



Zion Farmers Market Veg-u-cation



Lettuce Grow!

Lettuce (*Lactuca sativa*) is an annual plant of the aster or sunflower family Asteraceae. It is most often grown as a leaf vegetable, but sometimes for its stem and seeds. Lettuce was first cultivated by the ancient Egyptians who turned it from a weed, whose seeds were used to produce oil, into a plant grown for its seeds and leaves. Lettuce spread to the Greeks and Romans, the latter of whom gave it the name "*lactuca*", from which the English "lettuce" is ultimately derived. By 50 AD, multiple types were described, and lettuce appeared often in medieval writings, including several herbals. The 16th through 18th centuries saw the development of many varieties in Europe, and by the mid-18th century cultivars were described that can still be found in gardens. Europe and North America originally dominated the market for lettuce, but by the late 1900s the consumption of lettuce had spread throughout the world.

Generally grown as a hardy annual, lettuce is easily cultivated, although it requires relatively low temperatures to prevent it from flowering quickly. It can be plagued with numerous nutrient deficiencies, as well as insect and mammal pests and fungal and bacterial diseases. *L. sativa* crosses easily within the species and with some other species within the *Lactuca* genus; although this trait can be a problem to home gardeners who attempt to save seeds, biologists have used it to broaden the gene pool of cultivated lettuce varieties. World production of lettuce and chicory for calendar year 2010 stood at 23,620,000 metric tons (23,250,000 long tons; 26,040,000 short tons), over half of which came from China.

Lettuce is most often used for salads, although it is also seen in other kinds of food, such as soups, sandwiches and wraps; it can also be grilled. One variety, the Woju (莴苣) or asparagus lettuce, is grown for its stems, which are eaten either raw or cooked. Lettuce is a good source of vitamin A and potassium, as well as a minor source for several other vitamins and nutrients. Despite its beneficial properties, contaminated lettuce is often a source of bacterial, viral and parasitic outbreaks in humans, including *E. coli* and *Salmonella*. In addition to its main use as a leafy green, it has also gathered religious and medicinal significance over centuries of human consumption.

Lettuce was first cultivated in ancient Egypt for the production of oil from its seeds. This plant was probably selectively bred by the Egyptians into a plant grown for its edible leaves, with evidence of its cultivation appearing as early as 2680 BC. Lettuce was considered a sacred plant of the reproduction god Min, and it was carried during his festivals and placed near his images. The plant was thought to help the god "perform

the sexual act untiringly." Its use in religious ceremonies resulted in the creation of many images in tombs and wall paintings. The cultivated variety appears to have been about 30 inches (76 cm) tall and resembled a large version of the modern romaine lettuce. These upright lettuces were developed by the Egyptians and passed to the Greeks, who in turn shared them with the Romans. Circa 50 AD, Roman agriculturalist Columella described several lettuce varieties – some of which may have been ancestors of today's lettuces.

Lettuce appears in many medieval writings, especially as a medicinal herb. Hildegard of Bingen mentioned it in her writings on medicinal herbs between 1098 and 1179, and many early herbals also describe its uses. In 1586, Joachim Camerarius provided descriptions of the three basic modern lettuces – head lettuce, loose-leaf lettuce and romaine or cos lettuce. Lettuce was first brought to the Americas from Europe by Christopher Columbus in the late 15th century. Between the late 16th century and the early 18th century, many varieties were developed in Europe, particularly Holland. Books published in the mid-18th and early 19th centuries describe several varieties found in gardens today.

Due to its short life span after harvest, lettuce was originally sold relatively close to where it was grown. The early 1900s saw the development of new packing, storage and shipping technologies that improved the lifespan and transportability of lettuce and resulted in a significant increase in availability. During the 1950s, lettuce production was revolutionized with the development of vacuum cooling, which allowed field cooling and packing of lettuce, replacing the previously used method of ice-cooling in packing houses outside the fields.

Lettuce is very easy to grow, and as such has been a significant source of sales for many seed companies. Tracing the history of many varieties is complicated by the practice of many companies, particularly in the US, of changing a variety's name from year to year. This was done for several reasons, the most prominent being to boost sales by promoting a "new" variety or to prevent customers from knowing that the variety had been developed by a competing seed company. Documentation from the late 19th century shows between 65 and 140 distinct varieties of lettuce, depending on the amount of variation allowed between types – a distinct difference from the 1,100 named lettuce varieties on the market at the time. Names also often changed significantly from country to country. Although most lettuce grown today is used as a vegetable, a minor amount is used in the production of tobacco-free cigarettes; however, domestic lettuce's wild relatives produce a leaf that visually more closely resembles tobacco.



