



Slow Food® Upstate

TOMATO

Family: Solanaceae

Genus: Solanum

Scientific Name: *Solanum lycopersicum*



Did you know the tomato has been called everything from the wolf peach, to Love Apple? The first from the botanical Latin name for the tomato plant, the last stemming from its botanical relation to the mandrake, or "love plant". As the tomato belongs to the Solanaceae family, known as the "deadly" Nightshade family, it has in the past given it a false reputation of being toxic while, in fact, it is the tomato leaf that is toxic and not the fruit or tomato.

Botanical classification - In 1753 the tomato was placed in the genus *Solanum* by Linnaeus as *Solanum lycopersicum* L. (derivation, 'lyco', wolf, plus 'persicum', peach, i.e., "wolf-peach"). However, in 1768, Philip Miller placed it in its own genus, and he named it *Lycopersicon esculentum*. This name came into wide use, but was in breach of the plant naming rules. Technically the combination *Lycopersicon lycopersicum* (L.) H. Karst, would be correct, but this name (published in 1881) has hardly ever been used. Therefore it was decided to conserve the well-known *Lycopersicon esculentum*, making this the correct name for the tomato when it is placed in the genus *Lycopersicon*.

However, genetic evidence (e.g. Peralta & Spooner, 2001) has now shown that Linnaeus was correct in the placement of the tomato in the genus *Solanum*, making the Linnaean name correct; if *Lycopersicon* is excluded from *Solanum*, *Solanum* is left as a paraphyletic taxon. Despite this, it is likely that the exact taxonomic placement of the tomato will be controversial for some time to come, with both names found in the literature.



Fruit or vegetable? - Botanically speaking a tomato is the ovary, together with its seeds, of a flowering plant, i.e. a fruit. However, from a culinary perspective the tomato is typically served as a meal, or part of a main course of a meal, meaning that it would be considered a vegetable (a culinary term which has no botanical meaning).

This argument has led to actual legal implications in the United States. In 1887, U.S. tariff laws which imposed a duty on vegetables but not on fruits caused the tomato's status to become a matter of legal importance. The U.S. Supreme Court settled this controversy in 1893, declaring that the tomato is a vegetable, using the popular definition which classifies vegetables by use, that they are generally served with dinner and not dessert. The case is known as *Nix v. Hedden*. It should be noted that strictly speaking the holding of the case applies only to the interpretation of the Tariff Act of March 3, 1883 and not much else. The court does not purport to reclassify tomato for botanical or for any other purpose other than paying a tax under a tariff act. In concordance with this classification, the tomato has been proposed as the state fruit of New Jersey. In Europe the tomato is classified (correctly, botanically speaking) as a fruit.

The Tomato - The tomato (*Solanum lycopersicum*) is a short-lived perennial plant, grown as an annual plant, in the Solanaceae or nightshade family, typically growing to 1-3 m tall, with a weakly woody stem that usually scrambles over other plants. The fruit is an edible, brightly colored (usually red, from the pigment lycopene) berry, 1-2 cm diameter in wild plants, commonly much larger in cultivated forms. Though it is botanically a berry, a

subset of fruit, the tomato is nutritionally categorized as a vegetable.

The Tomato is native to South America but growing in temperate climates worldwide. The tomato begins its colorful and varied history upon the coastal highlands of western South America, where it was being enjoyed by the native peoples for a long time. Evidence supports the theory that from Peru it found its way to Central America where it was domesticated as a little yellow fruit, called '*xitomatl*', meaning "plump thing with a navel", and later called '*tomatl*' by other Mesoamerican peoples. Maya and other peoples in the region used the fruit in their cooking, and it was being cultivated in southern Mexico, and probably in other areas, by the 16th C. It is thought that the Pueblo believed that those who witnessed the ingestion of tomato seeds were blessed with powers of divination. The large,

lumpy tomato, a mutation from a smoother, smaller fruit, originated and was encouraged in Central America, the direct ancestor of some modern cultivated tomatoes. Unfortunately, much horticultural knowledge was lost after the arrival of Europeans, as the Roman Catholic Church had a policy of burning pre-Columbian information as pagan.

