



# Corn: A Fruit, Vegetable, Grain, or All Three?

*Traci L. Armstrong Florian, MS, RDN, Joshua Sherman, MS, Hope Wilson, MPH, RDN*



## Introduction

When many people think of corn, they think of warm evenings with family and friends enjoying the delicious, crisp bits of sweet, buttery-tasting corn on the cob as part of the summer and fall bounties. Others may think of the aroma of dried corn kernels being popped for a movie night or being ground and prepared to make masa and corn tortillas. Still, others, particularly ranchers and dairy producers, may think of growing field corn as silage and as grain for feeding their livestock. All of these different activities revolve around corn, and yet corn is not categorized into one food group. Depending on the type of corn grown, when in its lifecycle it is harvested, and how corn is consumed or utilized, it can be classified either as a fruit, vegetable, or grain.

## A Brief History of Corn

Native Americans of North and Central America were growing corn for several thousands of years before European settlers arrived. In fact, North American Indians saved the

first early settlers from starvation by sharing their stored corn with them<sup>1</sup>.

Wild corn (also known as maize in many parts of the world) originated in Mesoamerica and is considered the offspring of a Mexican wild grass called teosinte (*Zea mexicana*)<sup>2,3</sup>. This wild grass was initially cultivated by the Aztec, Mayan, and Incan farmers<sup>4,5</sup>. Corn (*Zea mays*), as we know it today, does not grow wild. It has only been through humans introducing it to other parts of the world over hundreds of years that corn has spread across the globe. World production of maize exceeds 800 million tons with an annual value that surpasses all the gold and silver extracted by the conquistadors<sup>4</sup>. It accounts for 21% of human nutrition worldwide<sup>2!</sup>

Selection and demand by humans, as well as natural evolution, have resulted in an array of corn available. Various types of corn are classified by the characteristics of their kernel endosperm, or the tissue that surrounds the germ providing food for the seed when it germinates<sup>5</sup>

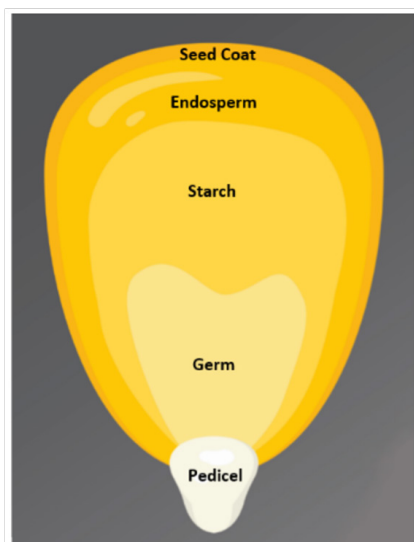


Figure 1: General Corn Kernel

## Types of Corn and Uses

The US is the largest producer of corn in the world, producing 40% of total world corn production<sup>6</sup>. The most common types of corn are<sup>5</sup>:

1. **Field Corn** (also called *Dent Corn*) is often used for animal feed, industrial products, and in food processing. Thirty percent (30%) of total US corn grown of this type is used for biofuel ethanol production<sup>7</sup>. This corn-based ethanol accounts for 97% of total US ethanol produced<sup>6</sup>.
2. **Flint Corn** (also called *Indian Corn*) comes in an array of variegated colors, and often used in autumn decor.
3. **Flour Corn** has a soft starch endosperm with thin pericarps to make grinding easy.
4. **Sweet Corn** is what most people are used to eating at the dinner table. One percent (1.0%) of total US-grown corn is this type<sup>7</sup>.
5. **Pop Corn** is basically a small-kernelled flint-type corn.
6. **Waxy Corn** contains 100% amylopectin starch generally used as a food thickener.



Photo of "Dent" Corn

## Not Just a Grain, a WHOLE Grain

Switching from corn being classified as a fruit, let's discuss how it is also classified as a Whole Grain: A grain is defined as the harvested dry seeds or fruit of a cereal grass. So, corn that is collected when the kernels are dry (a matured form of corn) would be considered a grain. For people working in agriculture, corn most likely would be considered a grain. For consumers, the United States Department of Agriculture's (USDA) *MyPlate* places the dried or ground form of corn in the *Grains Group*<sup>8</sup>.

