

THE EDIBLE GARDEN

MAY 2015

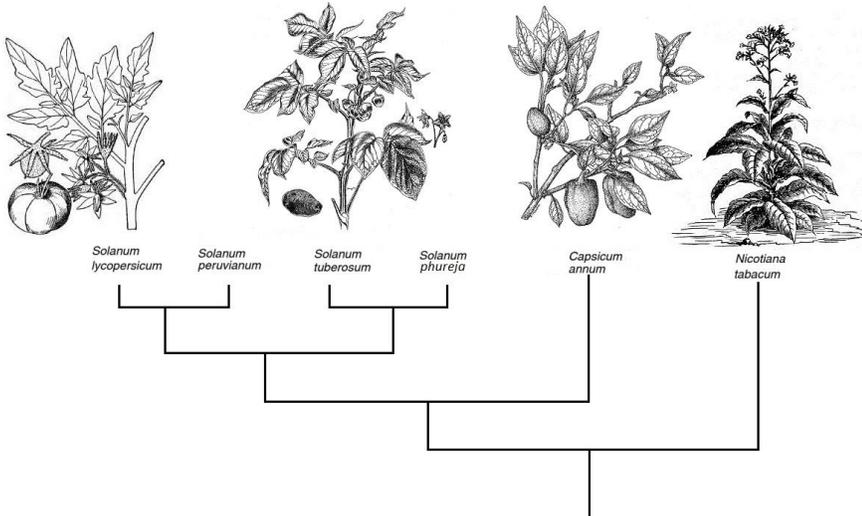


THE SOLANACEA FAMILY

*Rebecca Last,
Master Gardener of Ottawa Carleton*

The Solanaceae family is large, diverse and an important plant group for northern veggie growers. Sometimes called the Nightshade family, Solanaceae includes noxious weeds like the appropriately named deadly nightshade (*Atropa belladonna*). Indeed parts or all of many Solanaceae plants are highly toxic due to potent alkaloids that are a characteristic of the family.

Solanaceae plants can be annuals, perennials or biennials, vines, epiphytes, shrubs or trees. Even toxic members of the family can have important medicinal uses or are valued as ornamentals. For example, gorgeous Angel Trumpet flowers (*Brugmansia* spp.) are members of this family, as are petunias, Chinese lanterns (*Physalis alkekengi*) and Browallias. Members of Solanaceae are native to every continent except Antarctica, but the greatest diversity is found in Central and Latin America.



Cladogram showing the relationship between the three genera of the Solanaceae family

(Created: January 15, 2012, by Wikipedia user Yesydrodriguez)

The family name is derived from Latin, but its meaning is unclear. Perhaps it comes from the Latin word for “sun”, since many Solanaceae flowers have lobed petals that resemble the sun and its rays of light. Smokers might

ASSASSIN FROM BELOW CUTWORMS

*Dale Odorizzi,
Master Gardener of Lanark
County*

Have you ever gone out in the morning to admire the Beefsteak or Roma tomato plants that you planted the day before only to find one, two or more plants cut off at the soil line and lying flat on the ground? If so, your plants were visited overnight by cutworms! In my garden, my pepper or tomato plants are the usual victims of these predators. I have not had a problem with flowers seedlings.



Cutworm
(photo by Dale Odorizzi)

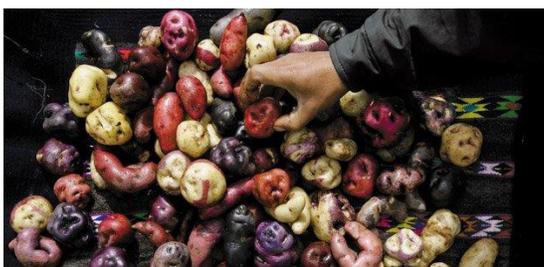
Cutworms are the larvae of the family *Noctuidae* which is a large family of brown or gray moths. The larvae are fat, greasy-looking gray or dull brown and are 2.5-5 cm in length. At night,

identify with another interpretation, which claims the name derives from the Latin word “solari”, meaning “to soothe”, in honour of the pharmacological properties of psychoactive members of the species, including nicotine. If you have ever bitten into a hot pepper by accident, you might question this second interpretation. Both bell and chili peppers also belong to Solanaceae.

