

## Virginia is not a corny state, but...

**T**he Corn Belt states include Nebraska, Illinois, Indiana, Ohio, Iowa, Kansas and Minnesota. These states average almost twice as many bushels per acre than Virginia (140 vs. 84).

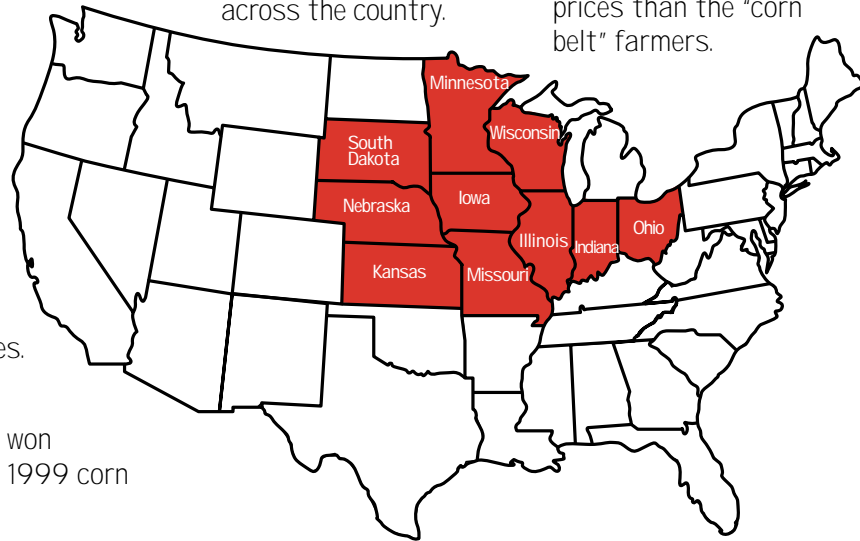
But, there are farms in Virginia that do very well with corn. Very, very well in some cases.

David K. Hula of Charles City, Va., won first place in the 1999 corn

yield contest sponsored by the National Corn Growers Association. His entry of 257.19 bushels per acre (non-irrigated, no-till) topped all other competitors across the country.

Demand for corn to feed poultry and hogs is greater than Virginia farmers can produce. This locally high demand allows Virginia corn producers to receive higher prices than the "corn belt" farmers.

**How to tell when sweet corn is ready to pick**  
Most varieties of sweet corn are ready to eat in two to three weeks after pollination. (Hot temperatures will hasten maturity.) External clues: brown, dry silks, and the cob will have a rounder, blunt tip. If the husk is loose, allow the kernels to fill out for another day or so. If the husk fits tight on the cob, your corn is ready. To remove the ear, pull down and twist.



### What's Growing On In Virginia?

Virginia Foundation for Agriculture in the Classroom  
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### What's growing on in YOUR area?

Share your AITC stories, comments and suggestions with us for possible publication in the next newsletter!

For information, contact Michele Awad at 804-290-1140 or e-mail [mawad@vafb.com](mailto:mawad@vafb.com).



What's Growing On In Virginia? is printed with soy ink.



### About this Newsletter

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# What's Growing On In Virginia?

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## Ordinary corn is becoming extraordinary

**O**nce upon a time, long ago, corn might have been considered ordinary. And, in some ways, it still is. But extraordinary things are happening to this old-fashioned crop today.

Corn is certainly old. People and animals have been eating it for 7,000 years. The oldest known remains of corn were discovered in Mexico. In the United States, corn has been found in New Mexico and northern Arizona caves dating back to 1200 to 1300 A.D.

Columbus is attributed with bringing corn to Spain on his return voyage in 1493. Its cultivation spread quickly, following the Portuguese trade routes in the early 1500s (One account has corn reaching the Philippine Isles from the west before Magellan arrived from the east in 1521).

The first sweet corn was recorded in 1779, reported to have been collected from the Iroquois Indians of the Susquehanna River Basin.

Corn is certainly popular. It is said to be grown in more countries than any other crop. About a fourth of all the farmland in the United States is planted with corn. In Virginia, it's grown in almost every county.

The reason corn is so commonplace is because it is the primary source of feed for our livestock. About 80 percent of the corn grown in the U.S. is fed to chickens, hogs, beef cattle and dairy animals.

