

# POPCORN



## WHAT IS POPCORN?

Popcorn – the corn that pops! Popcorn is a specific variety of corn grown for its shape, size, starch type, and moisture content. Not all corn will pop; popcorn has unique traits, like a thick outer shell and strict moisture content, that allow it to do so. Popcorn has a rich history as one of America's favorite snacks and is even named Illinois' State Snack food. Whether you prefer yours plain, sweet, or salty with lots of butter, we all enjoy popcorn every now and then. In fact, the average American eats 43 quarts, or just under 11 gallons, of popcorn per year. Grab a bag of your favorite microwave popcorn and read more on this delicious treat!



## DID YOU KNOW?

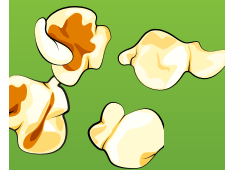
- Popcorn is **Illinois' State Snack Food!**
- January 19<sup>th</sup> is **National Popcorn Day**
- **October** is National Popcorn Month

## HOW MUCH POPCORN DO I NEED?

Popcorn kernels pop up to 40x their original size! Just two tablespoons of unpopped kernels will make 1 quart, or 4 cups, of popcorn.



## POPCORN STATISTICS



**14 BILLION** quarts of popcorn are consumed by Americans each year. That's 43 quarts, or just under 11 gallons, per person!

Popcorn kernels can pop up to **3 FEET** in the air.

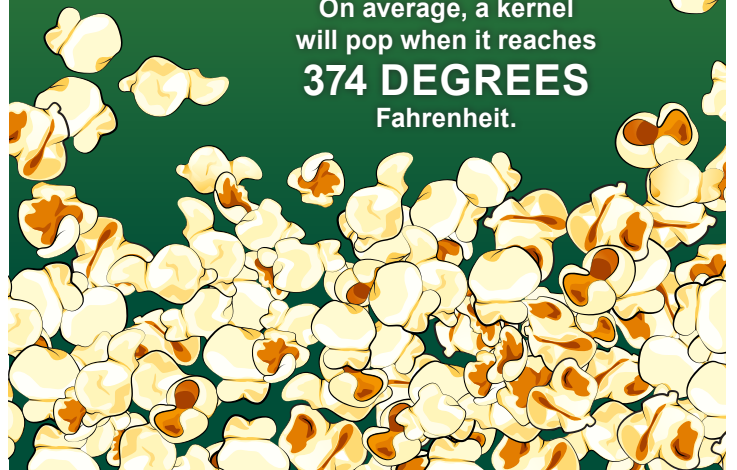


Air-popped popcorn has only **30 CALORIES** per cup.

The world's largest popcorn ball was made from almost 5 tons of popcorn in 2016. It weighed **9,370 POUNDS** and was 12 feet in diameter.



On average, a kernel will pop when it reaches **374 DEGREES** Fahrenheit.



## HOW DO YOU TOP YOUR POPCORN?



Butter



Caramel



Cheddar



Rainbow



Jalapeño



Chocolate

# POPCORN

## TYPES OF CORN



### DENT CORN

Most of the corn you see planted around in Illinois is not Popcorn or even Sweet corn, it is Dent corn. Dent corn is dried and processed into livestock feed, some processed foods, and ethanol.



### FLOUR CORN

Flour corn is similar to Dent corn but has a larger percentage of soft starch, which makes it easily ground. Flour corn is processed into foods like corn chips and tortillas.



### FLINT CORN / INDIAN CORN

Flint corn – or Indian corn – has a hard outer shell like Popcorn but is unique due to its wide range of colors. It is used mainly for decoration around harvest time.



### POPCORN

Popcorn is a type of Flint corn but is grown to have a specific size, shape, starch type, and moisture content. Its pericarp, or hull, is thick enough to allow pressure to build inside before it pops.