Planting

- Lettuce is a cool-season crop that grows well in the spring and fall in most areas. Lettuce seedlings will even tolerate a light frost. Temperatures between 45 F and 65 F are ideal.
- Loose, fertile, sandy loam soils, well-supplied with organic matter are best. Soil should be well-drained, moist, but not soggy with a slightly acidic pH of 6.0 to 6.5. Since the seed is so small, a well-tilled seedbed is essential. Large clods will reduce germination.
- Start seeds indoors 4 to 6 weeks before last spring frost date for earliest crop.

- One week before setting seeds or transplants in the ground, till in compost or organic matter, especially if you have heavy soils.
- Harden off seedlings for about one week, and transplant outside between 2 weeks before and 2 weeks after last spring frost.
- Direct sowing is recommended as soon as the ground can be worked. Plant seeds ½ inch deep. Snow won't hurt them, but a desiccating cold wind will.
- Seed may be sown in single rows or broadcast for wide row planting. When broadcasting, you'll need to "thin" for the proper spacing.
- Leaf lettuce: Plant 4 inches apart.
- Cos and loose-headed types: Plant 8 inches apart.
- Firm-headed types: Plant 16 inches apart.
- Your rows of plants should be 12 to 15 inches across.
- Cover the seeds with 1/4 to 1/2 inch of soil.
- Water thoroughly at time of transplant.
- Consider planting rows of chives or garlic between your lettuce to control aphids. They act as "barrier plants" for the lettuce.

Care

- You should be able to sow additional seeds every two weeks for a continuous harvest throughout the growing season.
- Fertilize 3 weeks after transplanting. Lettuce prefers soil that is high in humus, with plenty of compost and a steady supply of nitrogen to keep it growing fast. Use organic alfalfa meal or a slow-release fertilizer.
- To plant a fall crop, create cool soil in August by moistening the ground and covering it with a bale of straw. A week later, the soil under the bale will be about 10 degrees F (6 degrees C) cooler than the rest of the garden. Sow a three foot row of lettuce seeds every couple of weeks—just rotate the straw bale around the garden.
- Make sure soil remains moist but is well-drained.
- An organic mulch will help conserve moisture, suppress weeds, and keep soil temperatures cool throughout the warmer months.
- Lettuce will tell you when it needs water. Just look at it. If the leaves are wilting, sprinkle them anytime—even in the heat of the day—to cool them off and slow down the transpiration rate.
- Weed by hand if necessary, but be careful of plant roots: They are shallow.
- Planning your garden so that lettuce will be in the shade of taller plants, such as tomatoes or sweet corn, in the heat of the summer, may reduce bolting.



Pests

Aphids

Aphids are tiny (about 1/32" to 1/8"), and often invisible to the naked eye. Various species can appear white, black, brown, gray, yellow, light green, or even pink! Some may have a waxy or woolly coating. They have pear-shaped bodies with long antennae; the nymphs look similar to adults. Most species have two short tubes (called cornicles) projecting from their hind end. Adults are usually wingless, but most species can develop a winged form when populations become crowded, so that when food quality suffers, the insects can travel to other plants, reproduce, and start a new colony. Aphids usually feed in large groups, although you might occasionally see them singly or in small numbers.

Aphid Damage

Nymphs and adults feed on plant juices, attacking leaves, stems, buds, flowers, fruit, and/or roots, depending on species. Most especially like succulent or new growth. Some, such as the green peach aphid, feed on a variety of plants, while others, such as the rosy apple aphid, focus on one or just a few plant hosts.

- Look for misshapen, curling, stunted, or yellow leaves. Be sure to check the undersides of leaves, aphids love to hide there.
- If the leaves or stems are covered with a sticky substance, that is a sign that aphids may have been sipping sap. The honeydew, a sugary liquid produced by the insects as waste, can attract other insects, such as ants, which gather the substance for food. When aphids feed on trees, their honeydew can drop onto cars, outdoor furniture, driveways, etc.
- The honeydew can sometimes develop a fungal growth called sooty mold, causing branches and leaves to appear black.
- Aphids feeding on flowers or fruit can cause them to become distorted.
- Some aphid species cause galls to form on roots or leaves.
- Aphids may transmit viruses to certain plants, and also attract other insects that prey on them.