Processed into starch, oil, protein and fiber, corn is now used in a variety of products today that are not seen as corny. Popular soft drinks are sweetened with corn syrup. Corn also is used in adhesives, toothpaste and shoe polish.

Recent advances in biotechnology make corn extraordinary. At the end of the 20th century, a corn that protects itself from the European corn borer (a pest that cost U.S. corn growers more than \$1 billion annually) came out of the lab and went

into farmers' fields, saving farmers millions that once were spent on pesticides.

This is just the beginning of what might come. Research is being done on corn and other crops to produce plants that require less fertilizer, produce higher yields (even in a drought) and offer a higher nutritional content.

Successfully improving the genetics of corn is considered by some to be the single-most important scientific advancement in farming made in the 20th century. Genetic improvements and better crop protectants are why yields have gone from averaging 26 bushels an acre in 1928 to more than 130 bushels an acre today.

In the future, corn will have a variety of uses with which we do not now associate the grain. Already, some 550 million bushels of corn go to make some 1.3 billion gallons of ethanol for fuel, so it's clear that corn is getting more extraordinary every day.

## What is a hybrid?

A hybrid is the offspring of genetically different parents (America is sometimes called a nation of hybrid citizens). In corn, the offspring of the two parents may be much alike but differ in their genes. Hybrid sweet corn was first marketed in 1924, with hybrid field corn coming into wide use in the 1930s.

Corn will self-pollinate. So to create a corn hybrid, the new genetics have to be introduced by human intervention. Sounds high-tech, and it is, but much of the work still involves trained high school students in hot summer fields moving pollen from one corn plant onto another at the right time.

## What kind of corn?

**S**oon, some predict, more corn will be grown for a specific use (high-oil corn, organic corn, fuel corn, etc.). Today, however, we group corn in these categories:

**Dent corn** - the majority of the corn grown in the United States, it contains 85 percent starch and can be used to make everything from livestock feed to fuel

ethanol, to corn syrup and sweeteners, to cornstarch and industrial products.

**Sweet corn** - corn on the cob and canned corn that you buy in the grocery store are sweet corn. It has a high sugar content and is harvested when the plant is immature and the kernels still soft.

**Popcorn** - a special kind of corn that contains moisture inside that makes it "pop" when cooked.



**Food-grade corn** - includes blue, white, high-amylose and other corns used in production of food products, such as cornbread or tortillas. Food-grade corn is grown for its specific milling traits.

**Other** - Other types of corn such as indian corn or broom corn can be used for decorative or other uses.

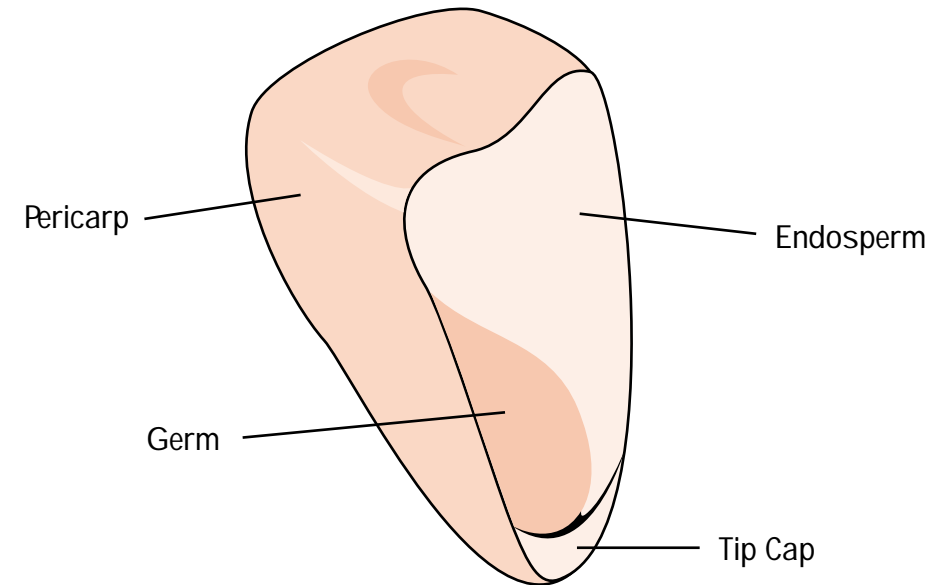
### Virginia Corn

- Third largest crop
- Generated \$45.6 million in cash receipts
- 300,000 acres harvested