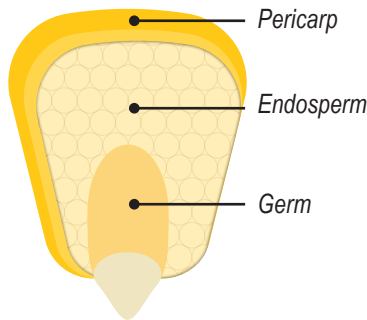


### SWEET CORN

Sweet corn is composed primarily of simple sugars, not starch. It will not pop. Sweet corn is the only type of corn that is picked when it is tender.

## WHY POPCORN POPS

A popcorn kernel consists of three main parts: the germ, endosperm, and pericarp (or hull). The pericarp on a popcorn kernel is thicker than on other types of corn, and the starchy inside contains 14% moisture for best “pop-ability”. When heat is applied to a popcorn kernel, the starch becomes gelatinous and the water expands and turns to vapor, creating pressure. Eventually, the thick pericarp bursts and the kernel flips inside out and cools, taking on its familiar popcorn shape.



## POPCORN SHAPES

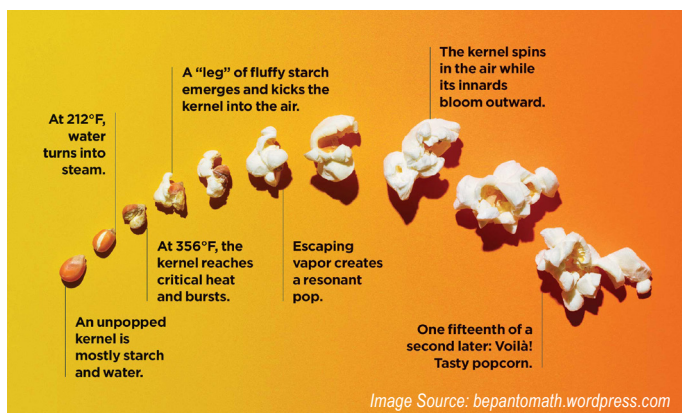
Popcorn comes in two main shapes – butterfly and mushroom. Butterfly popcorn has an irregular shape with large bumps. Its texture is light and crispy, and it breaks apart easily. This is the type of popcorn you would eat out of a microwave bag or in a movie theatre. Popcorn with a mushroom shape looks like a ball with a grooved surface. It is sturdier than butterfly popcorn, making it easy to stir when adding flavorings or coatings. Mushroom popcorn is used to make kettle corn and other flavored popcorn treats.



Mushroom



Butterfly



## TOP POPCORN PRODUCING STATES

1. Indiana
  2. Nebraska
  3. Illinois
  4. Ohio
- Top Popcorn-Growing County in Illinois: Mason County



# POPCORN

## HISTORY



**3000 BC** Oldest ears of corn (*believed to be used for popping*) found in the Bat Cave of New Mexico. These ears were very small, ranging from smaller than a penny to about 2 inches long.

**16<sup>TH</sup> CENTURY** Popcorn was integral to Aztec Indian ceremonies, used for food, ceremonial headdresses, necklaces, and ornaments.<sup>1</sup>



**1837** Invention of the moldboard plow led to widespread planting of corn in the United States.

**1893** The first mobile popcorn machine (*or popcorn cart*) was introduced by Charles Cretors in Chicago.<sup>2</sup>



**EARLY 20<sup>TH</sup> CENTURY** Popcorn was eaten as a breakfast food, just like we eat cereal today! Popcorn balls were one of the most popular treats and often given as gifts.



**1920s** During the Great Depression, popcorn grew in popularity due to its low cost - 5 or 10 cents a bag.

**1927** Popcorn was introduced into movie theatres due to its low cost for theater owners and viewers.<sup>3</sup>



**1939-1945** During World War II, sugar was sent overseas for U.S. troops, leading to a decrease in production of candy in the United States due to lack of sugar. Because of this, Americans ate three times as much popcorn as usual.



**1950s** Home television became popular, so fewer Americans were going to movie theatres. Popcorn went into a slump.<sup>4</sup>

**1981** Microwave popcorn was invented, and home popcorn consumption increased by tens of thousands of pounds in the years following.



