

# Solanum tuberosum

Ancestors of the Incas living high in the Andes in South America more than 6,000 years ago are believed to have stumbled on many types of small, bitter wild potatoes that survived well in the harsh mountain climate. These early farmers developed sophisticated growing methods, allowing them to cultivate huge quantities of potatoes. To keep their precious harvest from spoiling, they spread potatoes on the ground until they froze overnight, then walked on the potatoes the following day to squeeze out the water. After letting them dry in the sun and repeating this for

## Culture

Heavy clay soils are usually a hindrance for producing good-looking potatoes. A loose sandy loam or mulch (including straw) provides the best results.

To get an early start, potatoes (especially the early varieties) can be sprouted indoors two to three weeks before planting. Place the tubers in a shallow tray or box in a single layer with the end of the potato containing the most eyes or buds uppermost, into a warm bright room where they will begin to grow. Plant when the sprouts are about 3/4 inch long, but they may be planted with sprouts of any length. For large early potatoes, leave only three sprouts per plant, rubbing off the others. Otherwise, the more sprouts per tuber, the higher the yield. Handle sprouts carefully on planting day.

Plant early varieties as soon as soil can be worked in the spring (normally late April). Plant mid-season and late-season varieties from mid-May to mid-June (4 to 5 weeks after planting early varieties). Dig trenches 6 inches wide, 8 inches deep, and 30 to 36 inches apart. Spread 5-10-10 at a rate of 1 pound per 25 feet or its equivalent along the bottom of the trench and cover with 2 inches of soil. Plant small whole seed potatoes or individual seed pieces in the trench, 10 to 15 inches apart, and cover with about 4 inches of soil. Seed potatoes may be cut into small pieces (about golf ball size) with two to three eyes per piece. Allow them to cure (suberize)

## Hilling

Hill the plants for the first time about a week after they poke through the soil. Do the job with a hoe or a tiller with a hilling attachment, and pull up as much

soil as you can around the stems. Do the second hilling three or four weeks later, before the potato vines spill out into the walkways. Stop cultivation and hilling shortly after bloom to avoid root damage. The hills should be about 8 inches high and 10 to 12 inches across by that time.

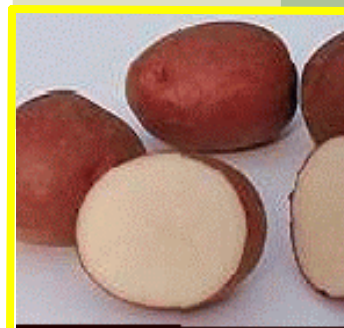
overnight or coat them with sulphur if they are to be planted immediately. This treatment will make the cut pieces more resistant to rot once in the soil. Do not expose cut seed to sun or allow them to dry out. Plant potato pieces in the trench with cut-side down.

The top, leafy part of the plant puts on a lot of growth in the first four to five weeks after planting. Then the main stem of the plant stops growing and produces a flower bud. When that happens, the plant will have as many leaves as it will ever have. With proper sunshine, the leaves eventually produce more food than the plant needs, and the excess energy is channeled downward to be stored in the "tubers" -- thick, short, underground stems -- which we simply call potatoes. Irish potato tubers develop above the original seed piece, rather than below it like many other underground vegetables.

In general, the storage process starts five to seven weeks after planting, often when the plants have flowered. Some varieties will produce great potatoes with no flowering at all, but usually flowering is a sign that something is definitely happening underground. Incidentally, potato flowers don't produce any nectar, so they're not visited much by bees or insects. The flowers are self-fertilized, and many potato plants produce small green seed balls about 1-inch in diameter, which contain up to 300 seeds.

# Potato

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# Irrigation

Potatoes need a steady, season-long supply of water, but it's most important 6 to 10 weeks after planting, when the plants start to develop their tubers. An uneven water supply can cause knobs or growth cracks in potatoes. If the plants don't get enough water, the tubers won't grow and their cells will start to mature. Then, when a sudden increase in water does occur, the potatoes start a second, new growth, causing the tubers to crack or develop into odd shapes.