Virginia Agricultural Statistics Service, 1998

In Virginia, 190,000 of the 500,000 acres planted in corn is used for silage, not grain. Livestock producers (especially dairy farmers) feed the entire corn plant to their herds, chopping the stalks green and preserving the feedstuff using partial fermentation in a silo (thus, the term silage). Most any corn can be turned into silage, but farmers usually grow a hybrid especially suited for producing overall green tonnage, not just grain.

## What's in a corn kernel?



Corn, called maize in most of the world, is actually part of the grass family of plants.

## Is dent corn dented?

Of course. When corn dries in the field before harvest, the moisture loss causes the soft endosperm to collapse and form a dent in the top of the kernel, thus the term "dent" corn.

## The complex corn kernel

**T**he germ is the only living part of the corn kernel. It contains the essential genetic information, enzymes, vitamins and minerals for the kernel to grow into a corn plant. About 25 percent of the germ is corn oil. Corn oil is the most valuable part of the corn kernel. It is high in linoleic fatty acid (polyunsaturated fat) and has a bland taste.

The endosperm is about 82 percent of the kernel's dry weight and is the source of energy and protein (starch) for the germinating seed. There are two types of endosperm, soft and hard. In the hard endosperm, starch is packed tightly together. In the soft endosperm, the starch is loose.

The pericarp is the outer covering of the kernel that protects it from deterioration. It resists water and water vapor and is undesirable to insects and microorganisms.

The tip cap is the only area of the kernel not covered by the pericarp. It is the attachment point of the kernel to the cob.

### Special Thanks . . .

*What's Growing On In Virginia?*

Sponsored by:  
The Virginia Corn Board

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# What's Growing On In Virginia

## Special pull-out lesson plan

### OBJECTIVE:

The students will discover the number of corn kernels on an ear of corn.

SOL:  
K.13, K.15, K.16 and K.17

1.1, 1.17, 1.18 and 1.19

2.2, 2.20, 2.21 and 2.23

3.21, 3.22 and 3.23

4.6 and 4.19

5.17 and 5.18

## Counting Kernels

### Background Information:

Corn seeds are the kernels which are attached to a high-fiber center core called a "cob." We refer to the cob and kernels as an "ear of corn," probably because it emerges from the side of the plant. The kernels are arranged in rows along the ear. An ear of corn can have as few as six rows or as many as 36 rows, but the number of rows is always even.

### Activity:

- Purchase different varieties of corn "on the ear," such as white and yellow sweet corn. Specialty stores and farmers' markets may have more varieties.
- Cut the corn into one-inch slices. A very sharp knife is needed so do this before beginning the activity.
- Place students into small groups. Distribute the corn slices to the groups.
- Have the students count the number of kernels around the cob.
- Complete a data chart with the class' kernel information.

Group Names	Type of Corn	Number of Kernels

- Discuss and interpret data.

## Extraordinary Corn

### Extension Activities:

- Make corn prints by dipping the corn slices into paint and pressing onto art paper.
- Discuss the difference between monocot and dicot seeds. Soak a variety of seeds overnight. Beans, peas and peanuts are examples of dicot seeds while corn, wheat and oats are monocot seeds.
- Have students illustrate the two seed types.
- Estimate the number of seeds on a whole ear of corn. Then count the number of seeds along the length of the ear. Multiply by the number of rows around the cob. Display and interpret data.
- Compose corny jokes. Some examples are:  
Why did the corn go to the doctor's office? It had an "ear" ache.  
What do you call a corny military officer? A kernel (colonel).  
Why did the farmer take a needle to his field? To sow the corn seeds.
- Check out the following Web sites:  
[www.ncga.com](http://www.ncga.com) [www.ohiocorn.org](http://www.ohiocorn.org) [www.kycorn.org](http://www.kycorn.org) [www.mncorn.org](http://www.mncorn.org)
- Create a corn products web. The following web contains several names of corn derivatives found in grocery store products. Have students hunt through their kitchen cupboards to find products containing these corn derivatives and other products with corn.

