn quality.
- Choose a sunny area for planting.
- Add compost to the soil.
- Plant seeds 9 to 12 inches apart.
- Plant directly in the soil; transplanting is usually unsuccessful.
- Water moderately.

For a video of instructions, see "How to hand-plant corn: Urban garden."

Encourage children to check the plants every day and water as necessary. With a little luck, if you plant corn in early June, you will

see mature corn about 3 to 4 months later—in September or October. A stalk will be about 8 feet tall.

Even if the plants die or get eaten by grasshoppers, raccoons, birds, or squirrels, planting will give children the experience of growing and gain appreciation for the work of farmers and gardeners.

With school-age children, discuss the page on *pollination* in Gibbons' book.

- What do the tassels at the top of the plant do?
- How does the pollen get spread?
- What are the silks?
- How do the kernels form?

### Field trip to a corn field

If possible, arrange a field trip to a neighborhood garden or a farm where corn is almost ready to be



harvested. Ask children to observe the following:

- How tall are the stalks? (Compare to a child's or adult's height.)
- What color are the silks?
- How many ears can you count on a plant?
- How is the corn harvested—by hand or machine?
- What does the gardener or farmer do with the harvested ears?
- What happens to the stalks? Ask the farmer to let you take away cornstalks and husks for children to use in an outdoor construction area.

As with any field trip, arrange for transportation, ask for parents or volunteers to accompany you, get written permission from parents, and follow other rules set by your program, including making

sure all children are out of vans and cars to avoid heat-related illness and death. Plan to take pictures, print them out, and post them on the bulletin board or in a handmade book.

### Grind corn for food

Borrow a mortar and pestle or buy one (the cost is generally less than \$10). Drop a few grains of field corn into the bowl and show children how to grind it. Invite children to try. The purpose is to demonstrate that grinding requires hand and arm strength and lots of patience. A hand-operated coffee grinder will have a similar result. Explain that cornmeal we find in a store is ground by machines.

Invite children to feel the texture of the ground corn. Compare to cornmeal from the store. Ask

children if they can name some foods made from cornmeal. The list includes corn muffins, cornbread, corn tortillas, corn chips, and corn flakes. Other corn-based foods include hominy, grits, and polenta (kernels ground to increasing degrees of fineness). Show pictures in appropriate pages in Gibbons' book and find color photos on the Internet.

### Cook cornmeal muffins

Invite children to help make cornmeal muffins. Have children wash their hands thoroughly. Introduce the ingredients and help the children explore how each contributes to the final product. Allow the children to measure and mix the ingredients and spoon the batter into muffin tins. Only an adult will place the muffin tins in the oven to bake and remove them when done. Use careful adult supervision.

### Grits cornbread

- ½ cup grits (roughly ground corn)
- ½ cup cornmeal (finely ground corn)
- 1 cup flour
- 1 teaspoon salt
- 2 teaspoons baking powder
- ½ teaspoon baking soda
- 2 tablespoons sugar
- 1 cup buttermilk
- 1 egg
- ½ cup vegetable oil

Grease muffin tins. Set oven to 400°F. Mix dry ingredients in a bowl. Mix egg, buttermilk, and cooking oil separately, and add to dry mixture. Stir only enough to moisten thoroughly. Drop by tablespoonful into muffin tin, filling about 2/3 full. Bake for 10

PHOTO BY SUSAN GAETZ



to 12 minutes.

Serve with butter and honey.  
Makes 12 muffins.

## Explore animal feed

Corn intended for human consumption is harvested before the silks turn brown and the kernels are still tender. But much of the U.S. corn crop stays on the stalk until the kernels harden and is used to feed animals.

Check a local feed store for corn intended for consumption by farm animals like horses, cows, pigs, and chickens. In areas where game hunting is popular, many feed and grocery stores will stock bags of corn to feed deer and wild turkeys. Pet stores typically carry cracked corn for feeding wild birds and small animals.

Buy a small bag of feed corn and have children compare it to the kernels in canned or cooked corn meant to be eaten by humans. Show children the page in Gibbons' book on animals eating corn. Place the feed corn on the science table.

## Make popcorn as a snack

Show children popcorn kernels from a microwaveable bag. Compare to canned corn and feed corn. Microwave the bagged popcorn, using careful adult supervision. Serve in paper cups. Note: Because popcorn is a choking hazard, be especially attentive; avoid serving popcorn to children younger than 3 years old.

As children eat the snack, show them the pages on popcorn in Gibbons' book. Explain the diagrams that show how the heated kernels pop because the moisture inside them expands.

## Looking toward fall

Evaluate the progress of corn planted in garden or containers. Add ears of variegated corn, along with autumn leaves, to wreaths and table decorations.

## Library center

Find children's books at the library or bookstores, and add them to the library center. Choose one or more to read at circle time.

**Aliki. (1976). *Corn is maize*. New York, NY: HarperCollins.**

This classic offers a simple description of how corn came to be an important food around the world.

**Anaya, Rudolfo. (2007). *The first tortilla: A bilingual story*. Albuquerque, NM: University of New Mexico Press.**

According to an ancient Mexican legend, one of the Aztec gods turned himself into a black ant and entered the cave where ants had stored corn. He delivered the grain to the people, and this became their most important food.

**Arnosky, Jim. (1987.) *Raccoons and ripe corn*. New York: Mulberry Books, William Morris & Co.**

A mama raccoon and her two kits sneak into a cornfield at night to feast on ripe ears of corn. Soft, sensitive illustrations by a renowned nature painter will endear children to this wild animal's adventure.

**dePaola, Tomie. (2018). *The popcorn book, (40th anniversary edition)*. Watertown, MA: Charlesbridge.**

Twins explore—and eat—popcorn. This nonfiction classic is informative and funny, recipes included.

**O'Malley, K. (2007). *Gimme***

*cracked corn and I will share.*

**London, UK: Walker Children's Books.**

A tongue-in-cheek, slapstick take on the old folk tune. Be ready for a contagious case of the sillies.

**Rau, Dana Meachen. (2009.) *Corn aplenty*. New York: Random House.**

Two children watch a farmer plow a field, plant seeds of corn, water the plants, harvest the corn, and sell ears of corn. Colorful illustrations and repeated text introduce children to the growing cycle and to reading.

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Webb, Densie. (June 7, 2017). Is high-fructose corn syrup worse than regular sugar? Berkeley Wellness, University of California, [www.berkeleywellness.com/healthy-eating/nutrition/article/high-fructose-corn-syrup-worse-regular-sugar](http://www.berkeleywellness.com/healthy-eating/nutrition/article/high-fructose-corn-syrup-worse-regular-sugar) ■