Aztec mention tomatoes in various writings mentioning they were prepared with peppers, ground squash seeds, corn and salt, possibly the original salsa recipe, and were enjoying them when the Spanish conquistadors first came to the land. This is where they were discovered by Cortez growing in Montezuma's gardens in 1519. After the Spanish conquest of South America, the Spanish distributed the tomato throughout their colonies in the Caribbean. They also brought it to the Philippines, from where it moved to Southeast Asia and then to the entire Asian continent.



Of course, the Spanish also brought the tomato to Europe where it grew very easily in Mediterranean climates, and cultivation began there in the 1540s. It was probably eaten shortly after it was introduced, becoming a staple food of the poorer South of the Italian Peninsula, the Borbon state of Naples, where these new vegetables were embraced and cultivated as the peasant classes discovered that it could be eaten when more desirable food was scarce, while in other countries they

were planted as ornamental curiosities, but not eaten: still today Italians are especially known for their love of the tomato. This eventually developed into a whole cuisine of tomato dishes, as the wonders of the fruit became obvious, and the earliest discovered cookbook with tomato recipes was published in Naples in 1692.

The tomato plant was not grown in England until the 1590s and one of the earliest cultivators was John Gerard, a barber-surgeon. Gerard's Herbal, published in 1597, and largely plagiarized from continental sources, is also one of the earliest discussions of the tomato in England. Gerard knew that the tomato was eaten in both Spain and Italy. Nonetheless, he believed that it was poisonous (tomato leaves and stems are indeed poisonous in quantity, but the fruit is safe). Gerard's views were influential, and the tomato was considered unfit for eating (though not necessarily poisonous) for many years in Britain and its North American colonies. By the mid 1700s, however, tomatoes were widely eaten in Britain, and before the end of that century the Encyclopedia Britannica stated that the tomato was "in daily use" in soups, broths, and as a garnish and reference to it can be found in the 1758 edition of Hannah Glasse's popular "The Art of Cookery". Tomatoes were originally known as 'Love Apples', possibly based on a mistranslation of the Italian name *pomo d'oro* (golden apple) as *pomo d'amoro* (amore really).

Smith states that the earliest reference to tomatoes in British North America is from 1710, when herbalist William Salmon reported seeing them in what is today South Carolina. They may have been introduced here from the Caribbean and by the mid-18th C. they were

cultivated on some Carolina plantations, and probably in other parts of the South as well. It is possible that some people continued to think tomatoes were poisonous at this time, and in general they were grown more as ornamental plants than as food. Cultured people like Thomas Jefferson, who ate tomatoes in Paris and sent some seeds home, knew the tomato was edible, but many of the less well-educated did not.



However, according to Smith, this changed in the early 19th C., first in the Southern states and then throughout the country, as tomatoes began to be used as food regularly. In some regions this may have happened quite quickly; for example, in an 1824 speech before the Albemarle Agricultural Society, Jefferson's son-in-law Thomas Mann Randolph discussed the transformation of Virginia farming due to the introduction of new crops. He mentioned how tomatoes were virtually unknown ten years earlier, but by 1824 everyone was eating them because it was believed they kept one's blood pure in the heat of summer.

As Randolph's speech shows, medicinal powers were sometimes attributed to tomatoes. The idea that tomatoes could be used as a curative was fully developed by Dr. John Cook Bennett, who believed that tomatoes could treat diarrhea, dyspepsia, and other stomach ailments. Bennett's claims were widely publicized in the 1830s, in part because they were fun to mock, and in part because the tomato was still a novelty. Soon tomato pills were being sold, and people began to testify to miracle cures caused by the healing powers of tomatoes. The tomato mania lasted only a few years, but it enormously boosted tomato consumption, and contributed to an increase in tomato sales throughout the 1830s and 1840s. By the end of this period, Smith demonstrates, tomatoes were an established part of the American diet.

Yes, the tomato has really seen and done it all.