With the exception of tobacco, the most economically valuable members of the Solanaceae family all fall within the Solanoideae sub-family. These include peppers, eggplants, and the three plants that are the focus of this article – potatoes, tomatoes and ground cherries.

Potatoes (*Solanum tuberosum* L.) offer the classic cautionary tale of the perils of monoculture. Indeed some credit the potato with giving birth to modern, industrial agriculture. Potatoes are grown from pieces of a parent tuber erroneously named “seed potatoes”, the result is a genetic clone. In the steep, isolated valleys of the Peruvian Andes where potatoes originated, thousands of varieties arose through what amounted to hundreds of separate selective breeding programs. However, when it was exported, European explorers chose only a few varieties, which were then cultivated in monocultures in their new homes. Easy to grow and tolerant of relatively poor soils, potatoes were a boon to European agriculture, which until then, had been reliant on fallowing up to one half of all lands to retain soil fertility. As a result, hunger was commonplace throughout Europe from the 16th through the 18th Centuries.

Potatoes are so closely associated with European peasantry today that it is hard for us to imagine the suspicion and fear they first aroused. Europe’s nobility embraced the potato as an exotic novelty long before their subjects would touch them. Marie-Antoinette apparently found the potato flower pretty enough to adorn her hair. Yet, when famine struck Prussia in 1744, King Frederick the Great had to order his subjects to eat potatoes! Slowly potatoes caught on and became a dietary staple that supported growing populations and enabled empires.



The international Potato Centre in Peru has preserved almost 5,000 varieties <http://www.smithsonianmag.com/history/how-the-potato-changed-the-world-108470605/?no-ist>

Grown in monocultures usually on marginal lands, the spread of the potato was aided by another export from Peru. By the early 19th Century, Europeans had discovered the productivity-enhancing properties of nitrogen-rich guano, sea-bird dung, which coated Peru’s remote off-shore islands so thickly it was mined and exported. Thus nitrogen fertilizer was added to the tool-kit of European farmers. With the introduction to Europe of the Colorado potato

these caterpillars feed on stems of seedlings, especially transplants, near the soil line, severing the transplants or eating the small seedlings. During the day, they rest below the soil surface, curled by the plant stems. If you do find a transplant laying on the ground, dig around the plant and you just might find a cutworm to squish.

While you can apply parasitic nematodes to your soil to get rid of cutworms, I have found the simplest and most cost-effective method for controlling cutworms is to put something between the transplant stem and the soil. There are a number of barriers you can use and I have tried most of them. My first attempt was to wrap tinfoil loosely around each transplant stem, ensuring that the tinfoil was 2.5 cm above and below the soil line. This worked really well at preventing cutworm damage but at the end of the year, my tomato plants had tinfoil around them or my garden had tinfoil in it. Try again.

Next try, I created a collar made from toilet paper rolls. Again this prevented the damage but in the process of situating the collar at the right level, I frequently sliced the tomato plant stem, doing as much damage as a cutworm.

Not to be discouraged, further research suggested inserting a finishing nail close to the stem of each plant. I envisioned having a garden full of nails and decided to try wooden toothpicks instead. I put one on each side of the stem, as close as I can get, maybe not quite touching but almost. The toothpicks worked great. They kept the cutworms away from the plants, were quick and easy to push into the soil, close to the stem (half above and half below the soil line) and best of all, they decomposed in the garden with no need to find

beetle in the early 20th Century, potato farmers turned in desperation to increasingly toxic mixtures of arsenic, thus giving rise to today's lucrative pesticide industry. Yet it was the advent of an invisible enemy, late blight, the crop-destroying *Phytophthora infestans* that provides our most poignant lesson in the perils of industrial agricultural monocrops. Late blight first appeared in Flanders in 1845, perhaps inadvertently shipped in a cargo of guano. The disease raced through north-western Europe, not running its course until 1852, by which time more than a million Irish people had died of famine. Despite this bad experience, potatoes today are the world's fifth most important crop after wheat, corn, rice and sugar cane.

Peru or Ecuador is also likely the birthplace of tomatoes. However, it was the indigenous peoples of Central America who first selectively bred the tiny currant-like wild progenitors of tomatoes into the juicy, larger fruits we enjoy today. Cortez is said to have discovered tomatoes growing in Montezuma's garden in 1519. Seeds were shipped back to Europe as part of the Spanish plunder.