How to Get Rid of Aphids

- Try spraying cold water on the leaves, sometimes all aphids need is a cool blast to dislodge them.
- Use commercially available biological controls or by spraying with insecticidal soap or horticultural oil.
- You can often get rid of aphids by wiping or spraying the leaves of the plant with a mild solution of water and a few drops of dishwashing detergent such as Ivory.
- Stir together 1 quart of water, 1 tsp of liquid dish soap and a pinch of cayenne pepper. Do not dilute before spraying on plants.
- In a spray bottle combine 2 parts rubbing alcohol, 5 parts water, and 1 tablespoon liquid soap.
- Organic controls include alcohol spray (isopropyl alcohol, straight or diluted), soapy emulsion (can be mixed w/alcohol), horticultural oil (read the directions) and pyrethrum spray. Soapy water/alcohol should be reapplied every 2-3 days for 2 weeks.
- You can also purchase beneficial insects, such as lady beetles and parasitic wasps, which will feed on aphids. These are usually ordered via mail—check the Internet for labs.
- Bring beneficial insects to your garden by adding plants that attract them. For example, nasturtiums are a good plant to rid your garden of aphids.

Earwigs

Earwigs can be found in almost any zone, although they more likely to inhabit southern climes. You might have trouble spotting one—not only are they quick movers, they are also nocturnal, and tend to hide out

during the day when you are tending the garden. They like decaying wood and plant material, and dark, damp spaces. Often times they can be found in basements and woodpiles. The name "earwig" comes from the Old English *ear-wicga*, which means "ear insect", and it is named so because its hind legs are shaped like human ears.

These one-inch long dark brown insects are easily identified by their forceps. Earwigs feed on other insects, such as aphids and spidermites, which is one benefit. Unfortunately, they will also feed on the rest of your garden. They are especially fond of flowers, lettuce, celery and fruits and leaves will appear jagged and full of holes.

How to Get Rid of Earwigs

Generally, Earwigs are not as much of a threat to your garden as other pests, but they are just as big of an annoyance! Try these remedies:

- Lay one-foot sections of bamboo or garden hose in the beds between your plants. Check these "traps" each morning, and dump the earwigs into a bucket of soapy water.
- Spread petroleum jelly around the stems of your plants. Earwigs won't crawl over it.
- If they are infesting your woodpile, try sprinkling borax around it, but keep pets and children away from this area after doing so.
- Combine equal parts soy sauce and olive oil, put it in a small plastic container, and secure the lid. Punch holes in the top of the container, near the lid. Make the holes large enough for the earwigs to get in. Bury the container in the soil just up to the holes. The soy sauce will attract the earwigs, and the oil will prevent them from escaping. Change the mixture as needed.

White Mold

White mold is a fungal disease that affects a variety of plants, such as beans, peas, lettuce, and members of the cabbage family.

Symptoms appear on blossoms, stems, leaves, and pods that have water-soaked spots. Leaves will wilt, yellow, and die; pods may rot.

How to Identify White Mold

White mold symptoms vary depending on the environment and type of plant, but here are some common ones:

- Wilting of individual stems
- Infected stems may appear to have tan to dark brown lesions on them. From these lesions, a dense, cotton-like growth will form under conditions of high humidity.

How to Control White Mold

- As soon as you notice any diseased plants, destroy them immediately.
- If your soil is infected, remove as much of it as you can and replace it with clean soil.
- You can use a barrier, such as plastic or mulch, to cover the infected ground to prevent the spread of the disease.

Prevention

- Be sure to use well-drained soil and space your plants properly to avoid crowding. Also, remember to avoid areas with poor air circulation.
- When watering your plants, try not to water the tops of them. Or water the plants early in the day so they have the chance to dry before nightfall.
- You can also spray your plants with an approved fungicide to help prevent infection. Spray the plants right before they bud, then spray again a week later.
- Control your weeds. Weeds can host this disease and spread it to your plants.
- If possible, remove all crop residue after harvesting. If residue is left, this disease may develop in it. White mold spores are long-lasting, so they will survive the winter if given the chance.



Harvest/Storage

- Lettuce should be harvested when full size, but just before maturity. You want it young and tender.
- Before maturity, you can harvest leaf lettuce by simply removing outer leaves so that the center leaves can continue to grow. Butterhead or romaine types can be harvested by removing the outer leaves, digging up the whole plant or cutting the plant about an inch above the soil surface. A second harvest is often possible this way. Crisphead lettuce is picked when the center is firm.
- Mature lettuce gets bitter and woody and it will go bad quickly, so check your garden everyday.
- As time passes, you will want to cut the whole plant from the ground.
- It's best to harvest in the morning before leaves have been exposed to sun.
- Keep lettuce in the refrigerator for up to 10 days in a loose plastic bag.

Recommended Varieties

- Crisphead: 'King Crown', 'Mission'
- Cos (Romaine): 'Wallop', 'Paris White Cos'
- Loose Heads: 'Burpee Bibb'
- Red Leaf: 'Red Sail' (Not recommended for hot weather, their red pigment absorbs more heat.)