Today it is so beloved that several dozens, if not hundreds, of tomato varieties can be found in markets throughout the world in any one season. New tomato varieties are constantly being improved upon to enhance one feature or another, as well as heirloom tomato seeds saved and kept true over several generations by family farmers and others dedicated to saving rare and historic varieties. One of these varieties is the "Pomme d'Amour" variety, once grown by Thomas Jefferson at Monticello, and still cultivated by the Monticello estate. You can purchase these seeds at Monticello - Plants and Seeds on line store or try one of the other historical and heirloom varieties.

Medicinal Properties - The tomato's medicinal properties had already been endorsed in Continental Europe in the 16th C. and their consumption was believed to benefit the heart among other things, as it contains lycopene, one of the most powerful natural antioxidants which, especially when cooked, has been found to help prevent prostate, lung, stomach, pancreatic, colorectal, esophageal, oral, breast and cervical cancers.



Lycopenes, bioflavonoid closely related to beta carotene, are potent antioxidants present in tomatoes and seem to be responsible for these natural cancer-fighting properties. Cooking tomatoes more than doubles the effectiveness of the lycopene they contain, while a small amount of olive oil, such as what you would add in a pizza or tomato sauce, intensifies the protective effect further. Numerous other studies have also shown that consuming tomato products containing lycopene reduces the risk of cardiovascular disease and found that tomatoes help to dissolve animal fat in butter, cheese, eggs, pork, beef and many deep-fried foods, preventing hardening of the arteries, while the high potassium content helps in reducing high blood pressure, a major risk factor for coronary heart diseases and stroke. The plant is a cornucopia of health remedies and, among the Incas of South America and some tribes of Papua

New Guinea, the fresh leaf of the tomato plant (by many considered poisonous), crushed with some water into a poultice, was even applied as an antibiotic to infected areas of the body

Recent research has demonstrated that lycopene is at least twice as effective as b-carotene in protecting blood lymphocytes from NO₂ radical damage. Lycopene also reduces LDL oxidation more effectively than beta-carotene and scientists have found that a combination of lycopene with vitamin E prevents LDL oxidation more effectively than each substance separately. Potassium is also very important for the kidneys as it reduces high blood pressure: one jumbo tomato (approximately 3 inches in diameter and weighing about 7 oz.) contains nearly 450 mg. of potassium.

Eye Irritation - To relieve bloodshot eyes, Chinese doctors suggest eating 1 or 2 fresh tomatoes first thing in the morning on an empty stomach. Scientists believe that the Vitamin C and flavonoid in the tomatoes strengthen the blood vessels. There is even some evidence that lycopene in tomatoes may help to prevent cataracts, age-related macular degeneration.

Tomato is excellent for cleaning and rejuvenating the skin. Here are some of its uses:

Face Peel - Tomato is excellent for a face peel that loosens the top layer of dead skin cells and rub them off. It is good for all types of skins. Rub tomato slices directly into your clean skin, concentrating on areas infested with blockheads. Tomatoes contain vitamin C, which

has healing powers, and an acid that removes dead skin and unplugs pores, making skin soft and radiant.

Tomato Mask - Slice a ripe tomato as thin as possible. Lie down and close your eyes. Apply the slices to your face. Wait 10 to 15 minutes. Let the juices seep into your skin. After the 10 to 15 minutes are up, use a slice to rub the juices further into the skin. The tomato works as a face peel, removing all dead, dry skin and leaving your face soft, glossy, and smooth. Rub off the excess tomato, leaving the residue on your skin. The mild natural acidity of the tomato restores the ph balance of your skin.

For tougher face cleaning applications a more abrasive and effective mixture may be needed. Add almond slices into a blender. Pulverize. Add an equal amount of mashed ripe tomato. Mix well. Apply over the area of the skin you want. This cleansing grain removes rough dead skin cells, and makes the skin smooth. It is also effective against blockheads. This will work against even the most stubborn areas around the nose and chin. It stimulates circulation and restores the color of sallow, tired skin. Remove the mixture with cool water or wipe it off, leaving a coating of the natural oils and juices. **Caution:** This is very abrasive. Use with caution. When skin is sensitive due to too much sun, eruptions, or abrasions, wait until the problems have gone. Use no more than twice a week, only once if it tend to irritate.