Going a step further, the *Grains Group* contains foods that are categorized as either a *Whole Grain* or a *Refined Grain*. The Whole Grain Council defines a whole grain as one that contains all of the essential parts and naturally occurring nutrients of the entire grain<sup>1</sup>. Thus, whole grain corn tortillas, corn breads, and other corn-based, baked goods, along with popcorn, would fall into the whole grain definition.

The example in Table 1 shows some of the nutrients derived from consuming whole grain corn.

Corn flour is naturally gluten-free and can be a substitute for gluten-containing flours in many recipes.

## A Vegetable—Now, That's Familiar!

When corn is harvested before it reaches maturity, it is considered a vegetable<sup>3</sup>. A vegetable is defined as a plant grown for an edible part like the leaves, flowers, stems, or roots. Technically, all cereal grains could be called vegetables. Still, by the norms of farming, we distinguish the cereal grains from the other vegetables. Therefore, the sweet corn many usually eat fits in with other vegetables like spinach, kale, peas, and carrots. So, sweet corn found at the supermarket (fresh, frozen, and canned) is considered a vegetable<sup>2</sup>. The USDA's *MyPlate* places this form of corn in the *Vegetable Group*<sup>10</sup>.

Table 1: Corn Flour Nutritional Information (in ¼ cup)<sup>9</sup>

<b>Kcals</b>	105
<b>Carb</b>	23g
<b>Fiber</b>	2g
<b>Protein</b>	2g
<b>Sodium</b>	1.5 mg
<b>Vit C</b>	0
<b>Potassium</b>	92mg
<b>Calcium</b>	2mg
<b>Iron</b>	.7mg

## A Word on Corn: Fresh, Frozen, & Canned

As you can see in Table 2, there are differences in nutrient values among fresh, frozen, and canned corn. Fresh corn has more digestible sugar available, hence the higher number of calories available. Once the corn is picked, it starts to age, and the sugars turn to starch, which is harder for humans to break down into usable energy. There is a small reduction of calories in frozen and canned corn varieties as there is less sugar readily available for energy. The other significant comparison is the sodium content. The canned variety listed contains sodium (for flavor and part of canning preservation). Buying *no-added-salt* canned varieties reduces the amount of sodium significantly.

Table 2: Corn Nutritional Information (in 100 g, approx. 2/3 cups)<sup>9</sup>

	Fresh	Frozen	Canned
<b>Kcals</b>	97	80	71
<b>Carb</b>	21g	19g	15g
<b>Fiber</b>	2g	2g	2g
<b>Protein</b>	3g	2.7g	2g
<b>Sodium</b>	3mg	0mg	279mg
<b>Vit C</b>	6mg	3.1mg	1.9mg
<b>Potassium</b>	252mg	146mg	142mg
<b>Calcium</b>	2mg	4mg	3mg
<b>Iron</b>	.5mg	.4mg	.3mg

## In Summary

Regardless if you are eating *corn* the grain, *corn* the fruit, or *corn* the vegetable, if you consume fresh corn on the cob, frozen corn, canned corn, cornbread, or a corn tortilla, *corn* will give you essential micro and macronutrients<sup>2</sup>. When consumed with a variety of foods, corn can be part of a nutritious, well-rounded, and delicious diet.

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### AUTHORS

**TRACI L. ARMSTRONG FLORIAN MS, RDN**  
Associate Agent, FCHS

**JOSHUA SHERMAN, MS**  
Assistant Agent, ANR

**HOPE WILSON, MPH, RDN**  
Assistant Agent, FCHS

### CONTACT

**TRACI L. ARMSTRONG FLORIAN**  
[tarmstro@cals.arizona.edu](mailto:tarmstro@cals.arizona.edu)

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Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Jeffrey C. Silvertooth, Associate Dean & Director, Extension & Economic Development, College of Agriculture Life Sciences, The University of Arizona.

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