

## SWEET CORN



The cultivation of corn (maize) (*Zea mays*) began over 8,000 years ago in Mesoamerica, a geographical area which includes central and southern Mexico, and Central America. Corn was first domesticated from teosinte (*Zea mexicana*), an annual grass native to this region. Wild teosinte mostly has value as a fodder plant, as it provides very little edible seeds.

The first archaeological evidence of domesticated corn comes from the San Marcos cave in Tehuacan and the Guilá Naquitz cave in the state of Oaxaca, Mexico. The corn in San Marcos cave is dated to over 5,000 years ago. The cobs from the Guilá Naquitz cave were dated to over 6200 years old.

Researchers believe that humans first domesticated corn by selecting the teosinte plants that had the largest amount of edible seeds until they eventually provided a substantial food source. This method probably took several generations to produce the corn we see today. In the process, humans have transformed corn into a plant that can no longer self-sow and modern corn now requires breaking the hard, tightly bound cob to remove the seeds. Wild teosinte, however, is very fragile and the seeds easily fall off and grow new plants. Interestingly, without human interaction, modern corn would probably cease to exist.

While field corn was grown in North America before 200 B.C and is grown primarily for animal feed and industrial uses such as ethanol, cooking oil, etc. In contrast, sweet corn is produced for human consumption as either a fresh or processed product. The specific time when sweet corn originated cannot be pin-pointed. However, sweet corn was grown by the American Indian and first collected by European settlers in the 1770's. The first variety, Papoon, was acquired from the Iroquois Indians in 1779.

**Sweetness Genes** – Standard sweet corn is a mutant type of corn that differs from field corn by a mutation which causes the kernels to accumulate about two times more sugar than field corn and significantly less starch. Today several hundred sweet corn varieties are available.

**Fresh supersweet Corn** is an exciting new generation of the sweet corn we have come to love. These new varieties contain three to four times more sugar than traditional sweet corn varieties and retain their sugar and flavor for up to two weeks after harvest, when stored correctly.

The supersweets, has two main advantages over the other types: 1) it is at least two to three times sweeter, and 2) the conversion of sugar to starch is negligible, thus this corn type will remain sweet up to 10 days after harvest if cooled properly, then refrigerated. Because of these advantages, the supersweet varieties are the superior variety for shipping to distant markets.

The fresh supersweet taste and excellent storage properties are attributed to the characteristics of the "shrunk 2 gene." This gene, when isolated, produces corn with a lower starch content and a much higher sugar content, resulting in a product that tastes better, stores longer and can be prepared in minutes.

**Sweet Corn Color** – Sweet corn comes in three colors: yellow, white, and bicolor (yellow and white). Cross-pollination of yellow kernel varieties with white kernel varieties will result in production of bicolor corn. Also, if a bicolor is cross pollinated with a yellow variety, kernel

color will be predominantly yellow. Although there are geographical preferences for certain kernel colors, there is no relationship between color and sweetness.

Sweet corn, *Zea mays*, is a monocot in the grass family, Gramineae. Modern sweet corn cultivars arose in the 19th century when a single gene mutated in field corn. Plants descended from this mutant had kernels with a sugary rather than a starchy endosperm and a creamy texture. The low starch levels make the kernel wrinkled when dry rather than plump. Sweet corn also has a thinner seed coat than field corn, making it more tender.

Most vitamins and minerals are present in at least small amounts but a solely corn-based diet provides inadequate niacin for human health, leading to deficiency diseases such as pellagra. Yellow corn has higher vitamin A content than white corn. One ear of yellow corn provides 11 percent RDA thiamin, 3g protein, and 85 calories.

Fresh sweet corn can be prepared in a variety of ways. In fact, it can even be eaten raw in dishes like fresh sweet corn salsa. The key thing to remember is that today's sweeter and fresher varieties do not require the cooking time that your parents' sweet corn did. Today's fresh sweet corn is more tender and stays sweeter longer. So no matter how you prepare it, your fresh sweet corn will cook quickly!

Sweet Corn is produced in about half of our states. Almost 50% of U.S. production comes from the Southern supersweet region. Supersweet varieties are the result of traditional breeding methods, and are NOT Genetically Modified Organisms or GMOs.

Sweet corn is graded right in the field and then packed into crates and rushed to a hydrocooler, or cooling facility, within 30 minutes from the time of harvest. Upon arrival at the hydrocooler, crates are re-inspected for quality assurance. Then corn is given a cold-water bath for about 30 minutes, bringing its temperature down to the perfect storage temperature of 33-36 degrees F. After being loaded into refrigerated trucks, crushed ice is blown over the top of the corn to keep it cool and moist.

Sweet corn can be found in three different colors: yellow, white and bi-color. Presently, yellow sweet corn comprises 60% of the fresh corn market. White and bi-color sweet corn represent 20% each, although demand for bi-color has increased dramatically during the last few years.

Fresh green husks with light brown silk ends free of damage are indications of good-quality ears. Green husks indicate the corn is fresh and light brown silk indicates that each kernel has been pollinated. Pollination takes place when pollen from the tassel comes into contact with the silk. Every strand of silk must make contact with pollen or you'll find gaps in the rows of kernels, although this occasionally happens for other reasons. Signs of poor quality include ears with yellowed, wilted or dried husks, as well as discolored and dried out stem ends.

Sweet corn is the result of a naturally-occurring recessive mutation in the genes which control conversion of sugar to starch inside the endosperm of the corn kernel. Unlike field corn varieties, which are harvested when the kernels are dry and fully mature, sweet corn is picked when immature and eaten as a vegetable, rather than a grain.

Sweet corn occurs as a spontaneous mutation in field corn and was grown by several Native American tribes. The Iroquois gave the first recorded sweet corn (called "Papoon") to European settlers in 1779. It soon became a popular vegetable in southern and central regions of the United States. Commercial production in the 20th century saw the rise of the sugary en-

hanced mutants, which are more suitable for local fresh sales, since the conversion of sugar to starch is minimized.

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