Healing Sunburn - Lycopene has also been shown to improve the skin's ability to protect against harmful UV rays and tomato can be used to transform a painful sunburn into a modest tan. A slice of tomato placed on a sunburn for 15 minutes takes away the burning feeling and prevents the skin from peeling or blistering; or soak peeled tomato slices in buttermilk, then apply them directly on the skin affected. It will close up the pores and relieve the pain, it will also

give a tan over the spot where the sunburn used to be!

Restores Vitality - For Persistent Fatigue - Hypoglycemic people (those who have low blood sugar) are beset with constant fatigue and lack of energy. Tomatoes are useful in rebuilding their strength. Tomato affects this process three ways: Tomatoes contain several naturally occurring sugars that account for nearly 50 % of the total dry matter, and very ripe tomatoes are especially high in glucose and fructose. Tomatoes also stimulate liver mechanism and doctors at Tohoku University in Sendai, Japan reported that fresh tomato juice was extremely effective in accelerating the glycogen (blood sugar) formation in normal rabbits. Tomato seeds are a great source of protein with scientists affirming that tomato seed protein is similar to that of sunflower and soybean.

Restores the Health of the Liver - Tomatoes play a key role in liver health and Russian doctors routinely prescribe tomatoes in the diets of factory workers exposed to toxic

chemical. Tomatoes are useful detoxifiers because of the presence of chlorine and sulphur, two very important detoxifying trace elements (100 grams of uncooked tomato contains 51 mg. of chlorine and 11 mg. of sulphur). Natural chlorine helps to stimulate the liver. It assists liver in its task as an important filter for body wastes. Tomato also assists the liver in removing the toxic waste products from the system. Sulphur helps to protect the liver from cirrhosis and other debilitating conditions.

Drinking fresh tomato juice can help to regenerate the damaged, destroyed or surgically removed liver, promoting its health and well-being and counteracting the negative effects of an overly-rich diet by helping the liver break down fats and eliminate them more easily.. "A tomato a day, keeps the liver in good stay!" according to John Heinerman, noted author and herbalist.



Antibiotic (leaves) - Tomatoes have also been widely used as a natural antiseptic agent, because of its nicotinic acids. As mentioned before, certain tribes use the fresh leaf of the tomato plant, pulverized with a little water, as a poultice which is applied to an infected area and wrapped with gauze or a strip of cloth. Usually an infected minor wound will heal within 24 to 72 hours. You can also get the benefit of the wound healing property of tomato from the fruit: take a slice of fresh tomato and wrap it around the affected part, then apply an adhesive tape to hold the tomato in place. Change the tomato slices 2-3 times a day. The infection will normally clear within 2-3 days. The skin of the tomato has also been known to help clean your teeth and gums, and ingesting tomatoes has long been an excellent elixir for your hair, giving it an amazing natural shine and bounce. To get odor free and dandruff free hair, you can apply tomato paste on the scalp and wash after 15 minutes.

The Team Players in the Tomato - More and more research appears to show that lycopene assists the immune system in protecting the body from illness. Despite all the wonderful health benefits of lycopene, there is one problem: the reductionist model of isolating single compounds for drugs and supplements has been applied to the tomato. New lycopene supplements are hitting the market at an astronomical rate, but mounting evidence suggests that these lycopene nutraceuticals do not have the same impact that a whole tomato would. When only the lycopene is isolated from the tomato, we lose the other beneficial effects of this superfood, it is the whole tomato that provides superior benefit in the synergy of the full array of compounds that make it a powerful medicinal food.