Irrigate heavily when needed, and allow the soil to dry out somewhat. Potatoes need up to 2 inches of water per week depending on the time of year and weather condition. Hot, dry conditions and vigorous growth increase water needs. If you observe a deepening leaf color on newly developing leaves at the plant tip (almost a bluish tinge), your crop needs water. Deep watering is the only way to go. Research shows that irrigated potatoes obtain 57 percent of their water from the top foot of soil, 24 percent from the second foot of soil and as much as 13 percent from the third foot of soil. Though the potato plant is mostly shallow-rooted,

# Fertility

Spread 5-10-10 at a rate of 1 pound per 25 foot of row, or its equivalent, along the bottom of the trench and cover with 2 inches of soil, as noted under "Culture" above. Side-dress when you hill for the second time with compost, seaweed, fish emulsion, or about 1 pound of 5-10-10 per 25 foot row. Never place fertilizer on or directly above the seed pieces; the fertilizer salt will dehydrate and damage or kill the seed pieces and developing roots and shoots. Side-dressed fertilizers always should be covered with soil or watered in shortly after application to prevent excessive loss of nitrogen to the air as ammonia. Potatoes prefer a soil pH of 6.0 to 6.5.

# Harvest

Many varieties "die-down" on their own. Potato plants mature and begin to die about 70 to 100 days after planting, depending upon variety. If you observe potato plants dying, check before panicking, they may be ready to harvest. If the plants are still growing and your potatoes have reached that perfect size, you may terminate growth by killing the vine. The best method is to break or cut off vines when tubers are mature. Standard potatoes yield about 10 times the amount originally planted. Fingerling potatoes yield from 15 to 20 times the amount originally planted.

To promote skin set, leave tubers in the ground for 10 to 21 days following vine death. This decreases bruising during harvest and permits better storage. Harvest when the soil temperature is 50 to 65 degrees. "New potatoes," on the other hand, are harvested earlier, when vines are still lush and green. Skins of these small tubers are fragile and the tubers quickly dry out if they are not used immediately or refrigerated.

Store potatoes in a cool, dark and humid place. Air circulation through the pile of potatoes is desirable. Potato tubers are living,

breathing vegetables. Storage sites are not potato "hospitals" but rather "hotels." Potato quality does not improve with storage. Proper care at harvest can prevent many storage related problems. Cure the tubers at 50 to 60 degrees for two to three weeks, then cool to the desired storage temperature. Most gardeners store their crop at 38 to 45 degrees and 90 percent or higher humidity. Do not allow condensation to form on tuber surfaces -- it may lead to rot problems. Tubers stored in this manner will not sprout for approximately three months. Significant variation in either temperature (above 50 to 65 degrees or below 30 to 37 degrees) or humidity (below 75 percent) during storage will decrease potato quality and often result in earlier sprouting.

Do not store potatoes with fruit. Apples, for instance, give off a growth-regulating gas, ethylene, which promotes sprouting of potato tubers. Do not eat green tubers. Instead, cut away green areas and discard. These areas contain glycoalkaloids, which impart a bitter taste and can give you a stomachache.

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# Pests

Common insects in home gardens include aphids, flea beetles, and Colorado potato beetles. To control adult potato beetles, hand-pick them from the potato plants before they lay their eggs on the undersides of the leaves. The eggs are a bright orange-yellow color. If the eggs hatch, pesticides are available to kill the larvae. For more information, consult University of Wisconsin --Extension publication A2088, Managing Insects in the Home Vegetable Garden.

# Diseases

Potato diseases may be seed-borne or acquired during the growing season. Many diseases can be avoided by using certified seed. Remove plants that are small, yellowing and sickly. Commonly encountered diseases in the garden include scab, early blight, pink rot and black scurf. Contact your local Extension office for more information.