Like the potato, this strange new fruit aroused suspicion in Europe. In 1692 botanist Joseph Pitton de Tournefort named it *Lycopersicon*, meaning "wolf peach", for its resemblance to deadly nightshade and mandrake, which according to Germanic legend could be used to summon werewolves or "lycanthropes". Nevertheless, the tomato's globe shape and bright, glossy skins were considered attractive enough to grow as ornamentals.

The first record of culinary use in Europe comes from a cookbook published in Naples in the mid-17th Century. We do not know what those early tomatoes looked like, but the Italian name *Pomi d'oro* (golden apple) suggests they were yellow, not red.

It took considerably longer for tomato consumption to take off in North America where many continued to regard it as toxic well into the 19th Century. However, by the time of the American Civil War, because the tomato's high acid content was so well suited to canning it became standard fare for the Union army. When soup magnate Joseph Campbell introduced his condensed tomato soup in 1897 the tomato's place in the food industry was established. According to the UN Food and Agriculture Organization, in 2012, global production was valued at US\$58B, making tomatoes the world's 8th most valuable agricultural product.

Tomatoes grown in 19th Century America were apparently not particularly palatable for eating fresh. They were described as tough-skinned, hollow and watery inside. In 1852 Alexander W. Livingston (1821-1898) of Reynoldsburg, Ohio, founded his seed business and began working to improve the tomato. In 1870, he introduced his "Paragon" tomato, which was larger, meatier, juicier and sweeter than those normally grown. It made a perfect slicing tomato. Livingston subsequently introduced several more beefsteak-type tomatoes, some of which are still available through heritage seed catalogues today.

The two main types of tomato in cultivation are determinate and indeterminate. The former are compact, bushy plants well-suited to growing

them at clean up time.

GROWING EGGPLANT

*Dale Odorizzi,
Master Gardener of Lanark*

Eggplant is the more exotic member of the Nightshade (*Solanaceae*) family. The ancient ancestors of eggplant grew wild in India and were first cultivated in China in the 5th Century BC. It was introduced to Africa before the Middle Ages and then to Italy in the 14th Century. It has a long rich history but was not always highly regarded. In fact many people still turn their noses up at a dish containing this beautiful berry— Yes, botanically, eggplant is classified as a berry. Eggplant in the early days held the reputation as causing insanity, leprosy and cancer, all untrue. The plant itself is very beautiful and even if you do not love eggplant, it can be grown as an ornamental.

Eggplant is a delicate, tropical perennial cultivated in our area as a tender or half hardy annual. Depending on the climate, it grows from 40-150 cm tall with large lobed leaves. In our climate, it thrives in a sunny location in a rich soil and warm temperature of 21°-30°C and average moisture. Eggplant needs a long growing season so start your seeds 8-10 weeks before planting out and transplant out after all danger of frost has passed and the soil is thoroughly warm—early June. Space 45-60 cm X 60-90 cm. Keep in mind this is a very tender annual and must be well protected if the temperature dips close to 0°C. It is a heavy feeder.

Warm to hot weather throughout the season is necessary for good production. Cold temperatures stop

in containers. Bred for commercial growing and harvesting, determinate plants produce a single flush of flowers and fruit that ripen all more or less at the same time so they are more economical to harvest. Indeterminate tomatoes grow on a long, recumbent vine that most gardeners stake upright to save space. Flowers and fruit are produced continually throughout the growing season, making indeterminates more useful for home gardeners.



Ground cherries growing happily out of the cracks between patio stones
(photo by Rebecca Last)

Our third focus plant in the Solanaceae family is the lowly ground-cherry (*Physalis* spp.). Sometimes called Cape gooseberries, ground-cherries can be found in speciality fruit and vegetable shops. Caterers use the golden globes, about the size of a sweet cherry, to decorate fruit platters. These ground cherries are usually *P. peruviana*, which originated in South America. Their protective papery husks, rich golden colour and sweet flavour, something like pineapple, made them a favourite of the Incas. Although it is relatively easy to grow from seed, unfortunately *P. peruviana* requires a longer growing season than Ottawa's.