Tomatoes are an excellent source of vitamin C, a nutrient known for its antioxidant action and also contain an abundance of other carotenoids, including beta-carotene, making it a

rich source of vitamin A. High intakes of vitamin C and beta-carotene may prevent atherosclerosis, diabetes, colon cancer and asthma. In addition, tomatoes are rich in fiber, which works in concert with vitamins C and A to aid against the same previously mentioned diseases: while vitamins C and A deter free radical damage to cholesterol, the fiber in the tomato lowers the amount of cholesterol from the body, by helping the body to remove it more efficiently. Fiber in tomato slows gastric emptying and therefore absorption of sugar into the bloodstream, positively impacting diabetes. In addition to its indirect effects on blood sugar, fiber also assists in removing carcinogenic compounds in the colon. This beneficially impacts both diabetes and colon cancer in separate but complementary mechanisms from vitamins C and A. These actions have a bearing on obesity as well, and when the low caloric value of the tomato is factored in, the argument is strengthened.



The tomato has even more nutrients for its fight against disease. Potassium, vitamin B₆, folate and niacin are all present in tomato and work together to help fight atherosclerosis. High cholesterol and homocysteine levels are both risk factors for atherosclerosis and other diseases. Niacin has proven effects in lowering cholesterol levels and vitamin B₆ and folate reduce high levels of homocysteine. The potassium in the tomato indeed works against heart disease by lowering blood pressure. The tomato also contains nutrients such as:

vitamin K, chromium and biotin. Vitamin K helps to build bone, while the latter two nutrients aid the body's ability to process sugar and fat, which may yet improve diabetes and nerve function. Riboflavin is another important nutrient in the tomato that helps with energy metabolism and fights against migraine headaches. Other potentially beneficial phytochemicals in tomatoes include: phenylpropanoids, phytosterols, and flavonoids. These phytochemicals beneficially influence the body in many different ways that science is just now beginning to realize. Unlike isolated supplements or drugs which have one or two main actions, tomato-based food products deliver many nutrients with multiple mechanisms of action. These manifold actions create a potent preventative medicine in the fight against aging and disease.

The Tomato is Better Cooked - The wonderful thing about the tomato is the many different culinary ways it can be used. It is widely used in salads, sauces, soups, and is the base of one of America's favorite condiments, ketchup. The tomato is without a doubt one of America's favorite health foods and considering the amount of lycopene consumed in the form of ketchup and pizza sauce, it makes one wonder what our rate of heart disease and cancer would be without this food.



The amount of beneficial nutrients in the tomato is significant with liberal consumption of tomato-based products and seems the best way to obtain the benefits is through more concentrated and cooked forms of the tomato. The celebrated Mediterranean diet includes high amounts of these foods and Italians, for example, are known for their love of tomato sauce: they use it as a dip, on pastas, in salads and even as a soup. As a result, they have one of the lowest incidence of intestinal and prostate cancers. Tomato sauce may indeed be the perfect way to obtain the beneficial lycopene and other compounds from the tomato as the slow cooking process of tomato sauce further enhances the concentration and absorption of the tomato's lycopene and other nutrients. Healthy oils, such as olive oil added to traditional sauces, also aid in the absorption and utilization of the lycopene and other carotenoids so, rarely do we find a healthier, more economical means of protecting health than with tomato sauce.

Spices cooked in tomato sauce also offer an increased opportunity to deliver medicine that has the potential of preventing disease. Garlic and oregano act as potent antimicrobial agents through the compounds allicin, thymol, and carvacrol. The cholesterol-lowering effects of garlic are also well-documented, and so are the antioxidant actions of rosmarinic acid found in oregano and the addition of rosemary provides

even more rosmarinic acid, as well as other antioxidant compounds. Basil provides an even greater antioxidant actions through the flavonoids orientin and vicenin which provide additional antimicrobial effects. Eugenol, (a phytochemical in basil) also has COX-inhibiting activity and is a target enzyme of many pharmaceuticals.

The addition of spices to tomato sauce provides a unique means of delivering medicinal compounds to the body, as the sauce can be prepared in such a way as to tailor medicine to an individual. For example, someone with an infection would benefit from extra garlic, rosemary and basil; while someone with a history of heart disease may want to include all of the above with an emphasis on the antioxidant herbs, rosemary and basil. Also, signature sauces can add other medicinal foods such as onion and pepper: in this way, tomato sauce acts as a unique medicine cabinet with interconnected beneficial effects on the body. As previously mentioned, the best benefits that tomato sauce has to offer relates to heart disease. When the sauce is made in the traditional Italian fashion, with garlic, oregano,

parsley and all the other spices, a tremendous amount of antioxidant, antithrombotic, and anti-inflammatory action is added. This list of medicinal actions would make any drug maker envious.