## WHICH CAME FIRST, THE MICROWAVE OR THE POPCORN?

Microwave popcorn and the microwave itself were actually discovered, or “invented”, at the same time and completely by accident. On October 8, 1945, Dr. Percy Spencer, who worked for an innovative technology company called Raytheon, stood in front of an active magnetron (high powered vacuum tube). When he did, the chocolate candy bar he had in his pocket started to melt. This was a new phenomenon. He then placed popcorn kernels near the magnetron and, to his surprise, they popped! This accident led to the invention of the microwave. Dr. Spencer filed a U.S. patent just a year and a half later to detail the use of microwaves to pop popcorn.<sup>5</sup>

<sup>1</sup>steemit.com/life/@macks/how-you-know-popcorn-was-invented-by-aztec-indians <sup>2</sup>www.popcorn.org/All-About-Popcorn/History-of-Popcorn <sup>3</sup>https://www.google.com/search?q=1920+popcorn+movie+theater&tbm=isch&ved=2ahUKewiBz4mGltz-AhWZbtABHRpID24Q2-cCegQIABAA&oeq=1920+popcorn+movie+theater&gs\_lcp=CgNpbWwQAzoECCMQJ1C-EVt-EWDpE2gAcAB4AIABnAGIAbICkgEDMC4ymAEoAEBggELZ3azLXdpel1pbWIAAQE&scilient=img&ei=LeiTZMGEHpnw-bkPmr698AY&bih=1329&biw=1895&riz=1C1GCEA\_enUS931US931#imgrc=46ZwBm83RIC5FM&imgdli=6AuZWXQrteCxmM <sup>4</sup>www.bostonglobe.com/2020/03/27/arts/could-families-bond-around-tv-like-they-used/ <sup>5</sup>spectrum.ieee.org/a-history-of-the-microwave-oven <sup>6</sup>https://spectrum.ieee.org/a-history-of-the-microwave-oven

# POPCORN RESEARCH



Dr. Anthony Studer,  
University of Illinois Urbana-Champaign

## I-POP RESEARCH PROGRAM WITH DR. ANTHONY STUDER, UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

### *Tell us about the I-POP program and your goals for the research.*

The Illinois Popcorn Outreach Program (I-POP) was designed to get people excited about plant science and expose them to the techniques used for crop improvement. For me, popcorn was an obvious choice because it is a food that everyone identifies with. We conduct educational outreach activities and have a popcorn breeding program that is developing new lines of popcorn.

### *What is the process for breeding a specific color of popcorn?*

Our blue popcorn is bred using traditional selection, selecting the best-looking blue year after year. To make orange popcorn, we first crossed with dent corn to get genes for orange pigments, then started color selection. We also work with yellow, white, pink, and red.



I-POP Popcorn Colors\*

### *What role do Illinois middle/high school students play in this program?*

They are a huge help to my program. I have partnerships with schools where they pop the popcorn for my breeding program, and I take that data and make selections for the next year. Some schools are assigned their own breeding population, so advanced selections go back to the same school. In my experience, they collect fantastic data and I really appreciate their involvement.

### *Why is your popcorn research important to the agriculture industry?*

Our results can be used to identify genes controlling important traits that will help popcorn grow better and pop bigger. We hope that the lines we make in our breeding program will one day be grown by farmers and eaten by popcorn lovers around the world.

### *What is your favorite way to eat popcorn?*

I like to air pop my popcorn and eat it plain. It is a very healthy snack this way and you get to taste all the different flavors of the popcorn.



Popcorn Diversity Spiral\*



Corn Kernel Cross-Sections\*

\*photos courtesy of University of Illinois Crop Sciences

## MAKE YOUR OWN POPCORN

Wondering what would happen if you popped popcorn on the cob? **You can try it!** All you need is a full ear of unpoped popcorn and a brown paper bag. Place the ear inside the bag, fold down the top 3 times over, and microwave it for 2 minutes. Open to find the popcorn you know and love... you may even find a few popped kernels still attached to the cob!