Not all members of the family are edible. Indeed many, like the lovely orange-husked Chinese lanterns (*P. alkekengi*) that are grown as ornamentals, are poisonous. The locally adapted varieties include two perennial weeds – smooth ground-cherry (*Physalis virginiana*) and clammy ground-cherry (*Physalis heterophylla*). Both are more common in south-western than eastern Ontario.

Most *Physalis* grow prolifically. Their small fruit can contain hundreds of tiny seeds. The Japanese variety contains so many seeds it has come to symbolize fertility. Of the local varieties, Aunt Molly's ground-cherry (*P. pruinosa* 'Aunt Molly's') is generally considered the tastiest and best producer. Smaller, tarter-tasting and not quite so vibrantly coloured as their South American cousins, these little gems can be purchased seasonally at local farmers' markets. Although they are not perennials, once established, ground-cherries will re-seed freely, forming small bushes (20-30 cm high and wide) that bear abundant fruit on the undersides of the branches from August until frost. Truly, a plant that keeps on giving!

Eggplants are susceptible to the same problems, pests and diseases as

plant and root growth, reducing plant vigor and yields. Use hot caps or cloches to protect the plants from cold condition. Black plastic mulch with a soaker hose underneath can greatly increase yield and hasten maturity. When the plants are 15cm high, pinch back the growing tip to encourage branching.

Eggplants or Aubergines, as our friends in the U.K. call them, come in a number of forms. The kind we see most often at grocery stores is the large, dark purple pear shaped (simply called Eggplant). It has a hefty feel but the larger it gets, the less flavorful it becomes. There is also a smaller version of the pear shaped fruit that is called Italian or baby eggplant. These have a more intense flavour and a more delicate skin. Another type is the Japanese Eggplant. They are smaller and longer, almost cucumber shaped and have a thin delicate skin. They tend to be a lighter purple or even striped. White skinned eggplant are now available. They also have a delicate flavour.

Cover plants with floating row covers until they start to flower. This will keep many of the problem insects away from them.

Pick fruits when immature, about two-thirds the maximum size, when skin is still very glossy with a uniformly deep purple colour. When the side of the fruit is pressed slightly with thumbnail and an indentation remains, the fruit is ripe. Long, slender Japanese eggplant may be ready to harvest from finger or hot dog size. Discard over-ripe fruit of dull colour with brown seeds. Mature fruit should not be left on the plant as this will reduce overall productivity. The fruit will store for about 7 days at temperature

tomatoes, including flower drop and misshapen fruit due to extreme temperatures. Other problems are:

Symptom	Cause	Solution
Leaves turn yellow and then brown	Lace bugs	Spray with insecticidal soap, especially on the undersides.
Leaves with large holes	Blister beetles	Wear gloves when you pick these off since they secrete a substance that causes blisters.
Leaves with light-centred, gray to brown spots or fruit with pale, sunken spots	Phomopsis blight	Spray with copper and plant resistant cultivars.
Fruit with dry, brown chew marks	Colorado Potato Beetle	Shake adults onto drop cloth and dunk in bucket of soapy water. Pick off adults and larvae. Look for eggs on underside of leaves.

between 7-10°C.

RECIPE

*Susan Bicket,
Master Gardener of Ottawa
Carleton*

BARBECUED AUBERGINE

Aubergine (eggplant)
Oil of choice, olive, sunflower, chili,
mustard.

1. Cut Aubergine in half length-wise or into thick slices.
2. Sprinkle with salt and leave for ½ hour to draw out bitterness (optional).
3. Rinse thoroughly
4. Brush with oil of choice
5. Cook on a hot barbecue until soft.

Note: Favourite spices or herbs can be added to the oil for extra flavour.

Watch for **Trowel Talk** the Master Gardeners of Ottawa Carleton electronic monthly gardening newsletter available on the 15th at <http://mgottawa.mgoi.ca/>

Visit the Almonte online community newspaper '**The Millstone**' - <http://millstonenews.com/> -for a column by David Hinks of the Ottawa Carleton Master Gardeners; under the Gardening tab

The Edible Garden logo was created by Jon Last (jonlast13@rogers.com)

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Ottawa E-mail Help Line: mgoc_helpline@yahoo.ca - monitored daily

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