In order to maximize the health benefits of tomatoes and tomato products, it is also best to consume fresh organic tomatoes and canned organic tomatoes as virtually all foods in the US, with the exception of organic food, have trace amounts of pesticides. There is mounting evidence that by avoiding even minuscule trace amounts of pesticides, one's health will be improved.

Considerations of the Tomato from a Chinese Medicine Perspective - Using food as medicine is an ancient tradition in China that dates back to more than three thousand years ago. In China, food therapy is known as Shi Liao. In fact, there are restaurants in China that specialize in serving medicinal foods, which are called, "Yao Shan" (medicated diet). The tomato has the properties of being sweet, sour, and slightly cold. It builds the yin, strengthens the stomach, promotes digestion, and cleans the liver. It is used in cases of diminished appetite, indigestion, food retention, anorexia, and constipation. Due to its cooling nature and affinity for the liver, the tomato relieves liver heat, thus helping to alleviate high blood pressure, red eyes, and headache.



Hippocrates' famous saying holds truer today than ever before in history. The idea of prescribing food is a foreign concept to most healthcare providers, a disappointing fact in view of the rising cost of health care and prescription drugs. The foods regularly offered and consumed are devoid of nutrition, full of dyes and chemicals, offering little in the way of bioactive medicinal compounds and even if you walk the aisles of many local health food stores, you will be confronted with refined cereals and organic junk food. The fast paced, time-is-money society of today

has precious little time to stop and think about what can be or cannot be found in food. Luckily for us, tomatoes and their products are some of the world's oldest "fast foods" and can be quickly added to salads, soups and made into a sauce. Research shows that the inclusion of cooked and concentrated tomato products consumed several times a week decreases incidence of disease providing old world medicine with new world convenience, in a way that would make Hippocrates smile.

General Information - The tomato is now grown world-wide for its edible fruits, with thousands of cultivars having been selected with varying fruit types, and for optimum growth in differing growing conditions. Cultivated tomatoes vary in size from cherry tomatoes, about the same 1-2 cm size as the wild tomato, up to 'beefsteak' tomatoes 10 cm or more in diameter. The most widely grown commercial tomatoes tend to be in the 5-6 cm diameter range. Most cultivars produce red fruit, but a number of cultivars with yellow or

orange fruit are also available. Tomatoes grown for canning are often elongated, 7-9 cm long and 4-5 cm diameter: these are known as plum tomatoes.

As in most sectors of agriculture, there is increasing demand in developed countries for organic tomatoes, as well as heirloom tomatoes to make up for perceived flavor and texture faults in commercial tomatoes. Heirloom varieties are increasingly popular, particularly among home gardeners and organic producers, since they tend to produce more interesting and flavorful crops at the possible cost of some disease resistance. Quite a few seed merchants and banks provide a large selection of heirloom seeds, which are often organically produced as well. Hybrid plants remain common, however, since they tend to be heavier producers and sometimes combine unusual characteristics of heirloom tomatoes with the ruggedness of conventional commercial tomatoes.

Type of Tomatoes - Tomatoes are commonly classified as determinate or indeterminate - Determinate, or bush, types bear a full crop all at once and top off at a specific height; they are often good choices for container growing. Indeterminate varieties develop into vines that never top off and continue producing until killed by frost.

Most modern tomato varieties are smooth-surfaced, but older tomato cultivars (and some modern beefsteaks) often show pronounced ribbing, a feature that may have been common to virtually all pre-Columbian varieties. In addition, tomatoes come in colors other than red, including yellow, orange, pink, purple and nearly black, though such tomatoes are not widely available in markets.

There is also a considerable gap between commercial and home gardener varieties; home varieties are often bred for flavor to the exclusion of all other qualities, while commercial varieties are bred for such factors as consistent size and shape, disease and pest resistance, and suitability for mechanized picking and shipping. Tomato cultivars also vary widely in their resistance to disease. Modern hybrids focus on improving disease resistance over the heirloom plants. One common tomato disease is tobacco mosaic virus, and for this reason smoking or use of tobacco products should be avoided around tomatoes. Various forms of mildew and blight are also common tomato afflictions, which is why tomato varieties are usually marked with letters like VFN, which refers to disease resistance to verticillium wilt, fusarium fungus, and nematodes.

Pollination - In the wild original state, tomatoes required cross pollination; they were much more self incompatible than domestic cultivars. As a floral device to reduce selfing, the pistils of wild varieties extended farther out of the flower than today's varieties. The stamens were, and remain, entirely within the closed corolla. As tomatoes were moved from their native areas, their traditional pollinators, (probably a species of halictidae bee) did not move with them. The trait of self fertility (or self pollinating) became an advantage and domestic cultivars of tomato have been selected to maximize this trait, yet this is not the same as self-pollination, despite the common claim that tomatoes do so. That tomatoes pollinate themselves poorly without outside aid is clearly shown in greenhouse situations where pollination must be aided by artificial wind, vibration of the plants (one brand of vibrator is a wand called an "electric bee" that is used manually), or more often today, by cultured bumblebees.

The anther of a tomato flower is shaped like a hollow tube, with the pollen produced within the structure rather than on the surface, as with most species. The pollen moves through pores in the anther, but very little pollen is shed without some kind of outside motion. The best source of outside motion is a sonicating bee such as a bumblebee or the original wild halictidae pollinator. In an outside setting, wind or biological agents provide sufficient motion to produce commercially viable crops.

Commercial Picking and ripening - Tomatoes are often picked unripe, and ripened in storage with ethylene. Ethylene is a plant hormone produced by many fruits and acts as the cue to begin the ripening process. These fruits tend to keep longer, but have poorer flavor and a mealier, starchier texture than those ripened on the plant. They may be recognized by their color, which is more pink or orange than the ripe tomato's deep red. Recently, stores have begun selling "tomatoes on the vine" which are ripened still connected to a piece of vine. These tend to have more flavor (at a price premium) than artificially-ripened tomatoes, but still may not be the equal of local garden produce.

The enzyme that ripens tomatoes stops working when it reaches temperatures below 12.5°C. (56°F.) Once an unripe tomato drops below that temperature, it will not continue to ripen. Only once fully ripe, tomatoes could be stored in the refrigerator, but they will lose most of their flavor, so are best eaten at room temperature.

Legends - Tomatoes' status as an aphrodisiac may be due to a mistranslation. Legend has it that a Frenchman on his travels ate a meal with tomatoes in it and was fascinated with the new taste. He went back to the chef, who was Italian, and asked him what this new ingredient was. The chef said "Pomme de' Moors" (Apple of the Moors), but the Frenchman misunderstood and thought he said "Pomme d'Amour" (Apple of Love).

It is also said that the tomato became popular in France during the French Revolution, because the revolutionaries' iconic color was red; and at one point it was suggested that they should eat red food as a show of loyalty. Since European royalty was still leery of the nightshade-related tomato, it apparently was the perfect choice. This may also be why the first reported use of the tomato in the U.S. was in New Orleans, Louisiana, in 1812, because of the French influence in that region.

The most famous legend of this sort was introduced by Joseph S. Sickler in the mid-1900s, and became the subject of a CBS broadcast of "You Are There" in 1949. The story goes that the lingering doubts about the safety of the tomato in the United States were largely put to rest in 1820, when Colonel Robert Gibbon Johnson announced that at noon on September 26, he would eat a basket of tomatoes in front of the Salem, New Jersey, courthouse. Reportedly, a crowd of more than 2,000 persons gathered in front of the courthouse to watch the poor man die after eating the poisonous fruits, and were shocked when he lived. There is also a story which claims that an agent for Britain attempted to kill General George Washington by feeding him a dish laced with tomatoes during the American Revolution.

There is little, if any, historical evidence for any of these legends, and they continue to be repeated largely because they are just entertaining stories.